Income Distribution Measurement and Regulation in the Globalized World

Ani Avetisyan

Abstract   Income inequality is one of the key issues of contemporary economic development in the majority of countries. Some scholars even add it to the list of the four major macroeconomic indicators. Current trends in world economic development indicate that inequality across countries is deepening. Statistics shows that distribution of both income and resources among countries is extremely unequal. However, so far no one has elaborated an optimal approach to the assessment of global inequality. Moreover, specialists have not agreed yet on what should be taken as indicators of income inequality: income, expenditures, resources or opportunities, in their broad sense.

Hence, the research is aimed to assess the level of income polarization on global scale through analysis of a series of relevant studies. In terms of methodology, the author applies to statistical analysis, as well as graphic and regression analyses. Based on results it has been concluded that capital does not move in the same direction as people do. It implies that world economic growth is not inclusive, meaning not all countries have access and opportunity to use economic resources. In this regard, the research findings show that the level of interstate polarization exceeds that within states, which leads to deeper social economic gap between groups of countries, thus gives less opportunities for ones and more opportunities for others. From theoretical perspective, ongoing tendencies of world economy development create challenges, namely the task to look for new ways of assessment and regulation of global income distribution.

Introduction

In most countries income inequality is one of the major challenges for economic development. According to statistics both income and resource inequality in the world is too high and is deepening. Nevertheless, there is still no optimal approach to the assessment of global inequality. In addition, economists have not come to a compromise over what should be taken as indicators of income inequality: income, expenditures, resources or opportunities.
Difficulties with analysis of income distribution are also related to several methodological issues concerning the very understanding and way of calculation of inequality. For instance,

Ani Avetisyan (✉)
Department of Economic Theory and the Issues of Transition Period Economies,
Institute of Economics and Business, Russian-Armenian University, Yerevan, Armenia
e-mail: avetisian.ani@gmail.com

in some African and Asian countries the level of income inequality is calculated as ratio of household spending without taking into account that higher income may boost the saving rate, which means that consumption level remains the same.

In regard to indicators of income inequality, the most common one is household disposable income comprised of household members' salaries, capital income and remittances. Based on the statistics on the level of income, the following coefficients are calculated:

- GINI Coefficient
- Theil Index;
- Atkinson Index.

Apart from those, there are other measures of income distribution, namely quintiles and deciles. They count total income share distributed between the richest and the poorest 10% and 20% of population.

At first glance, it seems that the level of income distribution can be measured by comparison of countries' share of the world population with their share of the world GNI. Aggregate data on per capita income also helps calculate global income inequality. In this regard, average GDP per capita growth compared with that of previous years in some groups of countries gives valuable findings. Nevertheless, as the ways of global income distribution assessment are fraught with ambiguity, more detailed ways of calculation are needed. In the framework of this study the author analyzes the following concepts of inequality measurement:

- Interstate inequality measured based on GDP per capita, PPP.
- Weighted interstate inequality, based on the previous concept and taking into account population of countries.
- Global inequality measured through average per capita income.

As there is too little data required for the third way of management, this study applies to the first two measurements.

Given all shortcomings related to calculation and assessment of income inequality, this research is aimed to contribute to the field by analyzing a series of relevant studies to assess the level of global income polarization through statistical, graphic and regression analyses.

Theoretical approaches

In terms of theoretical framework of income inequality, for a long period of time the neoclassical distribution theory was the prevailing view, but starting from the world economic crisis 2007-2008 it has changed. The nature of the global income inequality has modified: it is already not only intrastate, but interstate as well. Although the number of poor countries has reduced, the income gap between rich and poor countries is increasing: the poor in rich countries are getting richer than the rich in poor countries.[1] According to Piketty, inequality is one of the principal elements of capitalism.[2] Actually, there cannot be income equality, as countries have different competitive advantages. Moreover, they differ in disposable income, which is conditioned by the number of households, income level, expenditure pattern, etc. For instance, Deaton states [3] that at the microeconomic level the difference between developing and developed countries is that the households in the former are much larger and poor. In addition, as different generations of such families traditionally live together, household members save not for old age, but to have income

1 Hrant Bagratyan, and Irina Kravchenko, *Introduction into Megaeconomics: Theory, Methodology, and Practice.* (UBD NBU 2012).

2 Thomas Piketty, *Capital in the Twenty-First Century* (Harvard University Press, 2014), https://www.google.com/books?hl=ru&lr=&id=T8zuAgAAQBAJ&oi=fnd&pg=PR5&dq=.+Capital+in+the+twenty-first+century.+&ots=ZiQCDlXzDl&sig=kVGQYrPnulBpptExtyJleyJe9Ic.

3 Angus Deaton, "Saving in Developing Countries: Theory and Review," *The World Bank Economic Review* 3, no. suppl 1 (1989): 61.

in the times of low productivity, or to distribute income among generations. Savings are given to the disabled members of a family, and properties are inherited. Being perceived as a moral duty, circulation of resources within a family guarantees survival in the cases of disability or illness. As the guarantee is quite strong, such households live long, which creates such a phenomenon as a "consumer dynasty." The majority of the households in developing countries are engaged in agriculture or relevant spheres, which makes it difficult to predict and calculate the flow of their future earnings. As a result, such households are risk-averse, which influences their consumer behavior, thus overall income distribution throughout time. Supporters of globalization claim that liberalization of trade relations and increasing economic openness of countries will equalize costs (including those of factors of production) throughout countries and will provide equal access to resources. It should be mentioned that during the last thirty years there was another pattern contradicting the neoclassical models of economic growth. In the long-run the capital-labor ratio is constant (the labor share of total output constitutes 2/3, and the capital share is 1/3 respectively; accordingly, salary fund and profit are distributed in the same way).[4] In contrast, since the 1980s statistics has revealed a tendency towards reduction in the wage share in total income, which has encouraged new research done by Atkinson, Guerrero, Gollin, etc.[5] Some authors argue that the tendency mentioned above is the consequence of technological progress that has induced capital income growth. Simultaneously, the share of wage is determined by the following factors:[6]

- geographical location that creates favorable conditions for equalization of labor income shares in neighboring countries;
- economic policy aimed at labor income convergence;
- international trade and world costs: labor income share is countercyclical, which is compatible with the theory of Kaldor and Goodwin;
- institutional framework.

However, globalization has modified the factors influencing labor income share: now reduction in labor income share is more often conditioned by increased mobility of labor force. Increase in labor supply due to migration flows in developed countries leads to reduction in labor costs.[7] On the other hand, reduction in labor income share implies increase in entrepreneurs' profit, which along with technological progress contributes to a higher productivity rate, thus larger labor income share. Overall, there are several questions concerning income inequality, which deserve more detailed study,[8] yet, there is little analysis of income inequality and inequality in access to education and healthcare.[9] The matter is that there are difficulties related to measurement and

4 United Nations Conference on Trade and Development, "Trade and Development Report, 2012" (United Nations, n.d.), 4; Anthony B. Atkinson, "Factor Shares: The Principal Problem of Political Economy?," *Oxford Review of Economic Policy* 25, no. 1 (2009): 46.

5 Atkinson, "Factor Shares"; Marta Guerriero, "The Labour Share of Income around the World. Evidence from a Panel Dataset," *Development Economics and Public Policy Working Paper* 32 (2012): 2012; Douglas Gollin, "Getting Income Shares Right," *Journal of Political Economy* 110, no. 2 (2002): 458–474.

6 Olivier Giovannoni, "Functional Distribution of Income, Inequality and the Incidence of Poverty: Stylized Facts and the Role of Macroeconomic Policy," *The University of Texas Inequality Project Working Paper*, no. 58 (2010): 17, http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.459.1842&rep=rep1&type=pdf.\\uc0\\u8221{} {\\i{}The University of Texas Inequality Project Working Paper}, no. 58 (2010

7 Joakim Ruist and Arne Bigsten, "Wage Effects of Labour Migration with International Capital Mobility," *The World Economy* 36, no. 1 (2013): 31–47; Philip L. Martin, *Migrants in the Global Labor Market* (Global Commission on International Migration, 2005), 13, http://www.iom.int/jahia/webdav/site/myjahiasite/shared/shared/mainsite/policy_and_research/gcim/tp/TP1.pdf.

8 Ani G. Avetisyan, "On Some Theoretical Approaches to Income Inequality." Humanities and Social Sciences/ RAU Herald , № 2(20). – Yerevan.: Ed. RAU, 2015: 81-88, 148.

9 Ms Era Dabla-Norris et al., *Causes and Consequences of Income Inequality: A Global Perspective*

assessment of inequality, which one faces already at intrastate level. For instance, labor share is calculated as ratio of total labor costs and total income and includes not only salary, but all the types of rewards, bonuses, etc., paid by employers to their employees. Yet, the indicator does not count income of the self-employed, whereas it constitutes quite a large share in developing countries. As income of self-employed may be ascribed to capital and labor income, use of such an income inequality measurement and assessment tool may give inaccurate results. Measurement of labor share requires precise calculation of total income, from which the number of output and import, as well as indirect taxes should be extracted. Thus, the most popular way of calculation of labor share in income distribution is ratio of total labor costs and total value added without indirect taxes and price of consumption of fixed capital. The other way of calculation is based on the same ratio along with income of self-employed.[10] It is worth mentioning that difficulties with analysis of income distribution are conditioned by several methodological issues concerning the very definition of "inequality." For example, in several countries in Africa and Southeast Asia the level of income inequality is calculated as ratio of household spending without taking into account that higher income may be accompanied by higher saving rate, which means that consumption level remains intact.[11] In addition, household size varies according to the levels of economic development of countries, which influences expenditure pattern: under scale effect per capita utility expenditure decreases.

The common indicator used in income distribution measurement is household disposable income comprised of household members' salaries, capital income and remittances (excluding taxes). Based on the statistics on the level of income, the following well-known coefficients describing the level of polarization are usually calculated:

- GINI Coefficient
- Theil Index;
- Atkinson Index.

Apart from those, there are other measures of income distribution, namely quintiles and deciles. They count total income share distributed between the richest and the poorest 10% and 20% of population.

Income Distribution in the Globalized World: Findings and Data Analysis

At first glance, it seems that the level of income distribution can be measured by comparison of countries' share of the world population with their share of the world GNI (see Figure 1).

Figure 1 Countries' GNI and Population Share in the World, % (including India and China)

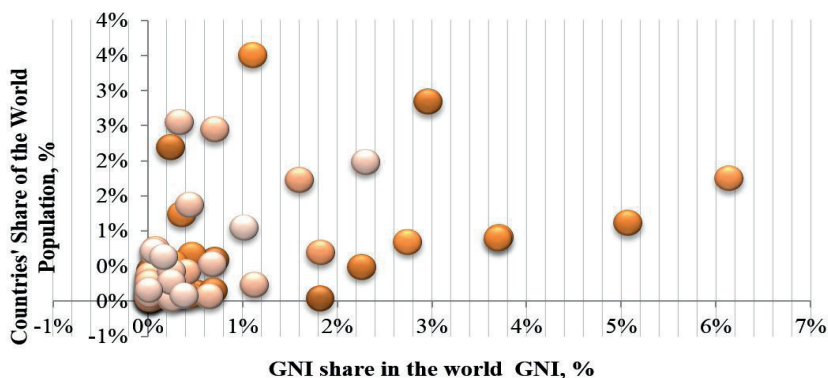Source: Calculated using data from World Bank, *http://data.worldbank.org/*
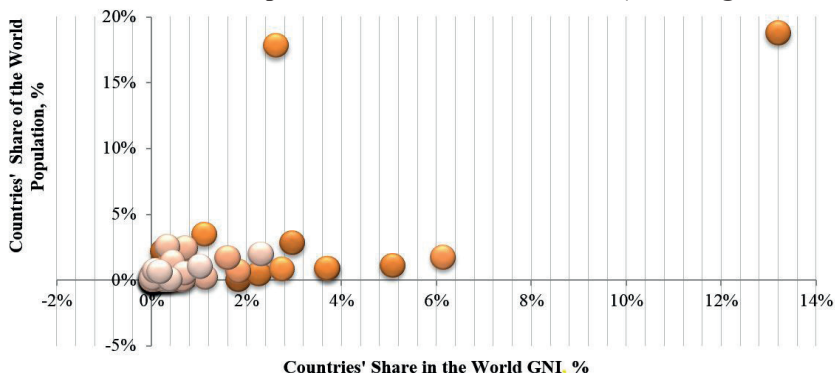
(International Monetary Fund, 2015).

10 Guerriero, "The Labour Share of Income around the World. Evidence from a Panel Dataset," 8.

11 United Nations Conference on Trade and Development, "Trade and Development Report, 2012," 45.

Though the fact that data on India and China is also observed distorts the overall pattern of income distribution in the world because of their large population, their examples illustrate inequality best. These two countries have almost the same size of population, but different shares in the world income: given its GNI, China is five times richer than India; meanwhile, in terms of GDP per capita based on purchasing power parity (PPP), China's indicator is only a little more than twice as high as that of India. The gap is explained by involvement of the economies in value creation, i.e. by factor productivity. Having omitted these two countries from analysis (see Figure 2), it turns out that income distribution among the majority of states is also unequal: countries with larger population (accordingly, larger labor force) have access to smaller share of the world gross income.

Figure 2. Countries' GNI and their share of the world population, % (except for India and China)

Source: Calculated using data from World Bank, *http://data.worldbank.org/*

Aggregate data on per capita income also witnesses global income inequality. In this regard, average GDP per capita growth compared with that of previous years in some groups of countries gives valuable findings.[12] Dynamics of the indicator shows unequal per capita income growth in several regions, and growth is higher in Asia and in the post-Soviet countries (including India and China). Low but constantly positive growth has been revealed in Western countries, as Maddison has classified them (in US, Canada, New Zealand and Australia, and Western Europe). In accordance with this statistics, growth of world economy does not have the same speed throughout countries, which implies unequal distribution of the outcomes of economic activities, which, according to many authors, brings about unequal access to opportunities.

Nevertheless, as the ways of global income distribution assessment are fraught with ambiguity, more detailed ways of calculation are needed.

In the framework of this research the following concepts of inequality measurement are analyzed:[13]

- Interstate inequality measured based on GDP per capita, PPP. In this case countries are considered as measurement units, like individuals in the case of intrastate inequality.
- Weighted interstate inequality, based on the previous concept and taking into account population of countries.
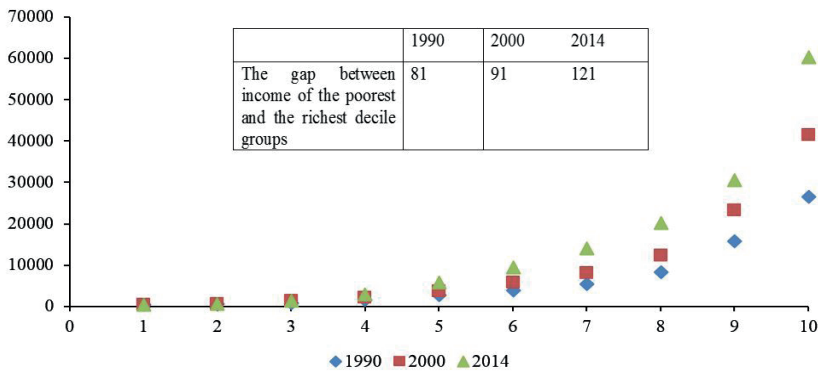
12 See *data from the Maddison Project Database, http://www.ggdc.net/maddison/maddison-project/data.htm*
13 Thomas Goda, "Changes in Income Inequality from a Global Perspective: An Overview," *Post Keynesian Economics Study Group Working Paper* 1303 (2013): 3, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2486888."plainCitation":"Thomas Goda, "Changes in Income Inequality from a Global Perspective: An Overview," Post Keynesian Economics Study Group Working Paper 1303 (2013

- Global inequality measured through average per capita income. The data on the latter is usually gathered through secondary quantitative data, namely household surveys and statistics on national accounts.

Since the data required for the third way of management is scarce, this study applies to the first two measurements. The statistical analysis based on the first methodology (see Figure 4) has shown that during the last 25 years the gap between the richest and the poorest 10% of population in the countries ranked in accordance with their GDP per capita (PPP) significantly increased. Moreover, during last 15 years interstate inequality increased much faster than 10 years before that.

Figure 3 Income Distribution per Decile Groups, by GDP per capita, PPP, 2014

	1990	2000	2014
The gap between income of the poorest and the richest decile groups	81	91	121

Source: Calculated using data from World Bank, *http://data.worldbank.org*

As statistical analysis based on the second way of measurement also counts the population of countries, it turns out that the level of income inequality decreases, and the ranking of countries according to decile groups also changes (see Figure 5). For instance, according to GDP per capita (PPP) and given population size, 10% of the richest countries are those having mainly resource-driven economies and extensive economic growth, along with the USA, Singapore, Ireland, and Switzerland.

**Figure 4 Decile Groups by Countries' GDP per capita (PPP) and Population**

Source: Calculated using data from World Bank, *http://data.worldbank.org*
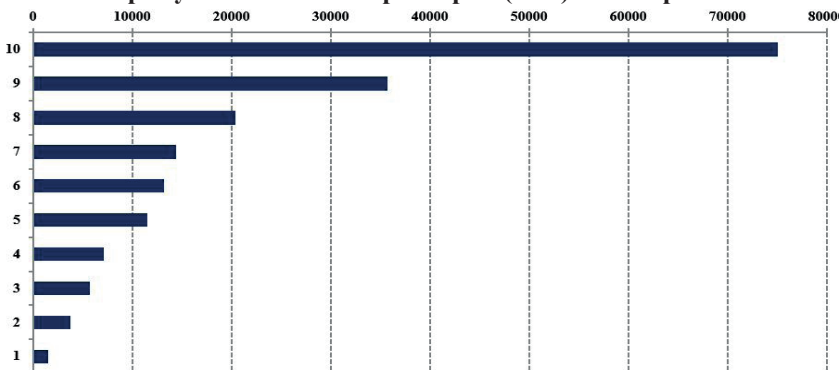
Interestingly, India and China are in the middle of the decile group, even though their populations are the largest ones. In terms of extensive economic growth, these countries are leading, yet, they

still are not able to maintain sustainable development. Apparently, these states are out of scope when one looks at average income per 1% and 5% of the poorest countries, which reveals even more inequality (see Figure 6).

Figure 6 Average Income of the poorest and the richest 1% and 5% of population ranked by GDP per capita, PPP (USD)
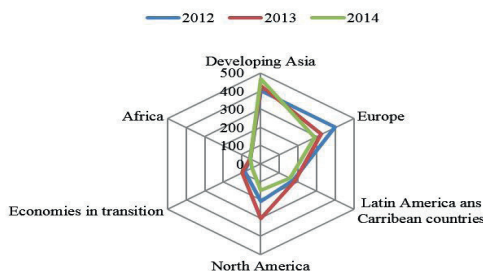

Source: Calculated using data from World Bank, *http://data.worldbank.org/indicator*
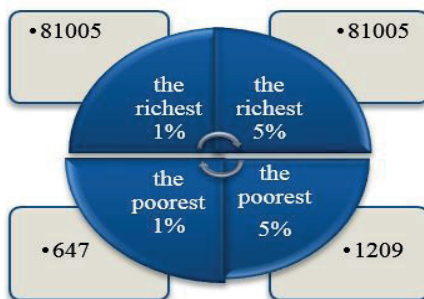
The majority of the richest countries are resource-driven Arab economies, USA, Norway, Singapore, etc., and, not surprisingly, the majority of the poorest are African states.

Global inequality analysis implies also research on investments flows as one of the factors of economic growth. Regional aggregate statistics shows that, in terms of investments, the leaders are the developing countries in Asia (see Figure 7).

Figure 7 Investment Flow, bln USD

Source: Calculated using data from the World Investment Report 2015

The analysis of the findings reveals that countries with large populations, thus having competitive advantage in terms of labor factor, attract investments as a factor of capital growth. In such a way they contribute to added value creation on global scale, however, their share in world income distribution is lower than that in its creation. The expanded list of countries involved in investment flows movement is shown in the Table 1.

Table 1 The Main Directions of Investment Flows*

Investment Flows: top-20 recipients	Investment Outflow: top-20 investors	Counries' share in the World GNI: top-20
China	USA	USA
Hong Kong	Hong Kong	China
USA	China	Japan

Investment Flows: top-20 recipients	Investment Outflow: top-20 investors	Counries' share in the World GNI: top-20
Great Britain	Japan	Germany
Singapore	Germany	France
Brazil	Russia	Great Britain
Canada	Canada	Brazil
Australia	France	Italy
India	Netherlands	India
Netherlands	Singapore	Russia
Chile	Ireland	Canada
Spain	Spain	South Korea
Mexico	South Korea	Australia
Indonesia	Italy	Mexico
Switzerland	Norway	Netherlands
Russia	Switzerland	Indonesia
Finland	Malaysia	Turkey
Colombia	Kuwait	Sweden
France	Chile	Argentina
Poland	Taiwan	Belgium

Developing countries are highlighted.

Source: Calculated using data from the UNCTAD World Investment Report 2015 and World Bank

It indicates that mostly capital moves to developing countries, which, as a rule, have a large population, but a small share in income distribution. This pattern proves that on the global scale capital is concentrated in the hands of limited number of developed countries. In this regard, global migration is a relevant issue, as it is one of the consequences of inequality (see the Table 2).[14]

Table 2 The Four Directions of the Largest Five Migration Corridors (the World Bank Classification, 2013)

South – North		North – North	
Investors	Recipients	Investors	Recipients
Mexico	USA	Germany	USA
Turkey	Germany	Great Britain	Australia
China	USA	Canada	USA
Philippines	USA	South Korea	USA
India	USA	Great Britain	USA
North – South		South – South	

14 Martin, *Migrants in the Global Labor Market*; Richard Black, Claudia Natali, and Jessica Skinner, "Migration and Inequality," 2005; "Sustainable Development Goals: 17 Goals to Transform Our World," *United Nations*, accessed May 23, 2016, http://www.un.org/sustainabledevelopment/.

Investors	Recipients	Investors	Recipients
USA	Mexico	Ukraine	Russia
Germany	Turkey	Russia	Ukraine
USA	South Africa	Bangladesh	India
Portugal	Brazil	Kazakhstan	Russia
Italy	Argentina	Afghanistan	Pakistan

Source: Calculated using data from the International Labor Organization World Migration report 2013, p.62

The USA is one of the main destinations of emigrants, which means that labor force movement has different direction than capital movement. This contradiction confirms that world economic growth is not inclusive and the level of polarization is increasingly determined by geographical location of countries.[15] Therefore, in the framework of sustainable development the UN has pointed out 10 steps of regulation of interstate income distribution. The steps should be implemented by 2030 through special arrangements in the framework of economic and social policies within states.[16]

In conclusion, ongoing tendencies of world economy development create challenges for theory of economy, namely the task to look for new ways of assessment and regulation of global income distribution. It is getting clear that the level of interstate polarization exceeds that within states even 10 times, which leads to deeper social economic gap between groups of countries, thus gives less opportunities for ones and more opportunities for others.

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15 Brsatnko Milanovic, "Global Income Inequality: The Past Two Centuries and Implications for 21st Century," *Powerpoint Presentation, World Bank, Washington, DC*, 2011.
16 "Sustainable Development Goals."

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