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Child Well-Being in Central and Eastern European Countries (CEE) and the Commonwealth of Independent States (CIS)

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Abstract This is the first attempt to produce a multidimensional index of the well-being of children in the CEE/CIS countries. It follows the methods employed in similar indices produced by the same authors for EU and OECD countries. Indicators are derived from existing survey and administrative sources, they are combined into components and the components are combined into seven domains of well-being. There is considerable variation in the performance of different countries in different domains. The domains are combined into a single index: Croatia, Bosnia Herzegovina, FYR Macedonia and Serbia are at the top of the index. Azerbaijan, Albania, Tajikistan and Moldova are at the bottom of the index. The article describes how the index was put together, explores its sensitivity and shortcomings. The level of wealth in GDP per capita explains only about a third of the variation of children's well-being in this region.

Keywords Child well-being · Central Europe · Eastern Europe, former Soviet states

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1 Background

This article provides an assessment of the well-being of children across the CEE/CIS region at a time the first generation of children born after the breakdown of the Soviet Union is coming of age. They have grown up during a time of change and insecurity, but also new opportunities. How is this reflected in their well-being in the different dimensions of their lives?

The CEE/CIS region is very heterogeneous in terms of geography and natural resources, democratic structure, economic and political developments. It reaches from EU member states Bulgaria and Romania to oil-rich Azerbaijan and low-income Tajikistan. The analysis of economic and democratic reforms shows that the transition from communism and centrally planned economies to democracy and market economy is far from over. Countries have followed different transition paths and particularly in the sphere of democratic reforms the gap between CEE and CIS countries is widening (Murphy et al. 2005; Murphy and Sprout 2007).

Overall reforms have focused very much on economic policies. Steady economic growth in recent years in all the countries of the region has led to a substantial reduction in extreme poverty rates, though vulnerability to poverty has remained very high. Children, however, have benefited least—they remain the population at highest poverty risk, and the vulnerability, particularly of young children appears to be rising (World Bank 2005; UNICEF 2006).

This is reflected in social policies and the often uneven progress in reforms of social systems. Disparities persist between rural and urban areas and there is marginalisation of—and often discrimination against—some groups of the population, such as Roma and other ethnic minorities, internally displaced people, and people with disabilities (Macours and Swinnen 2007; UNDP 2006). Social policies tend to be scattered and sectoral, lacking overarching frameworks and coordination. Governments appear not to be prioritising the well-being of children and families.

The heterogeneity of the CEE/CIS region and the complexities of the transition process underline the importance of monitoring the well-being of children both within countries and across the region. So far the monitoring of children's life situations in CEE/CIS countries is often limited to tracking Millennium Development Goal (MDG) indicators following international commitments. Designed for the situation in developing countries these indicators do not really capture the situation of children in middle-income and transition countries, which may appear to be on track in regard to reaching the MDGs, while falling back on previous achievements.

2 Objectives

The CEE/CIS child well-being index aims at moving beyond these traditional indicators towards a more comprehensive picture of children's life situations that also takes into account children's own perspectives. The index includes data on children's material situation, housing situation, health, education, personal and social well-being, family forms and care, and risk and safety. It builds on and uses the same methodology as the Index of Child Well-being developed for the EU (Bradshaw et al. 2007a) and OECD 2007 countries (UNICEF 2007; Bradshaw et al. 2007b).

3 The Conceptualisation of the Well-Being of Children

While there is no consensus about the concept of well-being it has been understood as inherently *multi-dimensional*, taking into account the complexity of children's lives and relationships (Ben-Arieh et al. 2001; Hanafin and Brooks 2005a, b; Bradshaw and Mayhew 2005; Land et al. 2001, 2007).

The UN Convention on the Rights of the Child (CRC) provides a normative framework for the understanding of children's well-being with its four general principles—non-discrimination (art. 2), best interest of the child (art. 3), survival and development (art. 6), and respect for the views of the child (art. 12). The progressive realisation of children's rights requires governments to invest the 'maximum extent of their available resources' (art. 4), highlighting both the importance of child outcomes and governments' investment in child-related public expenditure.

The aspirations when choosing the indicators of child well-being were to

- have the child rather than the family or households as the unit of analysis,
- reflect well-being now, during child-hood, rather than merely well-becoming—what the child might be in adulthood,
- reflect what the children thought and felt about their lives,
- focus on outcomes not inputs, not what service exist but what the services and other influences on their lives achieve,
- as far as possible to use direct rather than indirect indicators,
- be up to date.

In practice these aspirations were not always met. However in indicator development the perfect is too often the enemy of the good.

4 Data

Indicators came from two sources sample surveys and administrative sources. In the CEE/CIS few countries have yet joined the international student surveys such as TIMMS, PIRLS, PISA or HBSC. We were able to use PISA 2006 (OECD 2008) data for nine countries and 13 countries participated in MICS 2005 (UNICEF Statistics 2008), providing valuable data for example on children's family relations. The survey with the broadest country coverage is the UNICEF sponsored *Young Voices* survey undertaken in 2001 (UNICEF 2001). This survey sampled between 400 and 800 children aged 9–17 in each country and asked them questions on their home and school situations, including peer relationships and behaviours as well as opinions of the countries in which they live, and the extent to which they felt their rights were met. Though sample numbers are small the sample weights for each country account for variation in age and gender, and rural/urban dispersion. Young Voices data has contributed a number of important indicators to the index ranging from subjective poverty, parental and peer relationships, and risk behaviours and subjective measure of safety in the local environment.[1]

[1] For further information on the Young Voices survey in the CEE CIS region see http://www.unicef.org/polls/cee/index.html

In addition to survey data, data was used from a variety of administrative sources. Constrained by the data this index for CEE/CIS countries is based on seven dimensions

- Material situation
- Housing
- Health
- Education
- Personal and Social well-being
- Family forms and care
- Risk and safety

Fifty-two indicators contribute to 24 components that make up these seven dimensions. The sources of the data are presented for each dimension below.

Dimension	Component	Indicator	Source
Material situation	Income poverty	Children living under the $2.15 poverty line (percent)	World Bank (2005)
	Perception of need (subjective poverty)	Percentage of children who report having no money as something they are worried about	Young Voices (UNICEF 2001)
	Deprivation	Percentage of children with fewer than six educational possessions aged 15	PISA 2006 (OECD 2008)
		Percentage of children with less than ten books in the home—aged 15	PISA 2006 (OECD 2008)
		MICS 2005: percentage of children (<60 months) with less than three children's books	MICS 2005 (UNICEF Statistics 2008)
Housing and environment	Overcrowding	Overcrowded housing (more than three per room/ less than six m^2/person)	WDI 2005
	Environment	Children reporting that the place where they live is rather unsafe or very unsafe to walk around	Young Voices (UNICEF 2001)
	Facilities	Access to improved sanitation facilities, 2004	UNICEF (2008)
		Access to improved water sources, 2004	UNICEF (2008)
Health	Health at birth	Infant mortality rate (per 1,000 live births), 2006	UNICEF (2008)
		Share of low weight births, 2000–2006	UNICEF (2008)
	Breastfeeding	% of infants exclusively breastfed at 6 months of age, 2000–2006	UNICEF (2008)
		% of children still breastfed at 20–23 months, 2000–2006	UNICEF (2008)
	Immunisations	Child immunization rate, DPT3 (% of 1-year-old children immunized), 2006	UNICEF (2008)
		Polio immunization rate (% of 1-year-old children immunized), 2006	UNICEF (2008)
		Measles immunization rate (% of 1-year-old children immunized), 2006	UNICEF (2008)
	Nutrition	Prevalence of stunting, under 5 s, 2000–2006 estimates	UNICEF (2008)
		Prevalence of underweight, under 5 s, 2000–2006 estimates	UNICEF (2008)
		Prevalence of wasting, under 5 s, 2000–2006 estimates	UNICEF (2008)
		% of household consuming iodised salt	UNICEF (2008)
	Children's Health	% U5 with ARI taken to health provider	MICS 2005 (UNICEF Statistics 2008)

Dimension	Component	Indicator	Source
		% of U5 with diarrhoea receiving oral rehydration and continued feeding	MICS 2005 (UNICEF Statistics 2008)
		Under 5 Mortality Rate 2006	UNICEF (2008)
		Decayed, missing or filled teeth at age 12	WHO (2008a)
Education	Educational Participation	Pre-primary enrolment (net rates) 3–6 years	UIS (2008)
		Rate of primary school age children out of school	UIS (2008)
		Secondary school net enrolment ratio (percent of population of secondary school age)	UIS (2008)
	Educational Achievement	Reading literacy, age 15	PISA 2006 (OECD 2008)
		Science achievements, age 15	PISA 2006 (OECD 2008)
		Maths achievement, age 15	PISA 2006 (OECD 2008)
Personal and Social well-being	Engaging with the peer group	Percentage of children reporting having a good or very good relationship with a member of their peer group	Young Voices (UNICEF 2001)
	Social engagement	Children participating in an local organisation or club	Young Voices (UNICEF 2001)
	Subjective well-being	Child's quality of life aspirations in comparison with his/her parents' current life	Young Voices (UNICEF 2001)
		Children reporting that they most often feel happy about life in general	Young Voices (UNICEF 2001)
Family forms and care	Family relations	Percentage of children living in non-traditional family forms	Young Voices (UNICEF 2001)
		HH members engaged in less than four activities that promote learning and school readiness (U5)	MICS 2005 (UNICEF Statistics 2008)
		Children who report that their opinion is considered when a decision concerning him/her is taken at home	Young Voices (UNICEF 2001)
		Children reporting a very good relationship with one or both parents	Young Voices (UNICEF 2001)
	Child discipline	Children who report positive responses to good behaviour	Young Voices (UNICEF 2001)
		Children who report being beaten or insulted as part of punishment/discipline	Young Voices (UNICEF 2001)
	Children in care	Ratio of children in foster care to children in residential care (per 100,000 population aged 0–17)	TransMONEE 2007
		Rate of children in infant homes, 2005 or MRD	TransMONEE 2007
Risk and safety	Sexual health	Adolescent birth rate (15–19)	HNP 2008
		Sexually transmitted diseases, age 15–19	TransMONEE 2007
		Women without comprehensive knowledge of HIV/AIDS prevention (15–19)	MICS 2005 (UNICEF Statistics 2008)
	Alcohol and drug use	Child reporting that a friend or acquaintance has a tobacco addiction	Young Voices (UNICEF 2001)
		Child reporting that a friend or acquaintance has a Alcohol addiction	Young Voices (UNICEF 2001)
		Child reporting that a friend or acquaintance uses illegal drugs or inhalants	Young Voices (UNICEF 2001)

Dimension	Component	Indicator	Source
	Crime	Registered juvenile crime rate (per 100,000 population aged 14–17)	TransMONEE 2007
		Children reporting having ever been victim of violence	Young Voices (UNICEF 2001)
	Child labour	Child labour (5–14), 1999–2006	MICS 2005 (UNICEF Statistics 2008)
	Accidents and suicide	All children accidental and non-accidental death, all under 19 deaths	WHO (2008b)

5 Methods of Analysis

The simplest way to summarise comparative data is to rank variables for countries and then to take the mean of the ranks. However in summarising sets of indicators into components and components into dimensions we have chosen to use *z* scores on the grounds that they not only take account of rank order but also the degree of dispersion around the rank. *z* scores were calculated for each indicator and then averaged to obtain an average score for a component. Then the average *z* score for the components was averaged to create a dimension average and the averages of the dimension *z* scores were averaged to obtain the overall index score.

Following Hagerty et al. (2001) when we combine indicators to form components, components to form dimensions and dimensions to form the overall index, we have not imposed any weights (though there is an implicit weight in using *z* scores—the more dispersed variables have higher *z* scores at the end of the distribution and when combined with less dispersed indicators have more weight). Equal weights are obviously a contestable assumption, although Hagerty and Land (2006) provide an empirical justification for this assumption. They argue that the equal weights method is what is referred to in statistics as a minimax estimator, in the sense that they show both mathematical and in simulation analyses, that the equal weights method minimizes extreme disagreements among individuals on weights for the individual indicators. Of course anyone who disagrees with equal weights is free to redo the analysis with weights.

There is an important distinction to be made between cause models and effect models (Bollen and Lennox 1991). We are using a causal indicator model where it is the indicators which determine the latent variable (the component) rather than the reverse.

In order to maintain comparability we apply rules for the inclusion and exclusion of countries from component and dimension level analysis. The thresholds are designed to favour inclusion at the component level and be stricter at dimension level comparisons. Where missing data does not exceed two in three indicators for a component the country is included in component level comparison. However for that component to be used in the calculation of dimension scores more than 50% of indicators are required. The 50% rule also applies at dimension level, and so each country with at least 50% of the components is included in a dimension comparison. The threshold for the final overview comparison is 70% of indicators across the

index. Turkey has the least data and for this reason it is most often left out of the comparative analysis.

Outliers in the statistics have also been removed from the distributions. Where a country reports a measure outside +3 or −3 standard deviations from the average it is considered incomparable and removed.

6 Results

6.1 Material Situation

Poverty can strongly affect children's well-being and well-becoming directly and indirectly through the impact it has on health, education and other dimensions.

National poverty measures differ widely across the CEE/CIS—from relative poverty lines in EU accession and candidate countries, to extreme poverty lines based on a minimum intake of calories in, for example, Kyrgyzstan. Not all countries routinely calculate child poverty rates. The World Bank uses $ 2.15 per person per day as a poverty indicator. We use this as our indicator of income poverty because it is available for most countries though it does not necessarily reflect what would be an adequate standard of living for children and their families.

Indicators of material deprivation are probably better indicators of the resources that actually reach children. However we have found no single indicator that captures the experience of the whole region. We therefore use a range of indicators that give information on goods and resources that reach children.

Another measure of material well-being is how children and young people themselves see their financial situation—a measure of subjective poverty. from the Young Voices survey is used.

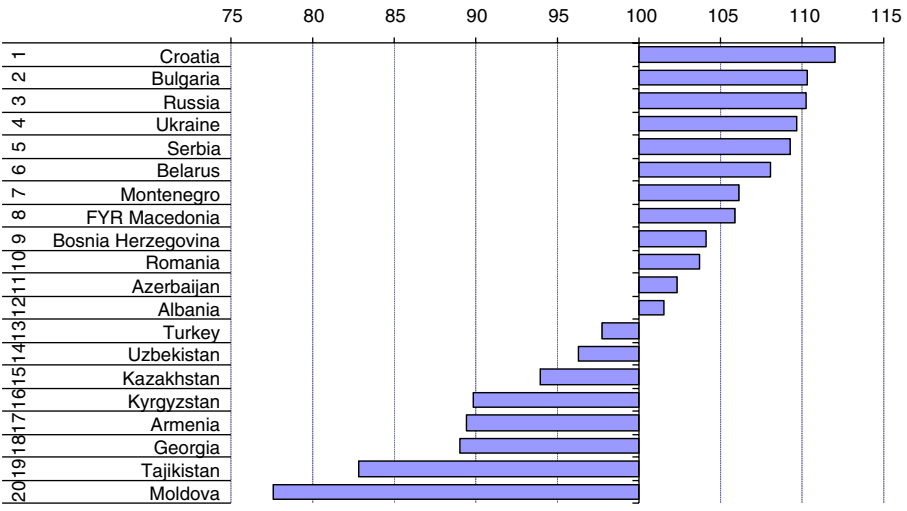

Fig. 1 Child well-being—material situation dimension

Figure 1 summarises the material situation of children in the CEE/CIS countries. This is a standardised scale of a composite of the *z* scores of three components: income poverty (Section 6.1.1) and material deprivation (Section 6.1.2), and subjective poverty (Section 6.1.3). A score of 100 is the average material situation score of all the countries. Turkmenistan is not included in the dimension comparison because data is only provided for two of the five material situation indicators (perception of needs [Young Voices] and children's book [MICS]).

Overall the material situation of children is best in Croatia, Bulgaria, Russia and the Ukraine and worst in Armenia, Georgia, Tajikistan and Moldova.

6.1.1 Income Poverty

The income poverty indicator from the World Bank (2005) is children aged less than 16 living in households where current consumption is less than $2.15 per person per day, converted from the national currencies using Purchasing Power Parities. Data is not available for Croatia or Turkmenistan. The data is for 2002–2003 except Bosnia Herzegovina (2001). Data used for Serbia and Montenegro separately reporting pre-cession data for Serbia and Montenegro.

Figure 2 shows that child income poverty rates range from 2% in Ukraine to 80% in the Kyrgyzstan. Six countries have more than half of children under 16 living on less than $2.15/day.

6.1.2 Deprivation

There was no single consistent indicator of child deprivation across the countries. The measure we use is therefore made up of three indicators: the proportion of children with fewer than six educational possessions (PISA 2006, OECD 2008); the

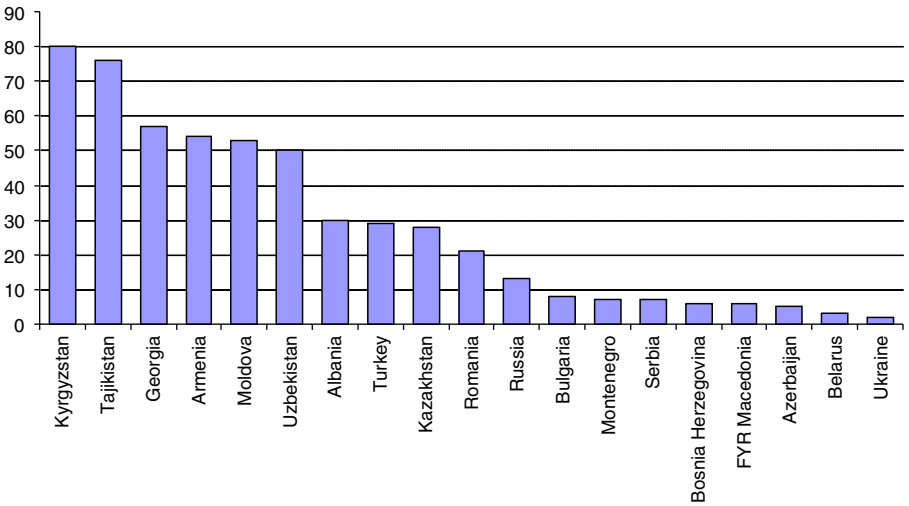

Fig. 2 Children living under the $2.15 per person per day poverty line (percent)

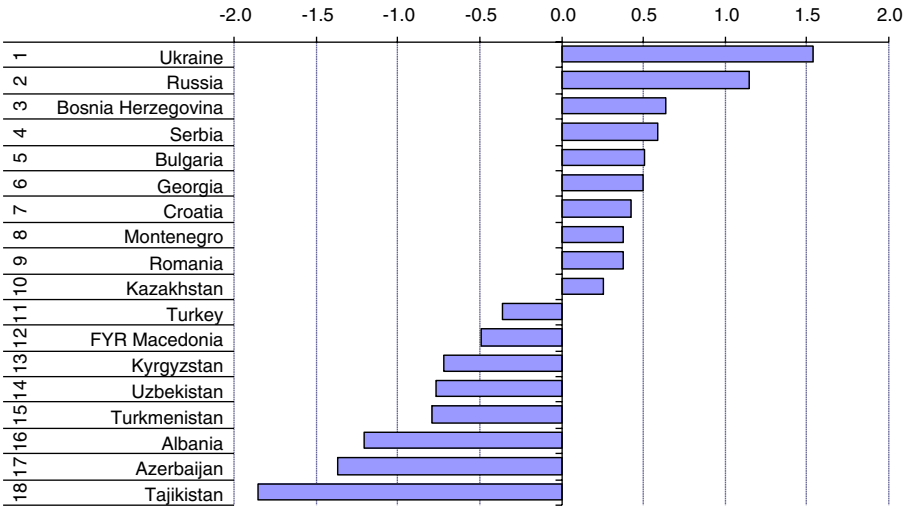

Fig. 3 Deprivation

proportion of children with less more than ten books in the household (PISA 2006, OECD 2008); and the proportion of under 5 s with less than three children's books (MICS 2005, UNICEF Statistics 2008). PISA data are unweighted estimates and are for 15 year olds and MICS data is for under 5 s. Educational possessions include: a calculator, a computer for schoolwork, a study desk, and a dictionary, a quiet place to study, educational software, an internet connection, and school textbooks. There is no data for this component for Azerbaijan, Belarus, and Moldova.

The lowest levels of deprivation are found in the Ukraine, Russia, Bosnia Herzegovina and Serbia. Children in Albania, Azerbaijan and Tajikistan are the most deprived (Fig. 3).

6.1.3 Subjective Poverty

The perception of one's own poverty or deprivation can have an emotional toll which will impact on well-being regardless of actual income or ownership of goods. For children it may be an even more critical indicator if resources are not shared within the household (a child can be poor in a rich household where income is not meeting the child's needs). For the purposes of operationalising this particular poverty indicator, data from the Young Voices Survey has been employed to measure the percentage of children who report that "lack of money or their economic situation is one of their main worries in life". Data used for Serbia and Montenegro separately reporting pre-cession data for Serbia and Montenegro.

Croatia, Azerbaijan and Bulgaria have the lowest proportions of child subjective poverty. They join Kyrgyzstan, Montenegro, Serbia, Russia, Ukraine, Belarus Albania and Uzbekistan in a group where less than 1 in 5 children worry about money. The most striking result is for Moldovan children where nearly half of all children worry about money, 50% more than in the next worst performing country (Fig. 4).

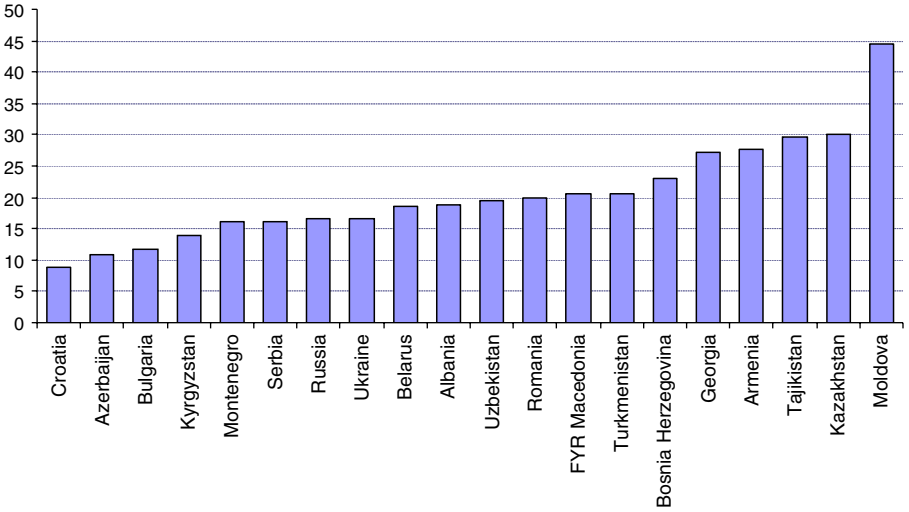

Fig. 4 Children who report having no money/their economic situation as something they are mainly worried about

6.2 Housing

The housing situation of children is difficult to capture and average national values hide substantial disparities within countries, in particular between rural and urban areas. We have three components of housing: overcrowding (Section 6.2.1), the local environment (Section 6.2.2) and access to improved facilities (Section 6.2.3). While overcrowding and local environment (safety) may be a larger problem in cities, access to improved water and sanitation facilities is more difficult in rural areas. Access to improved facilities belongs to the Millennium Development Goals (MDG)

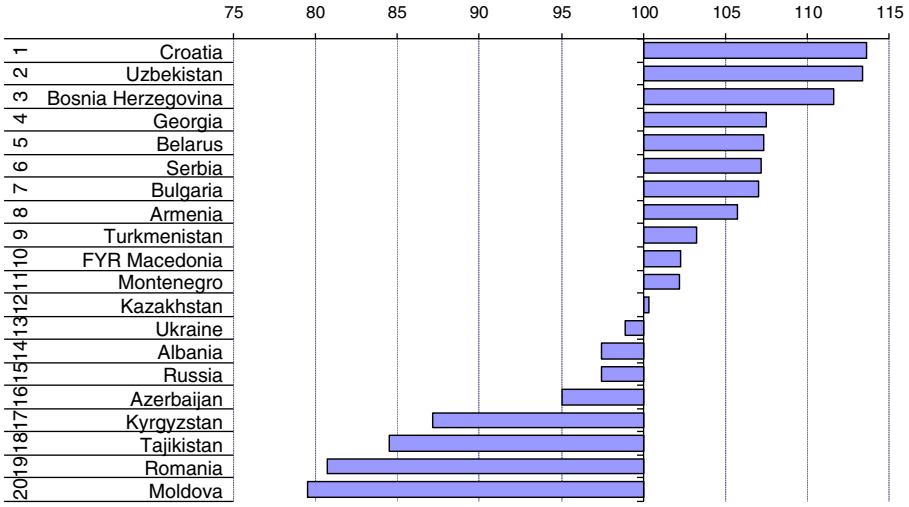

Fig. 5 Child well-being—housing dimension

indicators and as such aims to measure basic safety in the access to clean water and sanitation. But in this it may hide substantial differences in the quality of access—though both are considered 'improved water sources' a protected well in a village represents a much lower standard than in-house tap water.

Turkey is not included in the dimension level analysis because data is only available for the facilities component.

Figure 5 shows that Croatia, Uzbekistan and Bosnia Herzegovina have the best housing conditions in the region. Kyrgyzstan, Tajikistan, Romania and Moldova stand out as the worst performers.

6.2.1 Overcrowding

Overcrowding is defined as the proportion of overcrowded housing (more than 3 persons per sleeping room for each country in the region in 2005). The data is taken from the MICS surveys and data for Armenia, Azerbaijan, Bulgaria, Croatia, Moldova, Romania, Russia, and Turkey is missing. The indicator could not be disaggregated for households with children. It is likely, however, that overcrowding is experienced in many cases due to large groups of dependents, usually families with young children and multi-generation households.

Overcrowding is worst in Tajikistan and Kyrgyzstan where at least one in four households suffer overcrowding. The Ukraine and Belarus, as well as Bosnia Herzegovina have less than one in 20 households experiencing overcrowding (Fig. 6).

6.2.2 Environment

The environment component utilises data from the Young Voices survey which indicates the proportions of children reporting that the place where they live is rather unsafe or very unsafe to walk around (2001). Unsafe local environments can restrict children's opportunities to play and explore their local environment, and interact

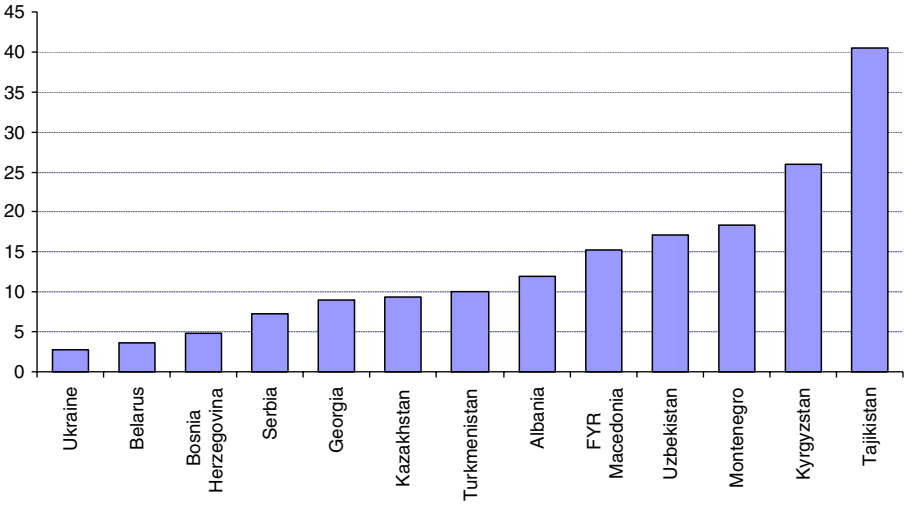

Fig. 6 Overcrowding

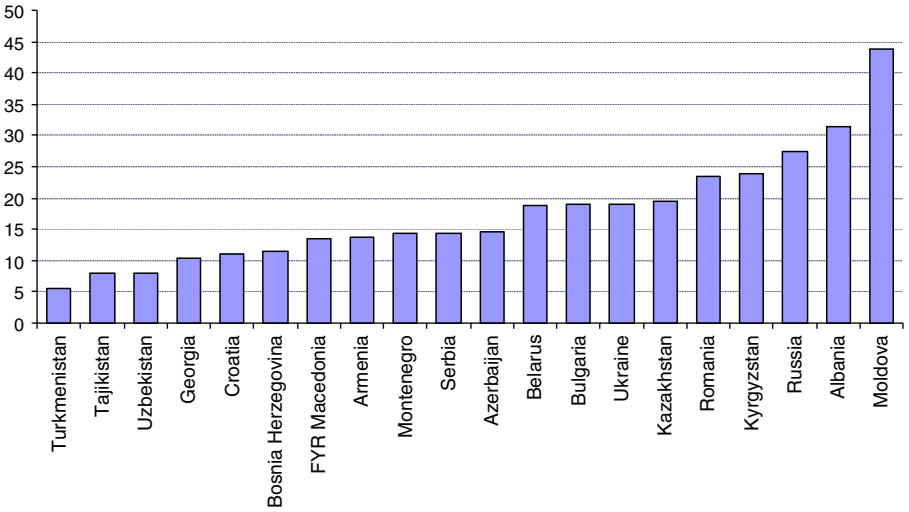

Fig. 7 Safety in the local environment—children reporting that the place where they live is rather unsafe or very unsafe to walk around—2001

with peers and members of the local community. The lack of safe opportunities to play outside of the home can lead to children spending increasing hours in the family home which may strain parent child relationships and may have impacts on the child's physical health through lack of exercise. Data used for Serbia and Montenegro separately reporting pre-cession data for Serbia and Montenegro.

Unsafe local environments are least reported by children in Turkmenistan, Tajikistan and Uzbekistan, children in Kyrgyzstan, Russia, Albania and Moldova experience the least safe environments (Fig. 7).

6.2.3 Facilities

The housing facilities include access to improved sanitation facilities and access to an improved water source in 2004. Both of these measures are population proportions, as again data is not available for households with children only (World Development Indicators 2007). Data for both of the facility indicators was not available for FYR Macedonia. Romania did not have data on access to sanitation facilities.

In Fig. 8 children are more likely to be living in households with improved sanitation and water facilities in Ukraine, Azerbaijan, Kyrgyzstan, and Bosnia Herzegovina. Facilities are most likely to be lacking in the Russian Federation, Albania and Tajikistan.

6.3 Health

Children's health is a dimension that is traditionally well monitored across the region. Most indicators however refer to the health and nutrition status of young children. The situation of older children is not sufficiently recognised. Likewise no information is available on children's own perceptions of their health and their health behaviour.

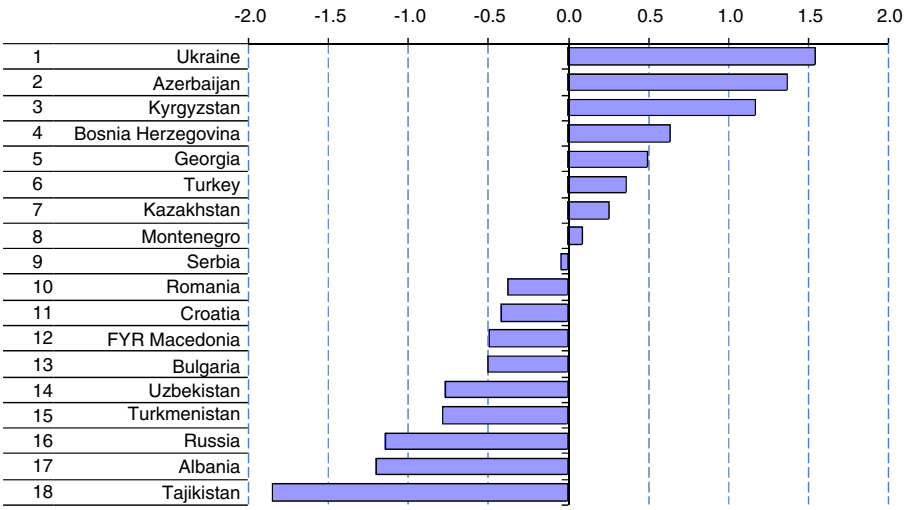

Fig. 8 Housing facilities

Health at birth (Section 6.3.1), breastfeeding (Section 6.3.2), immunisations (Section 6.3.3), nutrition (Section 6.3.4) and other child health indicators (Section 6.3.5) are combined to form the health dimension.

Figure 9 shows that child health needs are met most successfully in Croatia, Moldova, FYR Macedonia and Belarus. Azerbaijan and Tajikistan perform well below the regional average on this scale.

6.3.1 Health at Birth

The component representing health at birth is made up of two equally contributing indicators. These are: infant mortality rate (per 1,000 live births, 2006) and share of

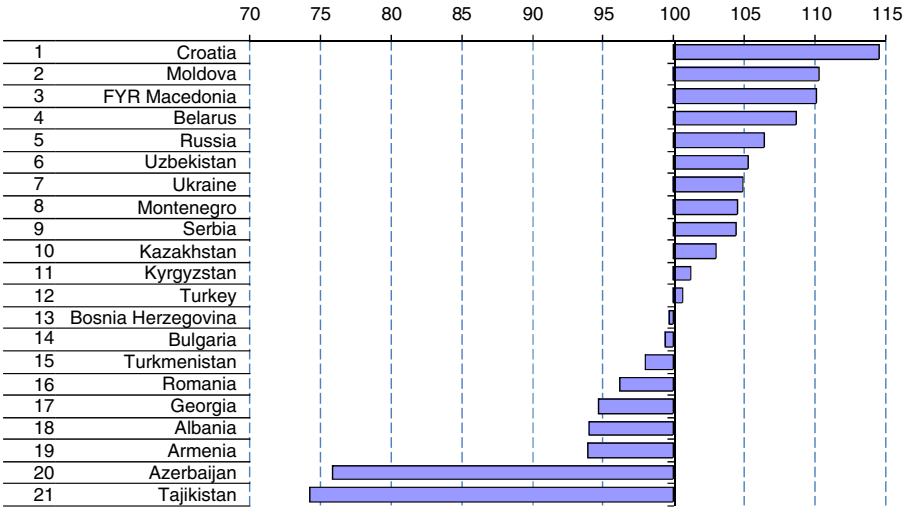

Fig. 9 Child well-being—health dimension

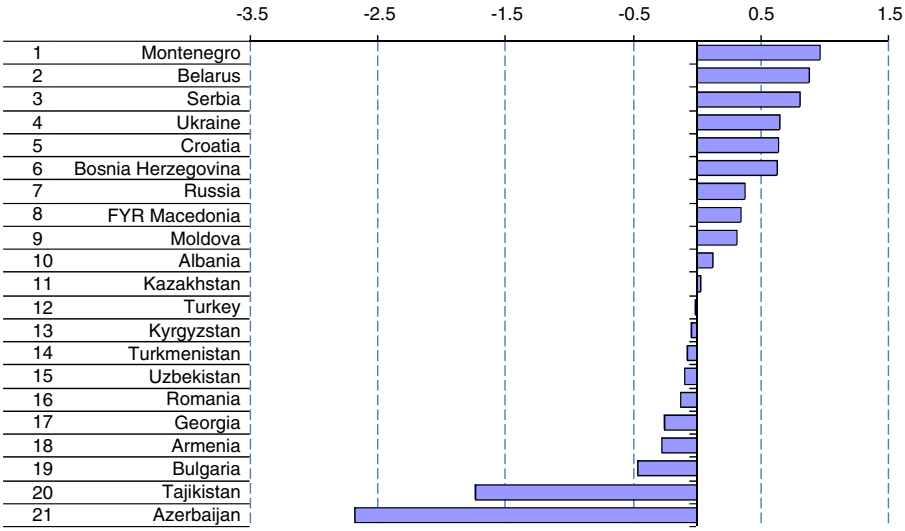

Fig. 10 Health at birth

low-weight births (births less than 2,500 g as per cent of total live births) which is reported using most recent available data for each country between 1999 and 2006 (UNICEF 2008). Infant Mortality data used for Serbia and Montenegro separately reporting pre-cession data for Serbia and Montenegro. Turkish data for share of low birth weights is a negative outlier (more than 3 standard deviations from the average of 6.4 at 16.0 deaths per 1,000 infants) and is removed from the analysis. Turkish results in the following table should therefore be read with caution.

Montenegro, Belarus, Serbia and the Ukraine are the best performing countries on health at birth. The worst performing countries include Armenia, Bulgaria, Tajikistan and Azerbaijan (Fig. 10).

6.3.2 Breastfeeding

This component is made up of two indicators from the same source: the percentage of children who are exclusively breastfed under 6 months in age, and the percentage of children who are still breastfeeding at 20–23 months in age (UNICEF 2008). The dates range from 2000 to 2006. Bulgaria, and the Russian Federation do not have any breastfeeding data; Romania does not have data for continued breastfeeding.

Breastfeeding of infants is most common in Uzbekistan, Tajikistan, Kyrgyzstan, and Turkmenistan who lead the region on this component. Children in Serbia, Albania, Ukraine and Belarus are least likely to be breastfed (Fig. 11).

6.3.3 Immunisations

The component for immunisations rates is a composite of the proportions of children who receive vaccinations for DPT3 in 2006, polio in 2006 and measles in 2006 (UNICEF SOWC 2007). All countries provided comparable data for this composite.

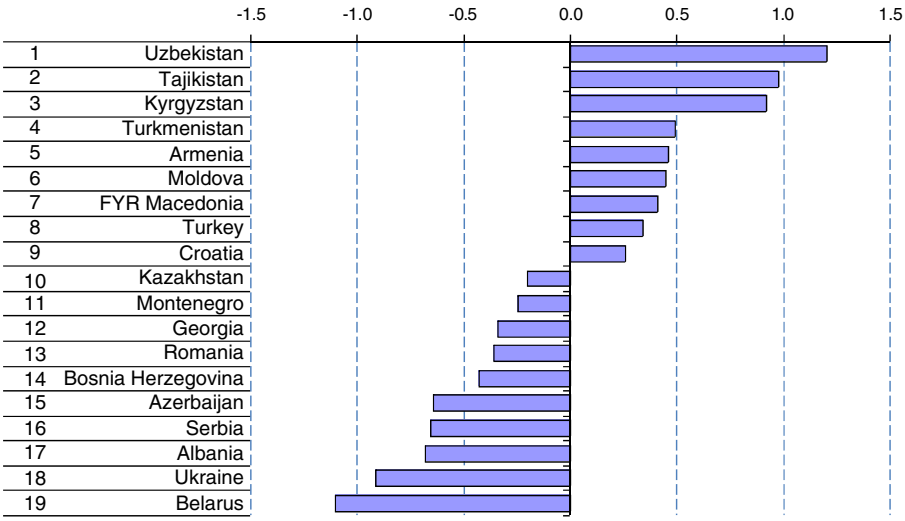

Fig. 11 Breastfeeding

Several countries in the region report high coverage of each immunisation, resulting in little variation in the best performing group. Kazakhstan has the highest average coverage, with the Russian Federation, Turkmenistan and the Ukraine following close behind. There is more variation in the worst performing countries, with Tajikistan performing particularly badly (Fig. 12).

6.3.4 Nutrition

The indicator of nutritional standards is made up of the proportions of children wasting, underweight, or stunted under the age of 5 years. The dates range from 2000 to 2006 and

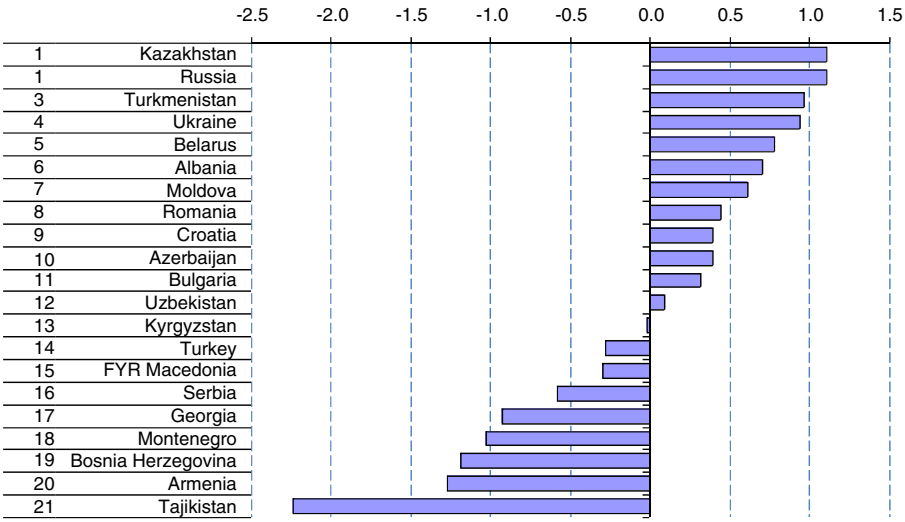

Fig. 12 Immunisations

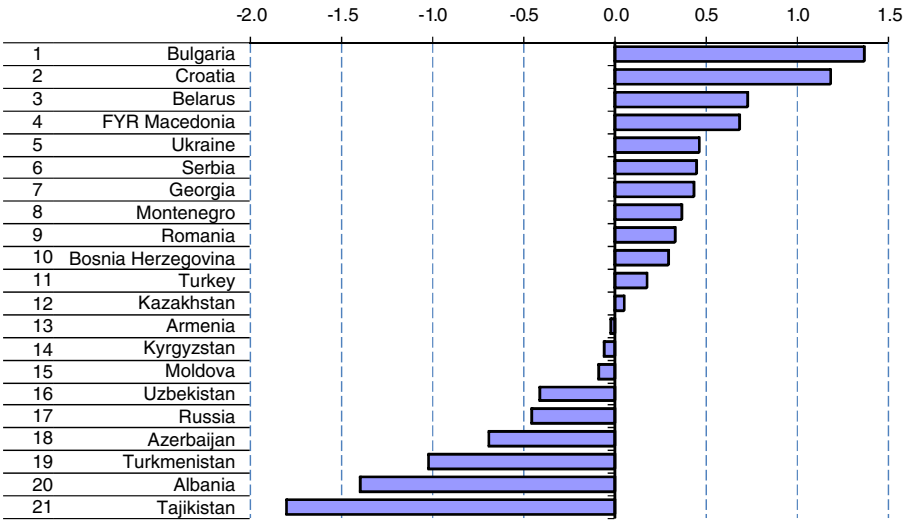

Fig. 13 Nutrition

most recent data is reported. Percentages of households consuming iodized salt during the same period are also included here (UNICEF 2008). Bulgaria only has data for consumption of iodised salt.[2] Statistics of malnourishment figures for Croatia, Georgia, and the Russian Federation differ from the standard definition (see UNICEF 2008).

It is important to note here the Tajikistan data for underweight children is a negative outlier (more than 3 standard deviations from the average of 3.7% at 17.0%) and has been removed. Inclusion of this data would have worsened the already low result for Tajikistan.

Bulgaria and Croatia are clear leaders on nutrition. A group of three countries: Turkmenistan, Albania and Tajikistan stand out as poor performers. Children's nutrition in Tajikistan is well below the regional average (Fig. 13).

6.3.5 Other Child Health

Other health indicators include: Under 5 mortality rates 2005 (UNICEF 2007), proportions of under 5's acute respiratory illness taken to a health provider 1996–2004, proportions of under 5's with diarrhoea receiving oral re-hydration and continued feeding, and the proportions of children with decayed missing or filled teeth at the age of 12 years 1995–2001 (WHO 2008a, b). Azerbaijan, Bulgaria, Croatia, Georgia, Moldova, Romania, Russia, Turkey, Ukraine do not have data for treatment of acute respiratory illness (pneumonia). Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Ukraine do not have dental health data after 1994 at the latest. Dental health data used for Serbia and Montenegro separately reports the pre-cession indicator for Serbia and Montenegro.

[2] For this reasons Bulgaria's particularly high result should be interpreted with caution.

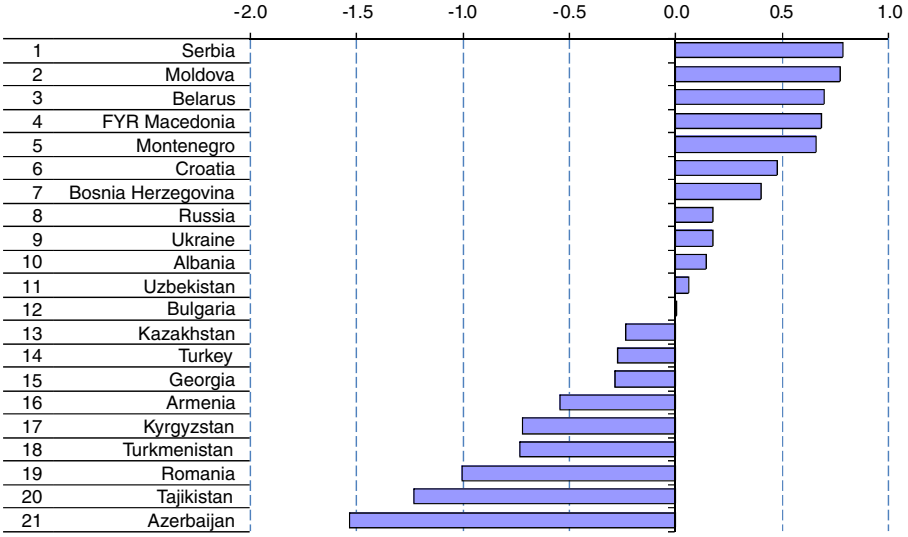

Fig. 14 Other child health

Serbia, Moldova, Belarus, and FYR Macedonia are the high performing countries in the region in terms of other child health. Romania, Tajikistan, and Azerbaijan perform worst (Fig. 14).

6.4 Education

The education dimension combines two components: educational participation (Section 6.4.1) and educational attainment (Section 6.4.2). While access to education

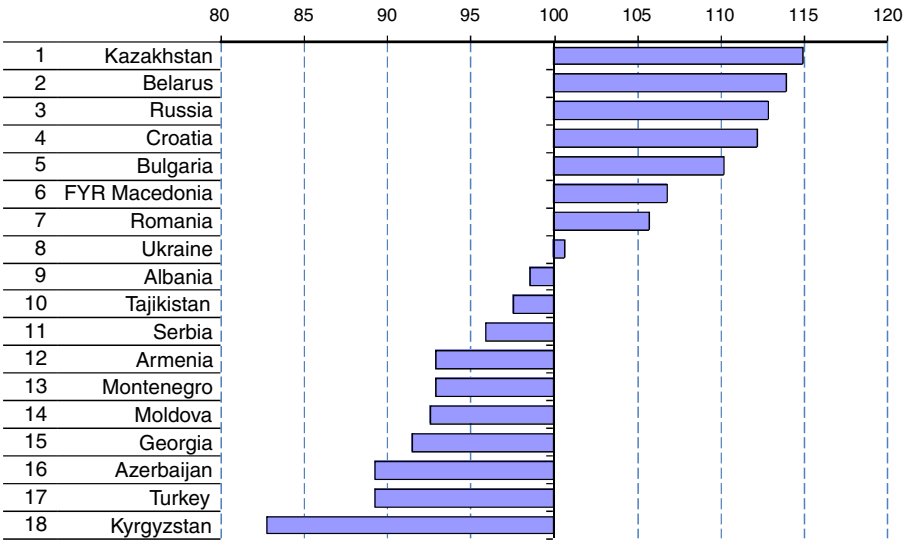

Fig. 15 Child well-being—education dimension

and coverage remain high in the region, investments in education are low by international comparisons and the quality of education is deteriorating. Official enrolment data may not always be reliable because of non-attendance and a tendency in many countries to over-register enrolments in order to maintain existing schools and teaching positions (UNICEF 2006—Regional Educational Study). Bosnia Herzegovina, Turkmenistan and Uzbekistan only have responses for pre-school enrolment and so were not included here.

Figure 15 shows that child educational well-being is best in Kazakhstan, Belarus, the Russian Federation and Croatia. Georgia, Azerbaijan, Turkey and Kyrgyzstan perform worst on this scale.

6.4.1 Educational Participation

Educational participation is made up of three indicators: pre-primary enrolments (net rates, percent of population aged 3–6 for 2005; TransMONEE 2007), the rate of primary school age children out of school in 2005 (UIS 2008), and secondary school net enrolment ratios (pupils of secondary school age as a proportion of all those of secondary school age) 2000–2005 (UNICEF 2008).

For pre-primary enrolments Albania, Armenia, Georgia, Kyrgyzstan, Russia and the Ukraine data are for children aged 3–5. Albania, Armenia, Russia and the Ukraine are gross enrolment figures. Serbian data and Montenegrin data are from pre-cession data in 2001 and exclude Kosovo. Croatian and Macedonian data includes pre-school preparatory classes. Moldovan data exclude Transdniestr. Turkmenistan and Georgian data are from 2004. Turkish data is missing.

Countries without data for the indicator recording the rate of primary school-aged children out of school are: Bosnia Herzegovina, Montenegro, Serbia, Turkmenistan, and Uzbekistan. Ukraine, Moldovan, Azerbaijan data are from 2006, Albanian data is from 2004, and Croatian data is for 2003. Data is missing for secondary school net

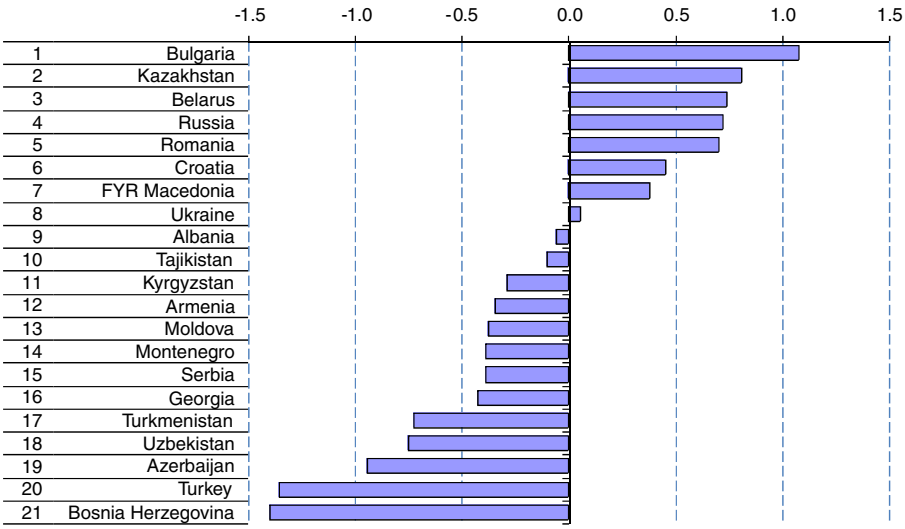

Fig. 16 Educational participation

enrolment ratios for Bosnia Herzegovina, Montenegro, Russia, Serbia, Turkmenistan, and Uzbekistan.

Educational participation is highest in Bulgaria, Kazakhstan, Belarus, and the Russian Federation. Uzbekistan, Azerbaijan, Turkey, and Bosnia Herzegovina have the lowest levels of participation (Fig. 16).

6.4.2 Educational Achievement

To maximise coverage of countries on educational achievement the PISA 2006 (OECD 2008) survey is used. PISA records reading, mathematics and science literacy achievement scores for 15 year olds in 2006 (OECD 2008). Each of these three achievement measures contributed equally to this component. The majority of countries did not take part in PISA 2006 (OECD 2008), and do not contribute to this component on achievement. PISA non-respondents are: Albania, Armenia, Belarus, Bosnia Herzegovina, FYR Macedonia, Georgia, Kazakhstan, Moldova, Tajikistan, Turkmenistan, and the Ukraine.

Educational achievement is highest for children in Croatia, Russia, Turkey and Serbia. Children in Kyrgyzstan have the lowest levels of recorded achievement for this subgroup of countries by some margin (Fig. 17).

6.5 Personal and Social Relationships

The success with which children interact with their peers and their environment is central to their perceptions of themselves as social actors, and more generally their life satisfaction. Engagement with activities outside of the school and home is one way for a child to feel part of the wider community in which they live and learn

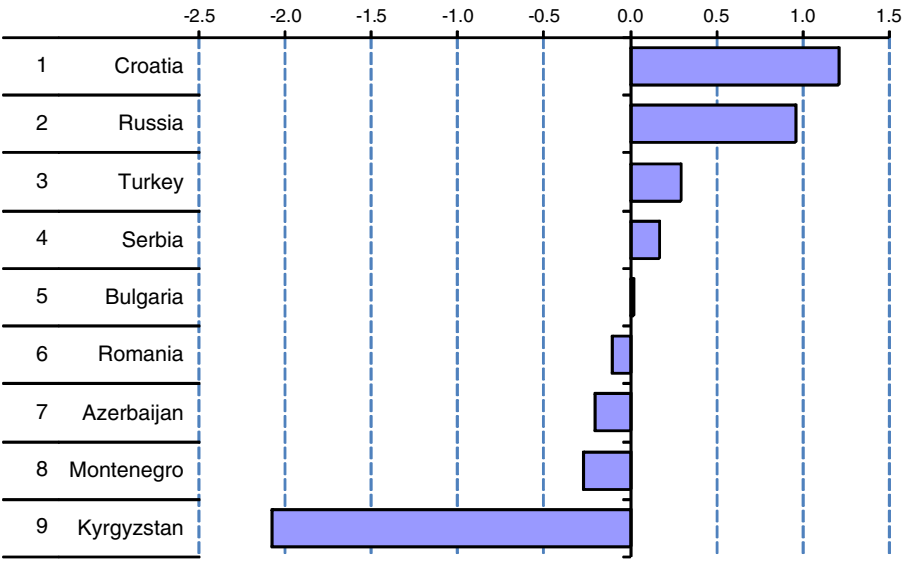

Fig. 17 Educational achievement

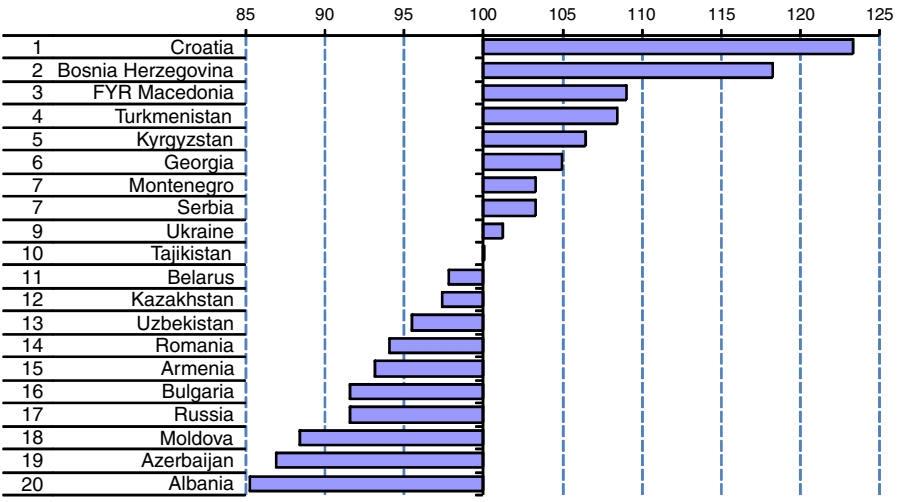

Fig. 18 Child well-being—personal and social relationships dimension

some of the softer skills which could be applied in relationships with adults and broader social interactions.

Asked about what well-being means to them, Irish children see friends next to their families as most important factor (Hanafin and Brooks 2005a). As children get older peers become more important—friends and the wider peer-group are important factors in shaping children's values and interests, their sense of belonging and connectedness with society and thus their personal well-being.

All of the data used for this dimension is derived from the Young Voices Survey—for this reason Turkey is not included in the final dimension rankings. Data used for Serbia and Montenegro across this dimension separately reports the pre-cession data for Yugoslavia excluding Kosovo.

Figure 18 shows that Croatia and Bosnia Herzegovina are the exceptional countries on this scale. Both countries have average personal and social relationship scores one standard deviation better than the nearest most successful country. Interestingly some of the poorer countries in the region, such as Kyrgyzstan and Tajikistan perform better than average. Moldova, Azerbaijan and Albania have the lowest levels of children's personal and social relationships.

6.5.1 Engaging with the Peer Group

This component is made up of a single indicator taken from the Young Voices survey—a question which asks whether children would say their relationship with the male and female (separately) schoolmates is very good to very poor on a five point Likert scale. The measure itself reflects the proportion of children in each country that report very good or good relationships with either their male or female schoolmates or both.

Turkey did not take part in the Young Voices survey.

Children in Croatia and Bosnia Herzegovina have the highest proportion with good relationships with peers. Children in Russia and Uzbekistan have the lowest

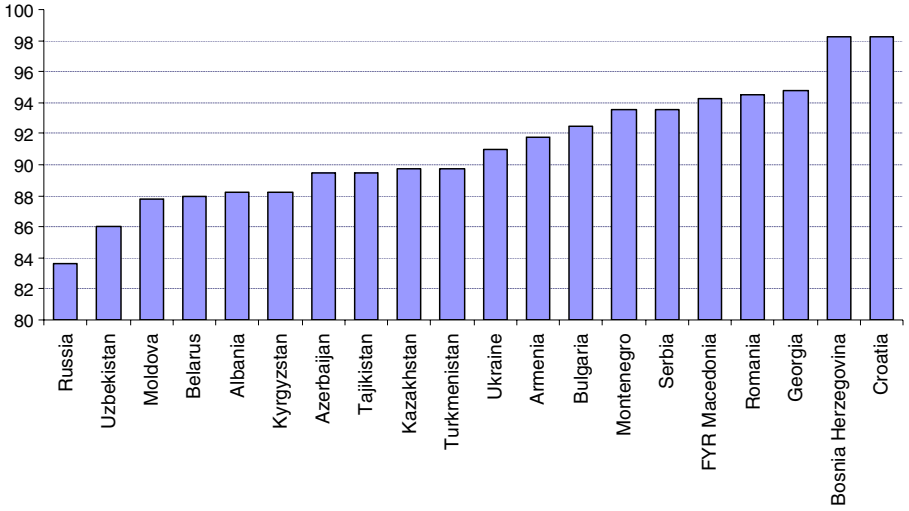

Fig. 19 Engaging with the peer group

proportions with good relationships. Across the region less than 1 in 5 children experience relationships with their peers they cannot describe as at least good (Fig. 19).

6.5.2 Social Engagement

The social engagement variable records the percentage of children who are participating in the following out of school groups or community groups: sports club or group, a political club or group, or a music, literature, or science club or group. Across the CEE CIS between one in ten and three to four in ten children are involved in community or youth groups of this type. Children in Croatia and

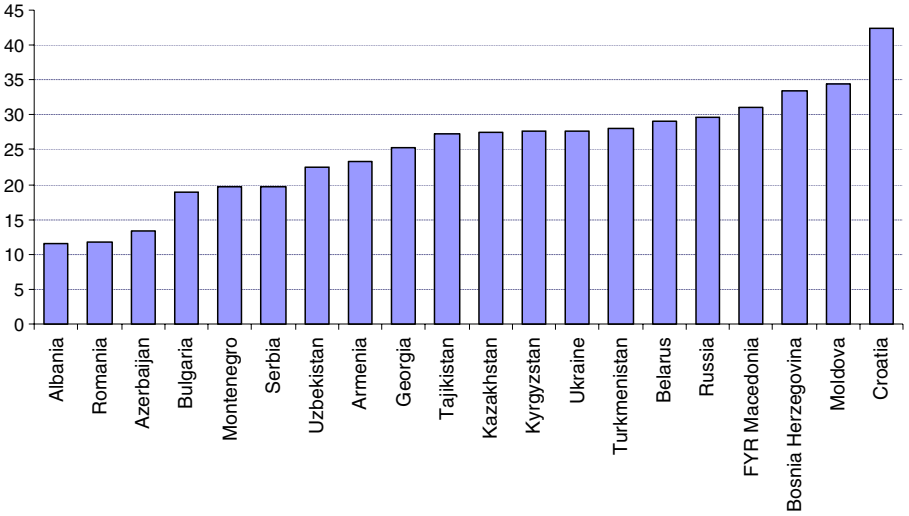

Fig. 20 Social engagement

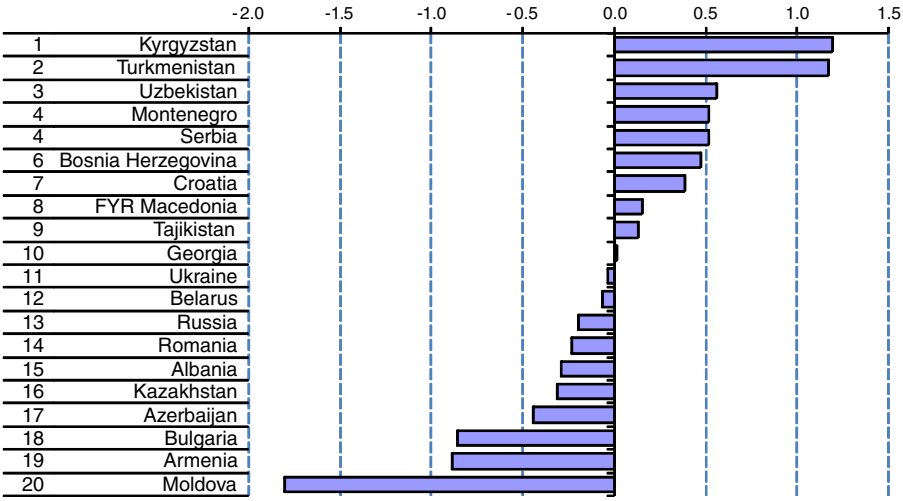

Fig. 21 Subjective well-being

Moldova have the highest levels of social engagement. Children in Albania, Romania and Azerbaijan have the lowest social engagement (Fig. 20).

6.5.3 Subjective Well-being

This component is made up of two indicators one of which can be used to assess young people's opinions of the present and one for opinions for the future. Opinions about the present are captured using the question 'Would you say that, most often, you feel... happy, neither happy nor unhappy, or unhappy?'. The indicator is the proportion of children in each country that reports being most often happy. Opinions about the future are captured by the proportion of children who report that they believe their future quality of life will be better or much better than the quality of life their parents are experiencing.[3]

Children in Kyrgyzstan, Turkmenistan, Uzbekistan and Montenegro have the most positive subjective well-being. Children in Azerbaijan, Bulgaria, and Armenia and by some margin Moldova have the least positive subjective well-being (Fig. 21).

6.6 Family Forms and Care

Conditions in the family and particularly the quality of family relations constitute the most important mediating factors for the well-being of children and children's development. Across the CEE/CIS many children experience disruptions in family life and the separation of one or both their parents. The institutionalisation of children is still widespread. Migration of one or both parents may leave children in the care of relatives, in institutions or living on their own without parental care. Data

[3] The exact question is: thinking about your life in the future and comparing it to your parent's life now, do you believe your life will be... much better, better, about the same, worse or much worse (Young Voices, children's questionnaire - question 60 page 12).

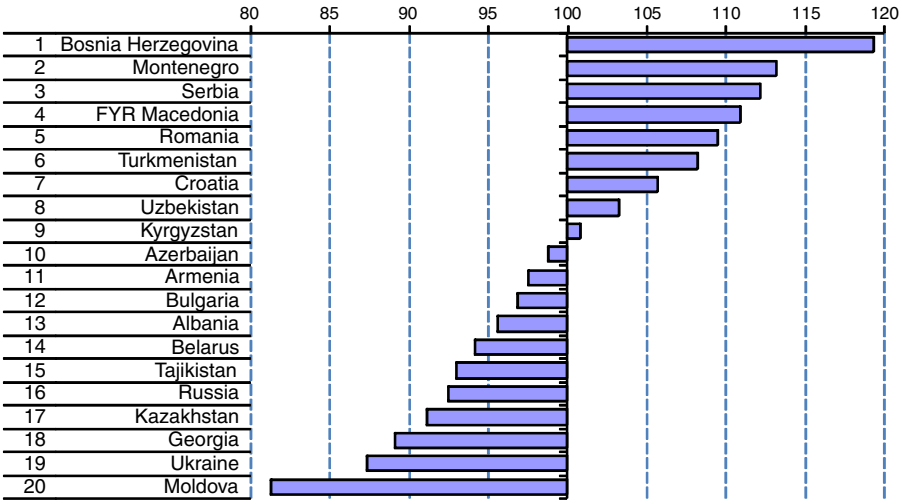

Fig. 22 Child well-being—family forms and care dimension

on the quality of family relations, the interaction between parents and their children is still scarce. Both the Young Voices survey from 2001 and new MICS 2005 (UNICEF Statistics 2008) survey offer some information on parent's interaction with children (on pre-school children) as well as information on child discipline.

The family forms and care dimension is a standardised scale of a composite of family formation (Section 6.6.1), child discipline (Section 6.6.2), and children in care (Section 6.6.3). All countries except Turkey have a dimension score calculated for family forms and care.

Figure 22 shows that children's situation in terms of family forms and care are best in Bosnia Herzegovina, Montenegro, Serbia and FYR Macedonia. The situation is worst in Kazakhstan, Georgia, Ukraine, and Moldova.[4]

6.6.1 Family Relations

The Family relations component is made up of four indicators: the proportion of children living in non-traditional family forms in 2001 (Young Voices Survey, UNICEF 2001); the proportion of household members engaged in less than four learning support activities with under fives (MICS 2005, UNICEF Statistics 2008); the proportion of children who report having their opinions considered when a decision regarding him/her is taken at home, and the proportion of children who report having a very good relationship with one or both parents (both Young Voices data, 2001).

The MICS is not undertaken in Armenia, Azerbaijan, Bulgaria, Croatia, Moldova, Romania, the Russian Federation, and Turkey, and these countries did not contribute to either of the indicators of learning support for under five's. While the Ukraine took part in MICS 2005 (UNICEF Statistics 2008) comparable data is not available

[4] Bulgaria and Azerbaijan have both had negative outliers removed from the calculation of this dimension, which if deemed comparable would have lowered their overall performance. Results for Bulgaria and Azerbaijan need to be read with caution.

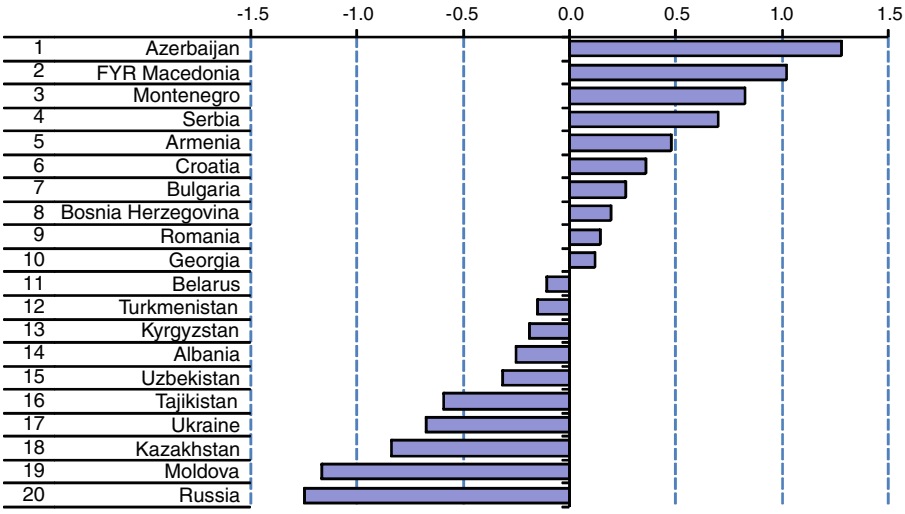

Fig. 23 Family relations

to include this country. The Young Voices survey does not include Turkey. Data used for Serbia and Montenegro across this dimension separately reports the pre-cession data for Yugoslavia excluding Kosovo.

Family relations in Azerbaijan are better than in other countries of the region. FYR Macedonia, Montenegro and Serbia are also performing well on this scale. There are two clear laggards; these are Moldova and the Russian Federation (Fig. 23).

6.6.2 Child Discipline

To indicate the extent of positive and negative child discipline in the region Young Voices survey data is used and includes the items: Children who report positive

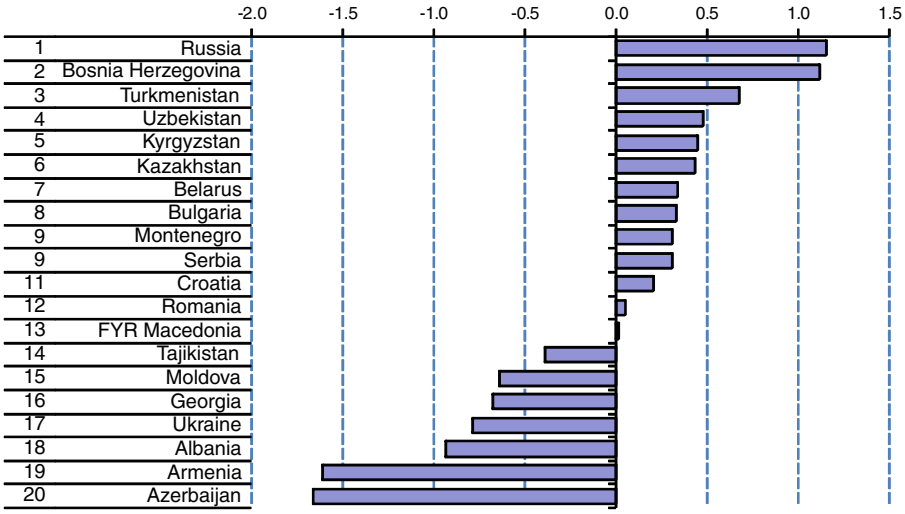

Fig. 24 Child discipline

responses to good behaviour (congratulations, hugs, or rewards), and the proportion of children who report being beaten or insulted as part of punishment/discipline.

It is important to note here the Azerbaijani data for positive forms of behaviour is a negative outlier (more than 3 standard deviations from the average of 77.5 at 35.5%). For this reason the data was removed from the calculation of the component, however regardless of removing this very low result Azerbaijan remains last overall along with Armenia. Children in Russia and Bosnia Herzegovina have the best practises in terms of child discipline (Fig. 24).

6.6.3 Children in Care

The component 'children in care' includes two indicators. The first of which is a ratio for the proportion of children 0–17 in care of foster parents or guardians (per 100,000 population aged 0–17) over the proportion of children in residential care (per 100,000 population aged 0–17).[5] The second indicator measures the proportion of children 0–3 in infant homes (per 100,000 population aged 0–3). Data is for 2005 or most recent data.[6] Missing countries for the foster to residential care ratio include: Albania, Armenia, Kazakhstan, Turkey and Turkmenistan. For infant homes countries with missing data are Georgia, Romania, and Turkey. Moldovan data exclude Transdniestr.

Foster care to residential care ratio data for Serbia and Montenegro is pre-cession data from 2001 and 2002 respectively and excludes Kosovo. For foster care Azerbaijan, Russia, and the Ukraine have guardian care data only, Tajikistan data is for foster care only. For residential care data Azerbaijan, Belarus, Georgia, Moldova, and Russian include general boarding school figures. Bulgaria data includes data from homes for medical and social care (Bulgaria is also a negative statistical outlier with a rate of 1,095 infants per 100 thousand in homes compared to the average of 130, and as such is removed prior to analysis). Armenian data is for children aged 0–5. Serbian data and Montenegrin data is pre-cession data from 2000.

Children in Bosnia Herzegovina are least likely to be in care, and if in care more likely to be placed with a foster or guardian family. Romania is also performing well on this scale. Georgia, Belarus and Bulgaria stand out as having the highest levels of institutionalisation of children (Fig. 25).

6.7 Risk and Safety

Engagement in risk behaviour is very common among young people, not least as a means of gaining acceptance in their peer group. However, often young people underestimate the risks they take and those who do engage in risk behaviour tend to do so in more than one way, for example they consume alcohol and have unprotected sex.

[5] Residential cared for children are "children in infant homes, in orphanages, in boarding homes and schools for children without parental care or poor children, disabled children in boarding schools and homes, family-type homes, SOS villages, etc. Children in punitive institutions are normally excluded" (TransMONEE 2007 database definition).

[6] Serbia and Montenegro data is for 2001 for the foster/residential care ratio and 2003 for Georgia. Bosnian Herzegovina data for residential care and infant homes is for 1999, and Turkmenistan data is for 2004.

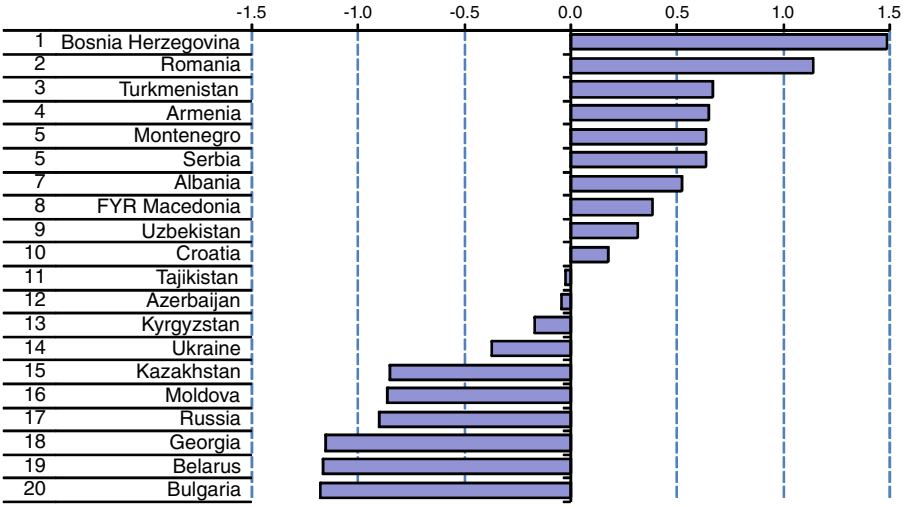

Fig. 25 Children in care

Research also shows that risk behaviour can be a response to stress experiences which young people cannot manage successfully (Klein-Hessling et al. 2005).

The risk and safety dimension covers the components sexual health (Section 6.7.1), alcohol and drug use (Section 6.7.2), crime (Section 6.7.3), child labour (Section 6.7.4), and accidents and suicide (Section 6.7.5). Turkey only has data for the adolescent fertility indicator and so could not be included in this comparison.

Figure 26 shows that risk and safety is more of a problem for children in Georgia, Bulgaria, Moldova, and Russia. Children face the lowest risk in Bosnia Herzegovina, Uzbekistan, Armenia, and Turkmenistan.

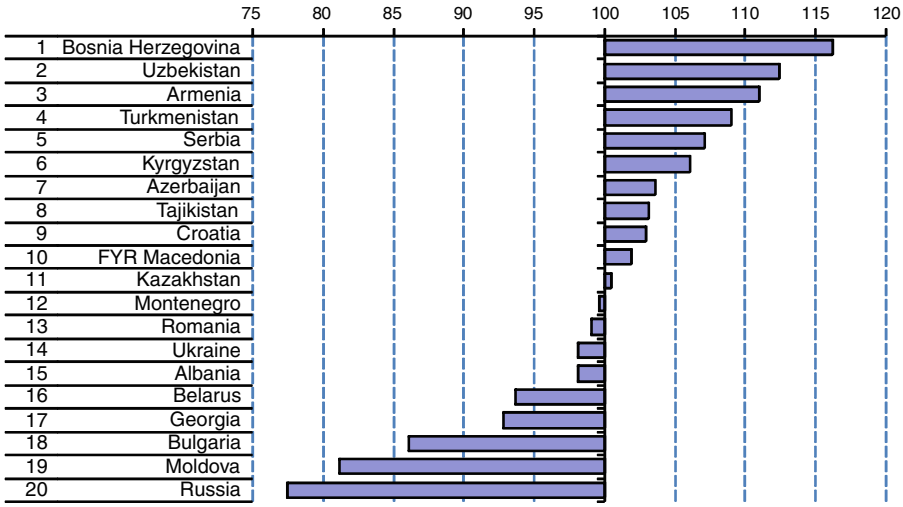

Fig. 26 Child well-being—risk and safety dimension

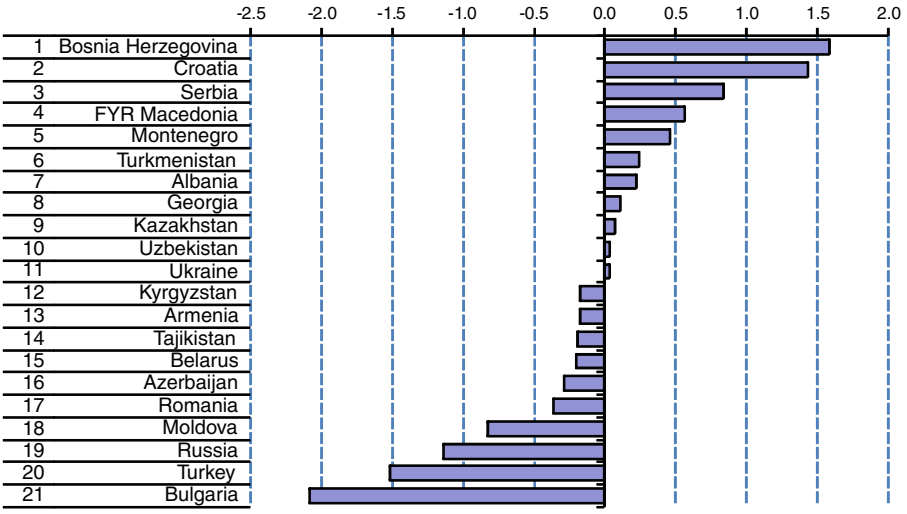

Fig. 27 Sexual health

6.7.1 Sexual Health

The sexual health dimension includes three indicators: births per 1,000 women aged 15–19 in 2006 (HNP 2008), sexually transmitted disease in 2005[7] (newly registered cases of syphilis and gonorrhoea per 100,000 of the population 15–19, TransMONEE 2007); comprehensive knowledge of HIV/AIDS prevention.

In the CEE/CIS region HIV/AIDS is mainly contained to high risk groups, particularly injecting drug users. Data on HIV/AIDS prevention and sexual behaviour is only available for young women and cannot give any information on the knowledge of behaviours of young men and of young people at high risk as they are unlikely to participate in household surveys.

For sexually transmitted diseases Macedonian data is for gonorrhoea only. Moldova data excludes Transdniestr. Georgian data exclude Abkhazia and Tskhinvali. Kazakhstan data for 2003 refer to 15–17 year-olds. Kyrgyzstan includes trichomoniasis. Albania, Bosnia Herzegovina, Bulgaria, Montenegro, and Serbia do not have data on sexually transmitted diseases. Bulgaria, Croatia, Moldova, Romania, The Russian Federation, and Turkey and these countries did not contribute to the indicators of comprehensive knowledge of HIV/AIDS prevention. Data for Armenia and Azerbaijan refer to women aged 15 to 24.

Sexual health is best in Bosnia Herzegovina, and Croatia, Serbia and Macedonia. Sexual health is worst in Moldova, Russia, Turkey and Bulgaria (Fig. 27).

6.7.2 Alcohol and Drug Use

Three indicators make up the alcohol and drug use component including: the proportion of children who report having friends or acquaintances of their age having had an

[7] Except Georgia (2004), Macedonia (2000), Croatia (1999) Turkmenistan (1997).

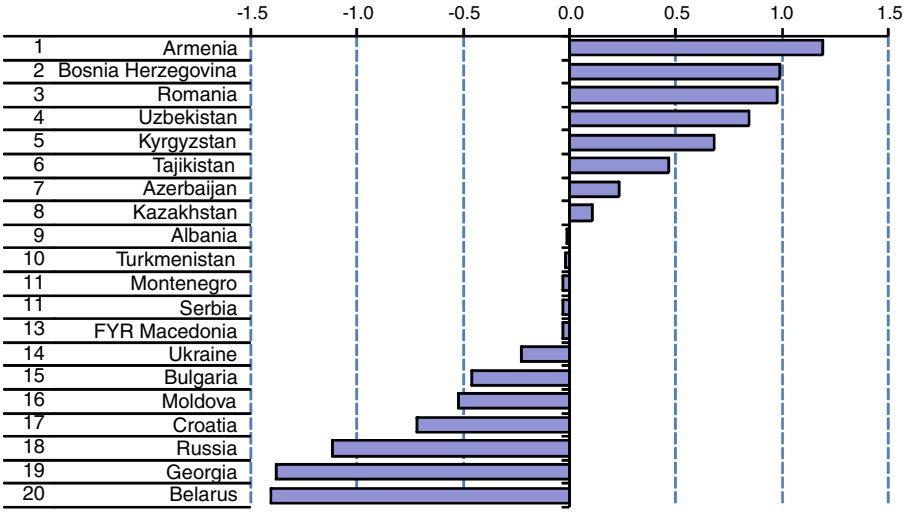

Fig. 28 Alcohol and drug use

addiction to tobacco; the proportion of children with friends or acquaintances of the child's age having had an addiction to alcohol; and the proportion of children reporting having friends or acquaintances of their age using inhalants or illegal drugs (all data from the Young Voices survey, UNICEF 2001). Data is missing for Turkey which did not take part in the Young Voices Survey. Data used for Serbia and Montenegro across this dimension separately reports the pre-cession data for Yugoslavia excluding Kosovo.

Data for Georgia that records the proportion of children with friends or acquaintances of the child's age had an addiction to alcohol is a statistical outlier (37.3% in comparison to the regional average of 10.2%) and has been removed from the analysis.

Notable is the situation in Belarus, Georgia and Russia where alcohol and drug use is a good deal higher than in other CEE CIS countries. Armenia, Bosnia Herzegovina, Romania and Uzbekistan are the countries with the least reported problems with risk taking of these forms (Fig. 28).

6.7.3 Crime

Two indicators make up the component of crime: the registered juvenile crime rate (per 100,000 population aged 14–17) in 2005 (except Georgia and Turkmenistan, 2004, and Serbia and Montenegro data for 2001 taken pre-cession; TransMONEE 2007); and the proportion of children (aged 9–17) who report having been a victim of any type of crime (Young Voices 2001). For the Juvenile crime rate Turkmenistan, Serbia and Montenegro, and Croatia data refer to number of offenders. Serbia and Montenegro data exclude Kosovo. Moldovan data exclude Transdniestr. Data for Turkey is not available.

Turkmenistan, Azerbaijan, Uzbekistan, Bosnia Herzegovina and Georgia stand out as countries that report the lowest levels of youth crime. Bulgarian, Romanian,

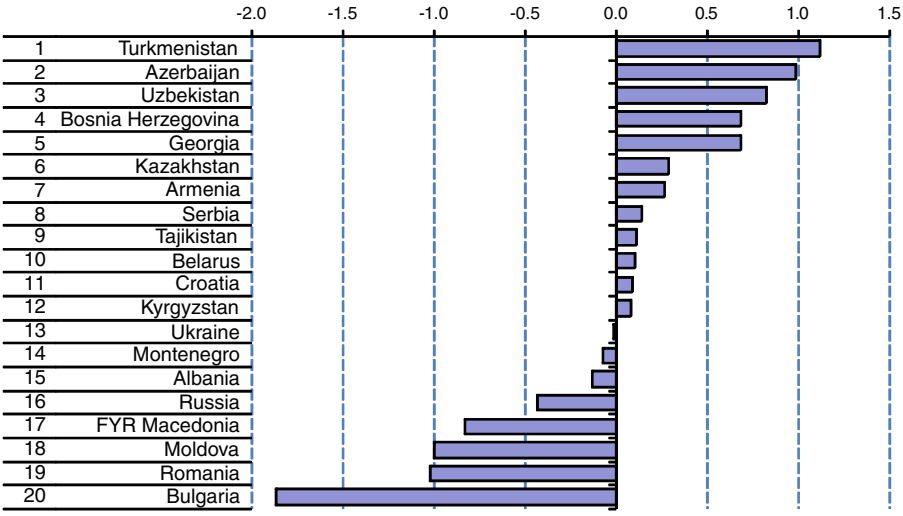

Fig. 29 Crime

Moldovan and Macedonian children are most likely to have experienced crime as victims or perpetrators (Fig. 29).

6.7.4 Child Labour

Child labour is defined as the percentage of children aged 5–14 years who are involved in child labour activities in 2005 (MICS 2005, UNICEF Statistics 2008). Data is not available for Armenia, Bulgaria, Croatia, Moldova, Russia, Turkmenistan. UNICEF defines child labour as children 5–11 years of age who did at least one

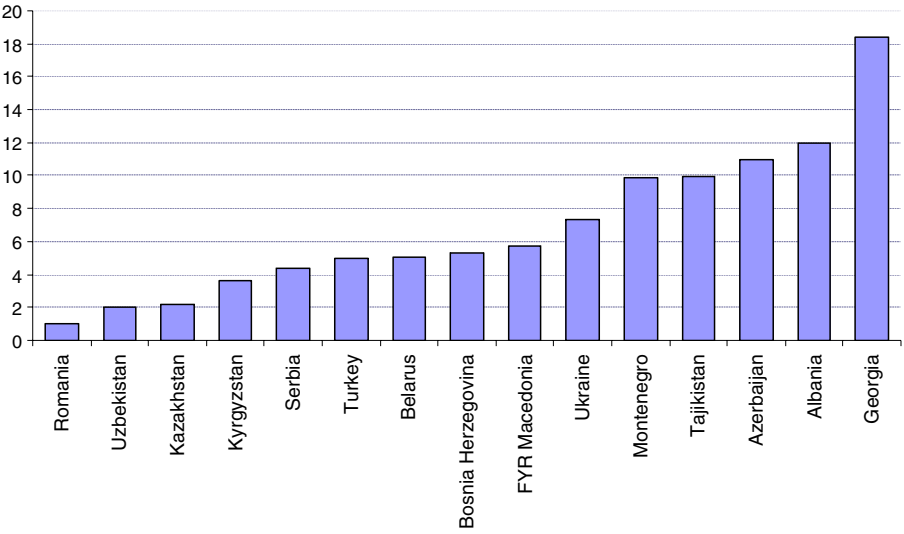

Fig. 30 Child labour

hour of economic activity or at least 28 h of domestic work during the week preceding the survey and children 12–14 years of age who did at least 14 h of economic activity or at least 28 h domestic work during the week preceding the survey (http://www.childinfo.org/areas/childlabour/, September 2006). Compared to EU countries this definition is very strict and may not be appropriate for capturing child labour in transition countries with high school enrolment but also high levels of seasonal agricultural child labour. As child labour data refers to the week prior to the survey, seasonal work is unlikely to be captured at all. As a consequence, Uzbekistan which has high levels of child labour during the harvest of cotton appears here as having one of the lowest level of child labour.

There is good deal of variation between the 11 countries with child labour statistics. The country where children are most likely to be working, Georgia, has an incidence over ten times that of the country where the data shows children are least likely to be working, Romania (Fig. 30).

6.7.5 Accidents, Homicide and Suicide

Accidents, homicide and suicide are the final risk and safety component, made up of just one indicator. All child accidental and non-accidental deaths (not including illness and other natural causes) for the three most recent years for which data is available have been calculated as a measure of under 20 deaths per 100,000 of the under 20 population (WHO 2008a, b).[8]

The latest year for each country is as follows: Albania 2002, Armenia 2001, Azerbaijan 2000, Belarus 2001, Bosnia and Herzegovina 1989, Bulgaria 2002, Croatia 1992, Georgia 1995, Kazakhstan 2002, Kyrgyzstan 1997, FYR Macedonia 2001, Republic of Moldova 1993, Romania 1996, Russian Federation 2003, Tajikistan 2003, Turkmenistan 1996, Ukraine 2003, and Uzbekistan 2000.

Data was combined for all kinds of accidental deaths, murder, suicide and deaths with undetermined cause into one variable. Turkey and Serbia and Montenegro did not have data for the calculation of this indicator.

Armenia and Tajikistan have non-accidental child mortality rates below six in 100,000. The countries where children are most at risk, Kazakhstan, Moldova, and Russia have incidences of accidental and non-accidental death around seven times that rate (Fig. 31).

6.8 Overall Child Well-being

Figure 32 presents the *z* scores for the seven dimensions contribute to an overall child well-being score for each country. The average rank is the average of the dimensions for which there are data. The rank given for each dimension is the average of the *z* scores for the components. Croatia has the highest rank and Moldova has the lowest.

The average rank hides very considerable variations in the ranking on the different dimensions. Countries can do very well on some dimensions and lag behind in others. Croatia despite coming top is middling on risk and safety. Bosnia and Herzegovina for

[8] Analysis, interpretations and conclusions drawn from the use of the WHO mortality data are those of the authors and not of the World Health Organisation.

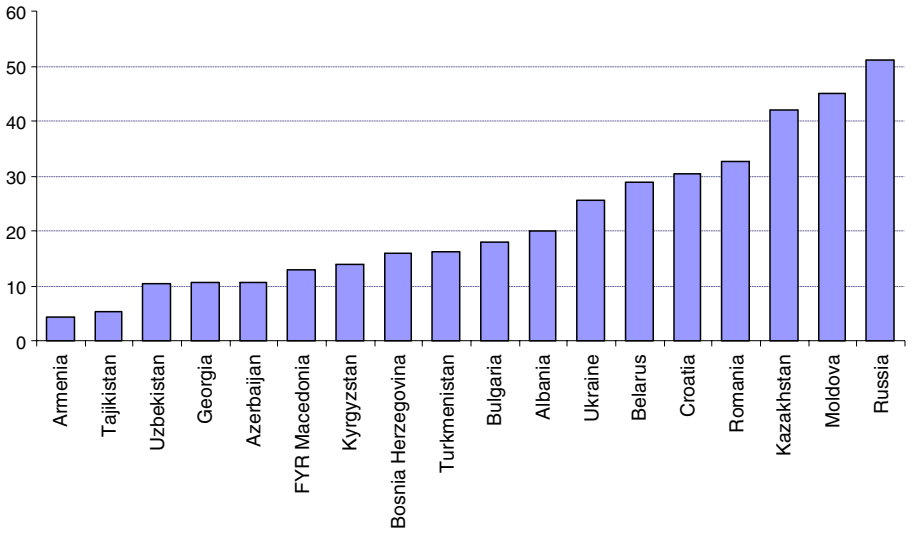

Fig. 31 Accidents and suicide

example despite coming second is middling on material well-being and health. In contrast, Romania is in the top third of countries on family forms and care, while only achieving a low overall ranking. Azerbaijan is in the top third on risk and safety but in the bottom third in health, housing, education, personal and social relationships.

	Average rank	Material	Housing	Health	Education	Personal and Social	Family Forms and Care	Risk and Safety
Croatia	3.4	1	1	1	4	1	7	9
Bosnia Herzegovina	4.8	9	3	13	-	2	1	1
FYR Macedonia	6.3	8	10	3	6	3	4	10
Serbia	6.6	5	6	9	11	7	3	5
Uzbekistan	7.5	14	2	6	-	13	8	2
Turkmenistan	7.6	-	9	15	-	4	6	4
Belarus	8.3	6	5	4	2	11	14	16
Montenegro	8.6	7	11	8	13	7	2	12
Bulgaria	10.6	2	7	14	5	16	12	18
Ukraine	10.6	4	13	7	8	9	19	14
Kazakhstan	11.1	15	12	10	1	12	17	11
Russia	11.3	3	15	5	3	17	16	20
Kyrgyzstan	11.7	16	17	11	18	5	9	6
Romania	12.0	10	19	16	7	14	5	13
Armenia	12.1	17	8	19	12	15	11	3
Georgia	13.6	18	4	17	15	6	18	17
Turkey	14.0	13	-	12	17	-	-	-
Azerbaijan	14.1	11	16	20	16	19	10	7
Albania	14.4	12	14	18	9	20	13	15
Tajikistan	14.4	19	18	21	10	10	15	8
Moldova	16.1	20	20	2	14	18	20	19

Fig. 32 Overall child well-being average rank by dimensions for the CEE/CIS region

Moldova comes second from top on health but in the bottom third on everything else. No countries are in the top third or bottom third on all dimensions. This is a much more volatile, less consistent picture than was obtained in either the EU25 or PISA 2007 versions of this index and points to the diversity and fragility of progress in the CEE/CIS region. To fully understand these differences it is necessary though to understand disparities within countries (especially urban–rural and income) and over time.

There is a bit of a tendency for some countries to do well on the well-being indicators related to standard public services and worse on relationships and risk and safety. Examples of this are Belarus, Bulgaria, and Russia. Other countries display the alternative tendency. These include Bosnia Herzegovina, Uzbekistan and Azerbaijan.

The new EU Member States Romania and Bulgaria still rank in the middle (Bulgaria) and lower third (Romania) of the region. EU accession has not solved problems for children. Particularly the high numbers of children in institutions and risk behaviour remain worrisome in both countries.

6.9 Sensitivity Analysis

This section reviews how sensitive dimension and overall rankings are to the methods we have employed for summarising the data.

Figure 33 shows that overall the high, medium, and low groups are stable across the region.

	Child well-being in the CEE CIS - All countries by Dimensions.	Child well-being in the CEE CIS - All countries by Componenets.	Child well-being in the CEE CIS - 70% by Dimensions.	Child well-being in the CEE CIS - 70% Componenets.
Croatia	HIGH	HIGH	HIGH	HIGH
Bosnia Herzegovina	HIGH	HIGH	HIGH	HIGH
FYR Macedonia	HIGH	HIGH	HIGH	HIGH
Serbia	HIGH	HIGH	HIGH	HIGH
Turkmenistan	HIGH	HIGH	HIGH	HIGH
Uzbekistan	MEDIUM	HIGH	MEDIUM	HIGH
Belarus	HIGH	MEDIUM	HIGH	MEDIUM
Montenegro	HIGH	HIGH	MEDIUM	MEDIUM
Bulgaria	MEDIUM	MEDIUM		
Ukraine	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Kazakhstan	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Russia	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Romania	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Armenia	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Kyrgyzstan	LOW	LOW	LOW	LOW
Georgia	LOW	LOW	LOW	LOW
Turkey	LOW	LOW		
Azerbaijan	LOW	LOW	LOW	LOW
Albania	LOW	LOW	LOW	LOW
Tajikistan	LOW	LOW	LOW	LOW
Moldova	LOW	LOW	LOW	LOW

Fig. 33 Sensitivity for overall well-being measure in the CEE-CIS

Table 1 Correlation coefficients of dimensions and overall well-being

Dimension	Correlations coefficient (significant level)
Material well-being	0.71**
Housing	0.68**
Personal and social well-being	0.67**
Family	0.65**
Education	0.58*
Health	0.50*
Risk and safety	0.35

*$p < 0.05$
**$p < 0.01$

Analysis of the variation in results by type of aggregation (at the seven dimensions level or the 24 components level) shows that only Uzbekistan and Belarus change standings. The changes shown are likely to reflect by greater variation between measures at the component level for these countries.

The inclusion of countries with less than 70% of responses only changes the group positions of one country in the region, Montenegro.

6.10 The Relationships Between the Indicators and Dimensions

This section will explore the relationships between the indicators, and dimensions that make up the index.

In Table 1 we explore the relationship between the overall index and each of the dimensions. The closest correlations are with material well-being, housing, personal and social well-being and with well-being in the family, the latter pointing to the importance of children's subjective well-being and the quality of their relationships at home and in their community. Risk and safety is not significantly correlated with overall well-being.

Land et al. (2007) have suggested that subjective well-being is the ultimate outcome indicator because it is based on subjective, individual level responses and not just "objective" indicators that may or may not be all that closely related to the

Table 2 Correlation of dimensions and overall well-being excluding personal and social wellbeing and subjective well-being

Dimension	Correlations coefficient (significant level) with personal and social well-being	Correlations coefficient (significant level) with subjective well-being
Material well-being	0.83***	0.30
Housing	0.74**	0.32
Personal and social well-being	0.54*	0.65**
Family	0.64**	0.61**
Education	0.57*	−0.12
Health	0.58*	0.06
Risk and safety	0.23	0.59**

*$p < 0.05$
**$p < 0.01$
***$p < 0.001$

Table 3 Correlation between the dimensions

	Material	Health	Education	Personal	Family care	Housing	Risk & safety
Material	1.0	0.42	0.56*	0.20	0.32	0.38	−0.17
Health		1.0	0.39	0.27	0.01	0.24	−0.25
Education			1.0	−0.02	−0.11	0.29	−0.33
Personal				1.0	0.49*	0.49*	0.42
Family care					1.0	0.33	0.62**
Housing						1.0	0.33
Risk and safety							1.0

*$p < 0.05$
**$p < 0.01$

well-being assessments of individuals. They constructed an index using the objective data and then used the subjective domain to assess the "external validity" of the index. Our dimension Personal and social well-being is based on the views of children expressed in the Young Voices Survey and has three components: engagement with their peer group; social engagement and subjective well-being. In Table 2 we show the correlations between the domains and overall index excluding personal and social well-being. Personal and social well-being is still positively correlated with the index made up of the more objective indicators $r=0.54$*. We also ran the analysis with only the subjective well-being component. Now as well as personal and social well-being family relations and risk and safety are the only domains related to subjective well-being component.

Next we explore the relationship between the dimensions in Table 3. The material dimension has a positive correlation with the education dimension. Personal and social well-being is correlated with family care and housing. However, the strongest correlation between dimensions is between family care and risk and safety—the better the family care in a country—the less the risk for children.

Is it possible to produce an index of child well-being in CEE/CIS countries with fewer indicators? We explore that question by first identifying whether there is a

Table 4 Correlations between single indicators and overall child well-being

Indicator	Correlation with overall well-being by dimension
Secondary school enrolment rate (15 countries)	0.67**
Women without comprehensive knowledge of HIV/AIDS prevention (15–19; 16 countries)	−0.64**
Percentage of children living under the $2.15 poverty line (18 countries)	−0.63**
Adolescent fertility rate (19 countries)	−0.62**
Under five mortality rate (20 countries)	−0.60**
Percentage of children beaten or insulted as part of punishment (20 countries)	−0.58*
Low birth weight (20 countries)	−0.58*
Infant mortality rate (21 countries)	−0.57*
Prevalence of child malnutrition (moderate and severe)—underweight (% of children under age 5) (19 countries)	−0.56*

*$p < 0.05$
**$p < 0.01$

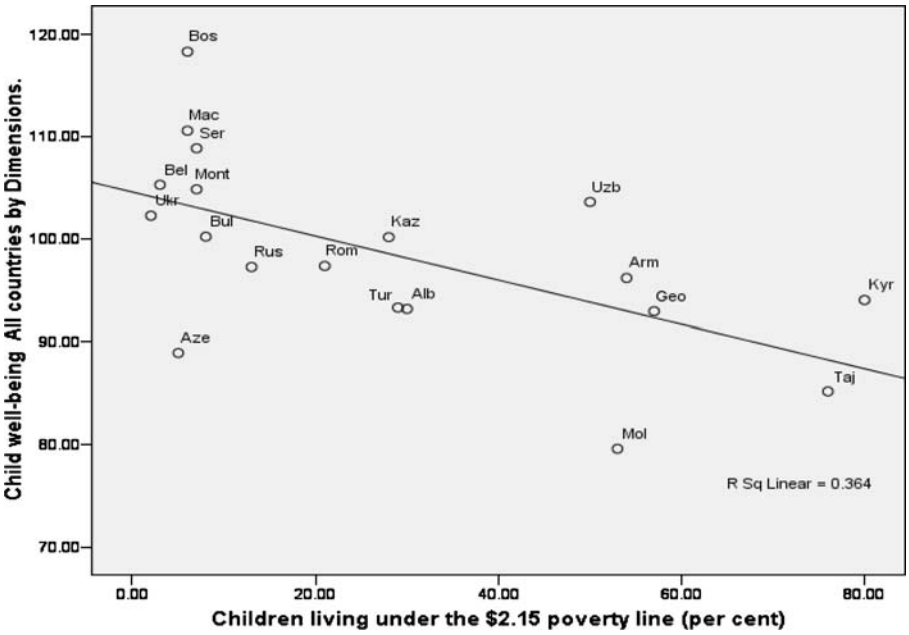

Fig. 34 Overall well-being by income poverty

single indicator that is highly correlated with our overall index. In both the EU and PISA 2007 versions we found that the adolescent fertility rate was the single indicator with the highest correlation with overall well-being. In this region the correlation was also among the highest (nine) in Table 4. The two with the highest correlation (secondary school enrolment and women with knowledge of HIV/AIDS are based only on a selection of the countries. There were a number of significant correlations covering at least 18 countries and the highest of these was the absolute income poverty rate. Next came the adolescent fertility rate. Figure 34 shows the relationship between overall well-being and the income poverty rate.

Table 5 Single indicators that best represent dimensions

Domain	Indicator	Correlation with domain
Material	Percentage of children living under the $2.15 poverty line (19 countries)	−0.88
Health	Under 5 Mortality Rate 2006 (20 countries)	−0.78
Education	Secondary school net enrolment ratio (percent of population of secondary school age) (15 countries)	0.69
Personal and social	Percentage of children reporting having a good or very good relationship with a member of their peer group (20 countries)	0.68
Family forms and care	Children reporting a very good relationship with one or both parents (20 countries)	0.63
Housing	Children reporting that the place where they live is rather unsafe or very unsafe to walk around—2001 (20 countries)	0.59
Risk and safety	Child reporting that a friend or acquaintance has a tobacco addiction (countries)	0.69

Table 6 Comparison of ranks using selected indicators and the average of dimensions

Rank order on selected indicators average *z* scores	Rank order on dimensions average *z* scores
Bosnia Herzegovina	Croatia
Croatia	Bosnia Herzegovina
Serbia	FYR Macedonia
Montenegro	Serbia
FYR Macedonia	Uzbekistan
Armenia	Turkmenistan
Romania	Belarus
Bulgaria	Montenegro
Georgia	Bulgaria
Kazakhstan	Ukraine
Ukraine	Kazakhstan
Belarus	Russia
Uzbekistan	Kyrgyzstan
Turkmenistan	Romania
Albania	Armenia
Tajikistan	Georgia
Azerbaijan	Turkey
Kyrgyzstan	Azerbaijan
Turkey	Albania
Russia	Tajikistan
Moldova	Moldova

Another approach is to identify the single indicator that explains most of the variation in each of the seven dimensions and see whether it is possible to replicate the overall well-being ranking using seven indicators instead or 52.

Table 5 presents the indicators that best represent each dimension (and where there is data for the majority of countries). In general the weakest indicators are those seeking to represent family forms and care and housing.

If we then compare the rankings of countries using these selected indicators with the rank order obtained using all the data in dimensions we see some quite big shifts in Table 6. In particular Armenia moves from the bottom to the top third of the distribution. Georgia moves from the bottom third to the middle third and Russia and Kyrgyzstan moves from the middle thirds to the bottom third. Less surprising is that Montenegro moves alongside Serbia from the middle group to the top group. It does not appear to be possible to match overall child well-being, at least with these selected indicators.

6.11 Analysis of Reasons for Variation in Child Well-being

What explains the variation in child well-being that we have observed in this article?

One obvious hypothesis is that richer countries do better—because they have more resources to devote to children. We test this hypothesis in Figure 35. There is indeed a correlation between overall child well-being and $ GDP per capita in PPPs (r=0.59**). It can be seen that there are some interesting outliers. Bosnia Herzegovina having a child well-being level considerably higher than their GDP per capita would suggest. So have Croatia and Macedonia, and at the bottom end of the distribution Uzbekistan does better than expected given its resources. In contrast

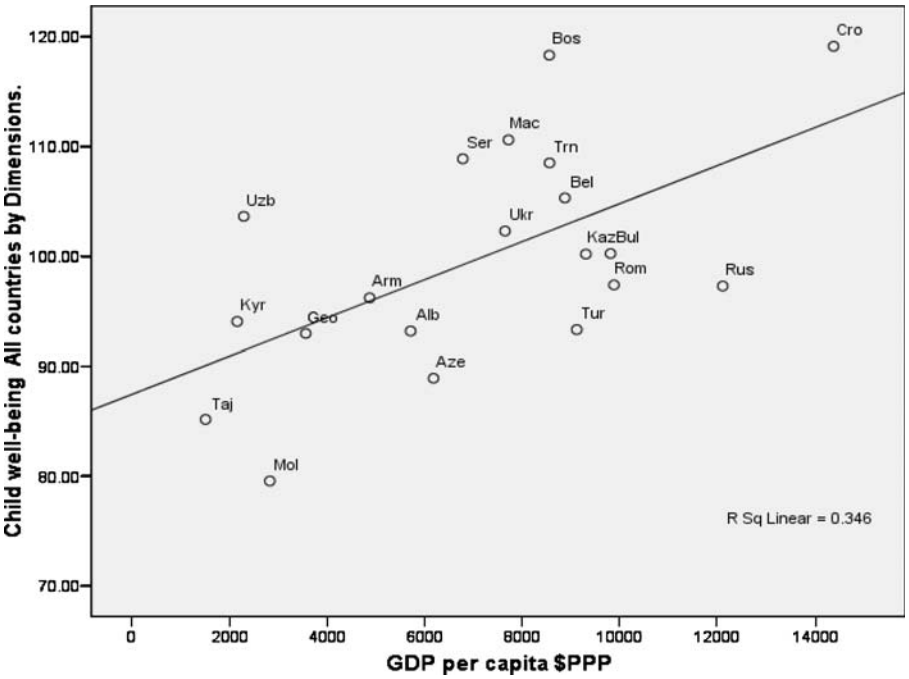

Fig. 35 Overall child well-being and GDP per capita $ppp

Russia, Turkey, and Azerbaijan, and Moldova at the bottom of the distribution all have lower overall child well-being than their GDPs would suggest.

Of the seven dimensions only material well-being and education are significantly associated with GDP per capita. The richer countries do better on material well-being but as can be seen in Figure 36 there are outliers—Ukraine and Uzbekistan are better than expected and Kazakhstan and Moldova are worse than expected.

It would be good to be able to relate child well-being to government efforts on behalf of children. Stewart and Huerta (2006) have data on the proportion of GDP spent on family allowances but only for eight CEE/CIS countries and we found no significant relationship between that and overall child well-being.

UNICEF (2006) has published data on public expenditure on health as a percentage of GDP for 19 countries. In this case there was a significant positive correlation with overall child well-being r=0.66**. The relationship is shown in Figure 37.

6.12 Reservations

The child well-being index is a first attempt to develop a set of indicators of child well-being in CEE/CIS countries and we are confident it will not be the last attempt. There are a number of weaknesses with this attempt that are worth highlighting as a guide to future work.

- The variables available do not cover all age groups in particular for children between the ages of 5 and 9 we are missing data.

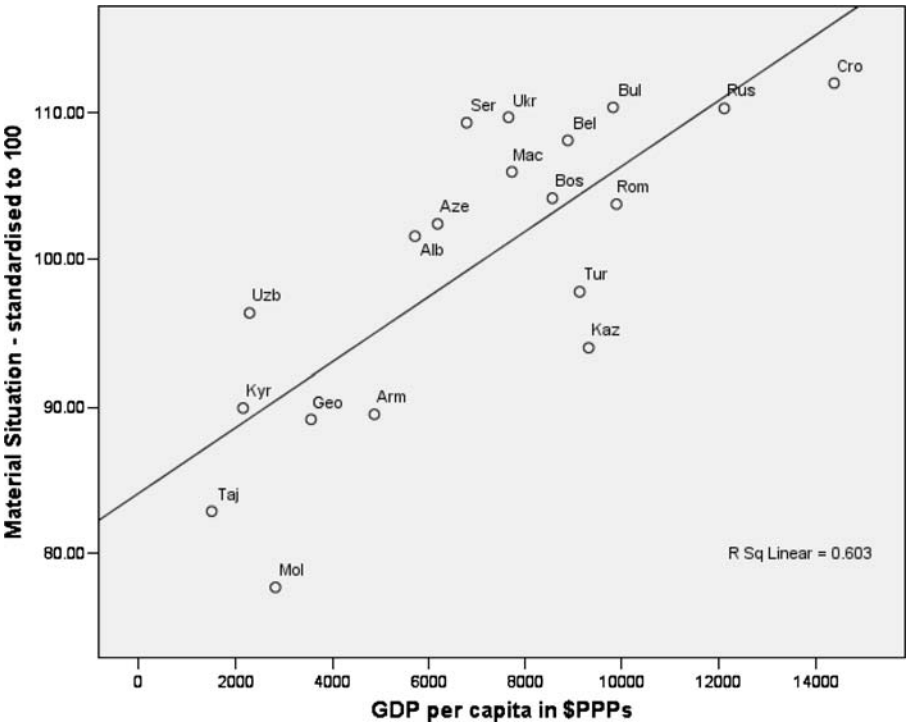

Fig. 36 Material well-being and GDP per capita $ppp

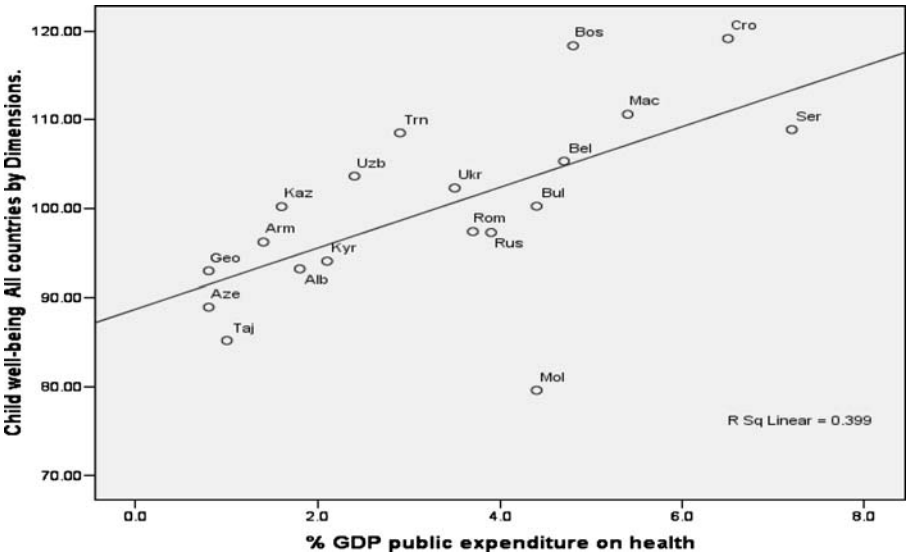

Fig. 37 Overall child well-being and public spending on health 2002–2004

- The analysis has used official administrative sources and survey data and does not adequately represent the well-being of minority and particularly excluded children, who may not feature in administrative series or sample surveys or be too small a minority in both to feature. Among the indicators that are not but should be included in this paper are data on violence within the family, children from ethnic minorities, child prostitution, child handicap, child mobility.
- The analysis is weak on dispersion. It uses thresholds and estimates the proportions of children above or below the threshold. However, this only gives part of a picture—what is hidden is the dispersion or degree of difference within a country. It is possible to produce measures of dispersion if we have access to the micro-social data. However, it was not possible with administrative data.
- For some of the dimensions there are obvious data missing that would ideally be included. So for example in the Material Situation dimension we are lacking data on poverty gaps, and on persistent poverty.
- We are perhaps too reliant on particular surveys for particular dimensions, leading to some countries entirely missing from dimension (Young Voices data does not include Turkey).
- Some of the sources we have used were not designed to study the well-being of children
- Of course this analysis involved making choices about which indicators to include, how to organise them into components and dimensions. It was also decided to give indicators and dimensions equal weight. Anybody may disagree with the choices and the weighting assumptions and indeed undertake their own analysis. To help them do that the data set may be obtained by email from jrb1@york.ac.uk.
- Finally there is no trend data here: the analysis is purely cross sectional. Analysis of change in well-being over time remains a challenge for future research.

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