

UPDATE ON MEASURING CHILD WELLBEING IN THE MEDITERRANEAN REGION – TOWARD A COMPREHENSIVE CHILD WELFARE INDEX

JACQUES VAN DER GAAG, ERIKA DUNKELBERG

Introduction

In 2003, the Fondazione Istituto Mediterraneo per L'Infanzia (Medchild Institute) funded a study to develop an index to measure child wellbeing in the Mediterranean countries. The result was a paper titled "Measuring child wellbeing in the Mediterranean region - toward a comprehensive child welfare index" (van der Gaag & Dunkelberg 2003). The paper was presented at the Conference "Children and the Mediterranean" held on January 2004 and subsequently published as a background paper to the annual MedChild publication "Chartering the Mediterranean Child 2004".

The paper "Measuring child wellbeing in the Mediterranean region - toward a comprehensive child welfare index" reviewed the relevant literature on children's wellbeing and proposed some alternative indices to measure children's wellbeing. The suggested indices included the Child Wellbeing Index (CWI), the Child Deprivation Index (CDI), and the Child Gender Index (CGI). These indices were constructed using the United Nations Development Program approach for calculating the Human Development Index (HDI) and its extension indices. A fourth index proposed assessed children's wellbeing in specific developmental stages. This paper is an updated and synthesized version of the earlier paper. This paper revises the index calculations and proposes two additional indices, the youth welfare index and the family environment index, and the comments received since the paper was first published.

1. Monitoring and Measuring Children's Wellbeing

For the paper "Measuring Child Wellbeing in the Mediterranean region" a thorough literature review on measures of children's wellbeing was conducted. Following, is a summary of the main findings.

- Wellbeing is defined as a multidimensional construct that incorporates a number of dimensions such as social, physical, economic, psychological, and cognitive. The most widely used dimensions are economic, health, and education
- There is increasingly interest in the use of the concept of social exclusion as a new measure of children's wellbeing. Social exclusion is defined as a concept which takes the child wellbeing discussion beyond income poverty. Social exclusion is concerned with the broader range of capabilities (or social rights) children fail to enjoy, a wider range of dimensions of disadvantage. The concept is mostly used by countries with robust economies, countries that have already confronted and addressed the problem of income poverty, achieved low rates of child poverty and infant and child mortality and malnutrition
- Dimensions are measured by a selection of social indicators. Table 1 depicts a list of the most commonly used (and less commonly used) indicators in the reports reviewed
- The types of indicators used to measure children's wellbeing have evolved. Indicators are increasingly more child-focused, with children as the unit of analysis. Also, indicators more and more measure positive outcome rather than deficiencies
- Indicators are becoming developmentally sensitive. Today indicators that reflect the needs, challenges, and accomplishments across the different developmental stages are being used to monitor children's wellbeing
- Some have attempted to construct aggregate indices that measure children's wellbeing. These attempts identify the key dimensions and a limited number of indicators to measure them, and put them together into one index
- These indices have been produced with a particular objective, to put the spotlight on the issues that are considered important. The choice of indicators allowed to enter the index and the choice of weights to combine these indicators could vary greatly. New dimensions can be added from a particular perspective if there is a particular aspect to be emphasized.
- There is considerable interest on monitoring and measuring children's wellbeing both in the developed and developing world

Table 1. List of indicators used for monitoring children's wellbeing

Dimension	Common Indicator	Less Common Indicator
Economic	GDP per capita Poverty Unemployment Population access to safe water	Child poverty Youth unemployment Parental unemployment Children on welfare Child and family allowances
Health	Infant Mortality rate Child mortality rate Prenatal and antenatal care Low birth weight Life expectancy HIV/AIDS incidence Crude birth rate and death rate	Access to health care Incidence of disease Overweight Disability Chronic condition Eating disorders Sexually transmitted diseases in adolescents Age/cause specific mortality Accidents and injuries Child examined by doctor in past year
Nutrition	Under five malnutrition Consumption of iodinated salt Breastfeeding	Consumption of basic foods Calorie per capita intake by households with different number of children Vitamin A
Social	Adolescence delinquency Teen childbearing Children in foster care	Alcohol consumption Drug abuse Cigarette smoking Child abuse and neglect Child labour Age of women at first birth Divorce rate Percent of households with children headed by single parent
Education	Gross enrolment rates pre-primary, primary, and secondary Net enrolment rates pre-primary, primary, and secondary Youth and Female literacy rate High school completion Drop out rates	Cognitive assessment scores on language and math Out-of-school children School readiness at age 5 Family reading to young children Children not enrolled in school or working
Social Exclusion	Workless household Teen pregnancy Access to education and health	Share of youth who report being satisfied with life

A review of current and past initiatives to monitor children's wellbeing in the Mediterranean region shows that, although some work has been done, there is still no unified report that monitors children's wellbeing. Existing reports do not present disaggregated data necessary to draw a complete picture of children wellbeing in the Mediterranean region. There are some initiatives worthwhile highlighting that attempt to measure children's wellbeing at the international level. Ben Arie and Robert Goerge¹ continue to lead the

"Multi National Project for Monitoring and Measuring Children's Well-Being" which aim is to identify a set of indicators that could be used across nations. The project has now moved phase two. During the first phase sixty indicators and five domains were identified. This effort, however, has not yet been translated into a periodical report. UNICEF, the foremost fighter for children in the world, uses every year the infant mortality rate to rank the countries in their publication *The State of the World's Children*. This report is the most important international

(1) Four organizations are currently conducting the work: the National Council for the Child in Israel, The Chapin Hall Centre for children at the University of Chicago, the National

Centre for Child Poverty at Columbia in the United States, and the German Youth Institute

document that presents key indicators on child wellbeing across the world. The report draws data from national surveys and international databases and compiles these data into one document, which is an annual review of basic indicators on children's survival and development. At the regional level, the Innocenti Research Center is actively involved in documenting children's wellbeing in the Eastern European and Central Asia countries. A number of papers were produced during and after the transition to the market economy to monitor children's wellbeing and covered a myriad of issues related to children (Cornia, 2002, Cornia 1991; Branko 1997; Micklewright & Stewart 2000; Innocenti Social Monitor Report). The *Innocenti Social Monitor Report* brings together a set of core social indicators that cover the child's environment - the family, school, and community where the child is the key analytical unit of study - in this annual regional report. This report is, perhaps, the most relevant document portraying child wellbeing in Eastern Europe and Central Asia.

Like in Eastern Europe, the Innocenti Research Centre supported a project in the Middle East and North Africa to look at children's wellbeing in nine countries² (UNICEF 2001). The report concluded that although there have been substantial gains, progress has been uneven between and within these countries and has faltered in some. Data on children exist in most, if not all, of these countries, but they are not adequately disaggregated and analyzed, making it difficult to provide a complete picture of children in the southern Mediterranean region. In the European Union, countries have long been engaged in monitoring and measuring children's wellbeing. Efforts have focused on measuring the effects of social policies on children, child social exclusion and poverty (Luxembourg Income Study series papers, OECD, Eurostat, etc). Recently the OECD has published their report *Society at a Glance* (2003) that focuses on disability and child welfare, including child poverty, in 30 member countries. Since the publication of the paper "Measuring Child Wellbeing in the Mediterranean region" there have been two major developments that are of interest to our study: the publication of UNICEF's *The State of the World Children 2005*, and the renewed emphasis on measuring child poverty. First, the publication of *The State of the World Children 2005* is particularly important given the emphasis that the report places on measuring children's wellbeing. In the report UNICEF concludes that there is a need for an agreed method of measuring the level of

wellbeing and its rate of change. UNICEF proposes an approximation of an aggregate index. For such approximation, under-five mortality continues to be the single most important indicator, but when used in conjunction with GDP growth rates it gives a picture of the progress being made towards the satisfaction of the most essential needs (UNICEF 2004). Second, it is now generally recognized that it is of the utmost importance to document the living conditions of children who are born in, and grow up in poverty (UNICEF 2004, UNICEF 2004a; Rainwater & Smeeding 2004; ATD Fourth World 2004; Gordon et al. 2003). However the basic information, which will contribute to create a reliable picture of the complexity of child poverty in the developing world, is still missing. The most recent publication on child poverty in the developing world was by Gordon (2003), which findings were published in UNICEF's *State of the World's Children 2005*. At the regional level, the *Innocenti Social Monitor Report 2004* included a section on child poverty in Eastern Europe and Central Asia and European countries recognize that child poverty is a priority (ATD Fourth World 2004). At the government level, the U.K. treasury published the *Child Poverty Review* (HM Treasury 2004), which described the government's medium and long term plans to meet the new child poverty target. A series of events and reports such as the review meeting on the Millennium Development Goals are scheduled for 2005. Child poverty is expected to continue to dominate the scene as the target set to reduce poverty approaches.

In the next section, we describe the proposed indices that measure child wellbeing and show how child poverty data could enhance the quality of such indices. But first, we present a synthesis of existing efforts that try to put forward an aggregate index to measure children's wellbeing. The indices reviewed can be grouped in three clusters: indices that measure wellbeing at the sectoral, national, and international level. Following is brief summary of the findings. Table 2 provides a summary of the aggregate indices and their main features. Some attempts measure child wellbeing in a specific sector. For instance in the U.S. Brink and Zeeman (1997) constructed the Index of Social Health, which deals with issues of health, mortality, inequality, and access to services. This index enables comparisons between GDP per capita and social health. The index measures social health across different demographic groups, from infancy to adulthood. It proposes a set of indicators for different age groups - children, youth, adults, and the elderly. The index is calculated by assessing improvement and decline against best performance rather than an ideal standard. Another approach to developing a child wellbeing index could be modelled after the World Health Organization index that measures countries' performance in the health sector (WHO 2000). The WHO index looks at the

(2) Algeria, Libya, Egypt, Jordan, Lebanon, Libya, Morocco, Syria, Tunisia, and West Bank and Gaza

goodness (level of performance) and fairness (distribution) outcomes as key indicators of the performance of the health system. Potentially, a performance measure for a country's "children system" could be pursued. However, defining the boundaries of a

child system (the total sum of all measures and efforts in a country that benefit the well-being of the country's children) is very difficult. For an example of how countries monitor and measure child wellbeing we looked at the United States.

Table 2. Summary of child wellbeing indices

Index	Purpose	Dimensions / Indicators
The Kids Count Report (U.S. - The Annie Casey Foundation 2003)	To develop a national state-by-state profile of child well-being	Indicators: Infant mortality rate Low birth weight Child death rate Teen death rate by accident or homicide Teen birthrate Percent of high school dropouts Percent of teens out-of-school and not working Percent of children living in households where no parents have full-time jobs Percent of children living in poverty Percent of families with children and headed by a single parent
The Child Well-Being Index (U.S. Land 2003)	To assess the overall direction of change in the well-being of children in the United States	7 Dimensions and 28 indicators Material well-being Health Safety and behavioral concerns Productive activity Place in community Social relationships Emotional and spiritual well-being
The International Index of Child Welfare (ICWI) (Dalirazar 2002)	To construct a holistic child welfare index based on the concept of the NGP as an indicator of child welfare	Infant mortality rate Under-5 mortality rate Under-5 malnourishment Net enrollment rate in primary school Percent of children reaching grade 5
The Child Quality of Life Index (CQLI) (Raab et al. 2000)	To assess countries' abilities to maximize specific child development goals while minimizing resource utilization	Under-5 mortality rate Youth literacy rate Chronic malnutrition Per capita income Female literacy Female age at first marriage Population per doctor
The Children's Index (CI) (Project on Human Development, Boston University, 2003)	To assess children's well-being	Infant mortality rate Gross primary enrollment rate Percent of population with access to safe water Percent of children under age 5 suffering from moderate-to-severe nutritional wasting
The Child Welfare Index (CER 2004)		Infant mortality rate Life expectancy at birth Urban population Underweight births Maternal mortality rate Children vaccinated Number of physicians Health expenditure Private and Public health expenditure Out of pockets health expenditure Pupil teacher ratio in primary Early child development Gross enrolment in secondary education Gross national income per capita Availability of TLC Number of computers in use Internet users Population with access to sanitation

The Annie Cassie Foundation publishes a widely recognized index of children's wellbeing in their annual publication KIDS Count. The index ranks all States for overall performance on a set of 10 indicators. These ranks are obtained by converting the numerical values for each indicator into standard scores. Another interesting initiative is being lead by Prof Kenneth Land, from Duke University. Land (2003) suggests an alternative index to measure the trend of quality of life of American children in the past 20 years using seven domains and 28 social indicators. The index is calculated by equally weighting the average of the seven domains.

At the international level, the International Index of Child Welfare (Dalirazar 2002), the Child Quality of Life Index (Raab et al. 2000), and the Children's Index (Project on Human Development, Boston University, 2003) constitute attempts to measure children's wellbeing worldwide. The International Index of Child Welfare is calculated by obtaining the simple average of the relative National Performance Gap³ for the five indicators. A second index is the Child Quality of Life Index, which was developed using a linear programming approach to measure the relative efficiency of countries in delivering child quality of life. The index is based on an input and output paradigm. The outputs indicators or goals describe child quality of life, and the input indicators constitute conditions that determine child quality of life. The authors found that Sub Saharan countries despite their smaller levels of outputs are more efficient: in fostering child quality of life than countries with comparable outputs and larger resources or inputs. Finally, the third index is the Children's Index. This index assesses children's wellbeing using four child related social indicators. Standard scores are averaged to create an index of wellbeing, where a higher value indicates poorer conditions for children. These indices have not been widely used and constitute a one-time approach.

(3) The NPG compares a country's performance on three basic indicators: percentage of children adequately nourished, percentage of children being educated to at least grade 5, and percentage of children surviving to age 5. To calculate the NPG, data for a number of countries—including high-income countries—are plotted on a graph on which one axis is always GNP per capita. Using a least-squares regression method¹⁶ a fitted line is calculated. The fitted line establishes the possible level of fulfilment for each indicator at any given level of income per capita. The NGP (or average achievement) is obtained by calculating the difference between the expected level (fitted line) and the actual country's performance

To sum up, first, most indices presented here use similar domains and indicators. The selection of the indicators, however, depends on the purpose of the index. Second, regarding the methods used to calculate the indices, most use simple averages of social indicators, although more complex calculations are also used. Third, despite some sectoral reports on children's condition, we are not aware of any indices of child wellbeing that apply comprehensively to the Mediterranean region. The indices reviewed only provided insights as to how to construct an index to measure child wellbeing in the Mediterranean region.

In order to look at ways to measure child wellbeing in the Mediterranean region, we looked at the ways in which the wellbeing of a population has been measured in general. The best measure of wellbeing is the Gross Domestic Product – or GDP per capita. GDP⁴ is widely used as an indicator of the average level of wellbeing of a population in a country, but in many aspects it is badly flawed.

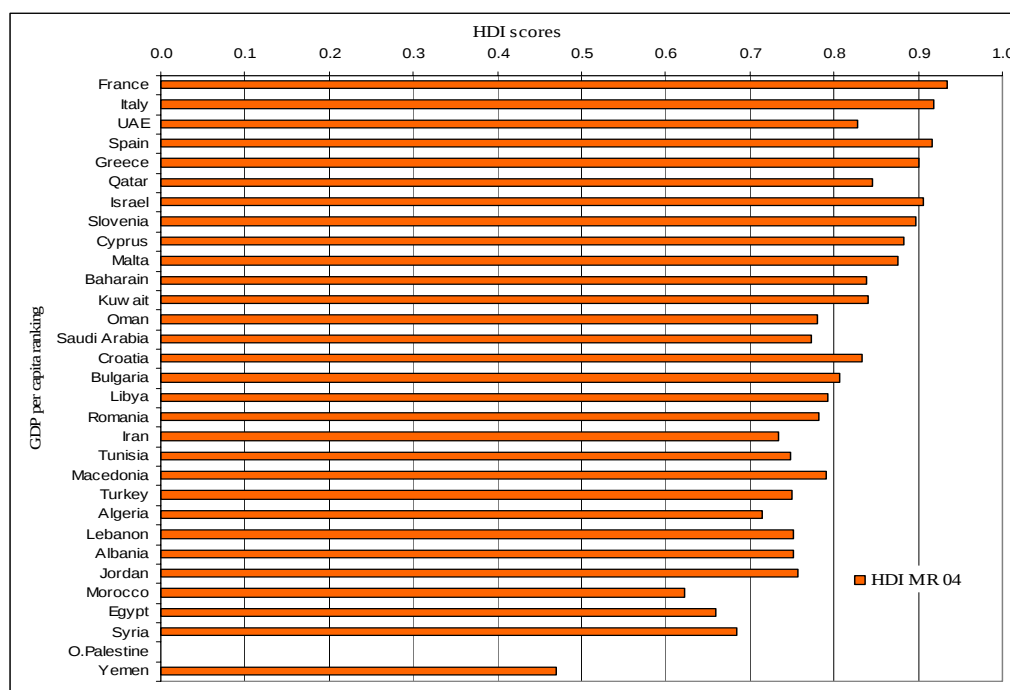
It has long been argued that not necessarily the GDP per capita is a good indicator of the average level of wellbeing of the population. In a democratic country, in which a government represents the preferences of the population, and in which all markets work well, one could argue that GDP per capita is an adequate index to represent the average level of well-being of the population. But in dictatorships, where large sums of money are spent on national security, the level of well-being of the population may be well below that of a country with a similar GDP, but with less military expenditures. In countries where the political system is captured by a few elites, most resources may accrue to the rich, leaving lots of people in poverty, or inefficient governments may collect a lot of tax money, but may fail to deliver high quality public education and health services. In all such cases, the average amount of resources available per person is a poor indicator of average levels of wellbeing. In short, GDP per capita does not address any of the distributional issues nor measures any other dimensions of wellbeing.

(4) The GDP represents the total value of all goods and services produced in a country. In other words, it is the sum total of all resources available to buy whatever "goods" the country's population wants. These goods include all market goods, such as food, clothing, housing, or automobiles. They include private desirables, such as good health and high education levels, and public goods, such as infrastructure, clean air, and national security

The shortcoming of the GDP per capita led to a long search for more comprehensive indicators that capture some of the aspects of wellbeing other than income. The “Physical Quality of Life Index” (Morris 1979) was an early attempt to construct such an index. Here, the physical quality of life index (PQLI) combines three dimensions of wellbeing that are deemed to adequately represent an overall notion of wellbeing of a country’s population. These three dimensions are infant mortality, life expectancy at age 1, and basic literacy. A number of comments can be made about this early attempt to replace GDP per capita by an index that better captures the average overall wellbeing of a population. First, while the measure appears comprehensive, incorporating three important aspects of wellbeing, the first two (infant mortality and life expectancy) are closely related. Second, though some dimensions of wellbeing are included, economic wellbeing – or income per capita – is not. This appears to be a serious shortcoming. While it is possible to argue that “money is not everything”, it is hard to argue that “money does not matter”. The level of total resources available in a country per capita, even if unequally distributed or in part squandered on undesirable public projects, does give a rough indication

of the average level of well-being of a population that cannot be captured by health and education indicators alone. Thirteen years after the PQLI was first presented in a preliminary report⁵, the United Nations Development Program published, in 1990, its first Human Development Report. Following the same arguments as Morris against the use of GDP per capita as the sole indicator of human well-being, but acknowledging that “a decent living standard” is important, UNDP proposed the “Human Development Index”. Three indicators (life expectancy, literacy and GDP per capita) are scored on a scale from the worst to the best possible outcome and then combined in one index⁶. The resulting HDI scores are subsequently used to rank countries from good to bad performers. The HDI has been refined to include other important aspects of a society’s wellbeing. For instance, the adult literacy indicator of the original HDI is replaced by a weighted average of adult literacy, and school enrolment data to also represent the knowledge dimension for younger cohorts. In addition, a number of extensions (Human Poverty Index, Gender Development Index, etc) have also been developed. Figure 1 shows the HDI scores for the Mediterranean countries ranked on their GDP per capita.

Figure 1. Human Development Index for the Mediterranean countries



Notes: Authors own calculation of the HDI for the Mediterranean countries. Data from World Bank database. When we compared the results of our HDI ranking to the ranking presented in the most recent UNDP Human Development Report (2003) slight differences were apparent. These variations reflect the different data sources used to develop the rankings. The data used for the HDI comes primarily from UN agencies, while the data for this report comes from the World Bank. In addition, the data used for this year is more current than that for the HDI. No sufficient data was available to calculate the HDI MR for four countries Serbia, Iraq, Bosnia and O. Palestine.

Figure 1 clearly shows that Bosnia, Greece, Malta, Macedonia, and Romania, among others, do far better on their human development ranking than on their income ranking, showing that they have directed their economic resources more toward some aspects of human progress. But, Algeria, Oman, Saudi Arabia, and United Arab Emirates, among others, do considerably worse on their human development ranking than on their income ranking, showing that they have yet to translate their income into corresponding levels of human development. Furthermore, Figure 1 illustrates the wide variation in human development achieved by countries in the region. France attained an HDI value above 0.9, whereas Yemen did not reach 0.5. This difference is not surprising because Yemen is the poorest country in the Mediterranean region (and one of the poorest of the world), whereas France is one of the richest countries in the region and the world. Overall, there is little homogeneity in the level of human development attained across the Mediterranean countries. Most European Union member countries cluster at top while Middle East and North Africa countries at the bottom, and Eastern European countries dispersed in between.

The HDI proved to be useful for the construction of a comprehensive child welfare index. In the paper “Measuring child wellbeing in the Mediterranean” the HDI and its extension indices (HPI, GDI, etc) were adapted to represent child wellbeing levels. The resulting indices were the CWI, CDI, CGI. Following the publication of the CWI, the MedChild Institute commissioned to Centro Europa Ricerche (CER 2004) the development of an alternative methodology to the CWI. CER used a different methodological approach to construct the child wellbeing index for the Mediterranean region. CER’s methodological approach supported the application of the principal component analysis to calculate the index. The principal component analysis is a tool of multivariate statistics that make it possible to break down the total variability of a multidimensional phenomenon and analyze the relations between the variables determining it. They selected nineteen indicators. To calculate such index each of the indicators was processed so as to make the intervals of variation as homogenous as possible. A major drawback of such an approach to constructing indices is that it is assumed that the data can speak for themselves. From this assumption it is often wrongly concluded that the resulting indices are “value free”. Unfortunately this is not the case. First of all, researchers using this method need to decide which indicators to include, and which ones to exclude. This inevitably introduces an aspect of value: the included indicators (dimensions of child wellbeing) are judged to be more important than the excluded ones.

Secondly, the weights resulting from this approach do indicate implicit value judgments, just as other, so-called more subjective”, approaches. There is just no way around this: when various dimensions of well being are condensed to a one-dimensional index of well-being, the weights used to combine these dimensions into one will reflect (implicit) value judgements. Finally, when we allow “the data to speak for themselves”, we will find out that next year’s new data will say something different than this years’ data did: the weights resulting from the data will be different from year to year. This will make it very difficult to make year-to-year comparisons, unless it is decided that from now on the weights from one year will be maintained for the future. This would enter yet another arbitrary element in this so-called “objective” approach.

2. Proposed Child Wellbeing Indices

In the paper “Measuring Child Wellbeing in the Mediterranean region” (van der Gaag/Dunkelberg 2004) we proposed four alternative indices for measuring children’s wellbeing in the Mediterranean region. The first three indices, the Child Welfare Index (CWI), the Child Poverty Index (CPI), and the Child Gender-Related Development Index, consist of adaptations of the HDI and its extension indices: the Human Poverty Index (HPI-1) and the Gender-Related Development Index (GDI).

The fourth index, the Child Development Welfare Index (CDWI), is an age-specific child welfare index, which measures achievement in child welfare at different stages of development. In this synthesis paper, we update the indices and present two additional indices: one that focuses on youth/adolescents and the other, which focuses on family environments. The first three indices proposed, as adaptation of the HDI, are constructed using the three basic dimensions of human development: a long and healthy life (or in this case childhood), knowledge, and a decent standard of living. Unlike the HDI, for the construction of the child well-being indices we used child focus indicators, which are direct measures of children welfare such as infant mortality rate. Table 4 shows the indicators used for the index calculations.

Our paper “Measuring Child Well-Being in the Mediterranean region” explains in detail the method used for calculating the indices. Briefly, once the indicators have been identified, these are first transformed into a dimension index.

Table 3. The Mediterranean countries

Arab countries	North Africa	East Europe	Western European/OECD
Bahrain	Algeria	Albania	Cyprus
Iran	Egypt	Bosnia	France
Iraq	Libya	Bulgaria	Greece
Jordan	Morocco	Croatia	Italy
Kuwait	Tunisia	Romania	Malta
Lebanon		Serbia and Montenegro	Spain
Oman		Slovenia	Israel
Qatar		Macedonia	
Saudi Arabia		Turkey	
Syria			
United Arab Emirates			
Yemen			
O.Palestine			

Table 4. Indicators used to construct the Propose Child Wellbeing Indices

Dimensions	HDI	CWI	CGI	CDI	ECWI
Long Healthy Life	Life expectancy at birth	Under five mortality rate	Under five mortality rate, girls & boys	Under five mortality rate	Under five mortality rate
Knowledge	Gross enrolment rate and adult literacy rate	Gross enrolment rate (primary & secondary)	Gross enrolment rate (primary & secondary) boys& girls	Out of school children	Gross enrolment rate in early child development
Decent Standard of living	GDP per capita	GDP per capita	GDP per capita	Population without access to water /Child poverty/ Percent of children underweight	GDP per capita

To construct the dimension index, a maximum and a minimum value are chosen for each underlying indicator. These goalposts are either predetermined by the HDI (such as GDP per capita) or determined using a minimum value of zero and a maximum value, which is given by the highest score in that particular indicator. For those indicators with values higher than a hundred percent (some countries report having enrolment rates higher than a hundred percent) we applied a value of 100 percent. Once we identify a maximum and minimum value, we proceed to calculate the dimension index using the formula given in the HDR (2003; 341). Like in the HDI, performance in each dimension is expressed as a value between 0 and 1. The dimension indices are then combined into a final un-weighted index. Results in the HDI are used for comparisons with scores on the child wellbeing indices.

2.1. The Child Welfare Index

The first index we proposed is the Child Welfare Index (CWI). This index is a direct adaptation of the Human

Development Index. The CWI that we proposed follows the HDI example, except that we use a health measure that is relevant for children – under five mortality -, we use a knowledge measure that is relevant for children – primary and secondary school enrolment - and for a lack of better, we use again GDP per capita as a measure of economic wellbeing. The objective of this index is to compare a country's average achievement in child welfare vis a vis the country's average achievement in overall human development (HDI), and GDP per capita.

To calculate the CWI, we convert our selected indicators into dimension indices. Since under-five mortality rate as an indicator does not measure a country's achievement in promoting a healthy childhood, we subtract 1 minus the under-mortality dimension index to obtain its complement – the probability of surviving by age five. By doing so, we are able to use under-five mortality as an indicator that measures a long and healthy childhood. To construct the education dimension we only used one indicator: combined enrolment rates in primary and secondary education. We did not use literacy levels as there is no readily available data on children's literacy

skills. When available, outcome indicators of educational achievement in school-age children (such as children's functional literacy skills in PIRLS, PISA) should be used to enhance the education dimension of the CWI index. Figure 2 shows how countries score on the CWI compared to GDP per capita.

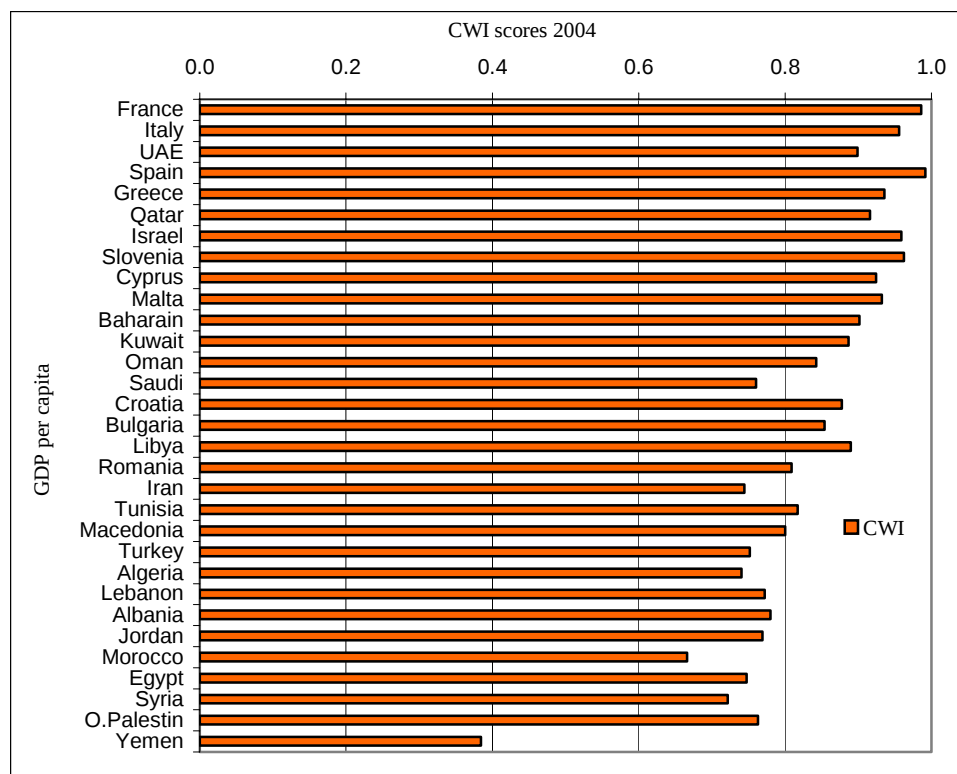
CWI shows something like the HDI but for children. When we compare CWI scores to GDP per capita, we see few modifications in the ranking, with some countries performing worse and others better. Among the countries that perform poorly on the CWI compared to GDP per capita are France, Italy, Greece, Kuwait, Croatia, Saudi Arabia, Jordan, Turkey, and Syria. Among the countries that perform better are Slovenia, Spain, UAE, Tunisia, Albania, Bahrain, Egypt, Libya, and Oman. The top three best performers are Spain, France and Slovenia. CWI ranking for Slovenia, Tunisia, Egypt, Oman continue to out perform their ranking in HDI while Greece, Croatia, Qatar, Kuwait, Saudi Arabia, Jordan, Turkey, and Syria ranked worse compared to the HDI. In sum, the CWI ranking captures differences but it is not extremely different from overall wellbeing (as measured by the

HDI) in a particular country. We need to go further into the indicators that put the focus on children.

In order to fully capture children's material wellbeing specific child indicators need to be used. The CWI index could be further improved with child poverty data as an indicator for economic wellbeing. Child poverty is a more directly related indicator to children's economic welfare than GDP per capita. The CWI uses GDP per capita as proxy for average incomes of families with children. As Mickelwright & Stewart (1999) explain a serious analysis of trends in average of incomes of families would need an indicator more directly related to the household sector, and with that sector to children.

Child poverty research shows that the impact of poverty on outcomes of children is particularly pervasive. Poverty may have detrimental effects in almost all areas related to children's healthy development. In the past year, several governments and organizations have emphasized the need to collect and make available child poverty data. The European countries have agreed to take the appropriate steps for poverty reduction and look at issues of child poverty as a priority (ATD Fourth World, 2004).

Figure 2. The CWI Ranking of Mediterranean Countries



Note: For Serbia, Iraq, and Bosnia, the data were insufficient for calculation. Author's calculations.

Source: World Bank internal database. Data on GDP per capita for 2003, data on under-five mortality for 2002. Data on primary and secondary enrolment UNESCO Global Education Digest 2001/2002

The Luxembourg Income Study (LIS) and the OECD organization have also produced a number of papers on child poverty developed nations. UNICEF has been the most active organization leading such movement at the international spheres. The State of the World's Children Report for 2005 focuses on child poverty. The report states that Child poverty is "rarely differentiated from poverty in general and its special dimensions are seldom recognized". UNICEF agrees that the widely available measures such as World Bank \$1 a day or UNDP's HDI, have not been specifically designed to assess child poverty nor quantify how many children live in poverty.

UNICEF (2004) comes up with a working definition of child poverty that includes other dimensions of poverty which go beyond material deprivation, spiritual and emotional deprivation. Yet, in the report, UNICEF agrees that many dimensions of poverty are difficult to compress into a single measure. *The State of the World's Children* report refers to a study commissioned by UNICEF to Gordon et al (2003) a study to look at child poverty in the developing world. The authors measure the different deprivations (nutrition, drinking water, sanitation, health, shelter, education, and information) that affect children in the developing countries using demographic household surveys. Absolute poverty is defined as the prevalence of two or more severe deprivations. Of the 46 countries studied in four regions, only three – Egypt, Morocco, and Yemen - are Mediterranean countries. The study concludes that fifty seven percent of rural children and nine percent of urban children in the Middle East and North Africa live in absolute poverty. These studies have been instrumental to focus international attention on child poverty. Still little can be said on a comparative basis on child poverty in developing countries beyond a limited number of

studies (Gordon et al 2003; Cornia 2002; UNICEF 2005a; Savethechildren Young Lives an International Study of Childhood Poverty). There are few reports on children poverty in the Arab world. Given the limited data, UNICEF *The State of the World's Children* report still does not include child poverty rates in their statistical annex tables. Table 5 shows available poverty data for some Mediterranean countries. At this point in time it would be impossible to replace GDP per capita with child poverty rates to enhance the CWI index. As an example of what could be done, however, we used existing child poverty data to recalculate the CWI for a few Mediterranean countries. For the calculations we used the complement of child poverty rates (i.e. child poverty rates minus one) as the indicator for a decent standard of living. Comparisons of CWI scores with child poverty data between countries can not be made because child poverty is defined differently by the different sources (UNICEF 2000; Gordon 2003; Rainwater & Smeeding 2003). Figure 3 shows the CWI calculations when using GDP per capita and child poverty.

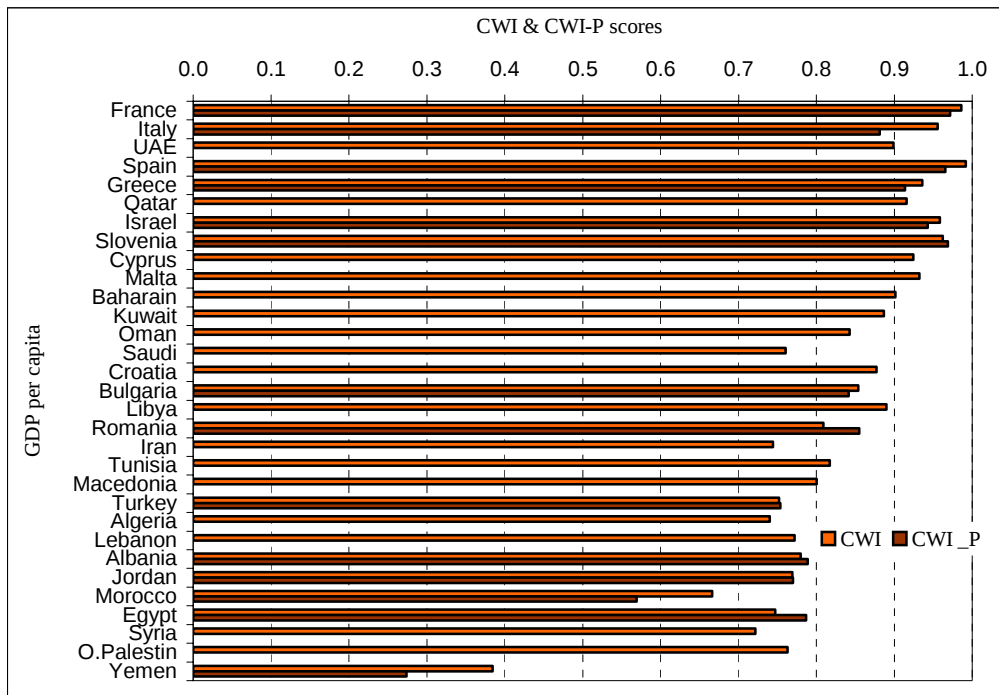
Figure 3 shows the differences in CWI scores when GDP and child poverty are used as indicators of decent standard of living. When child poverty rates are used as compared to GDP per capita, there are variations in the CWI ranking. Slovenia performs better than Italy, Spain, Greece, and Israel. These result indicate that GDP per capita as an indicator for decent standard of living does not accurately portray children's economic wellbeing. GDP per capita is a broader measure of economic development and may not reflect the "full" picture for children. As Atkinson (1998) emphasizes, we need to develop indicators of economic performance which are sensitive to the needs of children and families.

Table 5. Child poverty rates for some Mediterranean countries

Country	Child Poverty rate	Source
France	7.2	Rainwater & Smeeding 2003
Italy	19.5	Rainwater & Smeeding 2003
Spain	11.9	Rainwater & Smeeding 2003
Greece	12.3	UNICEF 2000 A League Table of Child Poverty
Israel	11.3	Rainwater & Smeeding 2003
Slovenia	6.9	LIS data for 1999*
Romania	10.0	LIS data for 1997
Turkey	19.7	UNICEF 2000 A League Table of Child Poverty
Albania	22.6	World Bank (1997) data for Albania, data refers to urban areas only
Morocco	45.6	Gordon et al 2003
Egypt	18.1	Gordon et al 2003
Yemen	65.3	Gordon et al 2003

* source: <http://www.lisproject.org/keyfigures/povertytable.htm>

Figure 3. CWI With Child Poverty as an Indicator – Selected Countries



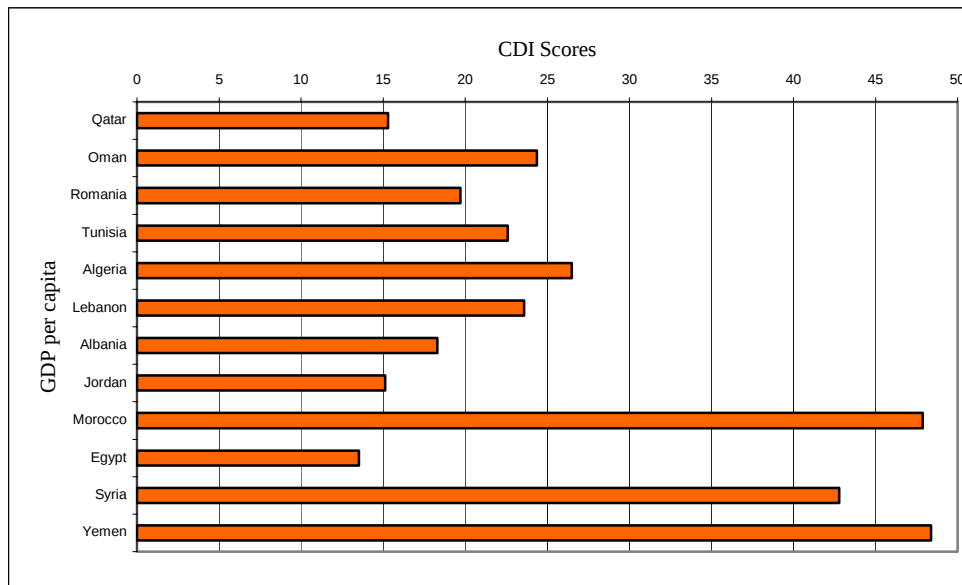
Note: For countries not shown, there were no data on child poverty. Poverty data source: UNICEF (2000); Gordon et al. (2003) Luxembourg Income Study; Rainwater & Smeeding 2003. Author's calculations.

2.2. The Child Deprivation Index

A second index suggested is the Child Deprivation Index (CDI). Like the Human Poverty Index (HPI-1), the CDI measures deprivations in three basic dimensions of child development; vulnerability to death at an early age, exclusion from participation in the education system, and lack of access to a decent standard of living. The CDI is calculated using the formula provided by UNDP to calculate the HPI-1. The percentage indicators are raised to the power of three, in order to give more weight to the dimension in which there is the most deprivation. In order to calculate the CDI we replace adult illiteracy by the percent of children out of school and the probability at birth of not surviving to 40 by the probability of not surviving by age five. To calculate the dimension of standard of living we used percentage of the population without access to water and percentage of the children underweight for age. Figure 4 shows CDI scores for a few Mediterranean countries. Figure 4 shows that Yemen's score on the CDI is extremely high followed by Morocco and Syria. Oman and Algeria also perform poorly on the CDI. This index could be improved if out of school data is used to measure the knowledge dimension rather than school enrolment rates. In recognition of the fact that deprivation is a relative concept, UNDP used a different human poverty index to

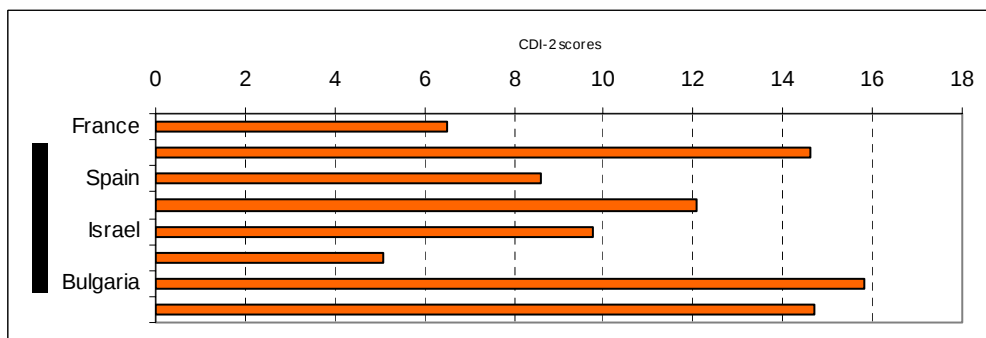
measure deprivation in OECD countries: the Human Poverty Index-2. In addition to the three dimensions of wellbeing captured in the HPI-1, the HPI-2 adds social exclusion as a fourth component of wellbeing. The HPI-2 uses the rate of long-term unemployment as the indicator for social exclusion. Social exclusion could also be incorporated into the CDI. The literature on children wellbeing in developed nations regularly addresses social exclusion as a key dimension which to assess progress. Like in the HPI-2, social exclusion in the CDI could be measured through an indicator similar to unemployment, which captures percent of households with children – under age 15 - with one or both adults unemployed. The literature shows that parental unemployment restricts children access to economic welfare but also to a range of services such as education, health, and recreation. Low parental income and wages translate into low parental access to services, and thus poor access to services for their children. Reduced access to social services cuts down children's immediate and future opportunities, which leads to social exclusion and the inter-generational transmission of poverty. As an example of what else could also be done with child poverty data, we recalculated the CDI scores using child poverty data instead of percentage of the population without access to water and percentage of the children underweight for age. Figure 5 shows the CDI results using child poverty as an indicator.

Figure 4. The CDI Ranking for Mediterranean countries



Note: For countries not shown, data was insufficient. Authors' calculations. Source: World Bank Internal Database 2004; UNICEF 2004, UNESCO 2004

Figure 5. CDI Ranking using Child Poverty as an Indicator- Some Countries



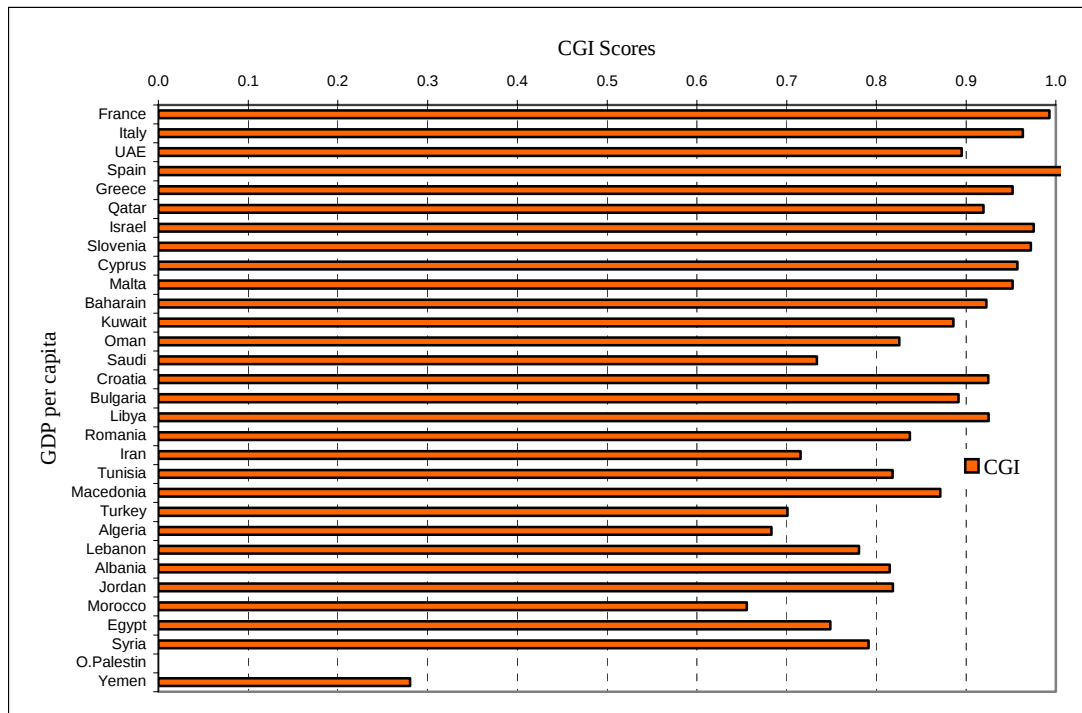
Note: The higher the score, the poorer a country performs in the CDI. Author's calculations

2.3 The Child Gender Index

The third index proposed is the Child Gender Index (CGI). The CGI is calculated similarly to the Gender Development Index GDI(HDR 2003) which uses the same three indicators as the HPI-1 (longevity, knowledge, and decent standard of living) but tries to capture the differences between sexes for those indicators. Gender equality is also an important aspect of children's wellbeing. The construction of the CGI, like the GDI, involves three steps: calculation of the gender specific dimensions using the general formula; combination of the dimension indices for boys and girls

“in a way that penalizes the differences in achievement between boys and girls, resulting in an equally distributed index; and the combination of these equally distributed dimension indices into a single index by means of a simple average. Note that in the case of the CGI, the share of girls and boys is calculated according to the age group covered by the underlying indicator. For example, for under-five mortality rate, we calculated the population share of girls ages 0 to 5; for combined enrolment rates we calculate the share of the girls population in the school age range. Unlike the GDI, which uses an estimated earned income by gender, the CGI refers to GDP per capita. Figure 6 shows the CGI ranking of the Mediterranean countries.

Figure 6. The CGI Ranking of Mediterranean Countries



Note: For Serbia, Iraq, Bosnia, and O. Palestine the data were insufficient for calculation. Author's calculations. Sources: World Bank Internal Database 2004; WHO 2004; UNESCO 2004

Figure 6 shows some reversals in performance using the CGI. Among the countries that perform worse on the CGI, compared with the CWI, are Kuwait, Oman, UAE, Qatar, and Tunisia. Among the countries that perform better are Israel, Bulgaria, Macedonia, and Romania. As expected, Middle East and North African countries do comparatively worse on the CGI than on the HDI and CWI. On the other hand, overall, Eastern Europe countries achieved better scores on the CGI. The three proposed indices are adaptations of UNDP indicators to a child welfare context. The indices to be presented hereafter are the result of a literature review on aggregate measures of child wellbeing. We present three age-specific sub-indices: a preschool; school age, and youth index. For each sub index we maintain the three dimensions: a decent standard of living, long and healthy childhood, and knowledge. An additional index that focuses on the family environment is also proposed.

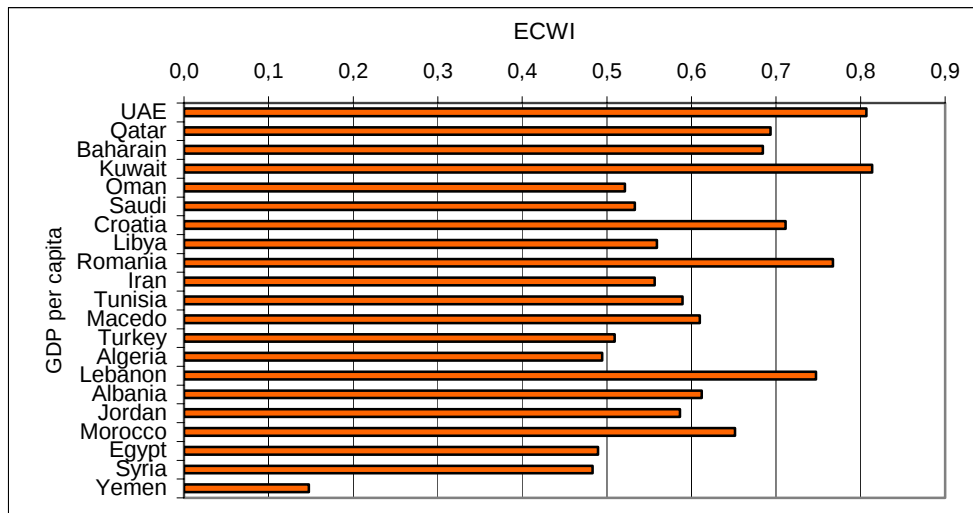
2.4. Age-specific child developmental wellbeing indices

The literature on child development explains that children go through different stages in development. At

each stage, the child experiences distinct and specific needs. These stages can be clustered in 3 main “general” stages: early childhood, school age, adolescent and youth. The child development index consists of 3 sub indices: the early childhood wellbeing index, which addresses children up to the age of 5, the school age wellbeing index, which addresses children up to the age of 14; and the youth wellbeing index that covers children up to ages 18 to 24. In each case we work with age specific indicators. There is always a decent standard of living indicators, one or more measures that will indicate the healthiness of children, and there is also a knowledge and educational dimension. Like with the CWI, GDP per capita should be replaced by the percentage of children in each specific age group living and growing in poverty.

The early childhood wellbeing index (ECWI) assess country's achievement toward early child well-being (for children ages 0-5) through five indicators: the percentage of children with adequate nutrition, survival rate by age five, percentage of children in ECD programs, and GDP per capita. Figure 7 shows the results of the ECWI ranking for the Mediterranean countries. Figure 7 shows some slight modifications in the ECWI ranking of countries, compared with the more comprehensive CWI. For instance, the UAE ranks better, whereas countries such as Egypt, and Jordan rank worse.

Figure 7. The EWCI Ranking of Mediterranean Countries



Note: For countries no final score on EWCI shown, data was in sufficient. Sources: World Bank Database 2004; UNESCO 2004

Figure 8. The Youth Welfare Index Ranking for Mediterranean countries



Note: For countries not shown, data was in sufficient. Data for O. Palestine refers to West Bank Gaza. O. Palestine, Serbia, Bosnia and Iraq are not ranked on HDI. Sources: World Bank Database 2004; UNESCO 2004

The school-age wellbeing index (SCWI) refers to older children (ages 6-14) and measures the welfare through three indicators: the percentage of children ages 5 to 14 who survive (mortality rate ages 5 to 14), completion of primary school, and GDP per capita.

The youth wellbeing index (YCWI) assesses youth wellbeing through three indicators: youth unemployment rate; youth literacy rates; and youth average rate of births. Figure 8 presents the results of the YWCI ranking of Mediterranean countries.

The ECWI, SWCI, and YCWI are alternative indices by themselves; but they can also be combined into one index. These indices offer important comparison

milestones to GDP per capita, the HDI, and CWI. Given that the indices focus on a specific age group, they offer important comparisons to the overall wellbeing of all children ages 0 to 18; vis a vis school age children; or vis a vis human development.

2.5. The Family Environments Index

A fifth index suggested by Levine (2004) is the Family Environments Index (FEI). This index comprises at least two readily available variables: the average level of educational attainment of married women in each country and the total fertility rate (the number of children

born to women aged 15 to 49). The first would be an indirect estimate of maternal schooling, which has been shown in many countries to predict the use of health and other services for children even when other socioeconomic factors are controlled. The second indirectly estimates the number of children in households among whom resources have to be distributed. Children whose mothers have more education and fewer children would be expected to fare better in health, schooling, and other indicators of personal success than those whose mothers had less schooling and more children. This index could be used within as well as between national populations, particularly as a measure of child welfare promoting factors at the domestic household level as Levine (2004) explains.

2.6. Limitations

As with other aggregated indices, the indices proposed have some limitations. Like any welfare index, the indices are snapshots taken from a particular time and from a particular point of view. As snapshots they include only a limited number of dimensions of wellbeing. The dimensions that are used most often are income, health, and education, but one could easily argue political freedom, equality, or environmental dimensions are equally important. Not only are a few dimensions included (and many left out), but also choices have to be made on how to combine these dimensions into one single index.

The arbitrariness in the construction of the indices, inherited to all such efforts. In order to score each of these outcomes on a scale of 0 to 100, the best possible and worst possible outcomes need to be defined. While 100 percent literacy can be defined as the best possible score for basic literacy, no such objective measure is available for the best possible life expectancy or the worst possible infant mortality rate. Thus, some more or less arbitrary boundaries have to be set for the scales of these three dimensions of wellbeing. This arbitrariness will be reflected in the final index. Other choices would have led to a (often slightly) different index. Also, the three scores get an equal weight in the final index. That too is an arbitrary choice. Implicitly, this puts a relative value on each of the three dimensions of wellbeing.

An index such as the CWI pays little attention to distributional issues. Given that countries can vary widely in their levels of inequality (between the poor and non poor, among regions, among ethnic groups) it is important to combine indicators of average welfare levels with distributional information. Comparative analysis of averages across countries might be misleading as averages conceal differences within countries. A country

with a very unequal distribution of welfare may rank similarly to a country with the same average income per capita but a more equal distribution of its wealth.

It has recently been shown that a widening gap between the poor and the better off children could accompany progress in the national average of child mortality rates. Studies show that some countries can do well in both national averages and distribution of malnutrition, whereas many others perform well in one dimension and poorly in the other (Wagstaff & Watanabe 200; Gawtkin 2000, Wagstaff 2003).

The quality of the CWI measures could be improved by incorporating breakdowns by age, ethnicity, and regions, and more child-focused indicators. Unfortunately, such data is not collected regularly and thus difficult to incorporate in an index, which is designed for monitoring children's welfare at the national level and on annual basis.

3. Conclusions

First, an index that measures child wellbeing in the Mediterranean region can and should be constructed and published annually. A child wellbeing index (CWI) should be constructed using UNDP's approach for constructing the HDI. As extensions of such index, a child deprivation, child gender, or even developmentally sensitive indices that assess specific developmental stages (such as the EWCI, SCWI, YWI) can also be developed.

Second, improving the quality of the data (indicators) should receive high priority. Clearly, if the focus is on child wellbeing, any index that does not include information on child poverty is seriously flawed. A first priority is, therefore, to collect comparable data on child poverty in all Mediterranean countries.

Third, the value of any such index that measures child wellbeing in the region will be realized only if it is used to launch further research. In-depth sector-specific studies focused on how well current policies and programs serve the needs of children in Mediterranean countries should be conducted

References

- Aleshina, N & Redmond, G 2003. How high is Infant mortality in Europe and Central Europe and the CIS. Innocenti Working Paper no 95. Florence: UNICEF Research Centre.
- ATD Fourth World 2004. Valuing Children, Valuing Parents. Focus on Family in the fight against child

poverty in Europe. A European discussion paper prepared by the International Movement ATD Fourth with financial support from the European commission. July 20004.

Ben Arie et al 2001. Measuring and Monitoring children's Wellbeing. Boston: Kluwer Academic Publishers.

Centro Europa Ricerche 2004 "Towards an estimate of child welfare". Comments on the paper Measuring Child Wellbeing in the Mediterranean Countries. Presented at the Seminar on "How to build a child wellbeing and start to apply it in an extended Mediterranean area". Rome 2004.

Cornia, A et Sipos, S (Eds) 1991. Children and the Transition to the Market Economy. Averbury Academic Publishing Group, England.

Department for Work and Pensions 2003. Measuring Child Poverty. Available on line at:
<http://www.dwp.gov.uk/consultations/consult/2003/childpov/final.pdf>

Gordon, D. et al 2003. Child poverty in the developing world School for Policy Studies, University of Bristol and Peter Townsend, Centre for the Study of Human Rights, London School of Economics and Political Science. October 2003. The Policy Press
_____. 2003a. The Distribution of Child Poverty in the Developing World. Report to UNICEF. July 2003

Human Development Report 2004

HM Treasury 2004. Child poverty review 2004. Available on line at
http://www.hm-treasury.gov.uk/spending_review/spending_sr04/associated_documents/spending_sr04_childpoverty.cfm

Levine 2004. Comments on the paper Measuring Child Wellbeing in the Mediterranean Countries Toward a Comprehensive Child welfare index prepared for the conference on the Mediterranean Child, Genoa, Italy January 7- 9 2004

Micklewright, J 2002. Social Exclusion and children A European View for a US Debate. Innocenti Working Paper No 90. Florence: UNICEF Innocenti Research Centre.

Micklewright, J & Stewart, K 2000. Child Wellbeing in the EU and Enlargement to the East. Innocenti Working Papers N 75. Florence: Innocenti Research Centre.

OECD 2003. Society at a Glance. OECD Social Indicators

Rainwater, L & Smeeding, T 2003. Poor Kids in Rich Countries: America's Children in Comparative Perspectives. New York. Russell Sage Foundation Publications.

Savethechildren Young Lives An International Study on Childhood poverty
<http://www.younglives.org.uk/data/publications/index.htm>

UNICEF 2004. The State of the World's Children 2005 Childhood under Threat. UNICEF, UNICEF House, 3 UN Plaza /new York, NY. 2004a.

Innocenti Social Monitor Report 2004. Economic growth and child poverty in the CEE/CIS and the Baltic states. Innocenti Research Centre. Available online at
http://www.unicef-icdc.org/cgi-bin/unicef/Lunga.sql?ProductID=366__ 2001 UNICEF Global Database on child Malnutrition. Downloadable
<http://www.childinfo.org/eddb/malnutrition/database1.htm>

UNESCO Global Education Digest 2004. Available at:
http://www.uis.unesco.org/ev_en.php?ID=5727_201&ID2=DO_TOPIC

Van der Gaag, J & Dunkelberg, E 2003. Measuring Child Well-Being in the Mediterranean Countries. Toward a Comprehensive Child Welfare Index. Paper presented at the Children and Mediterranean Conference January 2004. Presentation at the Seminar on "How to build a child wellbeing and start to apply it in an extended Mediterranean area". Rome 2004.

World Bank 2004 Internal Database GDF & WDI central (August 2004) Downloaded December 2004

World Health Organization 2004. World Health Report Changing History. Available at
<http://www.who.int/whr/2004/en/>