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**Measuring intersecting inequalities through the Social  
Exclusion Index: A proposal for Europe and Central Asia**

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**Abstract**

Social exclusion issues are often dealt with via group approaches. However, these can suffer from errors of exclusion and inclusion; they are not always policy relevant; and they may not reflect multiple inequalities or powerlessness. UNDP's social exclusion index addresses these weaknesses by measuring exclusion from economic life, social services, and civic and social participation in terms of eight indicators each (24 in total) in seven countries in the pan-European region (Armenia, the Former Yugoslav Republic of Macedonia, Moldova, Kazakhstan, Serbia, Tajikistan, and Ukraine). The analysis of survey data from these countries show how three elements of the social exclusion chain—individual risks, local conditions, and drivers of exclusion— influence social exclusion. This makes possible the use of an individual approach to social exclusion, and provides a stronger evidentiary basis for discussing policy options for social inclusion.

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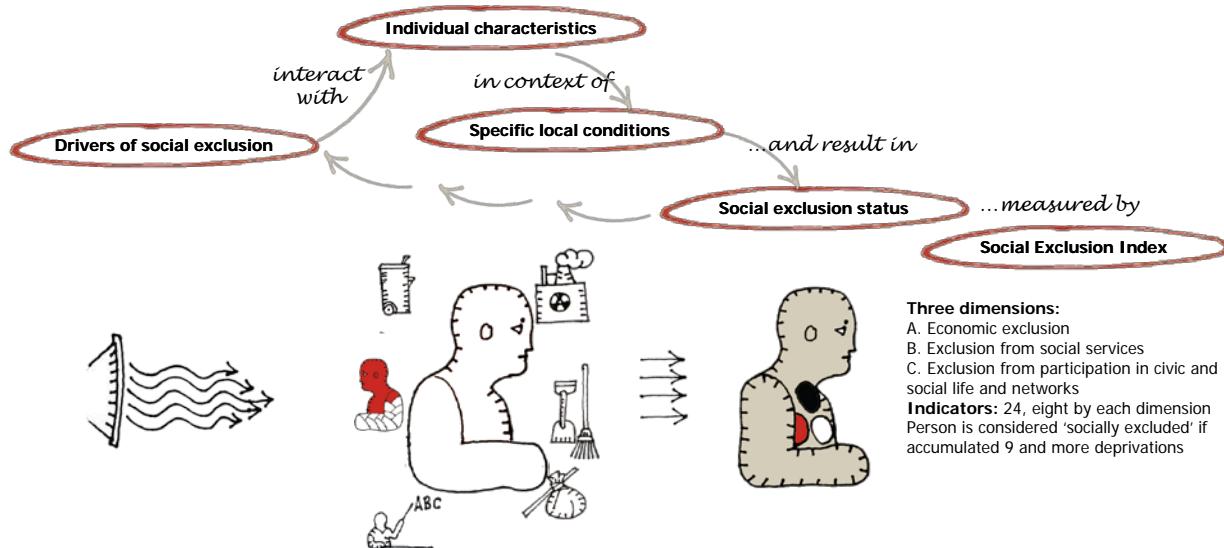
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<sup>3</sup> This paper is based on the analysis in the regional human development report "Beyond Transition, towards inclusive societies" published by UNDP in 2011 and authored by (in alphabetical order): Branka Andjelkovic, Andrey Ivanov, Balázs Horváth, Sheila Marnie, Dotcho Mihailov, Susanne Milcher, Mihail Peleah, Tatjana Peric, Sevinc Rende, Max Spoor, Paul Stubbs, Shahrbanou Tadjbakhsh. For easier reference, the report is referred in the text as "UNDP, 2011".

Social exclusion is a complex phenomenon. To measure it accurately, a framework reflecting this complexity is required. Social exclusion is an observable phenomenon, yet there is no consensus on how to measure it. The experience of the European Union introducing common indicators for monitoring poverty and social exclusion over time and across its member states is a relevant example for such a consensus. Yet, the World Bank, the European Union, the Organization for Economic Cooperation and Development (OECD), and the United Nations still use different measures and indicators to capture absolute and relative poverty, deprivation and inequality. UNDESA (2010) provides a good overview of challenges in measuring social exclusion. It also identifies ideal principles and properties of social exclusion indicators: social exclusion needs to be studied both through objective (verifiable, quantitative) indicators as well as subjective ones which capture the views of those suffering social exclusion.

The Social Exclusion Index constructed for 'Regional Social Exclusion Report: Beyond transition, towards inclusive societies' (UNDP, 2011) followed the framework developed for the report. We considered social exclusion as a multi-dimensional phenomenon, covering the three interlinked dimensions of social exclusion: exclusion from economic life, exclusion from social services, and exclusion from civic life. We considered social exclusion as the result of multiple and mutually reinforcing deprivations in some or all of these three dimensions. We departed from the traditional group-based approach, and looked on combination of individual characteristics (risks), drivers of exclusion, and local characteristics, which altogether leading to social exclusion outcome, which we measured using proposed Social Exclusion Index (see Figure 1).



**Figure 1. Social Exclusion Framework**

Proposed framework assumes that each individual has a number of individual characteristics, or social exclusion risks, which can put him or her at risk of social exclusion. These can be related to gender, ethnicity, language, religion, age, sexual orientation, beliefs and disability, as well as linked to particular

status (income, health, employment, educational attainment, access to resources and opportunities, possession of assets). Not all individual risks will necessarily materialize into actual social exclusion. Whether or not social exclusion manifests, depends on the interaction of risks with a set of drivers of exclusion and specific local conditions. The drivers, national regional or even local, determine the specific environment where the individual or group lives. Drivers can be structural (public and private institutions and norms), behavioural (values and behavioural patterns which are shaped by discriminatory attitudes and cultural practices that regulate norms and behaviours in society and among groups, also including forms of self-exclusion), or policy-related (policies, which reflect and respond to both structures and values). Apart from drivers, individual risks are also influenced by the local context, including the characteristics of the local economy (such as diverse or limited employment opportunities), history of local conflict, environmental legacy, the state of repair of basic infrastructure, distance to the capital and/or regional centres (which are usually poles of growth).

Proposed social exclusion index was constructed in such a way, to be nuanced enough to capture complexity, yet simple enough for practitioners to replicate in their own national contexts. It estimates the level of social exclusion in the three dimensions – exclusion from economic life, exclusion from social services, and exclusion from civic life and social networks. This multidimensional measure advances the way social exclusion is understood and analysed. Building on previously developed methodologies, it is intended to capture the multi-dimensional and dynamic nature of social exclusion, enabling governments to pursue more targeted policies to promote social inclusion. The literature provides no clear and straightforward algorithm for the construction of a multidimensional social exclusion index. It rather provides some general guidance and suggestion of good practices in the area (UNDESA 2010; Alkire and Foster 2009), which we used for index construction. The selection of appropriate indicators and thresholds is the first step in building a multidimensional social exclusion measure. Eight indicators were selected (see table 1) for each of the three dimensions of social exclusion—exclusion from economic life, exclusion from social services, and exclusion from civic life. Each indicator addresses a specific form of uni-dimensional deprivation. Existing analyses and secondary data (UNDP, 2011) have suggested that economic exclusion is characterized by inequality in incomes and poverty, lack of employment opportunities leading to a high share of discouraged workers who are no longer looking for a job, and exclusion from financial services. Therefore, under the first dimension, economic exclusion indicators reflect deprivation in current incomes and basic needs, access to employment, financial services and material assets, the lack of amenities that the household needs but cannot afford and of housing space. The second dimension, exclusion from social services, encompasses indicators reflecting access to and affordability of education and health services as well as public services of utilities. The third dimension—exclusion from civic and social life—covers indicators reflecting deprivation in access to and affordability of political, cultural and social participation and support networks, as well as frequency of social and civic participation. The inclusion of civic and social indicators is based on the findings from regional research showing that social and civic participation is

extremely low and social networks can be weak and non-inclusive for at risk groups. As an innovative feature, these indicators reflect capability deprivations—which mirror the real opportunities that a person has based on personal and social circumstances (Nussbaum, 2000)—rather than item or necessity deprivations, which reflect material items that people need but cannot afford.

Each of the three dimensions of social exclusion has equal weight as does each indicator. The indicators chosen for this social exclusion measure are objective: they reflect status, rather than perceptions. Still, there is an element of subjectivity in the assessment of needs<sup>4</sup> (*'the household needs certain amenities but cannot afford them'*) and in the assessment of frequency of social contacts (rare or infrequent social contact with family, relatives or friends) that also reflect the relative nature of social exclusion. Whether or not a household perceives to ‘need’ certain amenities depends on what is ‘normal’ in the respective society. For instance, most households in the region have television sets (on average only 3 percent of households cannot afford one with Moldova revealing the maximum share of 5 percent without televisions). The picture regarding computers is the reverse – only 9 percent have one and 60 percent cannot afford one. The case of Ukraine here is the most extreme with 49 percent of households reporting they do not have a computer and do not need one (the only country where this group outnumbers those who can’t afford one). Tajikistan is at the opposite extreme with 72 percent of people who don’t have a computer because they can’t afford one. Local conditions influence people’s perceptions of needs. It is not surprising that in areas where there is no gas supply, owning a gas oven is not perceived as important (and thus the share of those who ‘don’t need it’ is highest in the Former Yugoslav Republic of Macedonia and Serbia, 77 and 73 percent respectively). Other amenities however can be correlated with opportunities. The highest share of those who need but can’t afford electric sewing/knitting machine is in Tajikistan—the country most strongly marked by labour migration predominantly of men and limited employment opportunities for women. In such circumstances, this amenity could be not just an item enriching the household, but a resource for self-employment. The social exclusion index considers households deprived in their access to amenities only when the household considers that it needs the item but cannot afford it. This approach is meant to accommodate different life styles, cultures and opportunities across the six countries.

Robustness of indexes was conducted in a number of ways. A factor analysis of the indicators of the index was run to check the quality and robustness of the index. The results showed a very high uniqueness of the variance of the individual variables indicating the importance of each individual indicator. The uniqueness of variance for individual variables typically ranges from 0.75 to 0.99, with just a couple of exceptions for which this indicator is around 0.50. The results remain similar for the factor analyses run using the merged regional sample and by individual countries. The results of factor analysis therefore

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<sup>4</sup> Instead of binary question (household have / have not a certain item) we offered three options a) ‘have’, b) ‘don’t have because they cannot afford them’ and c) ‘don’t have because they don’t need them’.

suggest that the index, as a combination of the 24 individual variables, is robust. These results were also confirmed by a Principal Components Analysis, which also showed that many components were needed and they together explained most of the variance, both for the whole regional dataset and for individual countries. Correlation analysis also showed a lack of excessively strong correlations among the constituent indicators of the index. The only exceptions are housing and ICT indicators, which show a correlation close to 0.45. This could be explained by similar costs of items households cannot afford (washing machine, freezer or microwave on one hand and computer and internet connection on the other hand). However, taking into account the limited correlation, the essentially different nature of the items and significant country differences, it was decided to keep both these indicators in the index. Additionally, the robustness of the index with regard to the exclusion of certain variables was tested. Dominance tests that cover all possible values of the cut-off threshold  $k$  were made for the 24 indicators and for 21 indicators. In the latter case, the three variables, which showed the higher number of relatively high correlation (more than .15)—exclusion from financial services (*ex\_bank*), housing deprivation (*ex\_living*), and exclusion from social participation—inability to afford buying books, cinema or theatre tickets (*ex\_nocultr*) were excluded. Finally, the robustness of the index was tested by removing the poverty variable—assuming that income is the weakest variable. The results, summarized in Table 2 below suggest that the index is robust to the exclusion of these variables. It shows a similar magnitude of social exclusion and maintained the ranking of countries for the cut-off threshold  $k=9$ .

The Social Exclusion Survey results presented here focus on the six separate countries surveyed, and measure social exclusion at one point in time (November 2009). The indicators for each dimension were selected on the basis of research findings, expert opinion and availability of data. A number of iterations were performed to ensure selection of the most appropriate set of indicators. Since data on total household expenditures were missing in many cases, they were imputed using personal income range and share of personal incomes in total household income for the “At risk of poverty rate” indicator. For the selection of material deprivation indicators, a regression analysis was made first, which linked current incomes of the household (as a proxy of current income poverty) with possession of certain durable items. The results showed that these relationships are highly country-specific. In a second step, a factor analysis was made to select the most meaningful items, and reflect different living standards in the countries of the region. The results of both suggest that material deprivation indicators could be clustered into three groups—housing, amenities and ICT. Such a combination of indicators best reflects the diversity of living standards in the countries of the region. Table 1 provides the list of indicators used to construct the multidimensional social exclusion measure and the percentage distribution of the population by each indicator.

Equal weights are assumed, as the chosen indicators are of relatively equal importance. As Atkinson et al (2002) observe, equal weighting has an intuitive appeal: ‘The interpretation of the set of indicators is

greatly eased where the individual components have degrees of importance that, while not necessarily exactly equal, are not grossly different'. On the one hand, there was no evidence for using relative weights of dimensions and indicators, i.e. that people more seriously regret deprivation in housing than in social participation. On the other hand, the situation in the six countries covered by the survey is so different, that finding any common relative weights of dimensions or indicators would be an impossible task.

The social exclusion headcount refers to the share of individuals living in households that experience an absolute number of overlapping deprivations higher than a certain threshold. The choice of the threshold determines the headcount: the lower the threshold, the higher the number of people who would meet the criterion of being considered 'socially excluded' (and vice versa). Figure 2 illustrates how the share of persons identified as socially excluded declines with an increasing threshold of deprivations, albeit at a decreasing rate. All three thresholds used in the figure, however, produce a similar relative distribution of countries. The ranking of countries by the magnitude of deprivation is robust to the cut-off (i.e., it does not change) as the threshold is varied between 9 and 14. For the purposes of the study, an individual is determined to be socially excluded if he or she is deprived in at least nine indicators. There are two reasons behind this choice of threshold. One is to apply a conservative threshold that does not inflate the multiple deprivation headcount. Alkire and Foster (2007) suggest selecting the minimum acceptable deprivation count required to be considered socially excluded. The other reason for selecting nine as the threshold is to avoid considering a person facing deprivations in only one dimension: economic, social services and civic participation (and not facing a single deprivation in any of the other two) as 'socially excluded'. This is based on the assumption that deprivations in one area reinforce those in another. Given that there are eight indicators in each dimension, the threshold of 9 deprivations satisfies both requirements: the need to select the minimum threshold and the assumption that deprivations must span at least two dimensions in order to be considered social exclusion.

We applied proposed Social Exclusion Index methodology to six countries of the Europe and CIS region (Kazakhstan, Macedonia FYR, Moldova, Serbia, Tajikistan, and Ukraine). The data show that more than one third of the population of the region is socially excluded, with a wide range of variation across countries. While the share of people across the six countries considered to be socially excluded varies significantly, the intensity of their social exclusion (how many deprivations socially excluded people experience on average) is quite similar. Social Exclusion intensity ranges from 43 percent of deprivations in Ukraine (where the excluded people face on average 10.4 deprivations out of 24) to 46 percent in Tajikistan (where the excluded people face on average 11.1 deprivations out of 24). Findings suggest that despite the wide range of population size, GDPs and levels of human development, people experiencing socially exclusion experience a similar average number of deprivations regardless of whether they live in Southeast Europe or Central Asia. Being socially excluded in The Former Yugoslav Republic of Macedonia or

Kazakhstan means facing generally the same number of deprivations. There are also indications that people adopt similar coping strategies and behavioural patterns.

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**Table 1. Indicators for the multidimensional social exclusion index and distribution of population by indicator and country**

Dimensions	Indicators	Kazakhstan	Macedonia, FYR	Moldova	Serbia	Tajikistan	Ukraine
A. Economic exclusion	Inequality: At-risk-of-poverty rate (60 percent of median equivalent expenditures in a country)	30%	30%	29%	28%	29%	22%
	Subjective basic needs: In the past 12 months the household has not been able to afford three meals a day, or pay bills regularly, or keep the home adequately warm, or buy new clothes and shoes	4%	4%	6%	14%	14%	8%
	Employment: Being unemployed or a discouraged worker	10%	12%	9%	11%	6%	7%
	Financial services: Lack of access to a bank account on one's own name	76%	32%	78%	33%	96%	61%
	Material deprivation housing: The household cannot afford a bed for every member of the household	13%	3%	17%	4%	76%	7%
	Material deprivation amenities: Household needs a washing machine, freezer or microwave but cannot afford one	40%	14%	44%	16%	83%	25%
	Material deprivation ICT: Household needs a computer or internet but cannot afford one	53%	14%	47%	21%	72%	34%
	Overcrowding: Household with less than 6m <sup>2</sup> per person	3%	1%	3%	0%	16%	1%
B. Exclusion from social services	Public utilities: Household with no running water or sewerage system	65%	14%	55%	26%	82%	33%
	Public utilities: Household heats with wood or with no heating device	7%	68%	56%	52%	53%	4%
	Education: Low educational achievements (basic schooling) and early school leavers	15%	18%	19%	18%	25%	6%

Dimensions	Indicators	Kazakhstan	Macedonia, FYR	Moldova	Serbia	Tajikistan	Ukraine
B. Exclusion from basic needs	Education: Household could not afford to buy school materials for every child in the past 12 months	29%	16%	28%	30%	15%	37%
	Education: Household with young children not in school or pre-school	3%	7%	1%	2%	18%	1%
	Health care: Household could not afford medication or dental checks for every child in the past 12 months	23%	10%	20%	13%	37%	30%
	Health care: Medical needs not being met by the health care system	42%	28%	58%	30%	60%	55%
	Social infrastructure: Lack of opportunities to attend events due to distance (lack of transportation)	47%	25%	48%	33%	40%	41%
C. Exclusion from participation in civic and social life and networks	Social capital: Rare or infrequent social contact with family or relatives	3%	4%	16%	7%	4%	6%
	Social capital: Rare social contact with friends	4%	1%	8%	2%	7%	9%
	Social capital: Lack of support networks that could help in the event of emergency	20%	11%	12%	13%	12%	19%
	Social participation: In the past 12 months the household has not been able to afford inviting friends or family for a meal or drink at least once a month	8%	9%	9%	3%	22%	13%
	Social participation: The household has not been able to afford to buy books, cinema or theatre tickets in the past 12 months	51%	38%	49%	46%	65%	37%
	Civic participation: Inability to vote due to lack of eligibility or distance to polling station	2%	1%	2%	1%	6%	1%
	Civic participation: No participation/membership in associations, teams or clubs	92%	78%	83%	88%	86%	85%
	Civic participation: No participation in political/civic activities	77%	54%	59%	59%	65%	69%

**Table 2. Testing robustness of the social exclusion index for cut-off threshold k = 9**

	All 24 indicators	21 indicators (three excluded)	Poverty variable excluded (full dataset )	Income variable excluded (working dataset)
Kazakhstan	14%	6%	12%	12%
Moldova	18%	10%	17%	17%
FYR Macedonia	5%	3%	4%	4%
Serbia	8%	5%	7%	7%
Tajikistan	33%	15%	33%	33%
Ukraine	9%	4%	7%	8%

**Table 3. Social exclusion in the seven countries**

	Kazakhstan	Moldova	FYR Macedonia	Serbia	Tajikistan	Ukraine	Armenia
Magnitude of social exclusion							
Social exclusion headcount (%)	32	40	12	19	72	20	55
Intensity: Average number of deprivations among the socially excluded (out of 24)	10.5	11	10.8	10.8	11.1	10.4	11.6
Intensity: Average share of deprivations among the socially excluded (%)	44	46	45	45	46	43	48
Social Exclusion Index	14	18	5	8	33	9	27
Contribution of dimensions to Social Exclusion Index (%)							
A. Economic exclusion	34	31	30	31	39	28	35
B. Exclusion from social services	34	39	38	38	34	36	27
C. Exclusion from participation in civic and social life and networks	32	30	32	31	27	36	38

Note: data for all countries except Armenia are own calculations based on dataset from UNDP (2011). Data for Armenia are own calculations based on Social Cohesion Study implemented by CRRC<sup>5</sup> in 2011.

<sup>5</sup> <http://crrccenters.org/activities/research/?id=52>