

ECONOMIC GROWTH, GLOBALIZATION AND INCOME INEQUALITY: THE CASE OF UKRAINE

Juliet Abakumova^{1,a}, Olena Primierova^{2,b,*}

¹Department of Analytical Economics and Econometrics, Belarusian state university, Minsk, Belarus

²Department of Finance, National university of Kyiv-Mohyla academy, Kyiv, Ukraine

^aabakumovajg@bsu.by, ^bo.primierova@ukma.edu.ua

*Corresponding author

Abstract. Income inequality has been widely debated since the beginning of the economic development and this topic is especially present in today's economic world. As hypotheses, as a rule, statements are tested: economic growth leads first to an increase, and then to a decrease in inequality; high income differentiation stimulates higher growth rates; the processes of globalization contribute to reducing inequalities in the world. The purpose of the empirical part of the present research is to analyze the relationships between income inequality and economic growth, income inequality and globalization. The study has employed a single-country regression to investigate the existence of the Kuznets curve hypothesis for the Ukraine economy over the period 1995-2016. The bounds testing (ARDL) approach to cointegration is applied to examine the long-run relationship between the variables. The results, when regressing Gini index and GDP per capita based on purchasing power parity, confirm the presence of hidden cointegration. The Granger causality test is also applied in order to test the existence of a causal relationship between the economic growth and income inequality. We examine the globalization-income inequality relationship and causality. Globalization is measured by the KOF globalization index. For case of Ukraine results show that globalization and income inequality are positively correlated, Granger causality was confirmed.

Keywords: income inequality, economic growth, globalization, hidden cointegration, bounds testing approach

JEL Classification: C01, C12, D63, F63

1. Introduction

One of the most important goals of the economic policy of any state is to ensure sustainable economic growth, which is understood as the growth of welfare, as well as an increase in the national wealth of the country. When solving problems and developing mechanisms of measures to achieve this goal more and more attention is paid to the problems of inequality and poverty.

Currently, among the problems actively discussed by researchers regarding inequality its relationship with the productivity of the economy or with economic growth. Researches of inequality represent both the development of theoretical concepts and economic and mathematical models, and an empirical analysis of statistical dependencies between these

indicators in the form of spatial data and in dynamics. However, numerous scientific works aimed at studying the mutual influence of economic growth and inequality in the distribution of income, and could not give an unambiguous answer about the nature of this influence. Some theorists suggest that economic growth affects the level of income inequality, while others - inequality affects the rates of development. There are a number of theories in which both variables are positively correlated, in other theories a negative relationship is proved. As a conclusion, two statements are most often used: (i) economic growth leads to increased first, and then to reduce inequalities; (ii) high income differentiation stimulates higher growth rates. At the end of the last century, the economic data provided enough examples of that says about the limitations of these concepts: economic growth was accompanied by both strengthening and weakening of inequality, and high growth rates were achieved with initially low income differentiation. For example, China's economy is characterized not only by high rates of economic growth, but also by a high level of income inequality. On the other hand, a high level of differentiation of the population by income can lead to social and political conflicts, thereby impeding economic growth. There are a number of channels through which inequality can have a negative impact on economic growth: imperfect credit market, the threat of socio-political stability, limiting investment in human capital, and so on. It is also worth emphasizing that in the framework of the research, developed countries were most often considered. Among the post-Soviet states, the most of researches was conducted for the Russian Federation, Belarus and Kazakhstan, while the situation in Ukraine is still not until the end studied. In the current study, the authors attempted to confirm or disprove the existence of the relationship between economic growth and income inequality using econometric methods.

2. The Impact of Economic Growth on Income Inequality

This relationship was first investigated by the American economist S. Kuznets, which showed that economic growth first leads to an increase in inequality, and then to its decreasing. (Kuznets, 1955) Over the years, the U-shaped Kuznets curve has been subjected to a large number of tests, which resulted in both confirmation of the conclusions obtained by S. Kuznets and their refutation. For example, F. Paukert and M. Ahluwalia found evidence of the existence of an inverted Kuznets curve for developing countries. (Paukert, 1973; Ahluwalia, 1976) However, Oshima studies have shown that there is a relationship of such a form, however, but it must be taken into account that generalizations concerning inter-country models need to be made taking into account the huge historical, physical, regional, political, racial and religious differences. (Oshima, 1962)

Deininger and Squire tried to more fully test the hypothesis Kuznets. First, they used a more qualitative data than previous researchers. Secondly, for different countries, comparable data were used for several moments of time. The result for their sample was that no evidence was found for an inverted U-model for individual countries. In most cases, it has not been possible to find any significant changes in income distribution over the past decades. It was then further explored the question of whether there is a link between rapid growth and growing inequality, and again there was found no systematic evidence in favor of such laws. (Deininger & Squire, 1998)

These results are consistent with earlier research Ravallion and Chen, who also did not find a systematic relationship between growth rate and inequality. This indicated that the

economic policy aimed at rapid economic growth, is a vital element in poverty reduction strategies. (Ravallion & Chen, 1996) However, it is obvious that the impact of growth on the poor depends on how the benefits are distributed among the population. Therefore, Deininger and Squire (1998), studying economic growth and the share of income of various groups, investigated how the initial inequality, and also how the change in inequality affect poverty. It was found that the poor (up to 20 percent of the poorest) are the most affected by the economic downturn, as well as benefit from the measures that stimulate economic growth than the richest 20 percent. In addition, Ravallion and Chen (1997), analyzing data from household surveys in 67 developing countries over the period 1981-1994, also found that empirically there is a very strong correlation between the growth of per capita income and poverty reduction. It is worth noting that even if there is a strong link between GDP growth and poverty reduction, it may turn out that countries with initially serious income inequalities may be less successful in reducing poverty. The same conclusion was reached by M. Kean and E. Prasad on the results of a study of 14 countries with transition economies. (Keane & Prasad, 2001) Also they showed that similar results hold if one examines alternative inequality measures such as quantile ratios, quantile shares, or kernel density estimates of the income distribution.

3. The Impact of Income Inequality on Economic Growth

For the first time the idea of the existence of the impact of inequality in the distribution of income on economic growth was formulated in the mid-20th century by N. Kaldor. (Kaldor, 1956) Also mention should be made of the publications of R. Barro and P. Figini. (Barro, 2000; Figini, 1999). Barro identified four key channels in explaining the impact of inequality on economic growth: imperfect credit markets, political process, socio-economic tensions, differences in saving rates. Figini, in turn, considered the inequality in the distribution of income at the household level, as well as its demographic and socio-psychological consequences.

While some models, such as the Harrod-Domar model, predicted that greater inequality would lead to higher growth rates, in the 1990s an opposite phenomenon was observed: greater inequality led to a lower level of the total growth. Therefore, some empirical evidence in both industrialized and less developed countries, as a rule, confirms the negative impact of inequality on growth.

Such a link was found in cross-country data. (Persson & Tabellini, 1994; Alesina & Rodrik, 1994) The mentioned authors interpreted the results in the context of the political economy, and their argument was that when the inequality is high level, the median voter will seek high (distorting) taxes on the wealthiers, which will have a deterrent effect on savings, which in turn will lead to reduction of economic growth. However, further verifications of this proposal have questioned its validity, and evidence of distracting effects of taxation is still rather weak.

Another possible way from inequality to growth is through social conflicts, when inequality leads to increased political instability, which leads to a decrease in efficiency and investment level, and then to a recession. (Alesina & Perotti, 1996) It was also argued that instability reduces the ability of governments to respond to external shocks. (Rodrik, 1999). Deininger and Squire tested the link between inequality and growth, but found no consistent

relationship between the level of initial income inequality and growth. (Deiningen & Squire, 1998) Nevertheless, they found that high income inequality in poor countries has a significant negative impact on future growth. This can be explained by the fact that for poor countries it may not be possible to finance the training or make other investments. The lack of assets can also reduce opportunities for participation in the political process and, consequently, also reduce access to resources. As soon as countries become rich enough, this link between high inequality and low growth seems to disappear. The authors of another study found that low income inequality in East Asia contributed to rapid economic growth. In addition, policies aimed at reducing poverty and income inequality, such as improving basic education and measures that increase the demand for labor, also stimulated economic growth. (Birdsall et al., 1995)

Forbes conducted a study of panel data using a method that allows for the consideration of the fixed effects for countries to assess how the inequality in a country affects its growth. Then, contrary to previous studies, she found a stable and significant positive relationship between income inequality and growth. (Forbes, 2000) It is also interesting to note that Forbes argues that the problem in the papers of authors who previously received a negative impact of inequality on economic growth could be that the authors used non-comparable data on inequality in cross-section samples (since data on some countries had to be collected from "national sources"), and also that the data was of poor quality. It is also interesting to note the result obtained in the paper by C. Sonin. (Sonin, 2000). The main aim of the work was to evaluate how affects property rights protection on economic growth in Russian regions over the period 1994-1997. According to the model proposed by the author, the direct impact of inequality on economic growth should be negative, because in the case of low protection of property rights, economic agents tend to spend resources on consumption, rather than on investment, which leads to slower economic growth. However, this conclusion is wrong, if we talk about the indirect impact of inequality on growth. Indirect impact must be positive, since the greater the inequality, the more poor voters, the more demand for the protection of property rights. Moreover, the poorer the "losers" from redistribution, the less attractive is the redistribution for the "winners".

Thus the analysis of papers on this topic showed that in some of them noted the negative effect of inequality in the distribution of income on economic growth, while other authors conclude that there is a positive impact of inequality on economic growth, and still others prove the existence of a complex, non-linear relationship between income inequality and economic growth.

4. Research Results

To analyze the relationship between economic growth and income inequality were considered such factors as the Gini index and the gross domestic product (at purchasing power parity) per capita. The study used data from the World Bank for Ukraine for the period 1995-2016. Alternative indicators of income inequality also considered the decile ratio and the quintile ratio. In general, the results obtained not dependent on the choice of indicators of income inequality. Additionally, considered an indicator such as the globalization index KOF. KOF globalization index was created by Axel Dreher (Swiss Economic Institute) in 2002. It includes economic, social and political dimension of globalization. Globalization generally has o direct significant impact on the economic growth. Some researchers examining the links

was considered, in which the components of the original series are included as a variables. Four models have been evaluated to verify the cointegration between components, testing the hypothesis of absence cointegration was carried out using bounds test (Granger and Yoon, 2002):

$$dy_t = a_0 + \sum_{i=1}^m a_{1i} dy_{t-i} + \sum_{i=1}^m a_{2i} dx_{t-i} + \beta_1 y_{t-1} + \beta_2 x_{t-1} + \varepsilon_t,$$

$$H_0 : \beta_1 = \beta_2 = 0. \tag{2}$$

The hypothesis of the absence of cointegration is verified using F-statistics and critical points I(0) and I(1). If the value of F-statistics is higher than the critical point I(1), the hypothesis of the absence of cointegration is rejected. In the case where the value of F-statistics is lower I(0) the hypothesis H₀ is accepted. If the value of the F-statistic lies between the critical points I(0) and I(1), then we can not make a conclusion about the cointegration (uncertainty zone). Selection of the optimal lag was based on Akaike information criterion (AIC). Tab. 1 presents results of the bounds test of a nonlinear autoregressive distributed lags (NARDL) model (2).

Table 1: Bounds test results

GINI	GDP	R ²	I _{1%} (0)	I _{1%} (1)	F _{bounds test}	Hypothesis
positive	positive	0.996	6.84	7.84	7.01	H ₀
positive	negative	0.997	6.84	7.84	11.88	H ₁
negative	positive	0.993	6.84	7.84	6.00	H ₀
negative	negative	0.974	6.84	7.84	1.821	H ₀

Source: (Own estimation using EViews software)

Based on the estimates of the models described above, it can be concluded that at a 1% level of significance, the component reflecting the positive dynamics of the GINI index is cointegrated with the component, reflecting the negative dynamics of GDP, the remaining results of test at the considered level α indicate that there is no cointegration between the corresponding components. This confirms the negative relationship between indicators and in the case of economic slowdown should be expected stratification of the population by income to a greater extent. An interesting conclusion is that there is no link between the negative components of the indicators at any level of significance. Cointegration in the two remaining variants is observed only for certain values of the significance level: between the positive components of the indicators with an alpha level of 0.025 (2.5%); between the component reflecting the negative dynamics of the GINI index and the component reflecting the positive dynamics GDP – at the $\alpha=0.05$ (5%). In other words, in the analysis of these interdependencies for Ukraine, we find that the more likely one can expect the growing income inequality if the growth rate of the economy decreases, but with the same assumptions regarding the significance level – the positive economic growth will not lead to a decrease in population stratification by income.

4.2 Testing Hypotheses II

When testing the hypothesis II, it was decided to use the Granger causality test. Since the presence of a statistically significant correlation between all the indicators considered limits

the use of multiple regression analysis methods. Tab. 2 presents results of Granger causality test, where h – number of tested lags.

Table 2: Pairwise Granger Causality Tests

Null Hypothesis	h=1	h=2	h=3	h=4	h=5	h=6
GINI does not Granger Cause KOF	0.292	0.615	0.123	0.026	0.079	0.103
KOF does not Granger Cause GINI	0.013	0,047	0.068	0.261	0.537	0.435

Source: (Own estimation using EViews software)

At the $\alpha=5\%$ level of significance the results of the Granger causality test allow us to confirm our original assumption about the presence of influence of KOF Globalization Index on GINI at h=1 and h=2, as well as at h=3 with an alpha level of 0.07 (7%). And then we can observe a change in the direction of the relationship. An empirical analysis of the data for the case of Ukraine showed that between the studied indicators GINI and KOF observed a linear relationship, with a certain increase in the variance of GINI with growth of KOF values. Based on the results of the conducted testing, we can talk about the presence of mutual influence between globalization and income inequality.

5. Conclusion

An analysis of the results of empirical studies of the relationship between economic growth and income inequality shows that the results largely depend on the choice of the model specification and the quality of the data used. The authors applied the bounds testing (ARDL) approach to cointegration to examine the long-run relationship between these variables. It can be said that the presence of significant inter-influence for these indicators was confirmed, which manifests itself to a greater extent in the case of the relationship between the positive component of the Gini index and the component, that reflects the negative dynamics GDP. From the authors' point of view, hidden cointegration explains some of the studies in which conflicting results were obtained regarding the tested relationship. Also in the study, the authors tested the causal relationship between the processes of globalization and income inequality. Globalization is measured by the KOF globalization index. By the Granger causality test and through the correlation coefficients have been validated alleged links for both phenomena. The improvement of economic and mathematical methods and models allows us to refine the already obtained results of empirical studies of interdependencies and to obtain new results. But in the opinion of the authors, more in-depth studies in this area also require the development of schemes of action for the formation a list of economic policy measures using the identified relationships, depending on the goals the government.

References

- [1] Ahluwalia, M. S. (1976). Inequality, Poverty and Development. *Journal of Development Economics*, vol. 3, pp. 307-342.
- [2] Alesina, A. and Rodrik, D. (1994). Distributive Politics and Economic Growth. *Quarterly Journal of Economics*, vol. 109, No. 2, pp. 465-490.

- [3] Alesina, A. and Perotti, R. (1996). Income distribution, political instability, and investment. *European Economic Review*, vol. 40, No. 6, pp. 1203-1228.
- [4] Barro, R. J. (2000). Inequality and Growth in a Panel of Countries. *Journal of Economic Growth*, vol. 5, No. 1, pp. 5-32.
- [5] Birdsall, N., Ross, D. and Sabot R. (1995). Inequality and Growth Reconsidered: Lessons from East Asia. *World Bank Economic Review*, vol. 9, No. 3, pp. 477-508.
- [6] Butkus, M., Mačiulytė-Šniukienė, A. and Matuzevičiūtė, K. (2017). Globalization, development and economic growth: the case of EU member states. *Globalization and its Socio-Economic Consequences 17th International Scientific Conference Proceedings*. Rajcke Teplice, Slovak Republic, pp. 240-247.
- [7] Deininger, K. and Squire, L. (1998). New ways of looking at old issues: inequality and growth. *Journal of Development Economics*, vol. 57, No. 2, pp. 259-287.
- [8] Figini, P. (1999). Inequality and Growth Revisited. *Trinity College Economic Papers*, No. 99/2.
- [9] Forbes, K. (2000). A reassessment of the relationship between inequality and growth. *American Economic Review*, vol. 90, No. 4, pp. 869-887.
- [10] Granger, C. W. J. and Yoon, G. (2002). Hidden Cointegration. *Economic Working Paper Series*, No. 539384, Department of Economics, University of California at San Diego.
- [11] Kaldor, N. (1956). Alternative Theories of Distribution. *Review of Economic Studies*, vol. 23, No. 2, pp. 83-100.
- [12] Keane, M. P. and Prasad, E. S. (2001). Poland: Inequality, Transfers and Growth in Transition. *Finance and Development*, vol. 38, No. 1, pp. 50-53.
- [13] KOF Swiss Economic Institute (2017). KOF Globalization Index. [Online]. Available: <http://globalization.kof.ethz.ch>
- [14] Kuznets, S. (1955). Economic Growth and Income Inequality. *American Economic Review*, vol. 45, pp. 1-28.
- [15] Oshima, H. T. (1962). The international comparison of size distribution of family incomes with special reference to Asia. *Review of Economics and Statistics*, vol. 44, pp. 439-445.
- [16] Paukert, F. (1973). Income distribution of different levels of development: A survey of evidence. *International Labour Review*, vol. 108, No. 2-3, pp. 97-125.
- [17] Persson, T. and Tabellini, G. (1994). Is inequality harmful for growth? *American Economic Review*, vol. 84, No. 3, pp. 600-621.
- [18] Ravallion, M. (1997). What Can New Survey Data Tell Us about Recent Changes in Distribution and Poverty. *World Bank Research Observer*, vol. 11, No. 2, pp. 357-382.
- [19] Sonin, C. (2000). Inequality, property rights, and economic growth in transition economies: Theory and Russian evidence, *EERC Working Paper Series*, No. 2K/02.
- [20] Rodrik, D. (1999). Where did All the Growth Go? External Shocks, Social Conflict and Growth Collapses. *Journal of Economic Growth*, vol. 4, No. 4, pp. 385-412.