HOW MUCH DOES GLOBALISATION AFFECT THE INCOME INEQUALITY IN ROMANIA?

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Abstract
The paper examines the connection between income inequality and globalisation in the case of Romania. Using World Bank data and the KOF globalisation index we document that in Romania the increasing globalisation process has led to the growth of income inequality, during 1992-2011. Increasing dimensions of globalisation process has led to the deepening the gap between individuals' and households incomes in Romania.
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1. Introduction
Globalisation is a multifaceted phenomenon affecting business, people, life styles, labour and capital mobility, income and profits, environment and political life. As international and multilevel integration of national goods, services, ideas, capital and labour markets globalisation affects the income levels of individuals and households and the income differentials.

Income inequality has risen in most countries and regions in the last decades, including in developed countries. Since this period is associated with unprecedent trade, financial integration and globalisation, the debate over rising inequality has focused on the role of globalisation.

In accordance with this debate, the papers intend to offer an insight of the relation between income inequality and globalisation in the case of Romania. Using data from World Bank and the KOF index for the period of 1992-2011, we estimate the effect of globalisation on the income distribution within national economy.

The paper is organised as follows. After a short literature review on the connection between inequality and globalisation, the methodology of the study is presented in the third section, the main findings are described in the fourth section and the final section is dedicated to conclusions.

2. Income inequality and globalisation: a short literature review
Before to overview the main relevant studies that examine the effect of globalisation on inequality, some methodological and conceptual clarifications are needed.

We need to distinguish between three inequality concepts: *inequality among countries' mean incomes* (inter-country inequality), *inequality among countries' mean incomes weighted by countries populations* and *inequality between world individuals* (global inequality) (Milanovic, 2006b).

Accordingly, there are several ways in which globalisation affects the inequality among individuals in the world, such as: within countries (within national distribution of income), mean incomes of rich and poor countries or divergence/convergence process and the population's size (the effects differ in populous and small countries) (Milanovic 2006b).

There are several measures of inequality: skill premium, wage inequality, income inequality, and consumption inequality and accordingly, several methods were developed. The most frequently used are the Gini indices and Lorenz curve, the Theil index, the Atkinson index.

The effect of globalisation on inequality depends on many factors, several of which are country and time specific, including a country's trade protection pattern prior to liberalisation, the particular form of liberalisation and sector it affected, the flexibility of domestic markets in adjusting to changes in the economic environment and the existence of other concurrent trends that may have interacted with or even partially been induced by globalisation (Goldberg and Pavcnik, 2007).

In order to capture the effects of globalisation on economics the researchers concentrated mainly in the following aspects of globalisation: trade liberalization (reduction in tariff barriers), ousourcing, flows of capital across borders in the form of FDI and exchange rates.

For example, trade and capital flows were used as proxies for globalisation by Beer and Boswell (2001) and Mah (2002) in examining the consequences of globalisation on income inequality.

The individuals and households' income level depends on inflation, which in turn, is affected by the business internationalisation and globalisation process. Inflation stabilisation is a concern of governments and monetary policy makers (representatives of central banks) in order to reduce the negative effects of international trade and foreign investment inflows. There are several studied highlighting the importance of central bank independence for an efficient intervention for inflation stabilisation (Dumiter, 2009, 2010, 2012).

The vast empirical literature on inequality and globalisation offers mixed findings on this subject.

One part is documenting a beneficial effect of globalisation, by reducing poverty and income inequality. We can include here studies of Lawrence (1996), Dollar and Kraay (2001, 2004), Dollar (2005), Heshmati and Lee (2010) and IMF studies. For example, IMF (2007) argues that financial globalization, especially foreign direct investment (FDI), leads to a significant increase inequality within countries, and at the same time, trade globalization leads to a reduction in inequality in 51 developed and developing countries.

Another part is illustrating a widening effect of globalisation on inequality.

OECD (2011) indicates that technological change, trade, foreign investment flows, and changes in labor market are the main channels of the increase in inequality, in accordance with work of Cornia and Court (2001), Cornia and Sampsa (2001), Maddison (2001), Milanovic (2001) and Mazur (2000), which have shown a growth effect of globalisation on inequality.

Dreher and Gaston (2008) found that globalisation has exacerbated inequality in OECD countries and no robust impact of globalisation on inequality in less-developed nations was found.

Milanovic (2005, 2006a) and Ravallion (2007) found that trade openness is associated with increased inequality in poor countries and lower inequality in rich countries, while Dollar and Kraay (2002) argue that there is no systematic effect of openness on inequality.

In their survey of globalisation in developing countries, Goldberg and Pavcnik (2007) concluded that the evolution of variuous measures of inequality suggests that most developing countries experienced an increase in inequality during the 1990-2007. They found no evidence that any measure of inequality decreased over the surveyed period when compared to earlier periods characterized by less globalisation.

Elmawasini et al. (2013) used the 2010 KOF globalisation index to measure the overall impact of globalisation on income inequality in South Europe and CIS countries. Their findings support the hypothesis that globalisation widens the income inequalities within countries.

Jaumotte et al. (2013) examined the relationship between the rapid pace of trade and financial globalisation and the rise of income inequality observed in the most countries over the past two decades. Using a newly compiled panel of 51 countries over a 23-year period from 1981 to 2003, they reported estimates that support a greater impact of technological progress than globalisation on inequality. This limited overall impact of globalisation reflects two tendencies: whereas trade globalisation is associated with a reduction in inequality, financial globalisation and foreign investment in particular is associated with an increase in inequality.

The empirical evidence from time series regression analysis suggests that trade liberalization reduces poverty levels but does not having statistically significant impact on aggregate poverty and income inequality in Pakistan in short -run but in long run trade liberalization has some strong effects (Chaudry and Imram, 2013).

In our paper, we will examin the concept of inequality in the sense of within-country distribution of income, expressed by Gini index in relation with the globalisation process measured by the KOF 2014 index in the particular case of Romanian economy.

3. Methodology of the study
Our empirical investigation is based on the following regression equation:

$$GINI\_INDEX = C + \beta \cdot GLOBALISATION\_INDEX + \varepsilon \quad (1)$$

where: GINI_INDEX is the dependent variable, C is a constant, β is a regression parameter, GLOBALISATION_INDEX is the independent variable and ε is the standard error.

The source of the values of GINI index is the World Bank Data Basis (World Development Indicators) and of globalisation index, the KOF Swiss Economic Institute of Zurich.

The Gini index measures the extent to which the distribution of income or consumption expenditure among individuals or households within an economy deviates from a perfectly equal distribution. Thus, a Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality.

The KOF globalisation index was introduced by Dreher (2006) as a weighted indice consisting of three component variables: economic (36%), social (38%) and political (26%). The economic variables include actual flows (trade, foreign direct investment stock, portofolio investment, income payments to foreign nationals) and restrictions (hidden import barriers, mean tariff rate, taxes on international trade). Social globalisation is measured by data on personal contact (telephone traffic, transfers, international tourism, foreign population, and international letters) data on information flows (Internet users, television, trade in newspapers), data on cultural proximity (number of Mc Donald's restaurants, number of IKEA, trade of books). Political dimension of globalisation is expressed by number of embassies, membership in international organisations, participation in UN security missions and international treaties.

The data used in the study are referring to the 1992-2011 period.

For estimation of the above equation we used the OLS method. The hypotheses regarding the heteroscedasticity, autocorrelation and normality of errors were also verified.

4. Main findings

As we can notice from the Table 1 displaying the regression results, the regression model is statistically validated due to the fact that the valuee of Prob. for C and vor globalisation index are under 0,05, the significance threshold. Furthermore, the value of F-statistic, 10.1750 is higher than 4,301 ($F_{0,05;1,22}$) meaning that the hypothesis according to which the model is not valid is rejected and the conclusion is that the model is statistically validated.

Table 1 Regression results

Dependent Variable: GINI_INDEX
Method: Least Squares
Sample: 1992 2011
Included observations: 20

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	23.80501	1.595166	14.92322	0.0000
GLOBALISATION_INDEX	0.081401	0.025719	3.165043	0.0054
R-squared	0.357544	Mean dependent var		28.78150
Adjusted R-squared	0.321852	S.D. dependent var		1.460632
S.E. of regression	1.202826	Akaike info criterion		3.301864
Sum squared resid	26.04223	Schwarz criterion		3.401437
Log likelihood	-31.01864	Hannan-Quinn criter.		3.321302
F-statistic	10.01750	Durbin-Watson stat		0.505381
Prob(F-statistic)	0.005359			

Source: author's computation using E-views software

We notice also, that there is a moderate correlation between GINI index and globalisation index (the correlation coefficient is 0.35) and in a proportion of 32.18% the variation of GINI index could be generated by the variation of globalisation index.

The value of adjusted R-squared coefficient is 0.3218, close to the value of of R-squared coefficient, showing that the sample is representative for a concise reflection of the reality.

The regression equation is:

$$GINI\_INDEX = 23.80501 + 0.081401 \cdot GLOBALISATION\_INDEX \qquad (2)$$

The value of β is 0.081401, meaning that an incremental increase of globalisation index of one unit is accompanied by an increase with 0.081401 of the GINI index. Increasing values of GINI index means the deepening the gap between individuals' incomes, as the GINI index values are higher as the inequality between individuals and households in the economy is higher.

We have further tested the hypotheses of heteroscedasticity, autocorrelation and normality of errors.

We verified the hypotesis of errors heteroscedasticity by applying the White test. The results are displayed in the Table 2. The null hypothesis, according to which the estimation results are not signgificant, is accepted. The hypothesis of homoscedasticity is confirmed because F=1.886882 < $F_{0,05;1,22}$=4.301. Furthermore, the value of ObsR-squared (3.633202) is lower than $\chi^2_{0,05;2}$ (5.99), meaning that the errors are homoscedastic.

The values of residual variables (errors) are independent, there is no autocorrelation phenomenon. Using the Durbin-Watson test (see Table 1), for a number of 22 observations, $\alpha = 0.05$, k=1 independent variables, we find $d_1 = 1,24$ and $d_2 = 1,43$. The value of Durbin-Watson test is 0.505381. d_2=1.43>0.505381 meaning that the null hypothesis is rejected, the errors are autocorrelated.

Table 2 Heteroskedasticity test

Heteroskedasticity Test: White

F-statistic	1.886882	Prob. F(2,17)	0.1819
Obs*R-squared	3.633202	Prob. Chi-Square(2)	0.1626
Scaled explained SS	1.898830	Prob. Chi-Square(2)	0.3870

Source: author's computation using E-views software

In order to verify the normality hypothesis of errors, we use the Jarque-Bera test (Figure 1). The value of JB test (2.542159) is lower than the $\chi_{0,05;2}$ (5.99), meaning that the null hypotesis is accepted, the errors are folowing a normal distribution.

5. Conclusions and further research

We found a positive and moderate association between globalisation and income distribution measured by the GINI index. The raise of globalisation index is accompanied by an increase of income inequality in Romania. Increasing values of

globalisation has led to the deepening of the gap between individuals' and households incomes in Romania.

It would be very useful to deep the analysis at regional level, by computing Gini coefficients of income at regional level and examining how they are affected by globalisation process, measured by the KOF globalisation index. Furthermore, the components of this index (economic, social and political) can be used in a detailed analysis, in order to highlight all dimensions of globalisation at Romanian regions' level.

Figure 1 Normality test (Jarque-Bera) of errors
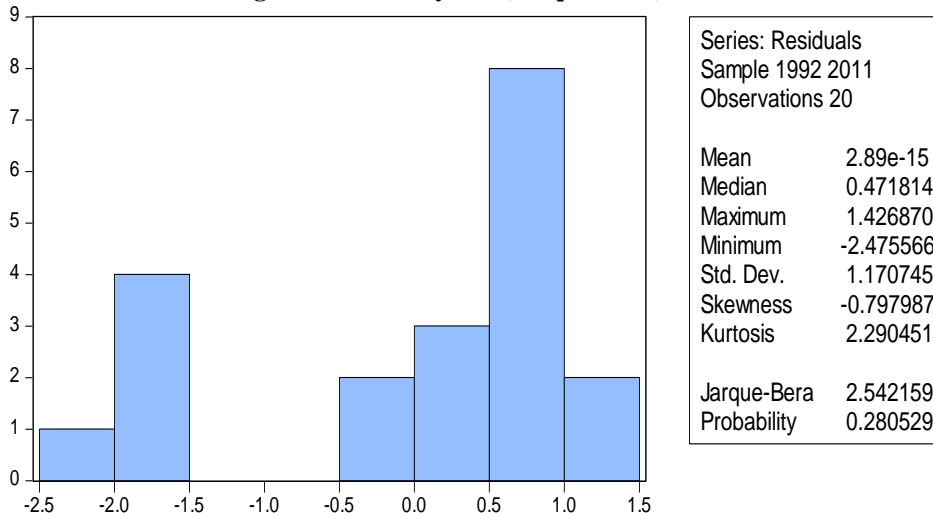
Source: author's computation using E-views software

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