Approaches to poverty measurement in BRICS: a reflection on economic reality (the case of Brazil, China and Russia)

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Abstract. Poverty eradication is an urgent task set by the world community in the Millennium Development Goals. Studying the success of Brazil, China and Russia as regional leaders in reducing poverty is of great scientific and practical interest for economic geographers in terms of typological peculiarities as well as the approaches and tools used. The article highlights the main features of modern countries’ social and economic development which contributed to poverty reduction or inhibited the process in the past several decades. It reveals the similarities and differences in the approaches to poverty measurement in three BRICS countries (Brazil, China and Russia) that showed the biggest progress towards poverty eradication and presents a comparative analysis of poverty research and measurement methods used at the national level.

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1. Introduction

Poverty of a significant part of the world population is one of the most urgent challenges facing the international community as it threatens the political stability and appears as a consequence of uneven distribution of scarce resources. Despite the existing programmes at the national level and actions of international organizations directed at poverty eradication, by 2015, according to the World Bank approach to poverty assessment, 1/3 of the world population (2238 million people) was living in poverty (with an income of less than $3.10 a day) and 1/8 of the world population (800 million people) were extremely poor or indigent (with an income of less than $1.90 a day) (World Bank, 2017). As much as 88% of the world poor population (1991 million people) and 94% of the extremely poor around the world live in 135 middle and low-income countries and territories according to the World Bank classification, which attributes them to the developing world (while 80 high-income countries and territories – to the developed world). The BRICS states — Brazil, India, China, South Africa — account for 44% of the extremely poor population of the developing countries and 42% of the world population (World Bank, 2017). Wherein, three countries — Brazil, China, Russia — have shown the biggest progress towards poverty eradication among the BRICS countries and are characterized by a minimum poverty rate according to the World Bank (Fig.1).

Focusing our interest on Brazil, China and Russia is reasonable because two of them — Brazil and China — are regional leaders in poverty eradication relative to the international extreme poverty threshold within the strategy of achieving the Millennium Development Goals, namely to “halve the proportion of people whose income is less than 1 dollar a day”. Attention paid to Russia is explained by the existence of a kind a paradox: on the one hand, Russia is the only country in the BRICS group where the proportion of the poor, assessed by the international extreme poverty threshold, is equal to zero (World Bank, 2017). On the other hand, the problem of poverty in Russia stands sharply in the ongoing crisis, and poverty rate has reached a record level since 2008 – 19.2 million people (13.3% of the country’s population) in 2016 (Federal State Statistical Services of the Russian Federation).

Fig. 1. Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population) and GNI per capita, PPP (constant 2011 international $) in the BRICS countries, 2015 (the latest available official data)

* The latest data available for 2009;
** The latest data available for 2011.
Source: own elaboration based on World Bank (2016).
Considering just three BRICS countries (Brazil, China and Russia) is explained by data availability. Brazil, China and Russia systematically provide statistics on poverty indicators in contrast with the others. Thus, the statistical data on poverty indicators for the three above-mentioned countries have been available with high frequency, especially in the past several decades. On the contrary, data for India and South Africa are outdated and published once every five or more years.

The aim of the research is to identify features and differences in the approaches to poverty measurement in Brazil, Russia and China. For these purposes we use the comparative analysis of research methods of poverty measurement at the national level. Studying these aspects on the example of Brazil, China and Russia, which have fundamentally different ways of assessing poverty, has a high practical significance as the specificities of the approaches to this issue affect the formation and targeting of policies as well as the ways of measuring progress in the fight against the poverty.

2. Theoretical background of the paper

The number of papers tackling the issue of poverty differs significantly among the three analysed countries. Various aspects of poverty in China were the most widely considered: the basic indicators of poverty (poverty gap index, poverty severity index, Sen index) were calculated and the areas of poverty concentration were identified (Plesskij, 2015). A significant number of papers are devoted to the problem of assessing the level and setting the thresholds of urban and rural poverty (Ravallion and Chen, 2007; Lu, 2013; Zhang et al., 2013). The information about the results of tackling poverty and applied measures are available in the official documents of the Government of China (Information Office of the State Council, 2001, 2011).

Publications containing the results of research on poverty in Brazil are extremely scarce, but it is often stressed that one of the main motivations of the country’s innovative development is an ambition to overcome poverty, and Brazil has successfully demonstrated great results over the last several decades (Kirchanov, 2012; Seleznev, 2014; Churkin, 2015). A significant contribution to the study of social problems in Latin America, including Brazil, is made by the experts of the United Nations Economic Commission for Latin America and the Caribbean (ECLAC). They emphasize that the principles of interaction between the “market”, “state” and “society” prevailing in the last three decades cannot operate effectively during the active transformation of the global economic system: economic growth remains uneven and provokes social inequality. Thus, it is argued that fighting against poverty alone in Brazil (as in many countries of the region) is not enough and the emphasis must be placed on the elimination of social fragmentation (Machado et al., 2014; ECLAC, 2015, 2016).

With regard to Russia, the topic is often revealed in the context of regional differentiation of socio-economic development in the papers of Granberg A.G. (2006) Zubarevich N.V. (2009; 2014), Safronov S.G. (2014), Kholina V.N., Mironova. M.N. (2011, 2012). Since the 2000s, the number of Russian papers on poverty has been growing. The comparative analysis of methods for measuring poverty and actions for combating poverty in foreign countries (mainly the EU) and Russia have become particularly relevant (Aleksandrov and Aleksandrova, 2015; Rodionova, 2015).

3. Research results

3.1. Brazil, China and Russia in the global economy

According to the World Bank, Brazil, China and Russia are the largest developing countries in the world, with great territorial (26% of the Earth’s land area), human (24% of the world population), natural (8.2% of the world proven oil reserves, 19.4% of gas reserves, 31% of coal reserves, 26% of gold extraction, etc.) and economic potential. China, Russia and Brazil are the first, sixth and seventh economies in the world respectively and, in 2016, they accounted for a total of 23% of world gross national income (GNI) at purchasing power parity (PPP) ($25 trillion). The highest level of GNI per capita (PPP) in 2016 was in Russia ($23,281),
followed by Brazil ($14,145) and China ($13,515) (World Bank, 2017).

Since the end of the 20th century, the countries have shown unstable dynamics of their GNI growth rates. China’s economy has had relatively steady GNI growth rates and has been growing on average twice as fast as the Organization for Economic Co-operation and Development (OECD). The GNI growth rates in Brazil have been the closest to the average of the OECD countries; furthermore, Brazil came through the deepest international crisis of 2008–2009 with unprecedented stability and recovered faster than many developed economies. And already in 2010, the GNI growth rates of Brazil reached 10%, outpacing the biggest world exporters, and were supported by a high level of private and public consumption and investment as well as buoyant external demand (Kholina and Massarova, 2013). Against this backdrop, Russia has the least favourable position characterized by sharp jumps of economic recession and growth, which are the consequences of the country’s dependence on energy price fluctuations (Fig. 2).

The expanding involvement of the three countries in the global economy, including trade (the average countries’ share of merchandise exports was 16.1% in 2016, imports – 13.1%) has been strongly influencing the socio-economic development of Brazil, China and Russia in the past decades (World Bank, 2017).

Thus, the BRICS countries possess enormous potential and growing economic opportunities. Brazil, China and Russia are the engine of the BRICS group development, are overcoming social and economic problems, including poverty, and contributing to the multipolar world formation.

3.2. Dynamics of poverty and the peculiarities of its measurement in China

Since the beginning of the Chinese modernization policy and the opening up of the state in the late 1970s, the Chinese government has begun the systematic implementation of a development-oriented poverty reduction programme. The following measures have been developed among the main steps: the Seven-Year Priority Poverty Alleviation Program (a programme designed to lift 80 million people out of absolute poverty in the years 1994–2000), the New Century Rural Poverty Alleviation Plan (2001–2010, 2011–2020) (Information Office of the State Council, 2001, 2011).

The problem of poverty in China is primarily a problem of poverty in rural areas, so China's official standard of poverty definition is oriented mainly towards the rural population, as it can be seen from the state programs titles, and the national poverty line is defined just for the rural population (Information Office of the State Council, 2001, 2011).

Fig. 2. GDP growth in Brazil, China, Russia and OECD countries (annual %), 1990–2015
Source: own elaboration based on World Bank (2016)
According to the study published by the World Bank researchers Ravallion and Chen (2007), 2/3 of China’s rural population lived below the poverty line (according to the international poverty line) in 2007. According to the National Bureau of Statistics of China, the proportion of the rural poor was 4.2% and 17.2% in 2008 and 2010, respectively – such a significant proportion growth is explained by a change in the calculation standard of the poverty line. Nevertheless, China’s national poverty threshold was lower than the international (Fig. 3).

China’s poverty line was established in 1986 on the basis of a consumer expenditure survey of 67,000 rural households. As a result, 592 of over 2000 Chinese counties were defined as poverty-stricken and included in a priority poverty relief list: counties from 27 provinces, autonomous regions and municipalities (82% of counties were located in the central and western regions with difficult natural conditions, cross-border and national minorities’ settlement areas accounted for more than 72% of the rural population) (Information Office of the State Council, 2001, 2011).

The poverty line calculation standard has changed three times since its introduction: in 1986, the basis was the standard of absolute rural poverty, in 2000 – the standard of low income, in 2008 – the poverty standard which combines the first two. Thus, the rural poverty line was raised from 206 yuan ($140 (PPP)) per person per year in 1986 to 2300 yuan ($655 (PPP 2011) or $645 (PPP 2015)) in 2011. There is no official poverty line for the urban population at the national level, and the cost of living, which is set on the level of a city or province, is commonly used for poverty definition (Zhang et al., 2013: 28).

Notably, according to the study by Luo, Lee and Sikulara within the Chinese Household Income Project (CHIP) in 2007, poverty in urban areas is much higher (12.3% in 2007) if the relative poverty line equal to 50% of the median income in the cities is used, not rural poverty line or international poverty line (Zhang et al., 2013: 28).

The Chinese Government’s poverty reduction strategies seem to be effective. The number of people who are in need of food and clothes fell in rural areas from 250 million in 1978 (30.7% of the population) to 30 million in 2000 (about 3% of the population; 94.22 million or 10.2% by new standard) and to 26.88 million in 2010 (2.8%), i.e. almost 10 times (Fig. 3). According to the standard of 2011, the number of rural population living below the poverty line was equal to 55.75 million people in 2015 (National Bureau of Statistics of China, 2016).

By the end of 2010, 88% of the villages in the poorest counties obtained roads, 98% – electrici-
ty, 93% – telephone and 96% – TV; 86% of rural households had access to drinking water and 92% – to health care. The level of illiteracy fell to 10.3% (People’s Republic of China, 2012). These figures demonstrate the improvement of the quality of life in China.

In contrast to the dynamics of the population living under the national poverty line, international thresholds show a completely different picture. Firstly, the World Bank distinguishes both rural and urban poverty as well as the total ratio for China. Secondly, the proportion of the poor population according to the international standard is much higher than that based on the national methodology (the maximum difference occurred in 1990: 71.8% (international value) and 9.4% (national value)). This is connected with different threshold values. In addition, China is characterized by the direct dependence of how the poverty level decreases on urbanization; this is explained by active government policy combating poverty with a simultaneous focus on the sustainable development of the country. The level of urbanization in China increased from 11% to 54% in the years 1950–2013, i.e. almost five times (National Bureau of Statistics of China, 2014).

The aim of the current five-year plan is to eradicate poverty in China by 2020, and that is ten years earlier than it was set within the UN Sustainable Development Goals in September 2015 (Stuart, 2015).

3.3. Dynamics of poverty and peculiarities of its measurement in Brazil

Brazil has achieved significant success in reducing poverty over the past decade. The proportion of the population living in poverty fell from 50% to 18% relative to the national poverty line during the years 1990–2014 (the last year for which data is available), the extreme poverty level decreased from 22% to 5%. Relative to the international poverty line, the poverty rate fell from 36% to 9.5%, and extreme poverty from 20% to 5% (Fig. 4). It is important to note that the level of poverty has decreased in all regions, racial categories (white Brazilians (from 16% to 8%), Afro-Brazilians, Pardo (from 38% to 20%), as well as in urban and rural areas (Brasil, 2014). Nevertheless, poverty in Brazil remains high (37 million people are poor, and 10 million people are extremely poor).

The national extreme poverty (indigence) line in Brazil is the cost of the food basket which provides the minimum amount of calories needed to sustain human life (2850 calories according to FAO); the national poverty line is double the cost of the food basket which is calculated for each region of the country, as there is significant regional differentiation.

The national average poverty lines in Brazil range from $52 (extreme poverty in rural areas) to $130 per person per month (poverty in urban areas). According to these indicators, Brazil ranks 6th

![Fig. 4. Proportion of people living in extreme and total poverty in Brazil (%), 1990-2014 according to World Bank and national data](Source: own elaboration based on CEPAL (2015))
in Latin America after Venezuela ($258), Uruguay ($205), Mexico ($184), Paraguay ($160) and Costa Rica ($155) (CEPAL, 2017). The poverty line in Brazil is higher than the international line calculated by the World Bank: $130 per month or $4.4 per day compared to $3.1 a day, but in the case of extreme poverty, the situation is reversed, though the difference is insignificant: $1.7 against $1.9 per day (Fig. 5). According to the Department of Statistics and Socio Economic Research of Brazil the real income that is necessary for providing basic needs is nearing $400 per person per month (Brasil, 2014).

However, Brazil’s progress in the fight against poverty as a result of targeted programmes cannot be underestimated. The social cash transfer programme introduced by President Lula da Silva in 2003 demonstrated the highest efficiency: “Bolsa Família” aimed at the poor population and “Benefício de Prestação Continuada” focused on the elderly population and people with disabilities. Their contribution to income inequality reduction in 2001–2011 is estimated at 17% by the UN Economic Commission for Latin America and the Caribbean, and in addition, these programmes were accompanied by a significant expansion of credit availability. The “Bolsa Familia” programme became the largest scheme for social cash transfers in the world and a major source of income for the poor of Brazil. Its contribution to the reduction of income poverty in 2003–2014 is estimated at 16%, reduction of inequality at 13% and to the decrease in extreme poverty at 33%. The government expenditure on the programme is just about at 0.4% of GDP per year – contributions from the population and charity organizations make up the bulk of the fund, and that is the main advantage of the programme (Telles, 2013). The “Bolsa Familia” programme showed the highest efficiency and became the prototype for the formation of similar measures in 40 countries of the world by 2014.

3.4. Dynamics of poverty and the peculiarities of its measurement in Russia

There is no special poverty reduction program in Russia, unlike in China and Brazil. However, welfare improvement including poverty reduction are the priority directions of the social policy of the Russian Federation and it is defined in the Concept of Long-Term Socio-Economic Development of the Russian Federation until 2020 and the National Security Concept of the Russian Federation. The main measures for reducing the poverty rate are also de-
determined in the government programme “Social Support of Citizens” aimed at ensuring accessibility, high quality and security of social services.

The poverty threshold in Russia is the cost of living determined in accordance with the Federal Law (1997). Since 2013, the methodology for calculating the cost of living and the consumption basket composition were changed: the cost of non-food goods and services is now assumed at 50% of the cost of food items, while earlier, the cost of both parts was equal. The cost of living is determined quarterly and is established by the Government at the national level and by federal entities. The consumption basket is compiled at the federal and regional levels for three socio-demographic groups: the economically active population, pensioners and children.

The population living below the poverty line (cost of living) in Russia, as in China and Brazil, has decreased: the proportion of the poor by national standards declined almost 2.5 times in 2000–2014 and amounted to 11.2% in 2014 (Fig. 6). In 2014, the poor population covered 16.1 million people (as compared to 49.3 million in 1992). It is notable that the cost of living in Russia peaked in the second quarter of 2015 (10,017 roubles per person per month or $444 (PPP)) and dropped to 9,452 roubles in the fourth quarter of 2015 by the governmental order. Therefore, if in the second quarter of 2015 there were 20.1 million people living below the poverty line, in the fourth quarter, that number fell to 14.5 million, primarily due to the lower threshold (the average value is 19.2 million of the poor in 2015) (Federal State Statistic Services of the Russian Federation, 2015). It is noteworthy that the Concept of Long-Term Socio-Economic Development of the Russian Federation until 2020 (the Ministry of Economic Development of the Russian Federation, 2008) predicted a decrease in the number of the poor to 11.1 million people (7.8% of the population) in 2015.

The number of people living below the international extreme poverty line of $1.90 per person per day has been trending to zero since 2008 and the proportion of poor below the international poverty line of $3.10 per person per day is less than one percent.

3.5. Comparison of approaches to poverty measurement in China, Brazil, Russia

Methods of poverty measurement used at the national level in different countries are different from those at the international level and depend on the national interest and the socio-economic situation in a given country. Approaches to poverty measurement and poverty threshold defining in Brazil, China and Russia are presented in Table 1.

In all considered countries, the consumer basket is used for defining the minimum expenditures of the population, but it differs by quantitative and...
Table 1. Criteria used in poverty measurement in Brazil, China, Russia, 2015

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Brazil</th>
<th>China</th>
<th>Russia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poverty definition</td>
<td>Situation in which people cannot purchase a basic food basket, even if their income is used entirely for that purpose.</td>
<td>Poverty equates to economic poverty in which an individual or a household is not able to satisfy their basic needs with the help of the salary or other income by their current income.</td>
<td>Economic status of an individual or a household in which all available resources (money, goods, property) are not enough for satisfying minimum needs.</td>
</tr>
<tr>
<td><strong>Poverty line definition</strong></td>
<td>Indigence line – cost of food basket which satisfies the minimum quantity of calories, that is necessary for adequate life (2850 calories according FAO). Poverty line is the doubled cost of the food basket, which is calculated for each region of the country. Calculated per person per month.</td>
<td>Cost of consumer basket: minimum expenses on vital food in the poorest regions (mainly grain) and non-food products (mainly clothes) at a ratio of 60% to 40%, respectively. Calculated per person per month.</td>
<td>Cost of consumer basket: minimum set of food products – in absolute numbers, non-food products and services at a ratio of the cost of food products (50% of the food items), which are necessary for human health; mandatory payments and fees. Calculated per person per month but differs between three categories: working-age population, pensioners, children.</td>
</tr>
<tr>
<td>Consumer basket</td>
<td>Food basket consists of 13 items: meat, milk, beans, rice, flour, potatoes, tomatoes, bread, coffee, bananas, sugar, vegetable oil, butter. Non-food products and services are not included.</td>
<td>Food basket consists of 12 items which give 2100 calories per person per day and meet the standards of healthy nutrition. A total of 27 items in 15 categories. Non-food items: bare necessities (mainly clothes). Services: water, electricity.</td>
<td>Food basket consists of bread and bakery products, potatoes, vegetables, fresh fruits, sugar and pastry products, meat products, fish products, milk and dairy products, eggs, vegetable oil, margarine, other products (salt, tea, spices). Non-food products: goods for personal usage (clothes, shoes, school writing products) and goods for household usage (bed linen, daily necessities, sanitation and medicinal products). Services: housing and utilities, transport services and other services. A total of 156 items.</td>
</tr>
</tbody>
</table>

qualitative composition. In Brazil, indigence (the cost of the food basket) and total poverty (doubled value of the food basket) are distinguished. In China, the cost of basic clothes, electricity and water is added to the food basket for the determination of the poor.

In Russia, the cost of living is not only the highest in comparison with Brazil and China, but the consumer basket contains the biggest number of services. Besides, the climatic zone of a given federal unit of the Russian Federation is considered in consumer basket formation. Thus, the number of items in the consumer basket varies between different parts of the country.

The main drawback of the Chinese approach to the formation of the poverty threshold is the lack of data about basic spending on education and health-care. The difference between the cost of the baskets with and without these services was 417 yuan per person per year in 2007 ($54) (Fu, 2007). Since 2000, the low income line consisting of the cost of the food basket and 60% of the cost of non-food goods was proposed in China and this line is often used to determine the level of urban poverty (Lu, 2013: 304).

In Brazil, only the food basket is used for determining the poverty threshold. Non-food goods and services are not included, which makes the approach to poverty measurement extremely different.

4. Conclusions

National approaches to poverty measurement reflect the peculiarities of socio-economic development of individual countries stressing the problems inherent to them. Russia has the highest standard for poverty definition which includes numerous items (50 non-food goods and 50 types of services along with 11 food items). However, in view of significant regional income differentiation, there is little chance of passing from the absolute poverty approach to the relative one (adjusting the poverty line relative to the average income in the country) which is mainly used in the developed countries (usually 60% of the average income in a country is defined as the poverty threshold). Thus, passing to the relative approach of poverty measurement would mean setting the threshold at the level of 16,660 roubles per capita per month (60% of the average income equal to 27,766 roubles per capita per month in 2015), which is 1.8 times more than the level currently used (9,452 roubles per capita per month in 2015).

China outstrips Russia by many absolute economic indicators but concedes in relative socio-economic indicators including urbanization level: rural areas, which are often characterized by a lack of access to adequate services and infrastructure, house 607 million people (44.4% of the population of China) and that is 1.2 times more than the population of the European Union. Hence, carrying out measures aimed at poverty reduction among the rural population and estimating its incidence through setting the poverty line specifically for this category is the country’s priority at the present stage of its development.

China has attained the target of the UN Millennium Development Goals to halve, between 1990 and 2015, the proportion of people whose income is less than $1 a day. However, despite the promising results achieved by the government, China, according to the World Bank (Meng, 2015), is in the third place among the counties with the biggest share of the poor in the world (about 7% of the world poor population).

Brazil shows great progress in poverty reduction, but its consumer basket does not include any non-food items or services, so it automatically turns into the food basket. This approach seems to be insufficient, as Brazil is one of the highest-urbanized countries in the world but with a high degree of social problems as a result of fake urbanization. At the same time, the government does not include the cost of housing and communication when measuring poverty. However, the existing gaps in the approach to poverty measurement are compensated by the presence and development of effective programmes aimed at reducing poverty. In this aspect, Brazil could become an example for many countries in the world.

References

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