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## Article

# Constructing Official Poverty Lines for Countries in Transition – Beyond the Poverty Line (2000-2010)

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**CONSTRUCTING OFFICIAL POVERTY LINES FOR COUNTRIES  
IN TRANSITION – BEYOND THE POVERTY LINE (2000-2010)****Marinko Škare<sup>1\*</sup> and Romina Pržiklas Družeta<sup>2</sup>**<sup>1) 2)</sup> *Juraj Dobrila University of Pula, Faculty of Economics and  
Tourism “Dr.Mijo Mirković”, Pula, Croatia***Abstract**

This paper presents a new model for defining the poverty line using the Kakwani (2010) approach and developing a possible candidate for the construction of a new official poverty line. The model uses consumer theory to construct both food and non-food poverty thresholds and ensures that the poverty line is consistent across regions.

Namely, it is of great importance to review a new unique measure for transition countries because there is a lack of statistics and research in these countries because their governments denied the existence of poverty during the socialist years. The methodology developed in this paper is used to illustrate the construction of a poverty threshold and poverty rates in Croatia, Hungary, the Czech Republic, Poland, Latvia, Azerbaijan, Bulgaria, Slovenia and Russia for the period 2000-2010. The focus on poverty in transition countries was placed in the former Soviet bloc; for that reason, the benchmark country used to illustrate the methodology for the above period was Russia. Because there are considerable differences in the methods used for poverty estimates, as well as insufficient and incomplete statistics, proposal for a new unique measure would serve as a “tool” for the prompt application of adequate social policies for transition countries.

**Keywords:** A new model for constructing poverty lines, Poverty rates, Calorie cost, Poverty measurement in transition countries.

**JEL Classification:** D31, D63, I31, I32, O57

**Introduction**

A large body of literature on different poverty line estimation methods and advantages in welfare economies currently exists. Similarly, different poverty line approaches for poverty analysis have been developed. Although the basic need approach developed by Rowntree (1901) is the most commonly used approach to measure poverty, food energy intake methods, and subjective poverty lines are also used for the construction of poverty lines. Absolute poverty lines, which are based on \$1/day (World Bank, 2000), are subject to some limitations, such as the referencing and the identification problem. Relative poverty

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methods such as equivalent incomes (60% of national income median) through income distribution reflect poverty in the space of commodities (income distribution functions). Consumption based methods more accurately identify a minimum standard of living when compared to the income-based poverty measures. For example, Meyer and Sullivan (2012) argue that consumption based poverty measures are more reliable for identifying disadvantaged (poor) than income-based poverty measures (supplemental poverty measure) identifying mainly individuals dropped from poverty. Consequently, a consumption based poverty measure identifies the individuals falling below a minimum standard of living in addition to capturing changes in poverty trends due to public policy, social and economic changes over time.

Because these countries are making the transition from socialism to capitalism, they are experiencing a massive contraction in output and income and falling wages, which have caused extensive unemployment and poverty. In addition, there have been economic and social costs from the loss of social protection and an increase in social tensions (growing crime). Because these countries and communist governments denied the existence of poverty and unemployment in the past, it comes as no surprise to find a large gap in their statistical data and in the state of their development in the complex methodology of poverty. As Sharma (2013: pp.249) has commented, "However, in a world where market ideologies have become dominant and infused all areas of life, we have increasingly lost a sense of working together to make change."

The core hypothesis of this paper is that there exist disagreements regarding the methodology for poverty monitoring. The harmful result of inadequate methodologies for poverty monitoring becomes even more evident with the application of inadequate policies for poverty reduction.

Recent research (Redmond and Hotton, 2000; pp.33-34) found that "Poverty was, as Atkinson and Micklewright (1992) put it, "a subject of great sensitivity" for Communist governments. This culture of denial had different consequences as countries started their transition from communism. In all countries, there was no effective mechanism for means testing, since this was not seen as necessary.

In transition countries, a different technique is used to construct poverty measures, but it creates difficulties for monitoring differences across countries and changes over time within countries. Because of these difficulties, authors favour the absolute poverty approach, for example Milanović (1998)<sup>2</sup> and World Bank (2000)<sup>3</sup>.

This situation presents a challenge for the construction of a new model for poverty lines. The countries covered by this study are Croatia, Hungary, the Czech Republic, Poland, Latvia, Azerbaijan, Bulgaria, Slovenia and Russia for the period 2000-2010. These countries represent different parts of the region (Central and Eastern Europe, Balkan, Slav Post Soviet, Central Asia) and different experiences with the transitional process.

Convinced by arguments in favour of the consumption based poverty measure approach presented in the modern mainstream poverty analysis literature, a consistent poverty line that objectively and precisely identifies a minimum standard of living (using real survey

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<sup>2</sup>Poverty line=US\$4 per day

<sup>3</sup> Poverty line= US\$1 per day, US\$2 per day, US\$2,15, US\$ 4,30, 50% of median per capita, 50% of median per equivalent adult

data) is developed in this study. The constructed poverty line presented uses both the Cost of Basic Needs Method and the Food Energy Intake Method. Using the nutrition-based anchor that is considered to be adequate by the food poverty line, a specific consumption bundle (meeting minimal nutritional intake – basic needs food bundle) for an individual is derived. The derived food poverty line is corrected for demographic factors (urban, rural, activity levels), while the age and gender factors reflect the average household in the transition countries. After the costs of basic food needs are estimated, the non-food poverty line (estimated basic non-food needs) is defined. To construct a non-food poverty line accurately measuring a non-food component, the expenditure composition of households below the food poverty line (90%–below bound) and above (110%– upper bound) are used, i.e., the household expenditure close to the nutritional anchor. To avoid the lower and upper non-food poverty line bias, a non-parametric approach identifying the average non-food expenditure for the lower and upper bound is applied. After the food poverty line is estimated, the non-food component (non-food poverty line) is added to construct a national poverty line for the transition countries. This approach proved quite stable and robust. In addition, the changes from a transitional social and demographic shift to a market economy were captured without losing indicator consistency.

Past research papers on poverty lines in transition countries primarily concentrated on the absolute poverty line, which should reflect the cost of achieving basic human needs. However, the \$1 or \$2 a day international poverty line does not reflect the cost of achieving basic human needs. According to Kakwani (2010), a basic human need is the capability to be adequately nourished; therefore, it is necessary to use the basic needs approach to construct the food poverty line. However, not a single poverty line using a consumption-based poverty method (basic needs approach and nutrition based anchor construction) has been investigated for transition countries.

In addition, various alternative poverty indicators have been derived and contrasted with the official poverty line. Considering these issues, as well as the fact that consumption based poverty methods are more reliable for assessing poverty in countries with significant on-going social and economic change, consistent poverty analysis in transition countries has encountered horizontal inequity issues.

To resolve the question of which poverty line should be adopted as the official line for transition countries, Kakwani (2010) suggests a model based on the construction of a consumption poverty line (threshold) according to the following form:

$$u = u \left[ \frac{q_f}{r}, \frac{q_n}{n} \right] \tag{1}$$

where:

$u$  = utility function

$r$  = calorie requirement of an individual

$n$  = measure of non-food basic needs for the same individual is used.

Equation (1) defines the food and non-food (basket) poverty line for an individual with a given  $r$  and  $n$  by setting  $u = u^*$  (minimum standard of living). Because  $r$  and  $n$  are basically different, the food and non-food poverty lines will be different for different individuals to reflect the social, economic and demographic differences between them.

This research attempts to develop a new model for constructing the official poverty line for transition countries to overcome the shortcomings of the World Bank model and other income based poverty indicators.

It is important to have a consistent poverty line; without one, we would have horizontal inequity in the identification of the poor (Kakwani, 2010).

The findings of this paper are expected to assist policy makers in monitoring social and economic change for disadvantaged groups (the poor) by determining an “objective and robust” official poverty line.

The paper is structured as follows. First, the paper reviews the role and importance of poverty lines in poverty analysis. A research background is presented in section 2. Next, the research methodology is presented and data analysis techniques are discussed in section 3. Section 4 presents the results of the poverty analysis for transition countries. Finally, the conclusion and directions for future research are offered.

### **1. Background research**

World poverty estimates has been widely discussed in recent years by authors such as Chen, S., Ravallion, M. (2010) Ravallion, Chen and Sangraula (2009), Bhalla (2004), Sala-i-Martin (2006), Kakwani (2010).

As a research topic, poverty in transition countries before transition was ignored; therefore, it is not surprising that there are incomplete statistical data and gaps in the research. As a result, there is a disagreement regarding the appropriate methodology for monitoring poverty, i.e., a unique measure of poverty does not exist.

So far, the published data on poverty is produced by international organizations that monitor transition economies such as the EBRD 1997; the World Bank 2000; UNDP 1999. These data are also the result of the individual efforts of researchers who conducted research on particular countries and whose methodology depended on their own interests and the availability of data sources.

The World Bank (2000) published its reports on poverty indicators starting from consumption and the concept of absolute poverty using a poverty line that measures the energy value of food. In contrast, the countries of the European Union (EU) used a poverty line based on income and the concept of relative poverty. According to the concept of relative poverty, the poor are considered to be those whose incomes are less than 60% of the median income.

Having in mind that the relative line is determined in relation to some statistical parameters (average income or median income), many believe that relative poverty does not speak to the actual conditions of the poor.

Different techniques are used to draw the poverty line in transition countries, as presented in Table 1.

**Table no. 1: Summary of Empirical Poverty Transition Literature**

<b>Study</b>	<b>Data</b>	<b>Primary Sample Studied</b>
Bezemer, D.J. (2006)	Quality/quantity Intention is to consider each aspect of the poverty dimension Research method relies on several sources and data sets from different countries in a review study	.....
Milanović (1998)	CPS	Transitional econ.
World Bank (2000)	CPS	Transitional econ.
Commander et al. (1999)	CPS	Russia
Mills (2000)	CPS	Tajikistan
Scott (2001)	CPS	Kyrgyz Republic
Ellman (1994)	WI	Transition countries
De Sotro et.al. (2002)	QI	Albania
Škare (1999)	CPS	Croatia
Delalić (2012)	WI	Bosnia and Herzegovina
Baležentis et.al. (2011)	WI	European Union
Ringold (2002)	WI	Bulgaria
Dudwick et.al. (2003)	QI	Moldova
Ferrer-i-Carbonell and Van Praag (2001)	QI	Transition countries
Revenga et al. (2002)	QI	Transition countries
Bezemer (2006)	QI	Armenia
Benerji (2006)	QI	Moldova
O Keffe and Holson (1997)	QI	Azerbaijan
Hutton and Redmond (2000)	CPS Research method relies on several sources and data sets from different countries in a review study	Transition countries
Collins and Redmond (1997)	CPS	UK and Hungary

*Source: Author*

Remark:

CPS= Current Population Survey (Poverty Threshold)

PSID= Panel Study of Income Dynamics

SIPP= Survey on Income and Program Participation

CPS= Child Protective services

WI= Welfare Indicators

QI= Qualitative Assessment

EAI= Equivalent Average Income (the criterion in these studies regarding the measurement of poverty is that of half the equivalent average income)

In summary, many statistical indicators only reflect one side of poverty, and even the researchers who use the same data, the Current Population Survey (CPS), use different “tools.” Milanović (1998) used the absolute poverty line of US\$4 per day for the estimation of poverty, whereas Braber (2000) estimated poverty lines based on Ravallion's method. Nevertheless, Bezemer (2006) presented recent poverty estimates for selected transition countries based on the World Bank (2000)<sup>4</sup> calculation and noted that comparing poverty pre-transition and post-transition is difficult because poverty did not officially exist during socialism. The calculation of the poverty rate according to the World Bank (2000) was made for 24 transition countries divided into Central and Eastern Europe, Balkan, Slav post-Soviet, Transcaucasus & Central Asia. The study does not analyse only one set of data, but the research method relies on several sources and data sets from different transitional countries; for example, data include the dynamic aspect of poverty, the quality of life, insufficient food and clothing, limited access to utilities, healthcare, psychological effects, etc. Many authors have analysed the different aspects of poverty as presented in the Bezemer (2006) study, such as Ellman (1994), Commander et al. (1999), Scott (2001), De Sotro et al. (2002), Ringold (2002), Dudwick et al. (2003), Ferrer and Carbonell and Van Praag (2001), Milanović (1998), and World Bank (2000) et al., then multidimensional aspects of poverty presented in Delalić (2012), Baležentis et al. (2011).

Based on Table 1. it is evident that poverty measurement tools greatly depend on the interests of the individual researchers and that there is no single universally accepted measurement. Given the existing limited statistical standards in transition countries, redefining the existing poverty line becomes a necessity. In the meanwhile as Chen, Ravallion (2008; p.34) has commented “The developing world as a whole is clearly still on track to attain the first Millennium Development Goal of halving the 1990s “extreme poverty” rate by 2015.”

## 2. A new model for constructing the poverty line (updating the poverty line)

A poverty line (threshold) is a necessary instrument of poverty analysis. The poverty line specifies the level of income that is sufficient to maintain a minimum standard of living. Rowntree (1901) first measured the cost of maintaining a minimum standard of living and assessed the minimum cost of food that would meet the nutritional needs of families of different sizes. To these costs, he added rent payment and the minimum cost of clothing, heating fuel, and other bits and pieces that should be included for families of various sizes. A family is classified as poor if its total earnings are below the poverty line. This type of approach is identified as the basic needs approach.

The above mentioned line can be defined as consistent if the applied minimum living standard is the same for all individuals regardless of their needs and regardless of where they live.<sup>5</sup> However, the needs of individuals differ with respect to age, sex, physical activity, and religion both in different countries and within countries, which is why his

<sup>4</sup> World Bank 2000 estimate= % population below \$1 per day

<sup>5</sup> Two persons at the same minimum living standard do not necessarily consume the same basket of goods. The basket that each consumes depends on the consumption pattern. Two persons may have different consumption patterns and, at the same time, the same minimum standard of living.

approach faced serious criticism due to the non-differentiation of the nutritional needs of individuals as well as its arbitrariness.

The classic approach to poverty, such as B.S. Rowntree's (1901) measured poverty based on material hardship (which is expressed through income and consumption). This approach has been maintained until this day, but in the 1980s, the definition of poverty was made more complex. For example, Ravallion (1998) believes that poverty exists when one cannot achieve the level of economic welfare that is considered to represent an acceptable minimum standard for the observed society.

Even though today different alternative approaches exist to calculate poverty, the most commonly used measure, which is presented in the World Bank report 1990, is \$1 a day. Purchasing power parities (PPP) play crucial role in constructing the line of \$1 a day.

Although the measure of \$1 a day has been accepted (presented in the World Development Report 1990)<sup>6</sup> as a representative measure of poverty since 1990, some analysts such as Kakwani (2010) describe this amount as arbitrary.

Therefore, Kakwani (2010) suggests an alternative approach to assessing poverty in different countries. In this paper, the approach is applied to the transition countries of Croatia, Hungary, the Czech Republic, Poland, Latvia, Azerbaijan, Bulgaria, Slovenia and Russia for the periods 2000, 2005 and 2010. This paper focuses on poverty in transition countries within the former Soviet bloc; for that reason, the benchmark country used for an illustration of the methodology was Russia.

The primary idea of the Kakwani approach is to determine the poverty line based on food and non-food consumable components. The component of diet (food) is determined by the dietary energy threshold (kcal per person per day), while the non-food poverty line is defined as the average consumption per capita in households whose food expenditure is between 95% and 100% of the absolute poverty line (food poverty line).

Two "tools" are used to define the threshold:

- Household consumption is calculated by quintile groups (quintile groups are defined by income per capita)
- Given that an assessment based on national poverty lines is not a good basis for a comparison of poverty, the conversion of local currencies into a common currency is based on PPPs (purchase power parities).

The methodology developed in this paper illustrates the construction of the poverty line in selected transition countries; the poverty rates were then defined based on this line.

The primary source of data for poverty analysis is the Food and Nutrition Division software (FAO): "Calculating population energy requirements and food needs", the International Labour Organization Statistics Database (ILOSTAT) and C-GIDD (the Canback Global Income Distribution database).

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<sup>6</sup> In 2004, based on the measure of \$1 a day, approximately 1 billion people were estimated to be living in poverty (Chen and Ravallion, 2007). The line of \$ 1 per day is based on PPPs (purchasing power parities) for final household consumption. Although the PPP measure is used for aggregating national accounts, it can be inadequate for poverty comparison if the consumption of poor households is significantly different from that of the general population. For example, the poor and non-poor can consume rice at the same time, but of a different quality.



As there are insufficient detailed research papers about transition countries, it appeared worthwhile to explore the possibility of constructing a poverty line that includes a food and a non-food component and that is internationally comparable according to PPP\$.

Because calorie cost varies with people's standard of living, the population is divided into quintiles by ranking the households according to their per capita consumption.

These indicators, when combined with social and political considerations, should lead to proactive political tools.

### 2.1. Data and Methodology: The Russian Federation 2000-2010

Poverty analysis depends upon the measure of poverty, with the poverty threshold as a primary indicator. The first step in calculating the poverty threshold is to calculate the minimum daily energy threshold (Kcal/person/day), which was calculated in this study according to data from the POP-er software (FAO; Food and Nutrition Division): "Calculating population energy requirements and food needs". These data are shown below for 2010 (data for 2005 and 2010 were obtained in the same way).

To obtain data about the daily calorie intake based on the software data, the average household first needs to be defined for each country according to their national statistics along with the percentage of males and females in the average household. Secondly, the average weight according to age and sex is calculated as well as the recommended daily calorie intake (sex and age).

The distribution by age is defined as follows:

- >1
- 1-17
- 18-29
- 30-59
- 60+

The minimum calorie value that each person needs to consume was calculated depending on age, sex and psychophysical effort. The calculation was obtained for a healthy population with average psychophysical effort (see Table 2).

**Table no. 2: Nutritional Requirements Russian Federation 2010**

Age	Daily energy requirement (Kcal)	
	Male	Female
>1	621	573
1-17	3831	3340
18-29	3233	2740
30-59	2662	2137
60+	2220	1919

*Source: Author's calculation based on POP-er software; Food and Nutrition Division*

Based on the calculation for the nutritional requirement by sex and age, an average calculation for the recommended calories per person/day was made, which can be seen in the example of the Russian Federation, Table 3 below.

**Table no. 3: Recommended calories per person/day Russia 2000-2010**

Country	Average number of household	Recommended calories per person/day		
		2000	2005	2010
Russia	2.7	2975	2793	3142

*Source: Author's calculation based on POP-er software; Food and Nutrition Division*

The recommended calorie per person/day in the Russian Federation in 2000 accounted for 2975 Kcal, in 2005, 2793 Kcal, and in 2010, 3142 Kcal.

After a minimum calorie value was defined for the monitored period, the food items and non-alcoholic drinks included in the minimum calorie value intake were defined. It is important to note that the necessary changes for each country were made according to its actual eating habits, conditions, culture and religion.

The cost of the minimum basket of goods (see Table 4) indicates a minimum level of food consumption (food poverty line) below which households are defined as being poor.

The poverty threshold is expressed in US dollars to provide a precise comparison with other countries.

**Table no. 4: Composition and Cost of the Minimum Food Basket by Product Group (per person/monthly) for the Russian Federation 2010 year**

Product group	Quantity (equivalent adult)	Kcal	Percentage of E requirement (%)	Monthly cost (Rouble/eq. adult)
Bread & cereals	377.3	41.3	1,300	436.2
Meat	107	6.7	211	306
Fish	25	1.6	50	72
Milk, milk products and eggs	70	8.5	270	444
Fruits	125	2.2	70	207.9
Vegetables	269	2.2	70	120.3
Roots and tubers	247	7.05	220	120
Oil and fats	250	30	950	396
Beverages coffee, tea	25	0.03	1	195
<b>Total</b>			<b>3142</b>	<b>2297.4</b>

*Source: Author's calculation*

The average calorie intake per equivalent person in the Russian Federation in 2010 was 3142 Kcal/day and the resulting monthly cost for the minimum food basket was 2297.4 Rubles monthly per person (6,202.98 Rubles per family/monthly or 74,435.76 Rubles per family/year).

Following the Kakwani (2010) approach, the total poverty line is estimated in two steps. First, the food poverty line for the average household was defined. Second, the non-food poverty line was defined as the average per capita expenditure on non-food items of the

households whose per capita expenditures on food are between 95% and 105% of the food poverty line (see Table 5). The national threshold is based on PPP \$.

**Table no. 5: Measured poverty rates in Russia for the years 2000, 2005 and 2010 in \$PPP**

	2000	2005	2010
Poverty threshold	6,825	5,505	7,105
Food poverty line	3,805	3,352	4,270
Non-food pov. line	3,020	2,153	2,835

Note: PPP conversion factor: <http://mdgs.un.org> (17.43 conversion factor)  
(74,435.76/17.43 = 4,270.55)

Source: Author's calculation

Table 5 provides the estimates according to the indicated methodology for 2000, 2005 and 2010 for the Russian Federation.

It can be seen that poverty threshold has increased from 6,825 PPP\$ in 2000 to 7,105 PPP\$ in 2010. Using the absolute poverty estimates, the food poverty threshold has increased from 3,805 PPP\$ in 2000 to 4,270 PPP\$ in 2010, which indicates a worsening of living standards.

The determined share of food and non-food expenditure in the period 2000-2010 is shown below in Tables 6 and 7.

**Table no. 6: Budget shares for broad aggregates and conditional budget shares for food categories in transition countries 2000-2005**

Country	Food beverages and tobacco 2000	Food beverages and tobacco 2005
Low income countries	52.58	48.50
Middle-income countries	34.69	31.10
High income countries	16.97	20.40

Source: [www.ers.usda.gov](http://www.ers.usda.gov), [www.dzs.hr](http://www.dzs.hr).

**Table no. 7: Percentage of household final consumption expenditures spent on food, alcoholic beverages and tobacco that were consumed at home, by selected countries 2010**

Country	Food, alcoholic beverages and tobacco (%)
Croatia	27.6
Poland	26.7
Latvia	26.2
Slovenia	19
Russia	38.7
Bulgaria	25.1
Azerbaijan	47.4
Hungary	27.9
Czech Republic	23.6

Source: [www.ers.usda.gov](http://www.ers.usda.gov) (Euromonitor data, June 2012; the data are computed by Birgit Meade)

The tables show that in the 2000-2010 period, the food budget share decreased from 34% to 32% on average, while the expenditures intended to improve the quality of life rose from 66% to 68%. The increase in the food budget share from 31% to 32% over the 2005-2010 period is a clear indicator of negative economic trends and the reduced purchasing power of the population.

By summing the number of households below the poverty line (data obtained based on the data of income distribution C-GIDD) and dividing by the total number of households, the poverty rate is obtained.

**Table no. 8: Measured poverty rates in Russia for 2000, 2005 and 2010**

Poverty rates (%)	2000	2005	2010
	47.47	25.98	14.12

Source: Author's calculation

It can be seen that although the poverty threshold increased in 2010 compared to 2000, the poverty rate declined from 47.47% in 2000 to 14.12% in 2010. This result suggests that the real improvement or deterioration in the living conditions of the lower class population will not be visible when examining the relative poverty rate unless there are simultaneous changes in distribution (because due to social stratification, people are excluded from growth).

To obtain the data on how many households have incomes below the threshold, the C-GIDD data were used: "Global Income Distribution Database" 2000, 2005, 2010 (Table no. 9).

**Table no. 9: Global Income Distribution Russia 2000-2010**

Househ. (total)	A	B	C	D	E	F	G	H	I	
2000	53870928	621630	1911315	4553880	7546955	10944084	12622899	9356755	3331886	1759894
2005	52789645	235101	407629	1306194	3899544	7871130	12540490	13925072	7207255	3204903
2010	52454482	87599	134613	384933	1622981	5181613	10259921	14673652	10662971	5621935

Note: A-I = Income brackets by households (Number of households with household consumption < PPP\$ year)

A = >1,500      D=3,750-5,500      G= 14,000-25,000  
 B=1,500-2,500      E=5,500-8,500      H=25,000-42,000  
 C=2,500-3,750      F=8,500-14,000      I= 42,000-70,000  
 J=<70,000

Source: Canback- Global Income Distribution Database (C-GIDD)

In Russia in 2000, 25,577,864 households out of a total of 53,870,928 households had an average income of 5500-8500 PPP; in 2005, 13,719,598 out of a total of 52,789,645 households had an average income of 5500-8500; whereas in 2010, 16,671,660 households out of a total of 52,454,482 had an average income of 5,500-8,500. The suggested methodology indicates that although the rate from 2005 compared to 2010 declined from 25.98% to 14.12%, the actual number of households below the threshold grew higher.

**Table no. 10: Distribution of average annual household income (US\$PPP)**

C-Dangel	The average monthly income
>1,500	750
1,500-2,500	2,000
2,500-3,750	3,125
3,750-5,500	4,625
5,500-8,500	7,000
8,500-14,000	11,250
14,000-25,000	19,500
25,000-42,000	33,500
42,000-70,000	56,000
hh over 70,000	35,000

*Source: Author's calculation based on Canback Global Income Distribution Database*

## 2.2. Regional Differences

Regional disparity in terms of poverty is shown with an example of nine transition countries for which this type of data is available. The dispersion of poverty, the composition of poverty, and the difference between the highest and lowest regional rates are shown in the following tables. To address the diversity of the region, these countries are divided into three clusters:

- Central and Eastern Europe (Croatia, Hungary, the Czech Republic, Poland, Latvia, Bulgaria)
- Slav Post-Soviet (Russia)
- Central Asia (Azerbaijan)

Most transition countries that made the transition from socialism to capitalism have endured economic contraction, unemployment and changes in distribution, which all resulted in higher poverty rates. Some of these countries have survived economic transition in reasonably good shape, while for others, the consequences of economic transition have been very hard.

The intensity of the poverty increase was different and in accordance with the development of each country.

For example, economies in Central and Eastern Europe, when compared to some countries in Central Asia (Azerbaijan), have rapidly implemented market reforms and had a good starting position and cultural proximity to Western Europe. However, there is still extensive heterogeneity within this group of countries, which can be seen on the GDP/p.c. in the table 11 below.

**Table no. 11: GDP per capita in transition countries**

Countries	1990	1995	2000	2003	2008	2010
<b>Croatia</b>	5,185	4,722	4,862	7,690	15,694	13,461
<b>Hungary</b>	3,186	4,411	4,543	8,247	15,365	12,863
<b>Czech</b>	3,787	5,596	5,725	9,336	21,627	18,910
<b>Poland</b>	1,694	3,603	4,454	5,675	13,886	12,303
<b>Latvia</b>	2,796	2,107	3,301	4,811	14,858	10,723

<b>Countries</b>	<b>1990</b>	<b>1995</b>	<b>2000</b>	<b>2003</b>	<b>2008</b>	<b>2010</b>
<b>Azerbaijan</b>	1,237	397	655	884	5,575	5,843
<b>Bulgaria</b>	2,377	1,555	1,579	2,642	6,798	6,335
<b>Slovenia</b>	8,699	10,524	10,045	14,607	27,015	22,898
<b>Russia</b>	3,485	2,670	1,775	2,976	11,700	10,447

Source: *www.worldbank.org*

Heterogeneity and the divergence of transition countries are evident in the estimates of poverty thresholds and poverty rates, which are shown in Tables 13-17.

In this study, the aim was to create poverty profiles based on different poverty lines derived using the Kakwani (2010) method. First, poverty lines were based on a food basket for different transition countries (see Tables 14-16). To construct the minimum food basket, it is necessary to define the food energy requirements for individuals of different ages and sexes (see Table 12). The study relied on the World Health Organization data (1985) and the FAO (2004) recommendation. The FAO nutritional standard was designed using the software “Calculation Population Energy Requirements and Food Needs“.

**Table no. 12: Recommended calories per person/day**

<b>Country</b>	<b>Average number of households</b>	<b>Recommended calories per person/day</b>		
		<b>2000</b>	<b>2005</b>	<b>2010</b>
Croatia (CEE)	2.6	2,699	2,693	3,226
Hungary (CEE)	2.6	2,663	2,653	2,800
Czech Republic (CEE)	2.3	3,270	2,968	3,146
Poland (CEE)	3.1	2,840	2,688	2,756
Latvia (CEE)	2.5	2,414	2,416	2,646
Azerbaijan (CA)	4.5	2,300	2,376	2,452
Bulgaria (CEE)	2.4	2,945	2,814	2,994
Slovenia (CEE)	2.6	2,784	2,666	2,815
Russia (SPS)	2.7	2,975	2,793	3,142

SPS= Slav Post Soviet Countries

CA= Central Asia

CEE= Central Eastern Europe

Source: *Author’s calculation*

The absolute poverty threshold based on food energy requirements (for comparison purpose, expressed in US dollars) indicates regional differences in household demography, culture, religion and customs as well as price differences (see Tables 14-16).

Second, in calculating the *non-food* poverty line, Kakwani (2010) takes the average consumption of a household that spends 95% to 105% of the food poverty line on food. The calculation of the average non-food poverty line is performed by selecting the class with an average monthly income that corresponds to the average monthly consumption. The average food and non-food lines in the case of transition countries are presented below (Tables 14-16).

Having also estimated the *non-food* poverty line, we have computed the total poverty line (see Table 13), which indicates the total necessary income for a family to provide a quality life, expressed in US dollars.

As shown in Table 13, the tendency of the total poverty threshold indicates a price increase and a worsening of living standards.

**Table no. 13: Measured Poverty Threshold for years 2000, 2005, 2010**

Country	Poverty thresholds		
	2000	2005	2010
Croatia	9,595	9,309	11,350
Hungary	4,918	5,002	8,035
Czech Republic	5,015	5,039	6,903
Poland	4,272	4,634	7,815
Latvia	4,234	4,489	7,377
Azerbaijan	8,443	10,130	14,453
Bulgaria	12,275	11,375	18,154
Slovenia	10,421	10,212	12,194
Russia	6,825	5,505	7,464

*Source: Author's calculation*

**Table no. 14: Constructed Poverty Line (threshold) in 2000**

Country	Poverty line 2000 US\$ PPP		
	Food	Nonfood	Poverty line
Croatia	4,975	4,620	9,595
Hungary	2,856.13	2,062	4,918
Czech Republic	2,422.3	2,593	5,015
Poland	2,210.43	2,062	4,272
Latvia	2,172.41	2,062	4,234
Azerbaijan	5,038.12	3,360	8,443
Bulgaria	5,944.83	6,330.98	12,275.82
Slovenia	5,850	4,571	10,421
Russia	3,805.71	3,020	6,825

*Source: Author's calculation*

**Table no. 15: Constructed Poverty Line (threshold) in 2005**

Country	Poverty line 2005 US\$ PPP		
	Food	Nonfood	Poverty line
Croatia	4,479.00	4,830	9,309
Hungary	2,846.13	2,156	5,002
Czech Republic	2,552.84	2,487	5,039
Poland	2,478.76	2,156	4,634
Latvia	2,197.58	2,156	4,489
Azerbaijan	6,490.68	3,640	10,130
Bulgaria	5,562.73	5,810	11,375.01
Slovenia	5,389	4,823	10,212
Russia	3,352.27	2,153.12	5,505.12

*Source: Author's calculation*

**Table no. 16: Constructed Poverty Line (threshold) in 2010**

Country	Poverty line 2010 US\$ PPP		
	Food	Nonfood	Poverty line
Croatia	6,282.79	5,068	11,350
Hungary	4,705	3,330	8,035
Czech Republic	3,370	3,533	6,903
Poland	4,425	3,390	7,815
Latvia	3,964	3,413	7,377
Azerbaijan	8,536	5,917	14,453
Bulgaria	9,717	8,437	18,154
Slovenia	6,524	5,670	12,194
Russia	4,629	2,835	7,464

*Source: Author's calculation*

Tables 13-16 present the empirical estimates for these three measures by region. To obtain the aggregate measure of poverty based on the poverty threshold, poverty rates were calculated, as shown in the table 17 below.

**Table no.17: Measured poverty rates for the years 2000, 2005, 2010**

Country	Poverty rates		
	2000	2005	2010
Croatia	25.5	13.8	12.5
Hungary	14.88	7.85	17.33
Czech Republic	5.66	4.33	8.18
Poland	20	13.31	10.1
Latvia	12.88	4.28	12.41
Azerbaijan	38.84	74.95	78.85
Bulgaria	71.6	51.5	67.47
Slovenia	8.51	5.17	3.51
Russia	47.47	25.98	14.12

*Source: Author's calculation*

The table shows the divergence of poverty rates and regional disparity across the transition countries in the period from 2000 to 2010. Poverty rates in the mentioned period ranged from 3.51% (Slovenia) up to 78.85% (Azerbaijan).

From this example of transition countries, the countries that registered a decline in the poverty rate during the studied period were Slovenia, Russia, Poland, Croatia, Bulgaria and Latvia. For example, the poverty rate in 2000 in Slovenia was 8.51%, whereas by 2010 it had decreased to 3.51%; Croatia's poverty rate in 2000 was 25.5%, while by 2010 it had decreased to 12.5%; in 2000, Poland had a poverty rate of 20% while in 2010 it was 10.1%; the poverty rate in Russia in 2000 was 47.47%, and in 2010 it was 14.12%; Bulgaria in 2000 registered a poverty rate of 71.6%, whereas in 2010 it was 67.47%; Latvia in 2000 had a poverty rate of 12.88%, and in 2010 it was 12.41%.

Hungary, the Czech Republic and Azerbaijan registered an increase in the poverty rate for the monitored period. Nevertheless, it is important to note that Hungary and the Czech



Republic had an insignificant tendency in the rate increase compared to Azerbaijan. For example, the poverty rate in Hungary increased from 14.88% to 17.33%; in the Czech Republic, it increased from 5.66% to 8.18%; and in Azerbaijan, it increased from 38.84% to 78.85%.

In summary, even though some countries experienced a decrease in the poverty rate over the monitored period, when compared to other countries, the rate is still very high. For example, Bulgaria experienced a decrease from 71.6% to 67.47%; however, the rate is still, regardless of the slight decrease, rather high, which suggests that a conclusion cannot be made without a more detailed analysis.

In 2000, the highest poverty rates were those in Russia (47.47%) and Azerbaijan (38.84%), whereas the lowest rates were in the Czech Republic (5.66%) and Slovenia (8.51%).

In 2010, the highest poverty rates were in Azerbaijan (78.85%) and Bulgaria (67.47%), while the lowest were in Slovenia (3.51%), the Czech Republic (8.18%) and Poland (10.1%).

The decline of the poverty rate in some countries is the result of adjustment to the transition process at a later stage, although, as was suggested earlier, a complete analysis should be undertaken and more “tools” should be applied for the measurement.

By analyzing the tables for the poverty threshold and poverty rate at the same time, it can be concluded that although the poverty threshold increased in 2010 when compared to 2000, the poverty rate in some countries decreased over the same period. This result suggests that the real improvement or deterioration in the living conditions of the lower class population will not be visible when examining the relative poverty rate unless, simultaneously, there are changes in distribution (because people are excluded from growth due to social stratification).

To obtain the data for how many households have incomes below the threshold, we used the “Global Income Distribution Database” for 2000, 2005, and 2010 (Table no. 18).

**Table no.18:Global Income Distribution Database 2010**

Country	GDP p.c.	Poverty line	Total number of households	Total number of households below the threshold	Income bracket by household
Croatia	13,461	11,350	1,578,255	197,631	8500-14000
Hungary	12,863	8,035	3,882,098	672,878	5500-8500
Czech R.	18,910	6,903	4,197,184	343,420	5500-8500
Poland	12,303	7,815	13,499,388	136,970	5500-8500
Latvia	10,723	7,377	859,565	106,749	5500-8500
Azerbaijan	5,843	14,453	2,088,133	1,646,680	14000-25000
Bulgaria	6,335	18,154	2,790,072	1,882,483	14000-25000
Slovenia	22,898	12,194	751,734	26,455	8500-14000
Russia	10,447	7,464	52,454,482	16,671,660	5500-8500

*Source: Author's calculation based on C-GIDD and www.worldbank.org.*

From the above tables, it is evident that even though countries such as Poland, Croatia, Latvia, Slovenia, Russia, Bulgaria do experience a decrease in the poverty rate over the 2000-2010 period, during the same period, the same countries register an increase in the poverty threshold. Therefore, a second step should be made, i.e., the calculation of the total number below the threshold.

As seen in the tables, Croatia, with a total poverty threshold (2010) of \$11,350 and Slovenia, with \$12,194, are in the same Income bracket 8500-14000\$. However, in Croatia, 197,631 from a total 1,578,255 of households were below the poverty threshold, whereas in Slovenia, 26,455 from a total 751,734 number of households were below the poverty threshold. Furthermore, if we compare the obtained rate with the national statistics, there are some differences (see Table no. 19) that suggest that different methods of calculation provide different results.

**Table no.19: List of transition countries by percentage of population living in poverty**

Country	BDP/per capita	Population living below national poverty line	Population living below national poverty line	Year	Population living under 1.25 and 2 dollar (PPP) a day (%) international poverty line	
		(%)	(%)		\$1,25	\$2
		UNDP	CIA			
Croatia	13,461	11.1	17	2008	0.1	0.1
Hungary	12,863	17.3	13.9	2010	0.2	0.4
Czech	18,910	-	-	-	<2	<2
Poland	12,303	14.8	17	2003	0.1	0.2
Latvia	10,723	5.9	-	N/A	0.1	0.4
Azerbaijan	5,843	-	11	2009	0.4	2.8
Bulgaria	6,335	12.8	21.8	2008	0.0	0.4
Slovenia	22,898	<2	<2	2008	<2	<2
Russia	10,447	19.6	13.1	2009	0.0	0.1

Source: 1. Poverty headcount ratio at \$1.25 a day (PPP) (% of population); <http://data.worldbank.org/indicator/SI.POV.DDAY/countries>

2. Population living below national poverty line; <http://hdr.undp.org>, <http://www.cia.gov>

3. BDP/per capita: [www.worldbank.org](http://www.worldbank.org)

**Table no. 20: Poverty and Inequality**

Country	Year	National poverty line (%)	International poverty line, population below US\$1,25 a day	Gini index
Azerbaijan	1995	/	16.3	35
	2001	49.6	6.3	36.5
	2008	15.8	1	33.7
Bulgaria	1992	/	0	30.7
	1997	36	0.3	26.4
	2001	12.8	2.6	34.3
	2007	/	1	45.3

Country	Year	National poverty line (%)	International poverty line, population below US\$1,25 a day	Gini index
Croatia	1998	/	0.1	26.8
	2000	/	0.1	31.3
	2008	/	0.1	33.7
Czech Republic	1988	/	0	19.4
	1996	/	0.1	25.8
Hungary	1989	/	0	25.1
	1992	9.7	/	/
	1993	14.5	0.2	27.9
	1997	17.3	/	/
	2007	/	0.2	31.2
Latvia	2002	7.5	0	35.9
	2004	5.9	0.3	35.7
Poland	1992	/	0	26.7
	2002	16.6	0.1	34.1
	2008	/	0.1	34.2
Russian Federation	1988	/	0.5	23.8
	2002	19.7	0.3	35.7
	2006	11.1	/	/
	2008	/	0	42.3
Slovenia	1987	/	0	42.3
	2003	/	0	30.8
	2004	/	0.1	31.2

Source: <http://kilm.ilo.org>.

Poverty measurement, therefore, depends on the particular interests of the researchers themselves, as well as on the "tool" used for measuring poverty. For these reasons, this paper proposed the construction of a new methodology.

### 3. Results

This chapter has described a new method for estimating poverty lines that was applied to an example set of transition countries. The method developed by Kakwani (2010) uses methods to incorporate regional differences into poverty lines; the application of this method has been described in detail using the example of the Russian Federation. The aim of this paper is to create a new model for constructing poverty lines that accounts for true differences in the cost of living between different areas and different income groups and that is consistent across regions.

Having analyzed the collection data, it can be said that the first hypothesis (that there are considerable disagreements in the methodology for poverty monitoring) was fully confirmed.

It can also be concluded that there is a notable difference between some poverty thresholds and poverty rates, which is best seen in Tables 13 and 17. Namely, in all of the monitored countries, even though there is an increase in the poverty threshold, the poverty rates in some countries decline, whereas in some they tend to rise.

For example, countries such as Slovenia, Poland, Russia and Croatia had a rise in the poverty threshold but experienced a decline in poverty rates.

This result suggests that real improvement or deterioration in the living conditions of the lower class population will not be visible when examining the relative poverty rate unless there are simultaneous changes in distribution (because due to social stratification, people are excluded from growth). Table 18 shows the household income distribution.

In summary, it can be concluded that although Central and Eastern European countries register better transition results than the countries in Central Asia, there are visible differences within some country groupings.

For example, within Central and Eastern European countries, it is important to note the countries that have overcome the pre-transition level of GDP and have managed to reduce the poverty rate such as Poland, Slovenia, the Czech Republic, Latvia, and Croatia. These countries contrast with other countries such as Bulgaria and Hungary, which have been deeply affected by poverty and a low standard of living and which are lagging behind the mentioned countries (see Tables 13-18). Russia as a Slav post-Soviet Country was faced with negative economic growth, high poverty rates, unemployment and social tension due to a weak reform preparation in the initial stage (during the 1990s); however, at a later stage, after 2003, the country achieved economic growth along with the reduction of the poverty rate.

Furthermore, if we compare the obtained rate with the national statistics for these countries, there are some differences (see Table 19), which suggest that different methods of calculation give different results. Poverty measurement, therefore, depends on the particular interests of the researchers themselves as well as on the “tool” used to measure poverty. For this reason, this paper proposed a methodology that it uses on an example set of transitional countries. This methodology is consistent for different countries, and it takes into account different living standards and the different needs of the countries whose poverty is being compared.

### **Conclusions**

The transition from socialism to capitalism involves economic crises, the contraction of economic growth, and a decline in production and employment, and it has inevitably influenced the rise of poverty in transition countries, which are mostly middle or low-income countries. Nevertheless, to intervene in the reduction of poverty, it is first necessary to address poverty monitoring. Because poverty as an occurrence was denied in many of these countries, non-systematic, incomplete and summarized data compound the problem of poverty measurement. As a result, there has been no effective mechanism for poverty alleviation in transition countries.

When poverty began to rise, the researchers in transition countries had to develop appropriate new methodologies for the measurement of poverty. Today, different poverty lines have been estimated by various analysts, but mostly for specific samples of countries.

Although there are different approaches, due to the lack of statistical data, the commonly used measure is \$1 - \$4 a day, which some analysts describe as arbitrary. This research contributes to the poverty and welfare economics literature by demonstrating the importance and advantage of using the consumption and the cost of basic needs methods in constructing official absolute poverty lines. Alternative methods (relative, subjective and income-based approaches) lack clarity, comparability, and robustness, and they display characteristics of the inequity issue.

The results indicate that a consumption-based poverty line has many advantages over an income-based poverty line or relative poverty indicators. The primary disadvantages of an income-based poverty line include the referencing problem, identification problem, international comparison bias, and a subjective and inadequate \$1/day poverty threshold.

Design issues (data limitations on consumption and nutritional needs over longer time series) present the primary limitation of this research. Longer time series data availability would allow for a more powerful analysis and validity test of the study results. Further work on the subject should examine and address these issues if it is to significantly contribute to the field.

Without an economic policy and the institutions that address poverty to resolve this problem to a conclusion, inadequate policies for poverty reduction will result, which in turn will lead to negative externalities and social unrest.

The analysis presented in this article is just a small contribution to the development of a new model for constructing poverty lines.

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