



Children in Viet Nam – who and where are the poor?

**The development and application of a
multidimensional approach to child poverty**

November 2008

Executive Summary

Since 2006, a Government steering committee under the leadership of the Ministry of Labor, Invalids and Social Affairs (MOLISA) and with the participation of the Institute of Labor Science and Social Affairs (ILSSA), the General Statistics Office (GSO) and several line Ministries, has been working on the development of a multidimensional approach to measure and understand child poverty in Viet Nam. This initiative aims to highlight the specific nature of poverty among children, and to strengthen the evidence base for effective national policies to reduce child poverty.

UNICEF has given technical and financial support and the University of Maastricht (The Netherlands) provided technical assistance to the process. A series of consultation workshops was organized to facilitate the involvement of various stakeholders in discussing the different dimensions of child poverty in Viet Nam and in formulating relevant indicators. The resulting approach to measure child poverty has been applied by the University of Maastricht using existing national survey data. The key findings and lessons learned from this exercise are laid out in the present research report

Why measure child poverty?

Several reasons can be put forward for the importance of a child-focused approach towards poverty.

- Children are at a higher risk of poverty and are differently affected by poverty than adults. Children have different dietary requirements, for example, and the role of education is vital during their stage of life. A child-specific approach can highlight and emphasize those needs that are especially crucial for children and their development;
- Children are largely dependent on their direct environment for the provision of their basic needs and rely on the distribution of resources by their parents, household or community members. Child-focused poverty measures are crucial to provide information about this distribution and thus about poverty at the child-specific level;
- If children grow up in poverty, they are more likely to be poor in adulthood as well. Poverty often manifests itself as a vicious circle that children are trapped in

- from birth onwards. Reducing child-poverty as a short-term objective would therefore also reduce adult poverty in the long run;
- Finally, a generally accepted and workable definition and measurement method of child poverty is an important tool for both academics and policy makers. It does not only offer the opportunity to get an insight into children’s poverty status but also gives the possibility to formulate and monitor sound poverty reduction objectives, strategies and policies.

In addition to this, the conventional approaches to measure poverty on the basis of household income or expenditure also present challenges for measuring child poverty. For instance, these methods do not capture intra-household distribution and it is difficult to assign a monetary value to specific attributes of poverty such as literacy, life expectancy or participation. In sum, monetary approaches are limited to dealing with only one dimension of poverty.

The acknowledgement of the importance of taking a multidimensional approach to measure child poverty in Vietnam has led to the development of a Vietnam-specific child poverty measurement tool.

How to measure child poverty in Viet Nam?

The child poverty approach as proposed in this report has been especially developed to measure and analyze child poverty in Vietnam. The approach is child-specific, outcome-focused and country-specific and considers non-monetary aspects of deprivation that are especially relevant for children. Its multidimensional nature is characterized by the inclusion of various domains such as education, health, child labor and water and sanitation. Throughout an intensive consultation process, a conceptual framework for understanding child poverty in Vietnam was developed. In addition, the various stakeholders agreed upon a related set of poverty domains and indicators, which are considered to appropriately reflect the poverty status of children in Vietnam.

Table i Child poverty domains and indicators for Vietnam

Domain	Indicators
1. Education poverty	% of children not enrolled at the appropriate level
	% of children not having completed primary school
2. Health poverty	% of children not fully immunized
	% of children not having visited a health facility in the last 12 months
3. Shelter poverty	% of children living in dwellings without electricity
	% of children living in dwellings without proper roofing
	% of children living in dwellings without proper flooring
	% of children living in improper housing
4. Water & Sanitation poverty	% of children living in dwellings without hygienic sanitation
	% of children living in dwellings without safe drinking water
5. Child work	% of children working
6. Leisure poverty	% of children not having toys
	% of children not having at least one book
7. Social inclusion and Protection poverty	% of children not having their birth registered
	% of children with caregivers that are not able to work

Apart from measuring child poverty through indicators and domains according to the issue at stake, the approach presented in this report also provides ways of measuring child poverty at aggregate levels, by calculating a Child Poverty Rate (CPR) and a Child Poverty Index (CPI). Whereas the former indicates the overall percentage of children that is poor, the latter is a composite index score to track regional performance on child poverty in more detail.

How do we calculate the Child Poverty Rate and Child Poverty Index?

For the operationalization of the child poverty approach, we use the Multiple Indicator Cluster Survey (MICS) and the Vietnam Household Living Standard Survey (VHLSS) data from 2006. Both surveys are household surveys that provide child as well as household specific information for a number of indicators as specified in table i. The Vietnam MICS is based on the standardized MICS surveys supported globally by UNICEF and contains a range of questions focused on education, health, reproductive health, HIV/AIDS. The VHLSS follows the World Bank's Living Standards Measurement Survey (LSMS) methodology and collects information about household income and expenditures as well as non-monetary indicators. Household surveys provide data at the individual child level, allowing all deprivations to be traced back to the individual child, thereby creating the possibility to make cross-tabulations and create poverty profiles. Limitations of the use of these surveys include the unavailability of nutritional data at the time of writing, the exclusion of children not living in registered households, and the fact that different indicators provide information for children of different ages.

The selected child poverty domains and indicators form the basis for the calculation of the Child Poverty Rate (CPR) and Child Poverty Index (CPI). The CPR is a poverty headcount, referring to the proportion of children considered to be poor. To calculate the CPR, a child is identified as poor when it is poor in at least two out of the seven selected domains (education, health, shelter, water & sanitation, child work, leisure, social inclusion and protection). In turn, for a child to be identified as poor within a particular domain, s/he is not meeting an agreed-upon threshold for at least one of the indicators pertaining to that domain (cf. table i). For instance, a child who is not fully immunized is considered poor in the domain of health. When the same child also lives in a household without electricity (poor in the domain of shelter), s/he is counted as a poor child in the overall Child Poverty Rate.

The Child Poverty Index is not based on indicator poverty for individual girls and boys but starts from indicator poverty estimates at the regional level. Through the use of specific normalization methods for regional indicator poverty estimates and weighting schemes, we arrive at a composite score for every region. Regions are then ranked to indicate their relative performance with respect to child poverty.

Which children are poor in Viet Nam?

The application of the multidimensional approach for measuring child poverty in Vietnam shows that about one third of all children below 16 years of age can be identified as poor (CPR). This amounts to approximately 7 million children.

The most striking areas of poverty or deprivation are water and sanitation, leisure and health. More than one out of every three children was not fully immunized by the age of 5. Almost half of all children do not have access to a hygienic sanitation facility in their home and two thirds of all children do not have a children's or picture book to read. There are no significant differences between boys and girls. However, we do find a large urban-rural divide, with children living in rural areas experiencing a much larger degree of poverty than those living in urban areas.

Moreover, there are great regional discrepancies. Child poverty rates are highest in the northern mountainous regions, the North West and North East, and in the Mekong River Delta. The high degree of child poverty found in the Mekong River Delta is quite surprising as the region is among the better performing regions in terms of economic growth and monetary poverty. In line with the regional poverty results, the findings also suggest that ethnic minority children face a higher poverty risk than children of Kinh or Chinese majority groups. In fact, child poverty rates for these groups are 63% and 25% respectively.

The child poverty analysis in this report suggests that there are several characteristics of individual children and the households they live in that play a great role in determining the risk of poverty for children. Generally, the poverty risks for children are much higher in rural areas than in urban areas. Interestingly, estimates consistently show that there is no significant relation between the sex of the child and the probability to poverty or between the number of children or elderly in the household and child poverty. Increasing levels of educational attainment of the household head, however, go hand in hand with decreasing poverty risks in urban as well as rural areas. Children living in households whose head is employed have a lower chance of being poor. In rural areas in particular, this reduces a child's risk to be poor by at least 40 percentage points, depending on the type of occupation of the household head. The probability of being poor is higher for children who live anywhere other than the Red River Delta. Living in the Mekong River Delta and North West regions in particular considerably increases a child's chance to be poor. In fact, the probability to be poor for children living in the Mekong River Delta is 55 percentage points higher than for children living in the Red River Delta. Being of Kinh/Chinese ethnicity strongly decreases the probability of being poor in comparison to children belonging to ethnic minority groups, although this effect is more relevant in rural than urban areas. Children living in female headed households face a slightly smaller probability to be poor while children living in households that are monetary poor experience a higher poverty risk.

Table ii presents the ranking of regions according to their performance with regard to the level of child poverty (using the Child Poverty Index based on MICS data) as well as according to the level of monetary poverty (% of households living under the poverty line – based on VHLSS data).

	Child Poverty Index ranking (based on MICS data)	Household poverty ranking (based on VHLSS data)
Red River Delta	1	2
South East	2	1
South Central Coast	3	4

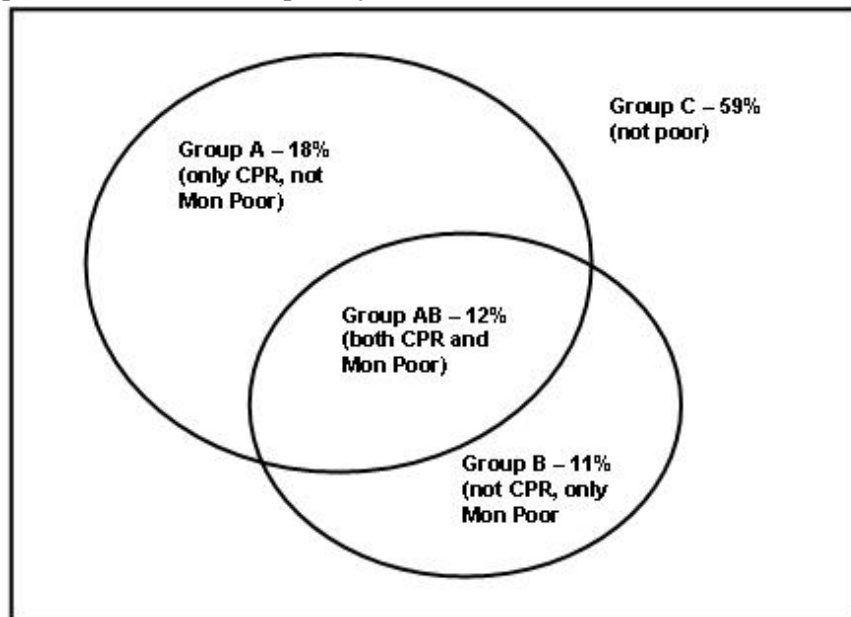
North Central Coast	4	7
Mekong River Delta	5	3
Central Highlands	6	6
North East	7	5
North West	8	8

Why measure child poverty using a multidimensional rather than monetary approach?

An in-depth analysis of the degree of overlap between the application of the monetary poverty and multidimensional child poverty approaches shows that both methods capture different groups of children. While there is a group of children that is identified as poor according to both methods, there is also a group that is only identified as poor by the child poverty approach but not by the monetary method and vice versa. Figure i uses VHLSS data to present the degree of overlap between the groups of children identified as poor by the multidimensional approach (using the Child Poverty Rate) and by the monetary approach. Group A consists of those children only identified as poor by the multidimensional measure of child poverty, group B contains those children that are only captured by the monetary approach to poverty measurement, and group AB covers those children that are identified as being poor by both approaches. Group C, finally, includes the children identified as non-poor. We can observe that almost half of all children belong to either one of the groups A (18%), B (11%), and AB (12%). The figure also shows that 29% of the children are identified by only one of the approaches, whereas 12% are captured by either approach.

In other words, the multidimensional and monetary poverty measurement methods identify quite different groups of children, implying that they do not draw the same pictures of child poverty.

Figure i: Degree of overlap between the multidimensional approach (through the CPR) and the monetary approach to measure child poverty (based on VHLSS data)



Basing policy design and targeting measures on one method of child poverty calculation alone would thus imply that a substantial number of children are “left out”. Exclusively using the monetary approach as input into the policy process would result in the exclusion of children that are only captured by the child poverty approach but are not poor according to the monetary method (children in group A). Even though the households in which they live are considered to have an income above the national monetary poverty line, these children typically suffer poverty in the areas of water and sanitation, health, leisure, and shelter. By the same token, basing poverty policies on the basis of the child poverty approach only would lead to the exclusion of the group of children that is only identified as poor by the monetary method (children in group B). The children that belong to this group are most likely children living in households with income levels just below the monetary poverty line. This situation likely means that these children have access to a number of services that are provided especially to the monetary poor. However, the resources of the household may not be sufficient to meet the thresholds for other indicators such as education, health, or social inclusion and protection. In conclusion, policies based on a **combination** of poverty measurement methods are more likely to target children who are poor, whether this is from a monetary or non monetary perspective.

What policy options have been identified?

The findings generated through the development and application of the multidimensional approach to measuring child poverty in Vietnam lead to a number of key policy recommendations to the Government of Vietnam. On an overall basis, the key findings indicate the importance for Government to adopt the approach in its various policies that aim to reduce poverty. The specific recommendations are as follows:

1. Continue to refine and improve the child poverty indicators on the basis of lessons learned presented in this report. In particular, this concerns the domains of social inclusion and protection, leisure and health;
2. Integrate the multidimensional approach to child poverty into the national system for poverty monitoring. In particular, child poverty indicators should be integrated into the design of the Vietnam Household Living Standard Survey (VHLSS), as this is the most regular national survey that measures the poverty status of households and children;
3. Redesign the sample frames of major national surveys on poverty in order for these to include vulnerable groups (migrants, unregistered households, etc.) that have hitherto not been included in the analysis of (child) poverty in Viet Nam;
4. Mainstream the multidimensional child poverty approach into policy analysis and review mechanisms of relevant Government policies such as the National Target Program on Poverty Reduction, the Socio-Economic Development Plan, the National Action Plan for Children, Program 135 and other national target programs.

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1) Introduction

Poverty and inequality in Viet Nam

In the past two decades, Vietnam has experienced a period of rapid economic growth and a dramatic decrease in poverty. The country is therefore often used as a prime example for good practices with respect to poverty reduction efforts and policies. The so-called Doi Moi reform policies in the late 1980's replaced central planning instruments with open-market economic policies, thereby stimulating economic growth through the creation of business and entrepreneurial opportunities for the Vietnamese as well as foreigners (Glewwe 2004). Monetary poverty figures tell a similar positive story with a reduction of poverty from 58 percent in 1993 to 19.5 percent in 2004 (VASS 2006). These estimates, however, are aggregate figures and only provide a very restrictive answer to the question of how specific demographic groups in Vietnam are faring. Little attention has been paid to the situation of children and in how far the poverty reduction efforts have managed to benefit this specific group in society. Further, official poverty measurement has largely focused on monetary poverty measurement, which has a number of drawbacks in relation to the measurement of child poverty. The lack of attention for child poverty as well as the shortcomings of the monetary approach call for an alternative approach to shed light on the issue of child poverty. Poverty estimates in Table 1 provide empirical evidence that the large decreases in overall monetary poverty figures from 1993 to 2006 do not reflect the whole story and that not all groups in society equally benefit from the rise in living standards.

Table 1 Poverty rates and inequality in Vietnam

	1993	1998	2002	2004	2006***
Proportion of population living below the poverty line*	58.1	37.4	28.9	19.5	16.0
Per area					
<i>Urban</i>	25.1	9.2	6.6	3.6	3.9
<i>Rural</i>	66.4	45.5	35.6	25	20.4
Per region*					
<i>Red River Delta</i>			22.4	12.1	8.8
<i>North East</i>			38.4	29.4	25.0
<i>North West</i>			68.0	58.6	49.0
<i>North Central Coast</i>			43.9	31.9	29.1
<i>South Central Coast</i>			25.2	19.0	12.6
<i>Central Highlands</i>			51.8	33.1	28.6
<i>South East</i>			10.6	5.4	5.8
<i>Mekong River Delta</i>			23.4	19.5	10.3
Per ethnicity					
<i>Kinh/Chinese ethnicity</i>	54	31	23	14	10.3
<i>Other ethnicities</i>	86	75	69	61	52.3
Gini coefficient**	0.34	0.35	0.37	0.37	0.36

* Data taken from GSO website, <http://www.gso.gov.vn>, last accessed on 03-04-2008

** Data taken from VASS (2006) Vietnam Poverty Update Report 2006: Poverty and Poverty Reduction in Vietnam 1993-2004, VASS, Hanoi

*** Data taken from VDR (2008) Social Protection, Joint Donor Report

Inequality figures are rising and there are sizeable differences in progress towards poverty reduction between different regions and demographic groups (VASS 2006). The rate of progress is significantly lower in rural areas than it is in urban areas. While the monetary poverty rate for urban areas dropped by 86% from 25.1 in 1993 to 3.9 in 2006, rural areas experienced a decrease of 62% during the same period. The rate of poverty in rural areas was 20% in 2006, indicating a clear disparity with urban areas (VASS 2006). Furthermore, we observe sizeable differences between regions and demographic groups. Table 1 indicates that the lowest level of poverty can be found in the South East region with a rate of 5.4 % in 2004. The North West region, at the opposite extreme, suffers from impoverishment at a rate of 58.6% in 2004. Such great differences in poverty incidence are also found among different ethnic groups. Poverty among the largest ethnic group, the Kinh-Hoa group, was 14% in 2004 while this was more than three times higher among ethnic minorities at a rate of 61% in the same year (VASS, 2006). These large disparities in poverty incidence among different groups in society that are masked by the overall poverty figures, also call for a special focus on children. If we wish to learn more about the specific situation of this demographic group, representing over one-fourth of the Vietnamese population (see Table 2), we need to look beyond overall poverty figures based on information of the overall population.

Table 2 Children as proportion of total population

	2006
Children below 5 years of age	7.00
Children below 16 years of age	28.05

Authors' own calculations from MICS 2006

Purpose and structure of the report

The present paper reports on the conceptualization and application of a multidimensional approach to measuring child poverty in Viet Nam. The purpose of the developing such an approach is to produce child poverty estimates that are solid, robust and relevant for the case of Vietnam and to provide a comprehensive and integrative picture of child poverty and children's lives in Vietnam, in order to better inform poverty reduction policies and strategies. This report lays out the various steps taken to develop the approach (review of literature, building the conceptual framework, defining poverty domains and indicators), presents its application on the basis of existing MICS and VHLSS survey data, analyzes the outcomes in terms of poverty rates and indices, and draws lessons with regard to its technical feasibility and to its added value, links and overlaps with monetary approaches to poverty measurement.

The structure of the report is as follows. Firstly, we provide a literature review focusing on the importance of a focus on child poverty, existing child poverty approaches and the differences between monetary and multidimensional poverty measurement. Secondly, the conceptual framework of the Vietnam-specific child poverty approach is described. Thirdly, the data and methodologies employed in this study are shortly discussed. The empirical results for the various outcome products, notably the Child Poverty Rate and the Child Poverty Index, are presented and analyzed next. Following this, we discuss the overlap in domain poverty, which underlies the multidimensional child poverty measure.

Next, a section is devoted to the analysis of overlap in outcomes when using the multidimensional child poverty or monetary poverty method. Finally, the report concludes with a child poverty analysis, assessing the predictive factors for a child to be poor or not.

2) Literature Overview

a) Why focus on child poverty¹?

Several reasons can be put forward for the importance of a child-focused approach towards poverty (e.g. Boyden, 2006, Gordon et al. 2003a, 2003b, Minujin et al., 2005, Young Lives, 2001, Waddington, 2004). A first reason is that children are at a higher risk of poverty regardless of place and time. Children are largely dependent on their direct environment for the provision of their basic needs. Since they are not independent economic actors by themselves, they rely on the distribution of resources by their parents, household or community members. Child-focused poverty measures are crucial to provide information about this distribution and thus about poverty at the child-specific level (e.g. White, Leavy and Masters, 2002). A second reason is that if children grow up in poverty, they are more likely to be poor in adulthood as well. Poverty often manifests itself as a vicious circle that children are trapped in from birth onwards. Reducing child-poverty as a short-term objective would thereby also reduce adult poverty in the long run (e.g. Corak, 2004, DWP, 2002). Further, children are differently affected by poverty than adults are since their basic human needs are different. Children have different dietary requirements, for example, and the role of education is vital during their stage of life (e.g. Waddington, 2004). A child-specific approach can highlight and emphasize those needs that are especially crucial for children and their development. Finally, a generally accepted and workable definition and measurement method of child poverty is an important tool for both academics and policy makers. It does not only offer the opportunity to get an insight into children's poverty status but also gives the possibility to formulate and monitor sound poverty reduction objectives, strategies and policies (e.g. Ben-Arieh, 2000, Corak, 2006). In sum, there is a strong foundation to support the claim for poverty definitions and measures that are specifically aimed towards children, taking into account their specific needs and living conditions. The acknowledgement of the importance of measuring child poverty in Vietnam has led to the development of a Vietnam-specific child poverty measurement tool.

b) Existing child poverty approaches

The review of existing approaches towards the definition and measurement of child poverty is by no means exhaustive but provides a good overview of the range of approaches currently developed. The analysis of these approaches serves as a solid basis for the development of the Vietnam-specific child poverty approach. The approaches included in the review are the monetary approach, the Bristol deprivation approach,

¹ This section is largely based on Roelen and Gassmann (2008) "Measuring Child Poverty and Well-Being: an overview", MGSOG Working Paper 2008WP001, Maastricht

Corak's practical approach, the EU Child Well-being Index, the US Child Well-being Index, the Young Lives study and the DEV framework.

The monetary approach conceptualizes child poverty as children living in low income² households and is the most widely used approach worldwide (Laderchi, Saith and Stewart 2003). It is a one-dimensional poverty measure, incorporating income as the single indicator of well-being. The outcome figure is an incidence rate, counting the number of children in households with an income below a pre-defined threshold (Ravallion 2004). Its output is easily interpretable, which is one of the major strengths of the approach. Further, one can also infer the poverty gap and depth from the information on households' incomes (Ravallion 2004). Nevertheless, the inclusion of a single dimension and use of the household as main unit of analysis are disadvantages of the monetary measure for the assessment of child poverty (eg. CHIP 2004; Minujin et al. 2006; Roelen and Gassmann 2008).

The Bristol deprivation approach is a child-focused poverty approach, primarily based on the Convention of the Rights of the Child (CRC). Child poverty is conceptualized as deprivations of human basic needs in seven different domains³. A child is defined to be severely deprived when it is deprived in at least one of those domains. Absolute poverty is constituted by deprivation in at least two domains (Gordon et al. 2003a, 2003b). The first method is also known as the union approach (Atkinson 2003) while the second is considered a dual cutoff identification strategy (Alkire and Foster 2007). The deprivation approach is multidimensional and easily interpretable, also allowing for the analysis of overlap of domain deprivations. The analysis of the size and severity of poverty, however, is limited.

Corak's practical approach uses the CRC as a starting point, thereby acknowledging that child poverty is a multifaceted problem. Six guiding principles, emphasizing feasibility aspects and practical constraints, form the approach's broad basis⁴. Consequently, the approach, its concept and choice of indicators are predominantly guided by data availability and practical operationalization. As a result, child poverty is defined as the proportion of children with equivalent incomes below the threshold of 50% of national median equivalent income (Corak 2005, 2006b). Hence, despite the approach being multidimensional in concept, it is one-dimensional in implementation (Roelen and Gassmann 2008).

The EU Child Well-being Index (EU CWI) is an approach developed for cross-country comparisons within the European Union. On the basis of the CRC, eight different clusters are identified to reflect the multidimensional nature of poverty⁵. Within those clusters,

² With the term income, we refer to monetary indicators including consumption and expenditures.

³ The seven domains included in the Bristol deprivation approach are food, safe drinking water, sanitation facilities, healthcare facilities, shelter, education and information (Gordon et al. 2003a, 2003b).

⁴ The six principles of Corak's practical approach include the avoidance of unnecessary complexities, the use of a limited number of complementary indicators to income measures, the inclusion of social norms in the drawing of poverty lines, regular updating of indicators, the use of a fixed as well as moving poverty line and the building of public support for poverty reduction (Corak 2005, 2006b).

⁵ The eight clusters of the EU CWI consist of material situation, housing, health, subjective well-being, education, children's relationships, civic participation and risk and safety (Bradshaw et al. 2006).

domains and indicators are identified. The composite index scores comparing the performance of individual EU countries is consequently based on average indicator and domain z-scores (Bradshaw et al. 2006). The provision of a single output figure is a useful tool for communication purposes and means of relative comparison. However, the figure carries less intuitive meaning and only tracks countries' performance in reference to the average.

The US Child and Youth Well-being Index (US CWI) was designed for the purpose of considering changes in child well-being over time. The construction of the index is based on the quality of life concept, including both objective as well as subjective measures of well-being in seven different domains⁶. Percentage changes from the base year are averaged over all indicators per domain and consequently domain indices are averaged to obtain the composite index score (Land et al. 2001). The tool is highly valuable for tracking child well-being over time for different demographic groups. Data requirements, however, are demanding and no other information can be drawn from the index.

The Young Lives study is a qualitative as well as quantitative approach towards the investigation of child poverty. It is implemented in four countries, being Ethiopia, Peru, India and Vietnam (Young Lives 2001). The approach presents a holistic and inclusive method for mapping outputs, outcomes and impacts of child poverty (Boyden 2006). Further, it provides a framework for visualizing the complexity, causality and inter-linkages of child well-being. However, it does not aim to capture child poverty in a single measure or quantifiable output that can directly serve monitoring and evaluation efforts.

The DEV framework for child poverty was developed by the Christian Children's Fund (CCF) and is based upon three dimensions, being Deprivation, Exclusion and Vulnerability (DEV). The comprehensive framework aims to acknowledge and capture the complexities that child poverty presents (Feeny and Boyden 2003). It criticizes and steps away from easily quantifiable outputs and cause and effect reasoning (Wordsworth, McPeak and Feeny 2005). As such, the approach is holistic and inclusive but does not provide hands-on tools for the measurement or evaluation of child poverty.

c) Monetary versus multi-dimensional poverty

The division between monetary and multidimensional concepts is commonly made within the area of poverty measurement. While monetary definitions refer to the measurement of poverty on the basis of income or expenditures, multidimensional measurement incorporates a larger range of attributes that are assumed to reflect the state of poverty. Money-metric poverty measurement was and remains the most widely used method for poverty analysis world-wide (Redmond 2008, Ruggeri Laderchi et al. 2003), based on the rationale that individuals with a certain degree of purchasing power are able to fulfill their basic needs (Thorbecke 2008, Tsui 2000). However, there are a number of drawbacks of the monetary approach, especially in terms of child poverty measurement.

⁶ The seven domains included in the US CWI are material well-being, health, safety, productive activity, place in community, intimacy and emotional well-being (Land et al. 2001).

Its underlying rationale assumes that all attributes for the fulfillment of basic needs can be purchased on markets and expressed in monetary terms. However, in many instances those markets do not exist or function imperfectly (Thorbecke 2008, Bourguignon and Chakravarty 2003, Tsui 2000) and monetary values can not be assigned to specific attributes⁷ (Thorbecke 2008, Hulme and McKay 2008). Further, when individuals or households have sufficient income for the purchase of a basic basket of goods, it does not directly imply that it is also spent on this basket of goods (Thorbecke 2008). Also, income is predominantly measured at the household level, not capturing intra-household distribution (Hulme and McKay 2008). Hence, one has to rely on equivalence scale methods to infer conclusions for individuals within the households, including children. Finally, children are not economic actors themselves and therefore not able to generate income to sustain their own livelihood. Monetary indicators would thus not adequately reflect children's state of poverty (White, Leavy and Masters 2002). Resulting from these conceptual and technical drawbacks, alternative general poverty approaches have been developed in a multidimensional sphere. Amartya Sen was one of the first scholars to propose an approach including other aspects than (merely) income that were considered to better reflect the state of poverty (Sen 1976, 1979). Consequently, the field of multidimensional poverty measurement has seen a wide expansion, including Sen's capability approach, basic needs approaches (Streeten 1981) or social exclusion methods (Marlier, Atkinson, Cantillon and Nolan 2007). Recent child poverty studies have also focused on more multidimensional aspects of poverty (Gordon et al. 2003, Bradshaw et al. 2006). The widespread acknowledgement in general poverty measurement and specific issues related to child poverty measurement have led to the development of a multidimensional poverty measure for Vietnam.

The literature review reveals the relevance and need for the development of a poverty measurement approach especially geared to identify and capture poor children while taking into account various dimensions of well-being. The overview of the selected child poverty measurement methods and studies has been instrumental in guiding the development of the Vietnam child poverty approach by considering the opportunities and limitations that are inherent to these methods. It provides a background against which an extensive consultation and development process was started for the construction and application of the child poverty approach in Vietnam. The main partners and stakeholder in this process are discussed in Box 1.

⁷ Consider attributes such as literacy, numeracy, life expectancy, social participation and information.

Box 1 The consultation process, key partners and stakeholders

An extensive consultation process has taken place to obtain a clear understanding of the purpose that the approach is to serve, the underlying concept of child poverty in Vietnam and the formulation of various dimensions and indicators that reflect various poverty areas for children. Key partners in this process are the Ministry of Labor, Invalids and Social Affairs (MOLISA), the Institute for of Labor Science and Social Affairs (ILSSA) and the General Statistics Office (GSO). Other stakeholders included Ministry of Education and Trade (MOET), Ministry of Health (MOH), Ministry of Agricultural and Rural Development (MARD), UNDP, World Bank and Save the Children. The key partners were heavily involved in discussions and development of the child poverty approach through regular meetings and communication. The other stakeholders were consulted during various progress and dissemination workshops at different stages in the development process of the child poverty approach (also see Box 2). This thorough collaborative and consultative process ensures that the approach presented in this report is truly Vietnam-specific, representing areas of poverty that are deemed to reflect child poverty by a wide range of stakeholders.

3) Purpose, definition, and key features of the multidimensional approach to child poverty in Vietnam

Rationale and purpose

It is widely recognized that a clear understanding of the rationale and purpose underlying the development of a poverty approach are crucial for making sound and solid comparisons (Ravallion 2004). Therefore, a considerable amount of time has been dedicated at the start of the development process of the child poverty approach for Vietnam to clarify this rationale and purpose with the key partners. The purpose of the child poverty approach in Vietnam was identified to be two-fold. On the one hand, it serves as an advocacy tool to raise public awareness. On the other hand, the approach feeds into the policy design and monitoring process. The two purposes require different methodologies and lead to different end products (Vandivere and McPhee 2008). The purpose of advocacy is best served by an intuitively appealing and easily understandable summary statistic, while the purpose of policy analysis, monitoring and evaluation is served by detailed information at different levels of disaggregation and decomposition. The two purposes and their methodological implications are discussed below, after which we will consider the specific use for Vietnam.

When using a measure mainly for *advocacy purposes*, a single number headcount to identify poor children is a useful approach. It indicates the poor children as a percentage of all children, also referred to as a headcount rate. This single number can be defined as the child poverty rate (CPR) and gives a clear and intuitive indication of the overall size of child poverty in Vietnam. Depicting child poverty in this way makes the measure easily interpretable and understandable for all. Furthermore, it can clearly display the progress towards a certain target child poverty rate for the whole of Vietnam or regions.

During stakeholder meetings and consultative workshops, it became apparent that the most urgent purpose of the child poverty indices in Vietnam is that of *policy monitoring*

and evaluation. The CPR is not only suitable for advocacy purposes but can also inform policy makers and practitioners in various manners. Considering that the CPR is an aggregate number, based on a number of child poverty indicators, its underlying figures can provide detailed data for different groups of children. This information can be used to assess who and where poor children in Vietnam are and what their characteristics are. Further, a child poverty index (CPI) specifically measuring performance at the regional level can complement this information. Such an index will allow for a ranking of regions based on an index score and provinces to analyze their relative performance. As such, it can stimulate policies towards the reduction of child poverty at the regional level. Hence, the combination of the CPR, CPI and child poverty indicators at the disaggregated level are to provide information for budget and resource allocation, policy targeting and policy design. Moreover, it makes child poverty visible in a way that is accessible for the general public as well as more informed stakeholders.

The concept of child poverty in Vietnam

It is important to note that the concept of child poverty is usually a very restrictive term when referred to in Vietnam. Poverty in general is understood and reflected in policies and programmes as a monetary issue. When talking about child poverty in Vietnam, one generally only regards children living in poverty in poor households, hence in monetary terms (Roelen and Gassmann, 2006). Furthermore, vulnerable children are referred to as those children under special circumstances. The Law on the Protection, Care and Education of Children stipulates different categories of special circumstances or difficulties that children might face. These concepts of poor and vulnerable children have been used to categorize and thereby target policies. However, our focus here is on a wider perspective of child poverty and vulnerability that goes beyond the lines of categorization. Our definition of child poverty focuses on the outcomes of children's circumstances rather than their specific conditions. For example, disability as such is not a reflection of child poverty. It might have a strong influence and impact but can not be considered as an outcome. Therefore, we focus on those children that do not have access to their basic needs and whose basic rights are denied, possibly as a result of specific circumstances or characteristics. This concept is captured under the heading of child poverty and refers to a broader definition of poverty than merely the monetary aspects.

Based on the identified purposes that the child poverty approach is to serve in Vietnam, the overall concept of child poverty was discussed and developed. The concept of child poverty is based on the 1989 Convention of the Rights of the Child (CRC) and the basic needs approach as used in Vietnam. The CRC builds upon four themes, being survival, protection, development and participation and identifies basic rights for children within these areas (UNHCHR 1989). The basic needs approach in Vietnam identifies eight groups of basic needs: food, shelter, clothes, health, education, water, sanitation and social exclusion. The needs defined under the basic needs approach and rights formulated under the CRC are largely overlapping and point to the same areas of development for children. Hence, they complement and reinforce each other as underlying lines of thoughts for child poverty. The child poverty concept is multidimensional, based on non-monetary measures and adjusted to Vietnam's cultural and social context. The concept also strongly builds on child poverty and well-being concepts formulated for existing approaches. As mentioned above, all child poverty approaches developed so far use the

CRC and notion of basic needs as point of departure. Moreover, the focus is on the actual situation for children at this specific point in time rather than their capabilities to be exploited for their well-being in the future (see Box 2). We choose to identify children as individuals under the age of 16 years because this is the official definition according to the Law on the Protection, Care and Education of Children in Vietnam (Socialist Republic of Vietnam 2004).

Child poverty in the context of our multidimensional approach can be defined as follows: Child poverty includes those individuals under the age of 16 years old that do not enjoy their rights as stipulated in the 1989 United Nations Convention of the Rights of the Child and do not have access to basic human needs.

Box 2 Child poverty and capabilities approach

A vital reason not to use the capabilities approach for the measurement of child poverty is that children might not have the power to fully utilize their set of capabilities. They are dependent on their direct environment, including parents, family and community, to turn capabilities into positive outcomes. Therefore, to learn about children's actual state of living, it is preferable to focus on outcomes (Thorbecke 2008). Further, outcomes are easier to observe and measure than capabilities are. Consequently, this study focuses on the actual situation children find themselves in rather than capabilities or means for the improvement of living.

Child poverty domains and indicators

The overall concept of the child poverty approach in Vietnam consequently guided the identification of a framework including a set of domains and indicators that reflect different areas of child poverty in Vietnam. The choice of domains is based on a number of selection methods, the use of which is explained in detail by Alkire (2008) and Biggeri (2007). These methods were used at various stages of the development process of the child poverty approach and resulted in different lists of indicators at different points in time (see Box 3). The method of assumptions and expert opinion inspired a first set of domains and with indicators, complemented by those identified on the basis of public consensus. In other words, a first list of domains was established on the basis of background information, the current state of literature and widely-agreed upon consensus documents, including the Millennium Development Goals and the ILO Convention on the Minimum Age. Participatory processes were employed to account for the views of stakeholders and key-informants, thereby ensuring the incorporation of the Vietnamese context. Workshops, meetings and discussions with key partners and stakeholders provided an insight into the nature of child poverty in Vietnam and how it could be represented. An elaborate discussion on the choice of domains and indicators is important as it is subject to value judgments, which should be made as explicit as possible (Alkire 2002). A final selection mechanism at work during the identification process for domains was the assessment of existing data and data availability. The domains within the child poverty approach are to represent the different areas of development but also correspond with policy areas to enhance the approach's usefulness for policymakers. Indicators are chosen to give a comprehensive representation of the development within the respective domains.

Box 3 Consultation process for the selection of child poverty domains and indicators

The formulation of the overall multidimensional concept of child poverty in Vietnam on the basis of the identified rationale and purpose and the selection of domains and indicators within that approach is the result of an intense consultation process that took place from October 2006 to July 2007. Ample discussions between key partners MOLISA and GSO, the University of Maastricht team, and UNICEF took place to establish the most suitable concept to capture the nature of child poverty in Vietnam. Further, a number of technical and dissemination workshops were held to receive feedback from other stakeholders and incorporate their views. While the concept of child poverty forms the approach's overall framework, child poverty domains and indicators were selected to represent the issue of child poverty in a more detailed and intuitive manner and to facilitate its measurement. A variety of selection methods and criteria were employed to guide the development process towards the child poverty approach in Vietnam. However, the development of the conceptual framework and its domains and indicators was not a linear process. To ensure that there was a clear agreement and understanding of the approach under development, decisions taken at an earlier stage of the process sometimes had to be revisited and reconsidered. A large range of indicators was discussed and considered, of which some were immediately discarded while others were contemplated for a longer time. Pro's and cons of the inclusion of specific domains and indicators were discussed at different stages of the development process, which makes it difficult to describe the exact shape and form of the approach's conceptual framework at different stages of the development process. However, the final concept and list of domains and indicators presented in this report can be considered a fair representation of child poverty in Vietnam shared by a large number of stakeholders as a result of this extensive consultation process.

With respect to the selection process of indicators, a number of criteria were formulated to which the indicators should adhere to ensure that they fit the overall concept and are feasible to calculate. Assessing all the indicators that were initially identified as possible reflections of child poverty in Vietnam against these criteria resulted into a reduced list of final indicators. Firstly, the indicators should ideally be child-specific. Conventional child poverty measures consider children as members of a household and measure issues related to poverty and vulnerability at the household level. The importance of a child-centric analysis with respect to poverty is also emphasized within the deprivation approach (Gordon et al. 2003a, 2003b) and a model of child poverty for South Africa (Noble, Wright and Cluver 2006). Nevertheless, it is unavoidable to measure certain indicators related to shelter, water and sanitation at the household level as data is only collected at the household level (Gordon et al. 2003a, 2003b), see also Box 9. A second criterion is that indicators should be easily observable and thereby measurable (Moore, Lippmann and Brown 2004). This implies that indicators about quality of services, for example, are difficult to include in our list of indicators unless we can formulate a clearly measurable standard for such quality. Thirdly, indicators should be easily interpretable. The indicators serve the goal to provide information about a certain aspect of child poverty and to feed into the policy making and monitoring process. To be able to use indicators to this end, they should be easily interpretable in an unambiguous way (Moore, Lippmann and Brown 2004). Fourthly, indicators should be factual. Hence, they should measure facts rather than subjective opinions and have the same meaning over time as well as different groups within the overall reference population (Gordon et al 2003b).

Fifthly, the indicators should adhere to the values and norms of the specific society in order to be meaningful (Thorbecke 2008). Thus, the indicators chosen should fit the Vietnamese context and are as such culture and society-specific. Finally, the indicators should be decomposable by gender, age, location and ethnicity (Noble, Wright and Cluver 2006).

Considering that data availability was one of the selection mechanisms for the identification of domains and indicators within the child poverty approach for Vietnam, we now proceed to discuss the data used for this study as well as its opportunities and limitations. In the following section, we discuss the specific choice of domains and indicators and the reasons for the in- or exclusion of specific issues. Please note that although the availability of data played an important role in the final selection of domains and indicators, the child approach in Vietnam can by no means be considered to be data-driven. The extensive consultation process started with the formulation of a conceptual framework and subsequently considered the choice of domains and indicators (see Box 2). A data-driven approach would imply that the available data was taken as a starting point for the selection of domains and indicators rather than being only one of a set of selection methods and criteria.

4) Data sources, opportunities and limitations

The transformation of the ideal child poverty framework to a feasible approach requires an in-depth assessment of the available data. For the operationalization of the child poverty approach, we use the most recent versions of MICS and VHLSS survey data from 2006.

a) MICS 2006⁸

The Multiple Indicator Cluster Survey (MICS) from 2006 is a household survey that provides child as well as household specific information for a number of indicators as specified in the theoretical framework. The Vietnam MICS is based on the standardized MICS surveys as technically supported by UNICEF. The first and second round was conducted in 1995 and 2000, while the third round was completed in 2006. The survey contains a range of questions especially focused on education, health, reproductive health, HIV/AIDS and is separated into a questionnaire for households, women of reproductive age and children under five. Regions were identified as the main sampling domains and the sample was selected in two stages, based on enumeration areas from the census (GSO, 2007). The sample consists of a total number of 8.356 households with 36.573 individuals out of which 10.874 are children up to 16 years of age.

⁸ This section is largely based on Roelen and Gassmann (2008) “A global measurement approach versus a country-specific measurement approach – Do they draw the same picture of child poverty? The case of Vietnam”, MGSOG Working Paper 2008WP005, Maastricht

b) VHLSS 2006

The second data source is Vietnam Households Living Standards Survey (VHLSS) is from 2006. This household survey is based on the former Vietnam Living Standards Survey (VLSS) but employing a bigger sample size and to be conducted every other year. The VLSS was conducted in 1993 and 1998 and VHLSS from 2002 onwards every second year by the Government Statistical Office (GSO), following the World Bank's Living Standards Measurement Survey (LSMS) methodology. The VHLSS survey samples from 2002 to 2010 are drawn from a master sample, which is a random sample of the 1999 Population Census enumeration areas. This sample of enumeration areas can consequently be used for multiple samples of households for different surveys or for the rotating panel that VHLSS employs. The VHLSS 2006 contains 9.189 households with 39.071 individuals, including 10.696 children under the age of 16.

c) Limitations

Household surveys such as the MICS and VHLSS provide us with micro-data, providing data at the individual child level. This gives us the possibility to derive all deprivations back to the individual child, thereby creating the possibility to make cross-tabulations and create poverty profiles. The surveys provide data on a range of issues related to children's well-being and poverty, providing information in the majority of the conceptually defined domains. However, a number of limitations are also inherent to the use of these surveys. A first limitation at the time of writing is that data on nutrition is not available. A module on nutritional information was included in VHLSS 2006 but the data was not yet available at the time of writing. Second, the sampling method of both surveys causes a substantial group in the society to be omitted from the sample and subsequent data. The sample for both surveys is constructed on the basis of the official lists of registered households in communes and urban wards in Vietnam that have lived in the enumeration area for at least six months (Pincus and Sender, 2006). This implies that households or individuals that have recently migrated are not included in the sampling frame. Further, due to the strict household registration system, or *ho khau* system, many households and individuals do not satisfy the necessary criteria to newly register and stay unregistered. The omission of this group in society is not only an important issue to point out because of its suspected significant size but even more so because of the denial of social and public services they experience due to their status. The structural exclusion of this group from the data will most likely present us with underestimations for all indicators. Third, the surveys used in this study do not collect information for all members of the household but direct different questions to household members of different ages. Hence, not all indicators are observed for all children⁹. Consequently, the assessment of multiple deprivations in one or more domains should be done with caution. Also the analysis of child poverty by age group is not self-evident as the poverty rate might reflect vulnerabilities in different areas, depending on the indicators observed for

⁹ For example, questions about education are only posed to children from 5 years upwards while questions about immunization are only considered for children below the age of 5 years. Hence, the total count of observable indicators depends on the age of the child and the number of questions posed to children of this age. This total count differs for different age brackets, complicating the poverty analysis and comparisons.

that specific age group. Further, a count of the total number of indicator vulnerabilities for every individual child to analyze the depth or severity of poverty would provide biased results. Finally, the data is only representative when broken down to regional level but does not permit us to consider child poverty at a lower level of disaggregation such as the province or district. This limits in the use of the child poverty measurement approach for geographic comparative purposes in Vietnam.

5) Choice of domains, indicators and outcome products for the measurement of child poverty in Vietnam

As discussed in section 3 and Box 3, the combination of the methods of assumption, expert opinion and public consensus put forward an extensive list of domains and indicators on the basis of the conceptual framework, some of which were not feasible to include into the final model for a variety of reasons. Domains under consideration included income, education, health, nutrition, transport, communication, subjective well-being, safety, shelter and water and sanitation, social inclusion and protection. During the consultation process, a reduced and final list of domains was decided upon. The income dimension was left out of consideration because it was considered a means to an end rather than an end in itself and did not fit the pre-defined purpose and concept of the approach. The issues of communication, safety and transport were not considered dimensions properly reflecting the poverty status of Vietnamese children and did not fit the country's context. The dimension referring to children's subjective well-being and nutrition had to be left out of consideration due to lack of data.

The selected domains and indicators for the child poverty approach in Vietnam are listed in Table 3¹⁰. Note that all indicators are represented in a negative manner, referring to the proportions of children not meeting a specific threshold value as indicator or domain poverty rates. Furthermore, indicator definitions can differ when based on the MICS or VHLSS survey due to the kinds of questions and the specific formulations of questions in the survey questionnaires. The table is followed by an extensive discussion per domain on the choice of indicators within that specific domain. Other indicators under consideration at different stages throughout the development process are discussed as well as the reasons for in- or excluding them from the final list of indicators.

¹⁰ Please refer to Annex 1 for the exact definitions and thresholds for each individual indicator.

Table 3 Selected domains and indicators for the Child Poverty approach based on VHLSS and MICS data

VHLSS 2006		MICS 2006	
1. Education poverty		1. Education poverty	
1	Enrollment poverty rate	1	Enrollment poverty rate
a	children in age 5 not attending pre-school as a percentage of all children in age 5	a	children in age 5 not attending pre-school as a percentage of all children in age 5
b	children in age 6-10 not attending primary school as a percentage of all children in age 6-10	b	children in age 6-10 not attending primary school as a percentage of all children in age 6-10
c	children in age 11-15 not attending lower secondary school as a percentage of all children in age 11-15	c	children in age 11-15 not attending lower secondary school as a percentage of all children in age 11-15
	Completion poverty rate		Completion poverty rate
2	children in age 11-15 that have not completed primary education as a percentage of all children 11-15	2	children in age 11-15 that have not completed primary education as a percentage of all children 11-15
2. Health poverty		2. Health poverty	
	Health visit poverty rate		Immunization poverty rate
1	children age 2-4 not having visited a professional health facility at least once in the last 12 months as a percentage of all children in age 2-4	1	children in age 2-4 that have not received full immunization as a percentage of all children in age 2-4
3. Shelter poverty		3. Shelter poverty	
	Electricity poverty rate		Electricity poverty rate
1	children living in a dwelling without electricity as a percentage of all children in age 0-15	1	children living in a dwelling without electricity as a percentage of all children in age 0-15
	Housing poverty rate		Roofing poverty rate
2	children not living in proper housing as a percentage of all children in age 0-15	2	children living in a dwelling without a proper roof as a percentage of all children in age 0-15
			Flooring poverty rate
		3	children living in a dwelling without a proper floor as a percentage of all children age 0-15
4. Water and Sanitation poverty		4. Water and Sanitation poverty	
	Sanitation poverty rate		Sanitation poverty rate
1	children living in a dwelling without a hygienic sanitation facility as a percentage of all children in age 0-15	1	children living in a dwelling without a hygienic sanitation facility as a percentage of all children in age 0-15
	Water poverty rate		Water poverty rate
2	Children not drinking safe drinking water as a percentage of all children in age 0-15	2	children not drinking safe drinking water as a percentage of all children in age 0-15
5. Child work		5. Child work	
	Child work rate		Child work rate

1	children age 6-15 that have worked for an employer or in household production in the last 12 months as a percentage of all children in age 6-15	1	children age 5-14 that have worked for an employer, in household production or self-employer in the last 12 months as a percentage of all children in age 5-14
		6. Leisure poverty	
			Toy poverty rate
		1	children in age 0-4 not having store bought or home-made toys worth as a percentage of all children age 0-4
			Book poverty rate
		2	children in age 0-4 not having at least one children's or picture book as a percentage of all children age 0-4
7. Social Inclusion and Protection poverty		7. Social Inclusion and Protection poverty	
	Caregiver poverty rate		Birth registration poverty rate
1	children in age 0-15 living in households with heads that do not work due to disablement or old age, age 0-15	1	children in age 0-4 not having a birth registration as a percentage of all children age 0-4

i) Education

Education is undoubtedly a child-specific area of development that can be considered a basic need and human right. Every child has the need to educate him or herself to be able to act as an independent economic actor in the future and secure his or her own livelihood. Access to education has been formulated as a right not only in the United Nations CRC (UNHCHR 1989) but also in the Millennium Development Goals (UN 2008) and the Law on the Protection, Care and Education of Children in Vietnam. The latter document states that children have the right to study and are entitled to study at public schools free of charge (Socialist Republic of Vietnam 2004).

The preferable outcome indicator for education would be the literacy or numeracy rate as these give a clear indication of the outcome of education for children. However, this indicator is difficult to observe and measure, thereby not meeting at least one of our indicator criteria. Enrollment rates are widely used indicators to report on education progress for children. Strictly speaking, the enrollment rate is an output indicator rather than an outcome indicator. Nevertheless, it indicates whether children attend school and consequently build up literacy and numeracy skills.

We use the combined rates for children not enrolled in pre-school, primary school and lower secondary school at the appropriate age as the first poverty indicator for education. In other words, the ***enrollment poverty rate*** is constituted by a child not being in the appropriate level of schooling according to his or her age. In the context of the current progress to education and enrollment in Vietnam, the use of both the gross enrollment and net enrollment per grade were considered inappropriate. Gross enrollment refers to school attendance regardless of age, which is almost fully achieved in Vietnam. However, improvements to school attendance at an appropriate age are still necessary. Measuring net enrollment by grade was considered to be too restrictive as some children might have to repeat classes and can not be considered to be enrollment poor.

The second education poverty indicator is the proportion of children that have not completed primary education, referred to as the ***completion poverty rate***. Hence, we look at the number of children that have not obtained the primary school diploma as a percentage of all children in the age bracket 11-15. Only completion of primary education (and not completion of lower secondary education) is considered as children under the age of 16 have not yet completed secondary education. The age bracket 11-15 is used as children are most likely to complete their primary education during these years of age, even if they had to repeat a grade or started attending school later. The use of this age bracket is different from the primary school completion rate reported in the MICS 2006 report, which only considers primary school completion for children at primary school completion age (GSO and UNICEF 2008). The MICS indicator is thus more restrictive than the one used for the child poverty approach and is likely to result in a higher estimate for the indicator poverty rate. The completion poverty indicator provides important complementary information to the enrollment poverty rate and serves as a further proxy for measuring educational outcome. Both the net enrollment and primary school indicators are included in MDG 2 relating to primary education for boys and girls (UN 2008).

ii) Health

The domain of health refers to those indicators reflecting the health status of children as well as their access to health care and services, critical for the children's health status. Good health and access to health services are basic needs for children, especially because of the short-term and long-term consequences. A bad health status or lack of services when children are sick can result in life-long adversary effects. The CRC underlines the importance of health by stating that every child has the right to enjoy the highest attainable standard of health and health care (UNHCHR 1989). This is further emphasized by the Law on the Protection, Care and Education of Children in Vietnam, which stipulates the responsibility of the state and parents/caregivers to provide children with proper preventive and primary health care (Socialist Republic of Vietnam 2004).

The MDG's include the mortality rates as indicators for children's health (UN 2008). This is, however, not observable for an individual child as children that have passed away simply are not part of the data. Although indicators on the use or quality of health care facilities are desirable but typically unfeasible (see Box 4), indicators referring to immunization also provide a good measure for poverty in the health domain. It considers the access to health services for all children (regardless of whether they have been sick or not) and serves as a preventive measure to avoid poor health. Immunization against measles is also an indicator used within the MDG framework (UN 2008).

Box 4 Health indicators and the problem of reduced samples

Identifying indicators that appropriately reflect health status and access to health in terms of poverty is a challenging task. Morbidity rates represent the health outcomes for children but these might reflect or be associated with other issues than poverty. Indicators on access to health services do reflect whether a child is able to go to a doctor or receive treatments when necessary. However, this can only be measured for children that have actually been sick. Limiting the indicator to this sample of children complicates the analysis and to draw conclusions about the situation with respect to health for children that are not part of the sample. Therefore, it is preferable to use identify indicators that refer to and are observable for all children to avoid making assumptions or imputations.

In this study, the rate of children that have not been fully immunized (*immunization poverty rate*) serves as the individual child indicator within the health domain for the MICS data. It is important to note that we refer to full immunization of 8 vaccinations that children in Vietnam are supposed to receive. Many children receive only one or two vaccinations but fail to complete the full range of immunizations. Only full immunization, including BCG vaccination against TB, three vaccinations against DPT, three vaccinations against polio and a measles vaccination is considered an adequate protection against diseases. Furthermore, we consider the age bracket 2-4, which means that we consider the immunization rate for children from 24 through to 59 months. Considering that it might take up to 24 months before a child is able to receive all vaccinations, the indicator would be too restrictive and overestimate immunization poverty when including

younger children in the definition. The use of this age group for the immunization poverty rate differs from the immunization rate reported in the MICS report 2006 (GSO and UNICEF 2008). Firstly, we report progress to full immunization in negative terms (the rate of children that did not receive full immunization) while MICS reports positive rates (the rate of children that did receive full immunization). Secondly, MICS considers the rate of children from 12 through to 23 months that have been fully immunized. However, as it might take a child up to two years before all vaccinations have been received, it was deemed more appropriate in this context to measure the immunization rate from 23 months onwards. Due to the more restrictive definition within MICS, the immunization rate for MICS is likely to capture more children that have not been fully immunized. Immunization rates can only be measured for children up to 5 years of age as the MICS does not report this information for older children.

Information on immunization of children is not available from the VHLSS data, requiring the formulation of an alternative indicator. The VHLSS holds little opportunities for the measurement of health issues for children. Health poverty within the VHLSS data is analyzed by considering whether a child has not visited a professional health facility in the last 12 months, regardless of whether the child was reported to have been sick or not (please refer to Annex 1 for the exact definition of a professional health facility. The indicator is referred to as *health visit poverty rate*. Purposes for the visits can include vaccination, check-ups and treatments. Although it is reasonable to assume that young children should visit a health facility at least once in a year for treatment, check-up or vaccination, it is likely this kind of indicator results in an overestimation of poverty to health. However, an alternative indicator is not feasible due to the problem of reduced samples (see Box 4). In order to maintain consistency with the indicator used for the MICS survey, we consider this indicator for children aged 2 through to 4.

iii) Shelter

Shelter and proper housing is a third basic need that can be identified for children. Housing that offers shelter from unfavorable weather conditions but also a safe haven to live and sleep is an important determinant for a child's development. Children lacking housing and shelter can clearly be considered vulnerable and poor. The importance of adequate housing is also stipulated in the CRC, which considers proper housing as a necessary condition of living for children to be able to develop (UNHCHR 1989). Furthermore, the issue is also of great relevance in Vietnam as many children, especially in mountainous areas, do not yet live in appropriate housing. In this domain, we use household level outcome indicators rather than child-specific indicators (see Box 9). Children do not live in their own house but are usually part of a household or household structure, which provides housing for the children. The importance of proper and secure housing is also highlighted by MDG 7, which includes one indicator on secure housing (UN 2008). The shelter indicators have hardly changed throughout the consultation process of selecting domains and indicators.

The first indicator to reflect the housing situation of children is the availability of electricity in a dwelling. The *electricity poverty rate* refers to the proportion of children not living in a dwelling with electricity. Electricity ensures that a dwelling can use proper

lighting, a refrigerator to preserve food, electric fans during summertime, among others. It is an essential utility of a dwelling that guarantees adequate living and housing conditions for children. This indicator is available within both the MICS and VHLSS.

In addition to electricity, one other housing indicator is formulated using VHLSS data while two housing indicators are identified for the MICS. VHLSS does not collect information on specific conditions concerning the floor or roof of the dwellings but categorizes dwellings along housing types. The housing indicator therefore reflects children not living in a proper dwelling, which includes villas, strong houses with private or shared facilities and semi-permanent housing as proper dwellings. This VHLSS indicator is referred to as the ***housing poverty rate***. MICS does not categorize along housing types but does collect information about roofing and flooring conditions. During consultation meetings, the classification of dwellings with natural/grass roofs and dwellings with natural/mud floors appeared suitable for Vietnam to identify as unsatisfying housing conditions. These types of dwellings are closely associated with poverty and considered unsuitable for children to grow up in and thus used as shelter poverty indicators. We respectively refer to the ***roofing poverty rate*** and the ***flooring poverty rate***.

iv) Water and Sanitation

Safe drinking water and hygienic sanitation represents another important aspect for a child's development and is therefore considered as a separate domain. Unsafe drinking water and unhygienic sanitation can be a cause and catalyst for many diseases and the spread of viruses. The importance of safe drinking water and hygienic sanitation in this respect has also been recognized in the CRC, stating that governments should take appropriate measure to ensure access to facilities and promote and educate children about personal hygiene (UNHCHR 1989). Vietnam has also placed great emphasis on these issues by making sustainable development of rural water supply and sanitation one of the national priorities. Coverage of safe drinking water and hygienic sanitation is still low in Vietnam, especially in rural and mountainous areas.

The first indicator for this domain refers specifically to hygienic sanitation and considers the proportion of children living in a dwelling that does not have a hygienic sanitation facility. We refer to the ***sanitation poverty rate***. In order to make this an observable and measurable indicator, a clear definition of hygienic sanitation facilities is needed. When referring to sanitation facilities, we focus on toilet facilities or latrines. The National Rural Water Supply and Sanitation Strategy of Vietnam states that hygienic latrines are "those that protect both users and other members of the public from infection from the feces in the latrine" (WSP-EAP, 2002). Hygienic sanitation facilities as identified in the MICS 2006 report (GSO and UNICEF 2008) include flush toilets into sewerage, septic tanks or pit latrines, ventilated improved pit latrine, pit latrine with slab and composting latrines. Hygienic sanitation facilities within VHLSS include flush toilet, suilabh and double vault compost latrine. Toilets directly over water, other facilities or no toilet are considered unhygienic. Hence, the most important criteria for a hygienic facility is that users are not exposed to the feces in the latrine and that the waste does not come into contact with water that is used for other purposes. The aspect of safe drinking water is the second indicator within this domain and the ***drinking water poverty rate*** refers to the

proportion of children living in dwelling without safe (improved) water sources in the dwelling. Again, the definition of safe drinking water has to be clearly specified. A widespread definition of access to safe drinking water is the access to improved water sources, including private piped water into house and house's yard, public piped water, protected dug well, rain water and bottled water (WHO, UNICEF 2004), which can be directly applied to the MICS data. Children drinking water from either one of these sources are considered to be drinking safe water. VHLSS employs different categories of drinking water sources but along the lines of this definition, the following sources are considered safe: private tap water from inside and outside the house, deep drill wells, hand-dug and reinforced wells, hand-dug, non-reinforced and covered wells, protected springs, rain water and bought water. Unsafe drinking water includes unprotected springs, small water tank, water tank, rivers, lakes and ponds and others are excluded from the definition of safe drinking water.

v) *Child work*

The domain of child work has been included separately due to its significance for children in Vietnam. During discussions during stakeholder meetings it became apparent that child work is widely spread throughout the country and poses a serious problem for children's development. This domain is the only "negative" domain in itself in our list as child work is not a basic need or right but rather an impediment to these. Therefore, we do not refer to the child work poverty rate but simply to the *child work rate*. Child workers are denied of the need and right for education and leisure, for example. The CRC stipulates that states should set a minimum age for admission to employment and provide proper penalties and sanctions when one does not adhere to this minimum age (UNHCHR 1989).

The child work indicator considers the overall prevalence of child work, which can be for an employer, family business or self-employment. It does not include household chores but involves a substantial contribution to the family's productive activities or income (including hawking and begging on streets, working on the farm or in business). During stakeholder meetings, the question arose whether to include an indicator on the number of hours a child works per day or whether he/she works in hazardous or dangerous conditions. However, we have decided not to include these indicators because children up to 16 years of age are not allowed or supposed to work in the first place. They should not experience any impediment in focusing on education or their own development. By not including a specification of the number of hours worked, the selected indicator for the child poverty approach is different from the MICS indicator. The MICS indicator does distinguish between hours per day worked for children of different ages and define child labor along those terms. As the child poverty approach indicator for child work is more restrictive, defining all children that have worked as poor regardless of the amount of time spent on the job, the child work rate estimates are expected to be higher than those for the MICS indicator.

vi) Leisure

Although not often included as a separate dimension of poverty, leisure can be considered a basic need and right for children. The CRC stipulates that all states that have ratified the convention recognize the children's right to rest and leisure (UNHCHR 1989), while the Vietnam Law on the Protection, Care and Education of the Children stipulates that children have the right to take part in recreational, cultural, artistic, physical, sport and tourist activities (Socialist Republic of Vietnam 2004). Due to the fact that issues concerning leisure or other types of recreational activities are not widely acknowledged as being important aspects of children's well-being and development, little information and data is available on the subject. This domain is therefore only included in the list of domains based on the MICS data as the VHLSS does not hold any information on this issue that could lead to the formulation of representative indicators. On the basis of the MICS data, another indicator referring to the amount of time that the household head spends with his or her child to play or doing other activities was also taken into consideration. However, it was argued that this indicator is not an appropriate reflection of a child's poverty status in the leisure domain as other family members might spend time with the child and this would not be reflected in the indicator.

Based on the limited information available, the first indicator considers the toys with which children play. Toys are important to stimulate recreational and playing activities and are one of the few assets of a household that is used by children alone. A distinction is made between items that do or do not hold the purpose of being used for playing. Items such as kitchen appliances, sticks, stones or waste products are not considered proper toys. Home made or store bought toys, however, are appropriate for measuring a child's situation with respect to leisure. The rate of children not having a homemade or store bought toy to play with is reflected in the *toy poverty rate*. The second leisure indicator considers whether children have any children's or picture books. Reading is a leisurely activity but also an important one in a child's development. The *book poverty rate* provides an estimate of the rate of children that do not have a children's or picture book. Both indicators are available for children up to 5 years of age as the MICS only collects the information for children of this age group.

vii) Social Inclusion and Protection

Social inclusion and protection also receives widespread recognition as a basic need and right for children. This domain is a broad one and leaves room for different interpretations. By social inclusion and protection, we mean on the inclusion of the child in a family and community structure, the care and attention by its caregivers and the participation in and access to social activities and services. These needs have also been included in the CRC and Vietnam Law on the Protection, Care and Education of Children (UNHCHR 1989). This is not an exhaustive interpretation of the domain of social inclusion and protection, though. The right to freedom of thought, conscience and religion and freedom of expression, for example, are also often categorized under this domain. Despite the range of interpretations possible under this domain, the degree of available information is limited in both datasets. We are constrained to using only one indicator for the measurement of social inclusion and protection within each dataset and use different indicators for the MICS and VHLSS.

Birth registration for children below the age of 5 is used as indicator for the MICS data. It provides information about the degree in which a child is able to participate and have access to social activities and services. If a child is not registered, it does not have access to basic services such as education and health care. This indicates a great obstacle to inclusion in society and forms of social protection. With respect to the VHLSS data, the social inclusion and protection indicator refers to whether the head of the household in which the child lives can work or not. We specifically consider whether the household head can not work due to disablement or old age. The fact that the household head does not work might imply loss of income but furthermore, disablement or old age can also cause the household head to be less able to care for children and the whole household to be detached from the community. As a result, children might be less integrated in a community, have less access to services and receive less care from caregivers.

viii) Sensitivity analysis

A sensitivity analysis was performed for every indicator, meaning that we analyzed how sensitive indicator poverty rates were to changes in the definition or specific threshold. The majority of indicators proved to be rather sensitive to changes in the specific threshold or definition used. An overview of the sensitivity analysis is provided in Annex 2. These sensitivity results and the differences in definitions and thresholds between indicators for the same domains selected for the MICS and VHLSS data require readers to be extra cautious when interpreting and comparing the results (see Box 5).

Box 5 Interpretation and comparison of results

The description of the selected domains and indicators on the basis of the MICS and VHLSS data calls for caution and careful attention when interpreting and comparing results. The questionnaire designs of both surveys are different, including different types of questions and reference populations. As a result, information is not always collected for the same domain and indicators or groups of children (in the health, leisure and social inclusion and protection domains, for example). But even if data is collected on the same indicators, the exact definition might differ due to different answer possibilities. One such example is the water and sanitation domain. Although both surveys contain information on hygienic sanitation and safe drinking water facilities, they are categorized differently. The use of different categories in the two surveys to refer to water and sanitation facilities results in indicator poverty rates that are not directly comparable. Throughout the report, the reader should be aware of these underlying differences in definition of the indicator and threshold and be cautious when interpreting results and comparing them to each other.

ix) Aggregate child poverty measures

On the basis of the purpose, concept and choice of domains and indicators, we propose two outcome products or indices. As guidance for the construction of the outcome measures, two criteria are used. Firstly, the two-fold purpose of the child poverty approach in Vietnam is reconsidered, requiring different types of output measures. While the advocacy purpose calls for an easily interpretable single summary measure (Moore et al. 2007), the policy input purpose requires more disaggregated and in-depth information (Ben-Arieh 2000). Secondly, we revisit the feasibility and applicability guideline as used

for the identification of domains and indicators and emphasize the importance of this characteristic for the output measures.

An outcome product that is suitable for the advocacy purpose, that complies with the feasibility criteria and can serve as a communication vehicle is a child poverty rate. An incidence rate makes child poverty visible in an understandable manner and is accessible for the general public due to its intuitive strength. The rate is an aggregate of the individual indicator and thus is genuinely child-specific and adjusted to the societal context. Further, at a lower level of aggregation and decomposition¹¹, the individual indicators can be used for detailed policy design and analysis. Secondly, a composite child poverty index can be constructed by combining individual indicators into domain indices and domain indices into another single-number output measure. The index can be used for relative regional comparisons by the ranking of regions. A disadvantage of a composite index is its lack of intuitive explanatory power. The index score is a result of statistical calculations and transformations and does not represent a cardinal value that can be intuitively explained (Micklewright 2001). Ranking on the basis of index scores might encourage policy makers in relatively poor performing regions to give the issue of child poverty greater emphasis.

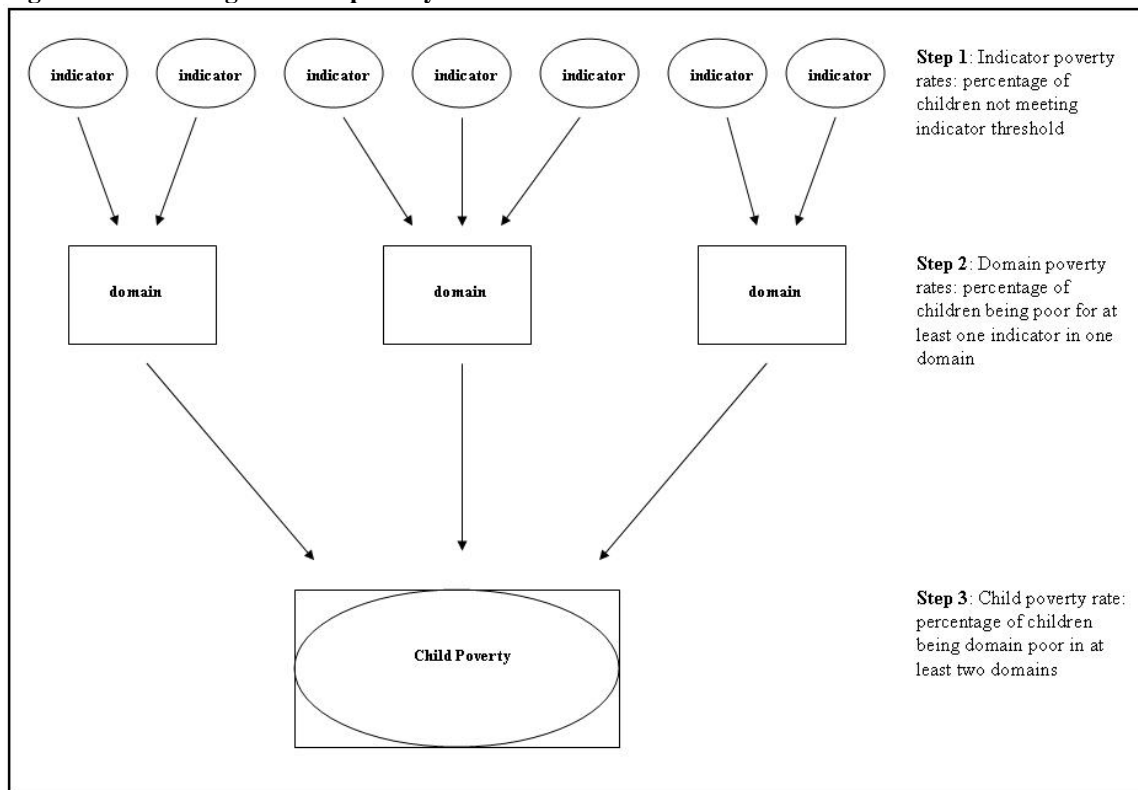
6) How to calculate child poverty in Vietnam: the Child Poverty Rate and Child Poverty Index

a) Child Poverty Rate

The *Child Poverty Rate (CPR)* is a headcount measure and refers to the proportion of children in Vietnam considered to be poor. It is a summary statistic based on individual indicators and domain poverty rates. At the lowest level of aggregation, we refer to indicator poverty rates. Indicator poverty rates by domain culminate in domain poverty rates. The final Child Poverty Rate is consequently built up from the domain poverty rates. The methodology for calculating these various rates is discussed below following three steps as illustrated in Figure 1.

¹¹ Lower levels of aggregation refer to individual and domain indicators, while lower levels of decomposition refer to indicators per demographic group.

Figure 1 Calculating the child poverty rates in Vietnam



Step 1: Indicator poverty rates are calculated for each indicator by considering whether a child meets the specified threshold or not. The indicator poverty rate represents the proportion of children that do not meet the indicator threshold as a share of children for whom that indicator was observed. In other words, the indicator poverty rates are binary indicators that indicate whether a child is poor or not but do not provide information about the degree of poverty. Individual indicators can be broken down by gender, age, area and region to provide as much detailed information as possible.

Step 2: The indicator poverty rates are then combined to determine the domain poverty rate. Domain poverty is determined by the rate of children that are poor with respect to at least one indicator in the specific domain. Hence, if a domain contains three indicators, a child is considered domain poor when does not meet the threshold of one, two or three indicators within that domain.

Step 3: The construction of the aggregate child poverty figures is based on the domain poverty rates and can be done in two different ways. First, a child can be identified to be poor when it is poor in at least one domain. Second, we consider a child to be extremely poor when it is poor in at least two domains¹². We refer to the latter as the *Child Poverty Rate* and use this measure for further analysis¹³.

¹² Within the context of multidimensional counting methods (Atkinson 2003, Thorbecke 2005, Cappelari and Jenkins 2006), the first approach is also referred to as the union approach (Atkinson 2003, Alkire and Foster 2007) and the second approach as the dual intersection cutoff strategy (Alkire and Foster, 2007).

¹³ Please refer to Annex 3 for the technical notation of poverty measures.

These two different levels of poverty are also employed by Gordon et al (2003) for the global child poverty study and respectively referred to as severe deprivation and absolute poverty. It is based on a count of indicator poverty per child, requiring micro-information at the level of the individual child (see Box 6). In this study, we do not specifically distinguish between two poverty lines as the one based on poverty in merely one domain is not considered to be robust. The use of a child poverty line based on domain poverty in only one domain holds the great disadvantage that the aggregate poverty rate can be blown up by a single indicator. In this case, aggregate child poverty is determined by poverty in one domain, which is in turn based on poverty with respect to one indicator in that domain. Hence, one indicator can make all the difference for the results of the aggregate poverty rate when using this method. That single indicator only represents one aspect of child poverty and undermines the child poverty measure's robustness. Using a poverty line based on domain poverty in two domains instead ensures that overall figures are less sensitive to changes in a single indicator poverty rate, making it a more sound method to use for in-depth poverty analysis. Estimates for both poverty lines will be used for the descriptive assessment of child poverty but the Child Poverty Rate is employed for the more in-depth analysis discussion of child poverty in Vietnam. This includes the analysis of underlying domain poverty, determining factors of multidimensional child poverty and differences in outcomes compared to the monetary poverty method.

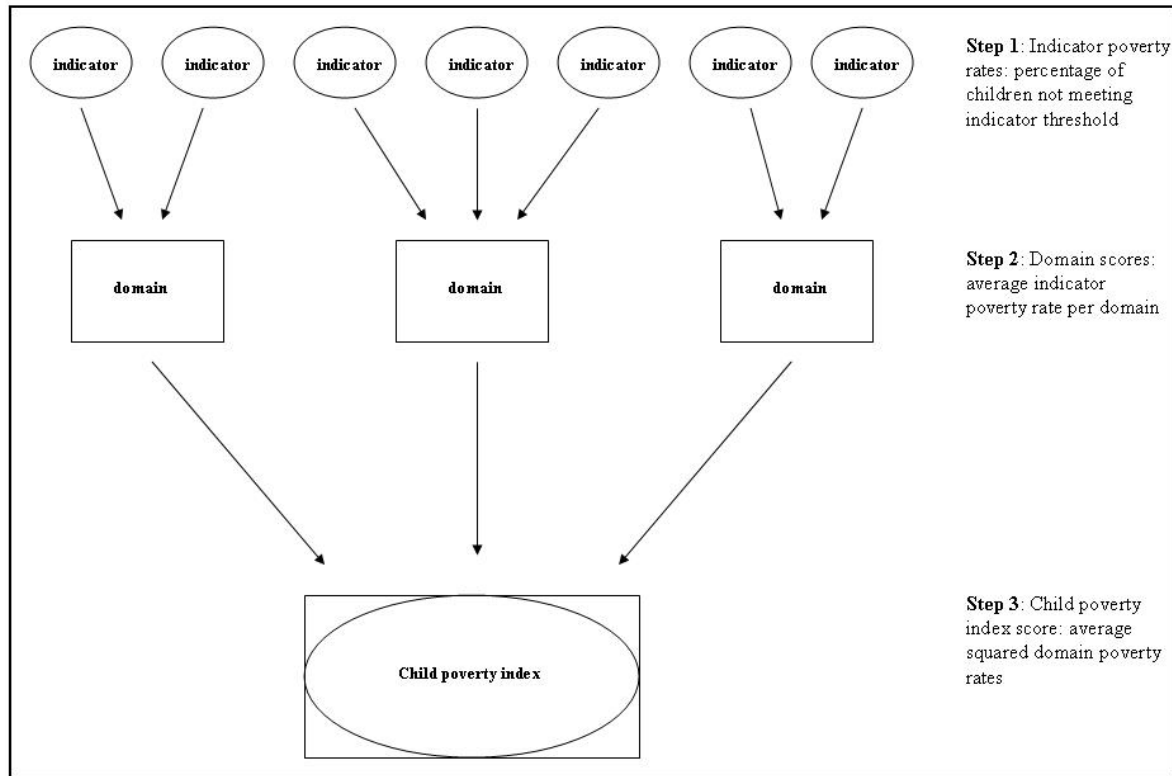
Box 6 Micro-data for calculation CPR

It is important to note that the calculation of the CPR requires micro-data at the level of individual child. In other words, one can only use survey data for the estimation of these types of poverty figures. The method required that we have information on the individual indicators for the individual children. We need to be able to "count" whether a child is poor in one, two or more domains to determine their poverty status. As a consequence, it is not possible to base the calculation of the CPR on aggregate numbers such as administrative data.

b) Child Poverty Index

The second outcome product is referred to as the **Child Poverty Index (CPI)**. Index scores are calculated for each region, providing an alternative method to analyze regional performance with respect to child poverty. The calculation of the Child Poverty Index can also be explained and illustrated through a three-step process (see Figure 2).

Figure 2 Calculating the child poverty index in Vietnam



Step 1: The first step follows the same procedure as for the child poverty rate. Indicator poverty rates are calculated for each indicator by considering whether a child meets the specified threshold or not. The indicator poverty rate represents the proportion of children that do not meet the indicator threshold as a proportion of children for whom that indicator was observed. In contrast to the calculations of the CPR, however, the data used does not have to be micro-data but can be also be macro-data at the level of geographical areas under comparison (see Box 7).

Step 2: Domain scores are calculated by calculating the average indicator poverty rate per domain. The sum of the poverty rates per domain is divided by the number indicators in that domain.

Step 3: The composite child poverty index is based on the domain score by firstly calculating the square of each domain score, thereby giving greater weight to larger values. Consequently, the sum of the squared domain scores is divided by the total number of domains.

Box 7 Macro-data for calculation CPI

The calculation of the child poverty index does not require micro-data but can also be based on aggregate numbers for the regions or geographical areas under consideration. In terms of the calculation process and the steps involved as discussed above, it means that the first step referring to the calculation of indicator poverty rates does not necessarily need to be based on data for individual children. The child poverty index does not require information on multiple indicators on the level of individual children but at the level of geographical disaggregation. The child poverty index methodology thus creates the opportunity for the use of administrative data and a more detailed analysis at geographically disaggregated levels. Administrative data will also be more feasible to collect for a large number of geographical areas than representative survey data, which costly and time-consuming.

In terms of the methodology used, the child poverty index can also be considered a squared domain severity index. The choice for this type of methodology hinges on a few underlying reasons. With respect to the first step, indicator poverty rates per geographical area (regions, in this case) are assessed against the target value of 0% poverty. As the indicator poverty rates represent the deviation from this target value, no special calculations are required to normalize the indicators. Other possible normalization methods for indicators and their consequences for the overall index score are discussed in Box 8. Second, the use of squared domain scores as a weighting scheme gives the index a “severity” element as higher domain scores are given a larger weight. It was deemed appropriate to apply a scheme that would highlight worse situations for children and give those greater weights. Further, applying this scheme to domain scores rather than indicator scores implies full compensability within domains but not between domains. Within one domain, a bad performance on one indicator can be offset with a good performance on another indicator. Full compensability between domains is abandoned when using squared domain scores. A high poverty rate in, for example, health can not be offset by a low poverty rate in water and sanitation. This is thought to properly reflect the actual situation of children as poverty in one domain can not just simply be compensated by affluence in another. Index scores are calculated for the eight regions of Vietnam for the purposes of geographical comparisons.

Box 8 Normalization of indicators for the calculation of CPI

Normalization of indicators aims to make indicators directly comparable with each other. Raw indicators are often expressed in different statistical units, ranges and scales, making it impossible to directly compare them. There are a number of normalization methods and the choice of a particular method depends on the kind of indicators to be normalized and the overall purpose of the index. The choice of the normalization method also has implications for the overall outcome of the composite index and its meaning. Therefore, the main consideration for the choice of a normalization method is its relation to the purpose and use of the index. One of such normalization methods is re-scaling to a reference value. Reference values can include the average regional domain poverty rate, the domain poverty rate of the best-performing region or a desired poverty rate (0%, for example) but its exact choice has implications for the overall outcome of the index score and subsequent regional rankings. The differences are illustrated using the example of the water and sanitation domain for the Red River Delta region.

- Normalization on the basis of the average regional water and sanitation poverty rate:

average regional poverty rate = 46%

Red River Delta poverty rate = 13%

normalized indicator score Red River Delta: $46-13=33$

- Normalization on the basis of the regional water and sanitation poverty rate of the best performing region:

Red River Delta is the best performing region with respect to water and sanitation

best performing regional poverty rate = 13%

Red River Delta poverty rate = 13%

normalized indicator score Red River Delta: 13 (Red River Delta rate) -13 (best performing regional poverty rate) $=0$

- Normalization on the basis of the desired water and sanitation poverty rate, which is 0%

target poverty rate = 0%

Red River Delta poverty rate = 13%

Normalized indicator score Red River Delta: $13-0=13$

The calculations above indicate that the use of different reference values leads to different indicator scores per region and also require different interpretations. With respect to the average regional poverty as reference, a higher positive value refers to lower levels of poverty in comparison to the reference while a higher negative value refers to more poverty in reference to the average. When the poverty rate of the best performing region is used, higher positive indicator scores refer to higher levels of poverty in reference to the best performing region. These two normalization methods make the indicators scores dependent on relative performance that can change over time. The third normalization method, however, calculates indicator scores in reference to a fixed target level, namely that of no poverty. Higher positive regional indicator scores indicate more poverty with respect to the target value in the specific region.

c) Shortcomings of analysis

The analysis presented in this report also suffers from a number of shortcomings, largely as a result of the available data. Firstly, the analysis provides static and one-shot picture of poverty. They do not provide an insight into the dynamics of child poverty over time or movements in and out of poverty. The data used in this study does not allow for these types of analyses and as a consequence, we are limited to a static analysis of child poverty. Secondly, this study only provides a child poverty incidence rate but does not consider depth or severity of poverty. The surveys used in this study do not collect information for all members of the household but direct different questions to household members of different ages. Hence, not all indicator vulnerabilities are observed for all children. Consequently, the assessment of multiple deprivations in one or more domains should be done with caution. Also the analysis of child poverty by age group is not self-evident as the poverty rate might reflect vulnerabilities in different areas, depending on the indicators observed for that specific age group. Further, a count of the total number of indicator vulnerabilities for every individual child to analyze the depth or severity of poverty would provide biased results. Delamonica and Minujin (2007) have attempted to extend the Bristol deprivation study with an analysis of depth and severity of child poverty by using the household as unit of analysis instead of the child. However, the use of this strategy would undermine the rationale and concept of this study, which explicitly focuses on the individual child.

7) Results –Indicator Poverty Rates and Domain Poverty Rates

This section provides the empirical results of the application of the CPR method to the MICS 2006 and VHLSS 2006 data. The results are firstly presented per indicator and domain and consequently for the CPR methodology. Individual indicator results can provide detailed information that is of great value for input into the policy design and implementation process. The indicators are easy to interpret and have not yet undergone any statistical manipulations. All results are disaggregated by gender, area, region and age group, providing insights into the situation for different demographic groups. Moreover, it is important to emphasize that all indicator rates are presented as indicator poverty rates. This means that indicators are formulated in a negative manner. For example, with respect to enrollment we do not consider the rate of children that go to school (as usually measured by the enrollment rate) but the rate of children that does NOT go to school. Formulating and calculating indicator rates in a negative manner ensures consistency with the overall child poverty rate but is also a prerequisite in order to be able to calculate child poverty. All indicators estimate the proportion of children in the specific age group that are poor, even though some indicators are measured at household level (see Box 9).

Box 9 Child-specific versus household level indicators

The approach for measuring child poverty in Vietnam is child-specific and predominantly measures issues at the level of the individual child. The term child-specific does not refer to issues only relevant for children and not for other members of the household. With the label child-specific, we refer to the level of measurement, which is ideally at the level of the individual child. However, certain indicators are measured at the household level rather than at the level of individual members of the household. The indicators for shelter and water & sanitation are household-level indicators. With respect to these indicators, we refer to the proportion of children living in households without proper shelter, water and sanitation conditions. Although strictly speaking these indicators do not adhere to the child-specific criterion, it is reasonable to assume that all members of the household have equal access to shelter and water & sanitation facilities. It was therefore decided to integrate these household-level indicators into the child poverty approach. However, it should be noted that this measure does not include households without children. As a result, indicator poverty rates for the child poverty approach (including only household with children) give different estimates compared to indicator poverty rates at the household level (including all households), and are thus not directly comparable.

a) Indicator poverty rates

Tables 4 and 5 provide a detailed overview of all the indicator poverty rates for MICS and VHLSS, disaggregated by gender, area, region, ethnicity and age groups. The results are discussed below and supplemented with specific information on the indicator poverty rates.

Table 4 Indicator poverty rates for selected child poverty indicators based on MICS data

	<i>Education poverty</i>		<i>Health poverty</i>	<i>Shelter poverty</i>			<i>Water and Sanitation poverty</i>		<i>Child work</i>	<i>Leisure poverty</i>		<i>Social Incl and Prot poverty</i>
	<i>MICS, n=8167, age 5-15</i>	<i>MICS, n=4381, age 11-15</i>	<i>MICS, n=1612, age 2-4</i>	<i>MICS, n=10874, age 0-15</i>				<i>MICS, n=7728, age 5-14</i>	<i>MICS, n=2680, age 0-4</i>			
	<i>Ind. 1 – Enrollment poverty rate (% children not enrolled)</i>	<i>Ind. 2 - Completion poverty rate (% children not having completed primary school)</i>	<i>Ind. 3 – Immunization poverty rate (% children not fully immunized)</i>	<i>Ind. 4 - Electricity poverty rate (% children in dwellings without electricity)</i>	<i>Ind.5 - Roofing poverty rate (% children in dwellings without proper roofing)</i>	<i>Ind. 6 - Flooring poverty rate (% children in dwellings without proper flooring)</i>	<i>Ind. 7- Sanitation poverty rate (% children in dwellings without hygienic sanitation)</i>	<i>Ind. 8 - Drinking water poverty rate (% children in dwellings without safe drinking water)</i>	<i>Ind. 9 - Child work rate (% children working)</i>	<i>Ind. 10 - Toy poverty rate (% children not having toys)</i>	<i>Ind. 11- Book poverty rate (% children not having at least one book)</i>	<i>Ind. 12 - Birth registration poverty rate (% children not having birth registration)</i>
Total	18.38	9.11	31.37	4.02	9.01	21.95	41.10	12.56	23.67	29.32	65.63	12.37
Gender												
<i>Male</i>	18.93	9.54	31.61	4.27	9.18	22.57	41.62	12.29	22.97	27.87	64.35	12.75
<i>Female</i>	17.79	8.66	31.14	3.76	8.82	21.30	40.54	12.85	24.39	30.90	67.02	11.95
Area	***	***	***	***	***	***	***	***	***	***	***	***
<i>Urban</i>	12.27	5.12	20.16	0.65	2.22	6.75	13.06	3.26	10.40	10.71	40.41	5.73
<i>Rural</i>	19.99	10.19	34.86	4.95	10.87	26.13	48.79	15.11	27.19	35.08	73.43	14.42
Region	***	***	***	***	***	***	***	***	***	***	***	***
<i>Red River Delta</i>	12.65	2.45	16.94	0.00	1.04	4.74	13.41	1.26	23.25	13.97	50.79	2.22
<i>North East</i>	20.67	14.39	52.78	13.59	25.64	51.46	51.55	19.34	33.24	62.02	78.05	17.42
<i>North West</i>	33.57	20.28	58.90	28.09	18.82	69.49	74.63	30.96	40.69	41.58	74.73	24.73
<i>North Central Coast</i>	13.08	4.87	33.01	0.28	5.76	12.70	35.74	8.47	30.01	44.76	73.02	12.70
<i>South Central Coast</i>	16.67	7.79	23.35	1.06	3.18	8.71	40.76	11.29	18.63	21.79	55.71	13.21
<i>Central Highlands</i>	22.30	17.49	42.59	6.57	2.90	18.24	57.01	18.02	14.81	40.27	71.81	21.70
<i>South East</i>	20.37	8.98	21.29	1.75	1.35	6.85	26.45	7.17	15.54	18.75	55.36	4.17
<i>Mekong River Delta</i>	23.23	13.73	32.29	3.18	17.86	38.99	69.17	23.41	20.88	18.98	75.30	19.88

<i>Ethnicity</i>	***	***	***	***	***	***	***	***	***	***	***	***
<i>Kinh/Chinese</i>	16.33	6.9	25.51	1.03	5.22	13.77	33.79	8.98	21.24	20.74	61.65	8.44
<i>Other</i>	28.76	21.11	5853	18.84	27.74	62.41	77.25	30.28	35.81	69.35	84.29	30.62
<i>Age groups</i>	***	***		***	***	***	***		***	***	***	***
<i>0-2</i>	na	na	32.60	4.46	9.41	22.89	43.59	12.42	na	31.99	70.87	14.92
<i>3-4</i>	na	na	30.71	4.55	9.06	24.49	45.47	13.67	na	25.18	57.48	8.38
<i>5</i>	17.65	na	na	5.10	10.05	25.74	45.45	13.64	1.01	na	na	na
<i>6-10</i>	6.87	na	na	4.68	10.43	23.51	41.77	13.01	11.69	na	na	na
<i>11-14</i>	17.49	9.86	na	3.26	7.54	19.09	38.16	11.73	38.19	na	na	na
<i>15</i>	59.64	6.37	na	2.64	8.32	20.56	37.76	12.47	na	na	na	na

Note: ***<0.001, significance level chi-squared group equality of means

Table 5 Indicator poverty rates for selected child poverty indicators based on VHLSS data

	<i>Education poverty</i>		<i>Health poverty</i>	<i>Shelter poverty</i>		<i>Water and Sanitation poverty</i>		<i>Child work</i>	<i>Social Incl and Prot poverty</i>
	<i>VHLSS, n=8326, age 5-15</i>	<i>VHLSS, n=4654, age 12-15</i>	<i>VHLSS, n=1428, age 2-4</i>	<i>VHLSS, n=10696, age 0-15</i>			<i>VHLSS, n=7800, age 6-15</i>	<i>VHLSS, n=10696, age 0-15</i>	
	<i>Ind. 1 – Enrollment poverty rate (% children not enrolled)</i>	<i>Ind. 2 - Completion poverty rate (% children not having completed primary school)</i>	<i>Ind. 3 –Health visit poverty rate (% children not having visited a health facility)</i>	<i>Ind. 4 - Electricity poverty rate (% children in dwellings without electricity)</i>	<i>Ind.5 - Housing poverty rate (% children living in improper housing)</i>	<i>Ind. 6- Sanitation poverty rate (% children in dwellings without hygienic sanitation)</i>	<i>Ind. 7 - Drinking water poverty rate (% children in dwellings without safe drinking water)</i>	<i>Ind. 8 - Child work rate (% children working)</i>	<i>Ind. 9 – Caregiver poverty rate (% children with caregivers that are not able to work)</i>
<i>Total</i>	17.97	9.17	47.81	5.95	17.89	47.74	11.84	8.91	8.01
<i>Gender</i>									
<i>Male</i>	18.93	9.81	49.76	5.38	17.83	47.55	11.37	9.22	7.84
<i>Female</i>	16.98	8.53	45.70	6.54	17.96	47.94	12.33	8.59	8.19
<i>Area</i>	***	***	***	***	***	***	***	***	***
<i>Urban</i>	11.57	5.39	38.14	0.88	7.38	15.43	2.20	2.80	13.69
<i>Rural</i>	19.78	10.21	50.90	7.41	20.93	57.06	14.62	10.62	6.38
<i>Region</i>	***	***	***	***	***	***	***	***	***
<i>Red River Delta</i>	10.71	3.80	52.46	0.61	2.06	24.52	0.74	4.82	9.20
<i>North East</i>	15.78	6.30	59.02	10.96	20.32	52.19	17.26	15.22	5.12
<i>North West</i>	33.07	31.24	68.77	32.70	27.97	88.04	41.56	19.68	2.43
<i>North Central Coast</i>	17.52	7.54	66.43	4.33	10.73	45.22	7.36	10.29	6.56
<i>South Central Coast</i>	13.75	4.90	41.62	1.78	7.32	41.77	5.43	5.11	5.50
<i>Central Highlands</i>	23.31	15.12	40.73	7.17	21.83	67.96	9.93	10.66	2.78
<i>South East</i>	16.45	9.59	35.40	2.96	12.16	26.74	4.13	6.22	11.45
<i>Mekong River Delta</i>	25.02	13.16	34.66	7.80	43.94	72.88	27.15	9.30	11.66
<i>Ethnicity</i>	***	***	***	***	***	***	***	***	***
<i>Kinh/Chinese</i>	15.04	6.32	46.31	2.63	15.05	39.17	6.96	6.62	8.87
<i>Other</i>	32.39	24.07	54.71	21.74	31.41	88.54	35.05	20.29	3.92

Monetary poor	***	***	***	***	***	***	***	***	
<i>Poor</i>	29.36	23.92	58.51	15.63	31.16	78.69	23.77	15.36	6.68
<i>Non-poor</i>	14.89	5.91	43.76	3.12	14.02	38.70	8.35	7.2	8.4
Age groups	***	***			***			***	***
<i>0-2</i>	na	na	45.52	6.85	17.86	48.11	13.26	na	12.75
<i>3-4</i>	na	na	48.97	7.22	19.46	47.83	12.85	na	12.14
<i>5</i>	40.57	na	na	6.64	19.16	48.29	11.83	na	9.35
<i>6-10</i>	7.31	na	na	6.68	19.02	48.90	11.70	1.31	7.66
<i>11-14</i>	17.00	10.24	na	4.97	17.15	47.51	11.63	11.29	5.54
<i>15</i>	42.64	5.32	na	4.37	15.00	44.15	10.07	23.88	6.81

Note: ***<0.001, significance level chi-squared group equality of means

i) Education

Indicator poverty rates for education are 18% concerning net enrollment and 9% with respect to the primary school completion rate. In other words, almost one out of five children aged 5-15 do not attend school in a level that is appropriate for their age. Almost one out of ten children between the ages of 11-15 do not complete primary school. The considerable difference between enrollment and primary school completion poverty rates can be explained by the fact that the net enrollment indicator is stricter and as such more difficult to comply with. Primary school completion is considered over a 3-year time span while net enrollment strictly considers enrollment in a specific level of schooling given the child's date of birth.

Demographic breakdown shows that for both indicators there is no gender inequality but there is a significant difference between urban and rural areas. Rural areas have approximately twice as high poverty rates for both net enrollment poverty and primary school completion poverty. Decomposition by region and age groups displays significant differences for both indicators. The North West and Mekong River Delta regions have consistently higher poverty rates while the Red River Delta holds the lowest percentage of poor children. The most vulnerable age groups with respect to net enrollment are the 5 and 15-year olds. Unsurprisingly, the oldest children are least vulnerable in reference to primary school completion.

Figure 3 Enrollment poverty rate per level of schooling based on MICS data

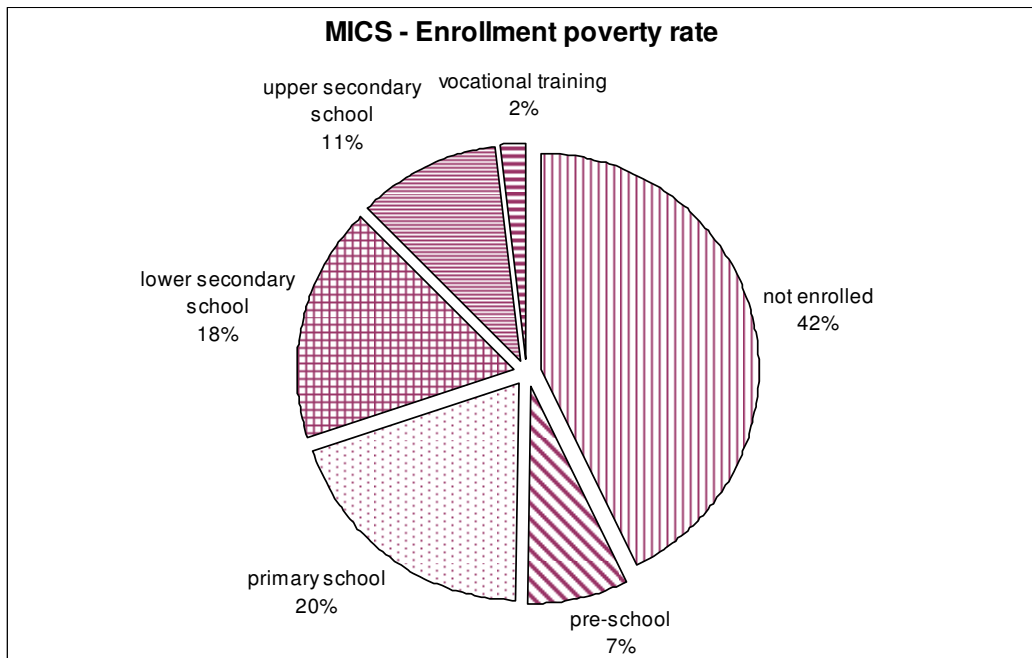
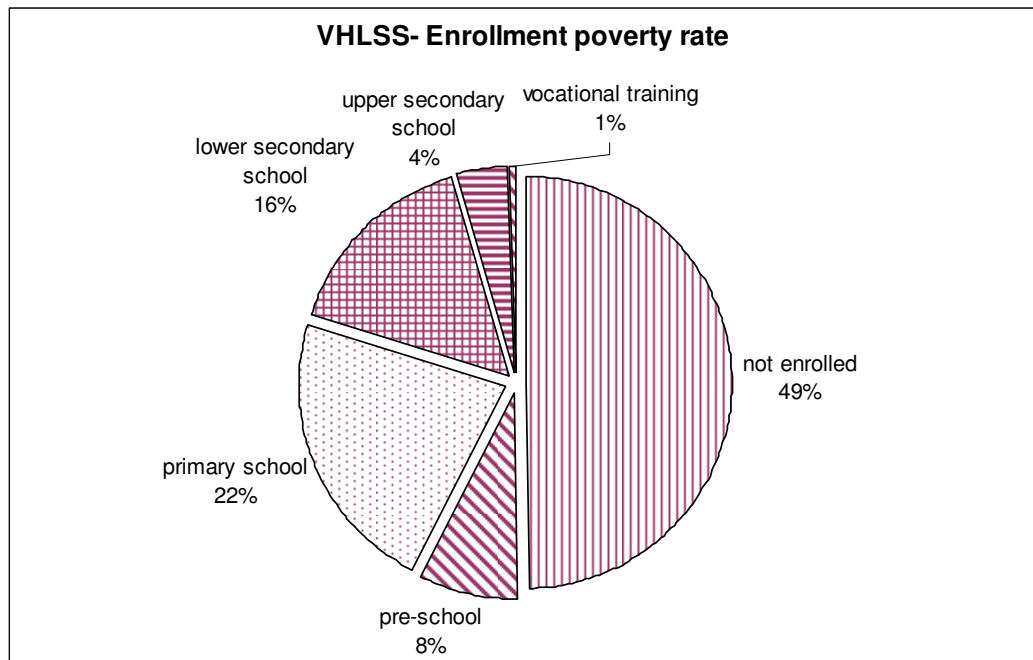


Figure 4 Enrollment poverty rate by level of schooling based on VHLSS data



After having considered the overall profile, we can consider enrollment poverty in more detail. The group of children captured as enrollment poor is decomposed by level of schooling in Figures 3 and 4. Based on both MICS and VHLSS data, we find that 42 to 49% of those children that are enrollment poor are not enrolled at all. Further, 20 to 22% of the children that are enrollment poor can be found in primary schools and 16 to 18% in lower secondary schools. In other words, the appropriate level of schooling for these children in accordance with their age would respectively be lower secondary or upper secondary school. The level of schooling they are currently enrolled in is lower than appropriate and indicates that they are behind in their educational development in comparison to other children in that age group. The relatively low poverty rates for upper secondary school and vocational training can be explained by the fact that many children drop out of school after lower secondary school and are thus reflected in the “not enrolled” category instead. Children of 15 years of age, for example, should be in upper secondary school or possibly vocational training considering the appropriate level of schooling for their age. However, 36% of them are not enrolled at all. In sum, enrollment poverty is an issue existent at all levels of education but should be tackled at the lowest age or level of education possible. Once a child is in a level that is lower than appropriate for his or her age, it will never be able to catch up again in terms of net enrollment. However, as a large percentage of older children tend to drop out of schooling altogether, efforts should also be directed towards encouraging enrollment in upper secondary school and vocational training.

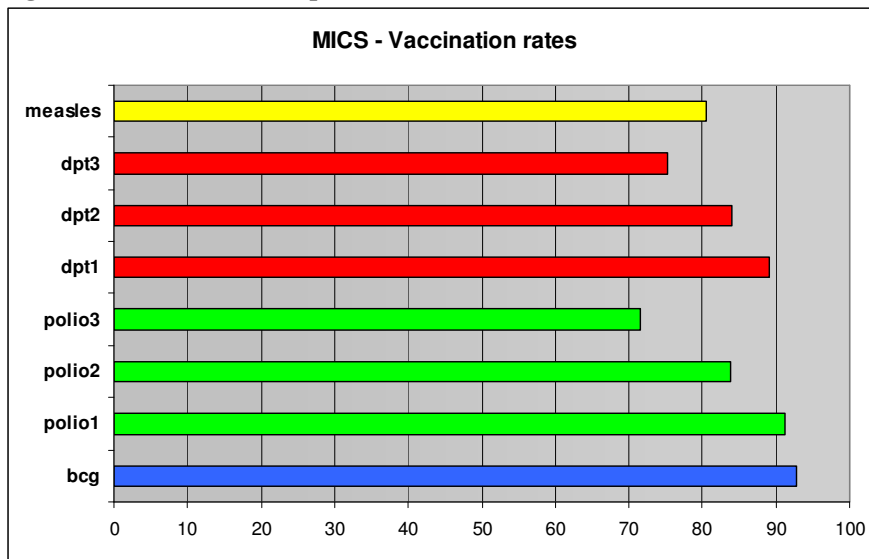
ii) Health

The immunization poverty rate based on the MICS data indicates that 31% of all children aged 2-4 have not received the full set of vaccinations. From Table 4, we can observe that the degree of non-immunization is considerably lower in urban areas than rural areas and in the Red River Delta, South East and South Central coast regions compared to other

regions. In these easily accessible and more densely populated parts of the country, the immunization programme is better able to reach children than it is in the more distant northern mountainous area, for example. In fact, in the North East and North West regions more than half of all children aged 2 to 4 are not fully immunized, accounting for 53% and 60% respectively. This can be attributed to infrastructure but possibly also to a lack of awareness about the importance of children having received the full immunization package. The MICS survey does not provide any information about possible reasons for immunizing or not immunizing children.

Figure 5 presents the proportions of children in that agegroup that have received a specific vaccination and provide a more detailed account of the situation with respect to immunization. It shows that more than 90% of all children have received the BCG vaccination against tuberculosis. Further, almost 9 out of 10 children are immunized against polio and DPT at least once. However, vaccinations rates drop when considering the second and third round of vaccinations against polio and DPT. The vaccination rate for measles, an indicator for MDG 3, is considerably lower than the first round of vaccinations for other diseases.

Figure 5 Vaccination rates per vaccination based on MICS data

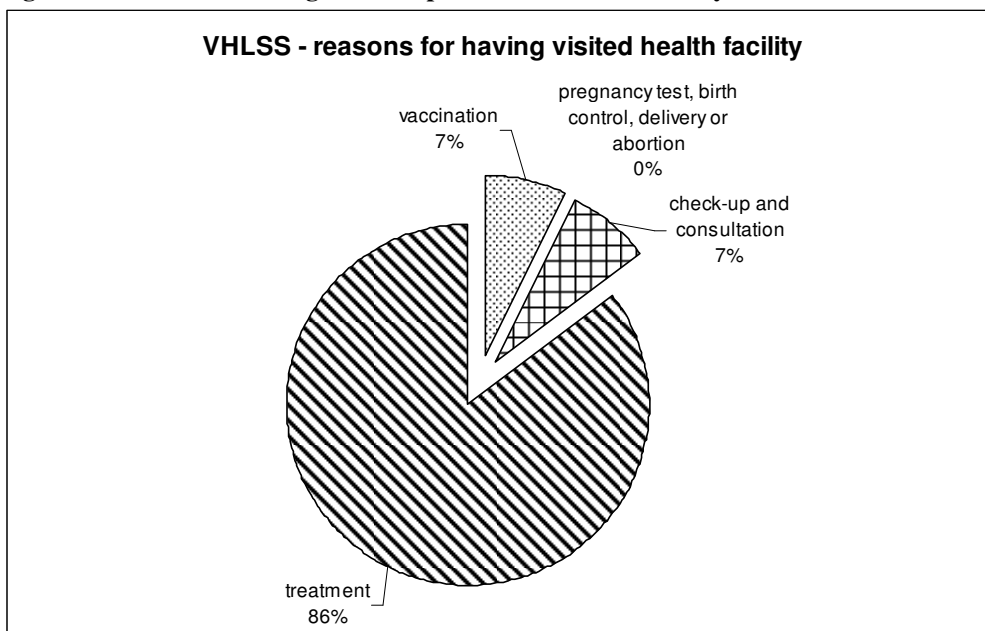


The findings in Figure 5 suggest that the main problem with respect to immunization is not to provide any type of vaccination but rather to ensure that children receive all vaccinations. Further emphasis needs to be placed on creating awareness about the importance of receiving the full package, as organizations like the WHO point out, and putting the infrastructure in place to create an enabling environment.

The health poverty indicator for VHLSS indicates that almost half of all children aged 2-4 has not visited a professional health facility in the 12 months preceding the survey. There are no significant gender and age differences but as is the case for the immunization poverty rate based on MICS data, large discrepancies between area and regional rates can be observed. It is noteworthy that more than half of all children in the Red River Delta region have not visited a health facility compared to much lower poverty

rates in the South Central Coast, Central Highlands, South East and Mekong River Delta regions. An explanation for high poverty rates in otherwise well-performing regions might be that the indicator does not only capture access to health facilities but also occurrence of illness. Figure 6 presents a breakdown of the purpose of visits for those children that have visited a professional health facility in the last 12 months (hence those that were not identified to be poor). The majority of the visits were made to receive treatment, while a minority of children went for a check-up or vaccination. The small proportion of children receiving a vaccination at the health facility implies that another infrastructure for the provision of immunization services is more important than health facilities. Hence, this indicator might be less adequate as a proxy for immunization but does provide an indication about the access to health services.

Figure 6 Reasons for having visited a professional health facility based on VHLSS



iii) Shelter

With respect to the electricity poverty rate, it can be observed from Tables 4 and 5 that only a small proportion of children live in dwellings that do not have electricity. Hardly any children in urban areas do not have electricity in their house while this is the case for one out of twenty children in rural areas. Large differences exist between regions with respectively 28 to 32% of all children in the North West and 10 to 13% in the North East being electricity poor. In contrast to access to electricity, high poverty rates can be observed for the other housing indicators based on both the MICS as well as VHLSS data. Considering the roofing and flooring poverty indicators based on the MICS data, we observe that almost 1 out of 10 children live in a dwelling without a proper roof and 1 out of 5 children in a dwelling without a proper floor. Great geographical differences underlie the overall poverty figures of all three indicators. There are a great urban-rural and regional disparities. Shelter poverty rates are highest in the North East and North West regions, followed by the Mekong River Delta. Regional poverty rates range from 26 for North East to 18% for Mekong River Delta for roofing and 69 for North West and 39%

for Mekong River Delta for flooring. These trends are also observed for the housing indicator based on the VHLSS data referring to housing types. The housing poverty rate in rural areas is 21% compared to 7% in urban areas, while the housing poverty rates for the Mekong River Delta and North West regions are respectively 44% and 28%. It is noteworthy that the Mekong River Delta is the region with the highest poverty rate and that the Central Highlands region ranks third with a rate of 22%. The specific regional results imply that housing conditions are dependent on the natural conditions of the area, including weather and environment. Yet, specific housing styles and traditions, especially among the ethnic minority groups, may also explain the use of predominantly natural materials. This notion indicates that one needs to be cautious when interpreting or contextualizing the poverty indicator estimates, taking into account contextual issues and not limiting oneself to generalizations.

Figures 7 and 8 present the prevalent flooring materials and housing types per region, providing in-depth information about regional disparities. Especially Figure 7 reveals a large degree of variance with respect to the use of flooring materials by region. While more than 25% of the children in the mountainous regions live in dwellings with a floor made out of wood planks, one thirds of all children in the Mekong River Delta live in dwellings with dirt used as flooring material. But also among the regions with low flooring poverty rates, we observe great differences. While more than half of the children in the Red River Delta and South East regions live in dwellings with vinyl floors, the majority of children in the South Central Coast region live in dwellings with cement floors. This observation further underlines the reasoning that types of building materials for housing is very dependent on regional conditions and their connection to child poverty is not always clear.

Figure 7 Use of flooring materials by region based on MICS data

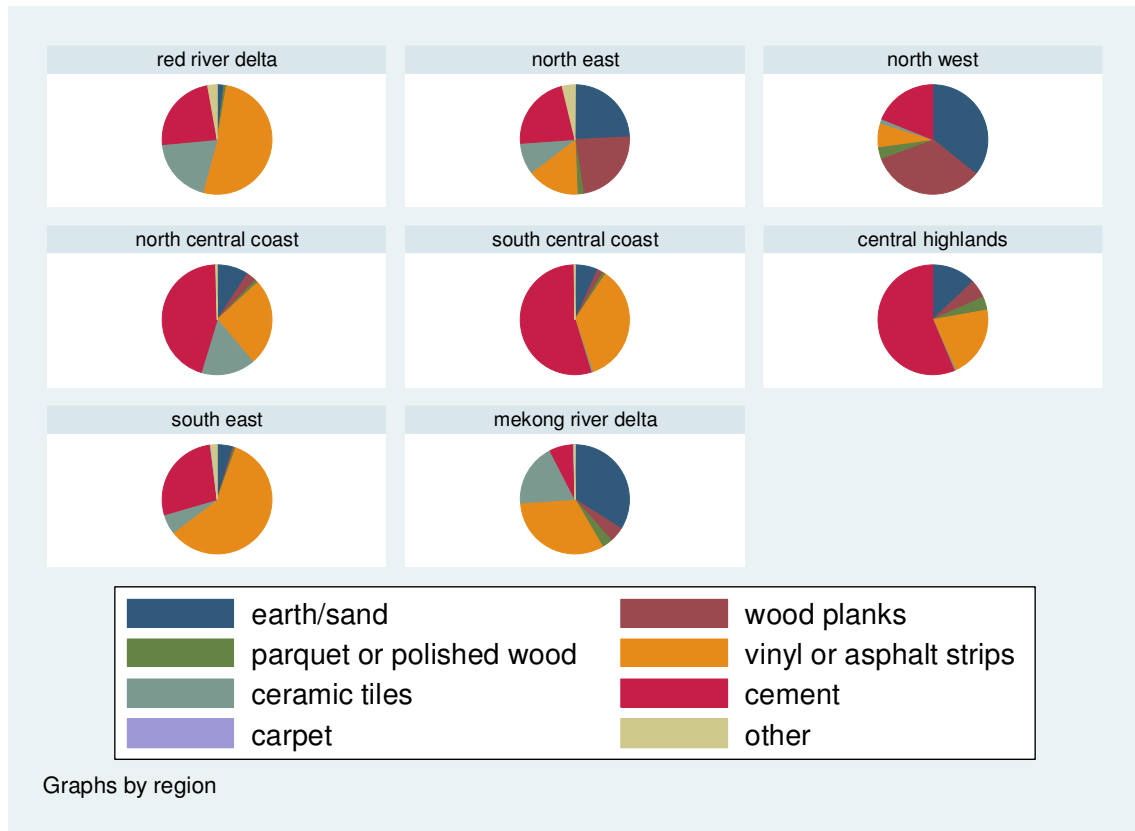


Figure 8 Housing types by region based on VHLSS data



Figure 8 also displays this variety in housing types by region. The large proportion of children in the Mekong River Delta that lives in shift-made houses is remarkable. The widespread use of this type of housing in that region could be attributed to the fact that these houses are built in river delta that often suffers from floods. Rather than building strong or semi-permanent houses, people opt for building temporary housing.

The detailed regional information on housing conditions confirms that use of materials and types of housing is very geographically dependent. The large regional differences could, on the one hand, be attributed to natural conditions and, on the other hand, to local traditions and cultures. Reducing shelter poverty would thus need a different approach in each region.

iv) Water and Sanitation

The water and sanitation poverty indicators display large poverty rates, especially with respect to hygienic sanitation facilities. Almost half of all children in Vietnam live in a dwelling without a hygienic sanitation facility. These rates are the second highest indicator poverty rates based on both the MICS and VHLSS data, implying that hygienic sanitation is one of the most stringent issues with respect to child poverty. Indicator poverty rates for access to safe drinking water hover around 12%. For both indicators, we do not observe significant differences between boys and girls or for different age groups (which is a logical result of water and sanitation indicators being measured at the household level) but the findings do suggest a large rural-urban divide and great regional disparities. About half of all children in rural areas are sanitation poor compared to 15% of all children in urban areas. Further, sanitation poverty rates range from 13% to 75% in the different regions based on MICS data and from 25% to 88% when based on VHLSS data. The North West and Mekong River Delta regions hold the largest proportions of vulnerable children with respect to sanitation as well as drinking water.

Figures 9 and 10 present the different types of sanitation used per region. In line with the figures in the shelter domain, we observe a large degree of variety in the types of sanitation used in regions with high as well as low sanitation poverty rates. Based on MICS data, the large majority of children in the North West region live in dwellings with no facility or a pit latrine without slab. This is matched by the VHLSS data, indicating that “no toilet” and “other facility” categories are most prominent in this region. More than half of all children in the Mekong River Delta region, however, use a hanging toilet or bucket (MICS) or a toilet directly over water (VHLSS). When considering the two regions with the lowest poverty rates, the Red River Delta and South East, we find that the use of a septic tank flush toilet is 16 percentage points higher in the South East region compared to Red River Delta. The use of a composting toilet is five times more prevalent in the Red River Delta than in the South East. Based on these findings, we can conclude that not only shelter types and materials but also sanitation use is highly geographically dependent. Also in this case, natural conditions and tradition or cultural habits might play a major role.

Figure 9 Sanitation types by region based on MICS data

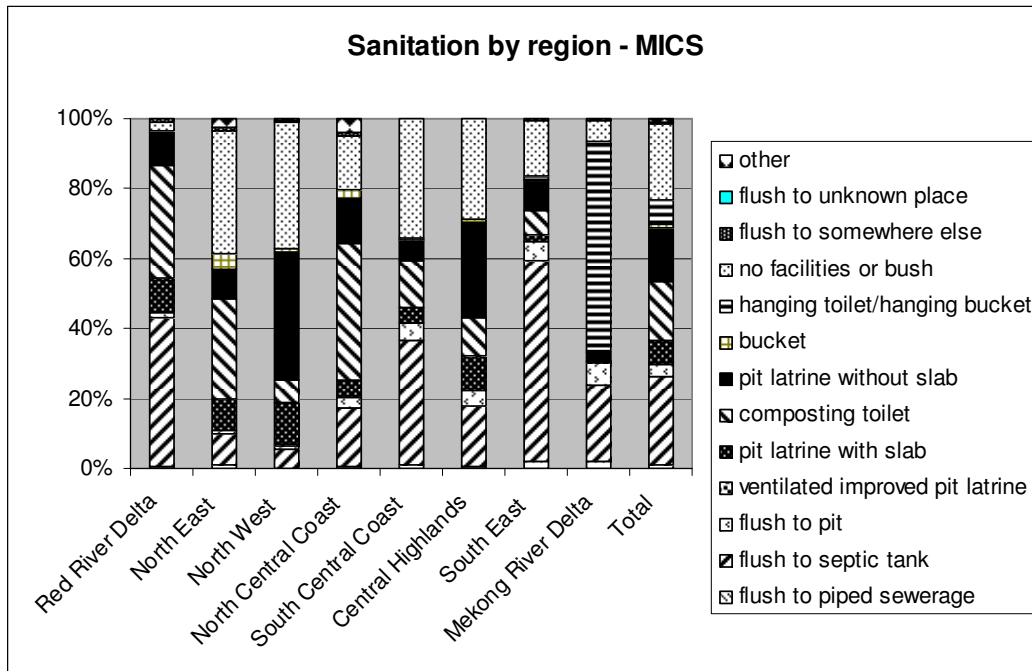
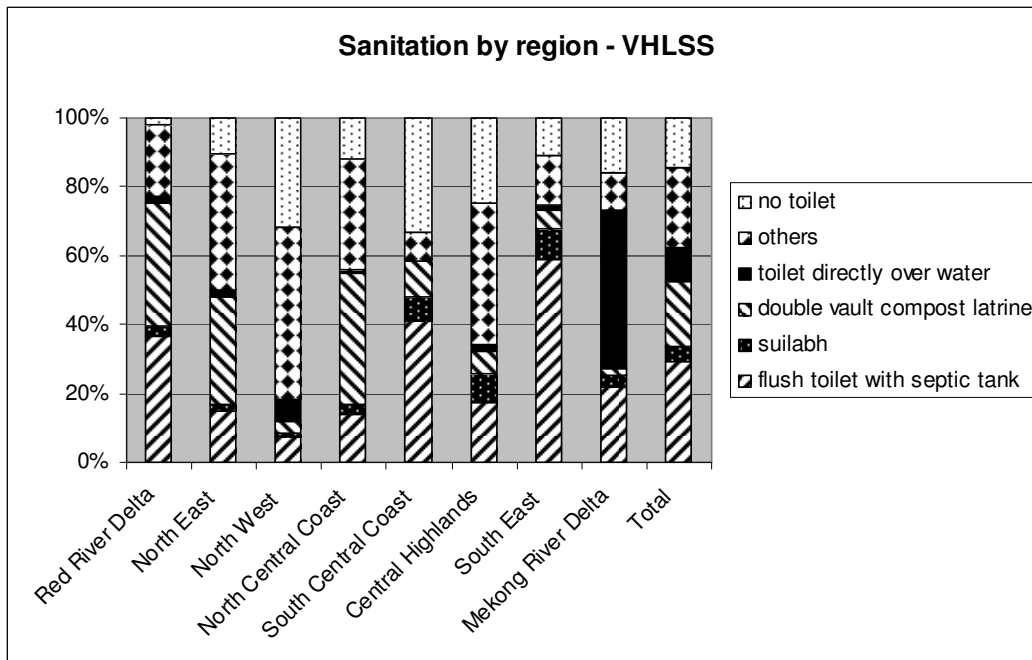


Figure 10 Sanitation types by region based on VHLSS data



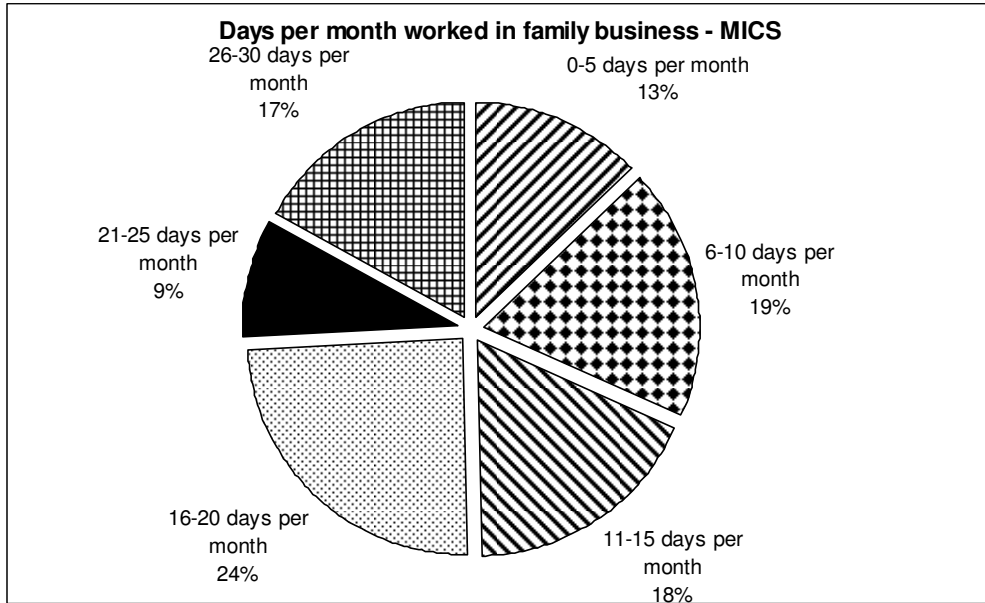
v) *Child Work*

Tables 4 and 5 display child work rates based on the MICS and VHLSS data. The estimate based on MICS data indicates that 24% of all children aged 5 -14 work for an employer or in household production. The child work rate is much lower when based on VHLSS data with an estimated 9% of all children aged 6-15 working. Decomposition by gender, area, region and ethnicity, however, provide similar patterns. There are no significant differences between boys and girls, not pointing towards any gender inequality with respect to child work. Child work rates are significantly higher in rural areas than urban areas and in the North West, North East and North Central Coast regions compared to other regions. A relatively high degree of child work in the Red River Delta indicated by MICS data could be due to large numbers of children being involved in hawking, begging, selling tickets and products in Hanoi. Children from ethnic minorities are also more likely to be involved in child work than those of Kinh or Chinese ethnicity. Decomposing the data by age groups indicates that older children are more likely to be vulnerable in terms of child work.

The large difference in child work rates based on MICS and VHLSS can largely be explained by the way in which the questions on work are formulated in the survey questionnaires. The question focusing on employment outside of the household only refers to paid employment in the VHLSS. In MICS, however, this question also includes unpaid work. Further, the questions in VHLSS with respect to within-household employment are more geared towards self-employment rather than working in household production from time to time. The MICS specifically asks about any work done in household production or services, regardless whether this is self-employment or part of family work. Despite the fact that these seem minor differences in the formulation of questions, they might greatly impact the estimated number of children involved in child work. It is difficult to assess which figures gives a true reflection of reality but the estimate based on the VHLSS data can be thought of as the lower bound of child work rate and the estimate based on MICS data as the upper bound. The “true” child work rate most likely lies in between these two bounds.

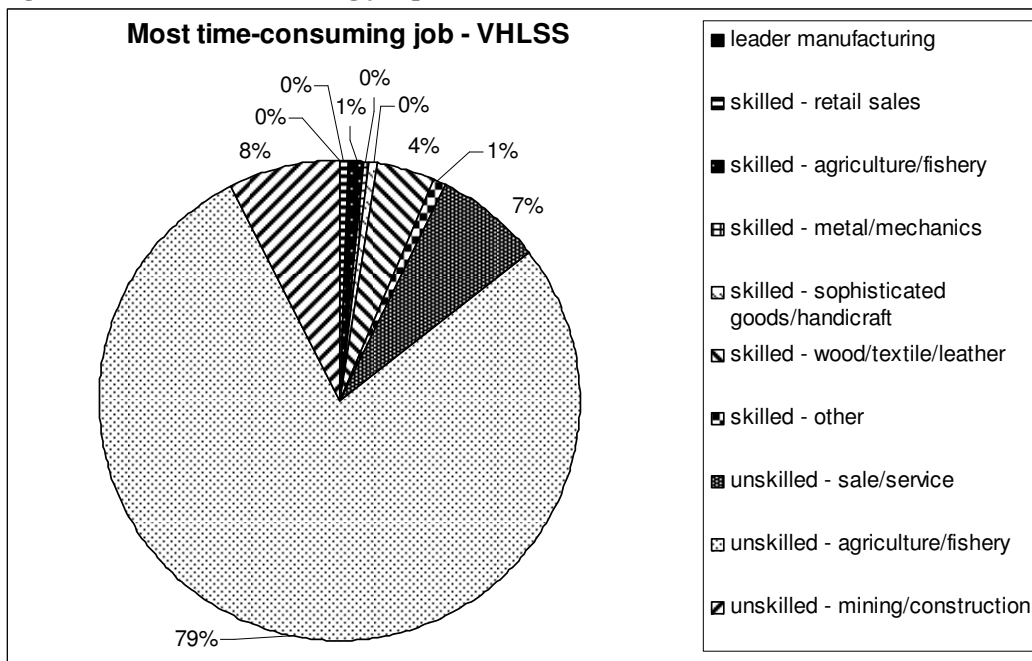
An in-depth look at the figures provided can give valuable insight into the characteristics of child work in Vietnam. Figure 11 presents the proportion of children that worked several days per month in family business. While 32% of all children having worked in family business in the last 12 months do so occasionally, from 0 to 10 days per month, half of them worked at least 16 days per month. 17% of all children worked almost every day of the month. These numbers of working days imply a serious inhibition to children’s developmental activities such as going to school, doing sports or playing.

Figure 11 Days per month worked in family business based on MICS data



The most time-consuming jobs that children have performed, inside or outside of the household, are presented in Figure 12. The large majority of children, 79%, have performed unskilled work in agriculture or fishery. Other jobs include unskilled work in the field of mining or construction and sales and service. Hence, children are mainly used as cheap workers, without learning or performing a specific skill. Only a very small percentage of children work in skilled work.

Figure 12 Most time-consuming job performed in last 12 months based on VHLSS data



vi) *Leisure*

The leisure indicators, which are exclusively based on MICS data, display high poverty rates, especially with respect to the availability of children’s or picture books. While almost one-third (29%) of all children aged 0-4 do not have homemade or store bought toys, more than double that number of children (65%) do not have any children’s or picture books. These leisure poverty rates are higher in rural areas, in the Northern regions and Mekong River Delta, for children of ethnic minorities and for children of low ages. The data do not reveal major differences between boys and girls. A possible explanation for the high poverty rates within this domain is the low priority parents attach to their children owning such objects. They are considered to be a luxury rather than something that is crucial for early childhood development.

Figure 13 Types of toys by area based on MICS data

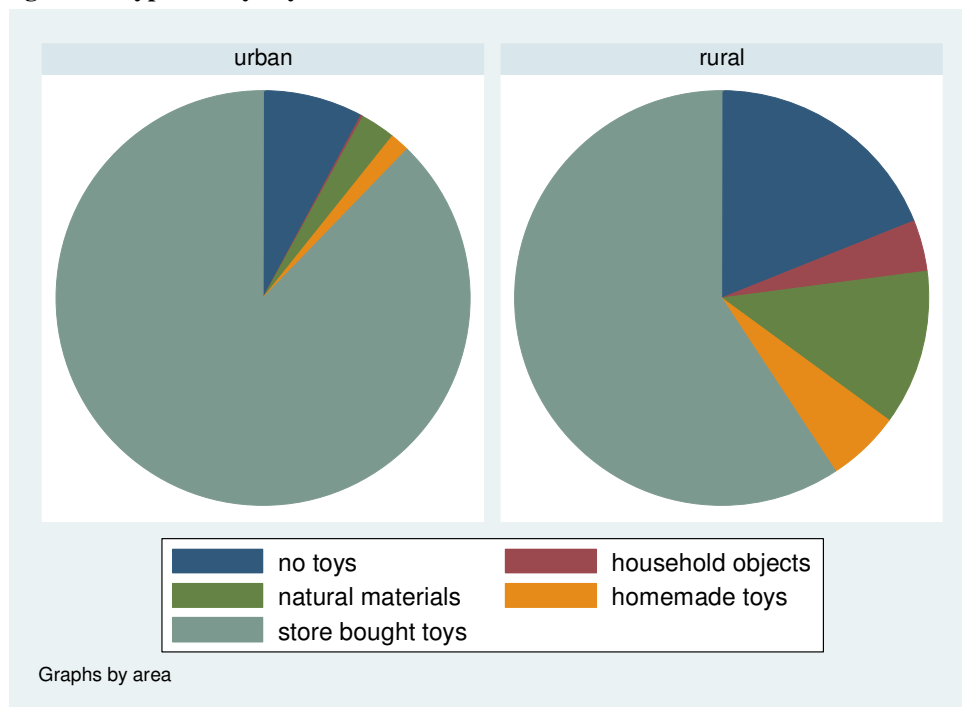


Figure 13 presents the types of toys available to children aged 0-4 in urban and rural areas. The large majority of children (almost 90%) in urban areas have store bought toys while this proportion is considerably smaller in rural areas. However, most of those children in urban areas that do not have store bought toys do not have toys at all. Children in rural areas, however, create alternative toys in the form of homemade toys, natural materials and household objects. The latter two categories are not considered as proper toys. In order to reduce the leisure poverty rate, awareness needs to be created about the importance of leisure activities for children to increase its priority.

vii) *Social Inclusion and Protection*

Poverty rates with respect to social inclusion and protection are represented by two different indicators presented in Tables 4 and 5. The indicator for the MICS data focuses

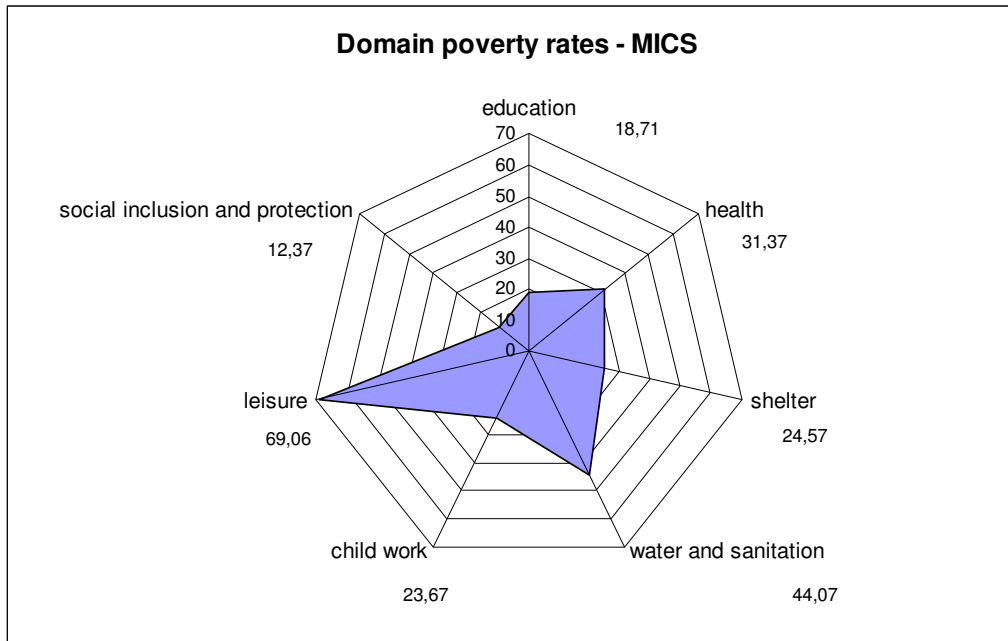
on birth registration for children aged 0-4. The social inclusion and protection indicator based on VHLSS data refers to the ability of the household head to work. Although both indicators provide an indication of the degree to which a child is socially included or protected, they essentially measure different things. As the estimates are also based on different data sets, a direct comparison can thus not be made. The MICS data indicates that 12% of all children aged 0-4 have no birth registration. The VHLSS data, in turn, reveal that 8% of all children aged 0-15 live in a household of which the head (caregiver) is unable to work. For both these indicators in the domain of social inclusion and protection, we do not observe significant differences between boys and girls. However, the figures do suggest an urban-rural gap. The birth registration indicator displays higher poverty in rural areas. In contrast, the caregiver indicator displays considerably higher poverty in urban areas. This might be explained by the fact that household heads that can not work due to old age or disablement live with family members in the city that are able to earn an income and support them. In terms of regional poverty rates, we also observe that the usually high-ranking Red River Delta and South East regions have high poverty rates with respect to the caregiver indicator. With respect to the birth registration indicator, the usual regional pattern can be observed with low poverty in the Red River Delta regions and high poverty in the North West region. In other words, the caregiver indicator based on VHLSS data referring to non-working household heads due to disablement, old-age or retirement seems to capture a situation that is more specific to areas and regions that are performing better in other regions. Unfortunately, information with respect to social protection and inclusion is scarce in both surveys, not allowing us to complement these figures with other information to gain a more detailed insight.

b) Domain poverty rates

After having analyzed the individual indicators, we aggregate them to obtain domain poverty indicators. These numbers provide less detailed information but do provide the possibility to analyze child poverty at the domain level. Domain poverty is based on indicator poverty and a child is considered to be poor in a domain when he or she is poor with respect to at least one indicator within that domain, as depicted in the methodology section.

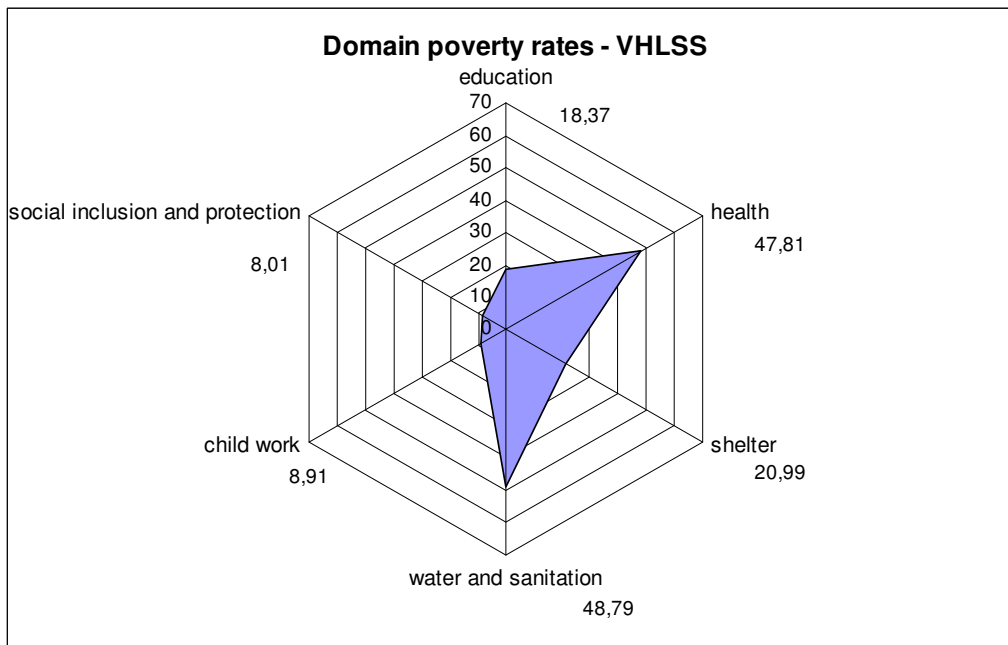
Figure 14 displays the domain poverty rates based on MICS data as proportions of those groups of children for which the domain poverty could be observed. In line with the observations for the individual indicators, we find that leisure and water and sanitation are the domains with the highest poverty rates, ranging from 69% to 44%. The domains of health, shelter and labor respectively rank third, fourth and fifth. Education and social inclusion and protection hold the lowest rates of poverty at 19% and 12%.

Figure 14 Domain poverty rates based on MICS data



The cobweb diagram in Figure 15 representing the domain poverties based on the VHLSS data is not directly comparable to the diagram based on MICS data as the leisure domain is not included. The domains of water and sanitation and health reveal the highest poverty rates of 49% and 48%. The shelter and education domains have poverty rates around 20%. 9% of children aged 6 -15 are involved in work and 8% of all children are considered poor in the area of social inclusion and protection.

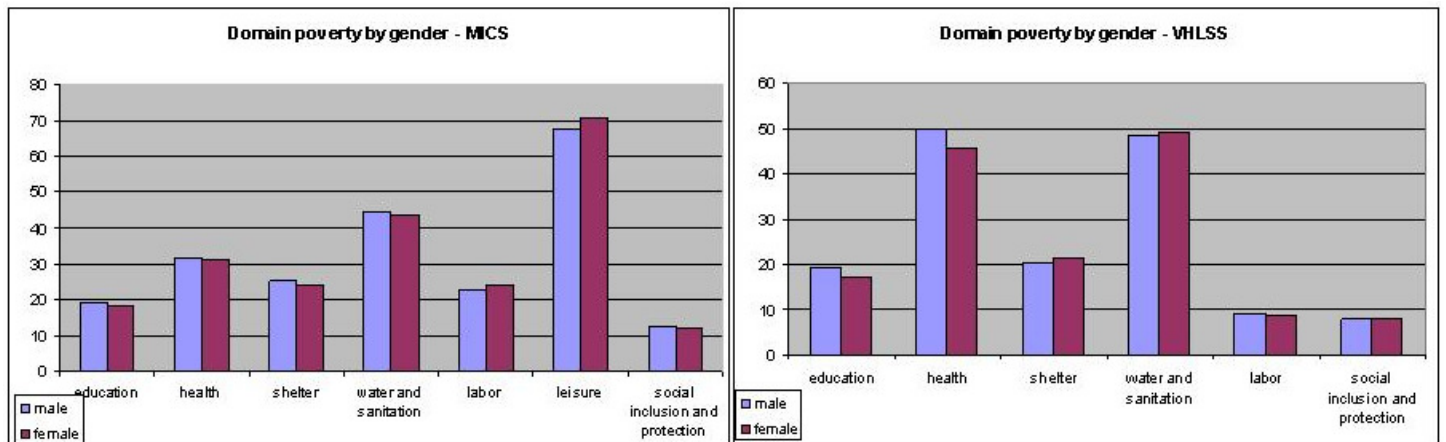
Figure 15 Domain poverty rates based on VHLSS data



Despite the differences in domain poverty rates, the areas of water and sanitation, leisure and health can be considered priority areas with respect to child poverty. Regardless of the survey data used, almost half of all children suffer poverty with respect to water and sanitation. Health poverty for children between the age of 2 and 5 ranges from 32% to 48%, depending on the data and indicator. Further, a quarter to one-fifth of all children is poor with respect to shelter. A comparison of both data sets provides inconclusive results with respect to the domain of child work. A detailed consideration of the individual indicators underlying these domains is necessary to obtain useful information.

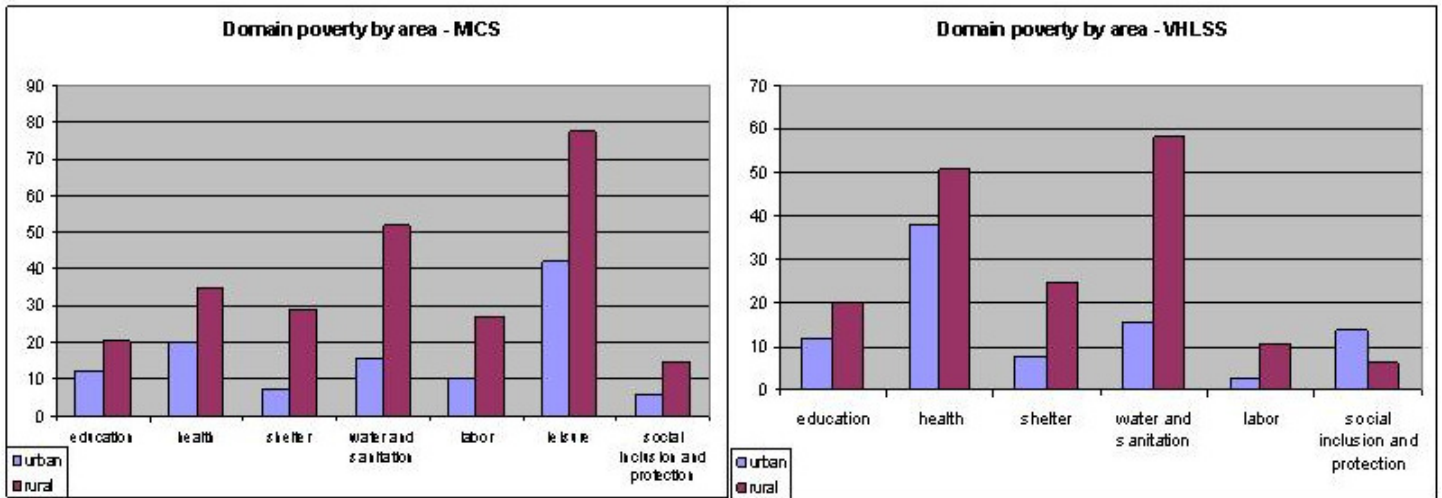
Figure 16 evaluates the differences between domain poverty rates for boys and girls. We can not observe a gender gap or significant difference in domain poverty rates for either boys or girls. Girls perform marginally better in the education and health domains while boys hold a marginal advantage with respect to leisure. The results for the other domains point to marginal differences for boys or girls depending on the specific data set. In line with the findings for all individual indicators, there is no indication of gender inequality and higher occurrences of poverty in any area for boys or girls.

Figure 16 Domain poverty by gender based on MICS and VHLSS data



The analysis of the indicator poverty rates already indicated the existence of large disparities between rural and urban areas. This observation is further confirmed by Figure 17, displaying urban and rural poverty rates by domain based on both the MICS and VHLSS data. Children in rural areas are poorer in almost all domains, albeit that the size difference with children in urban areas differs per domain. The largest disparity can be observed for the water and sanitation and shelter domains while the urban-rural divide is less pronounced for the social inclusion and protection and education domain.

Figure 17 Domain poverty by area based on MICS and VHLSS data



Figures 18 and 19 display domain poverty rates by region for MICS and VHLSS, indicating which regions are good or bad performers and the disparities between the poverty rates by domain. Considering MICS data, the North West and North East regions are the regions with the highest domain poverty rates across the board. The Red River Delta and South East regions, on the other hand, are the best performing regions in the majority of the domains. Further, it can be observed that poverty rates are highly divergent in the case of water and sanitation, shelter and health while regional performance is more equal when considering education, labor and social inclusion and protection. According to VHLSS data, the North West, Mekong River Delta and North East regions have the highest poverty rates for almost all domains. The Red River Delta and South East regions hold the highest ranks in performance to almost all domains, except for social inclusion and protection. Regional performances and rankings will be discussed further in later sections of this report. Please note that in Figures 18 and 19 the order of domain poverty rates in the league tables is dependent on their ranking relative to the other domains and can thus differ by region.

Figure 18 Domain poverty by region based on MICS data

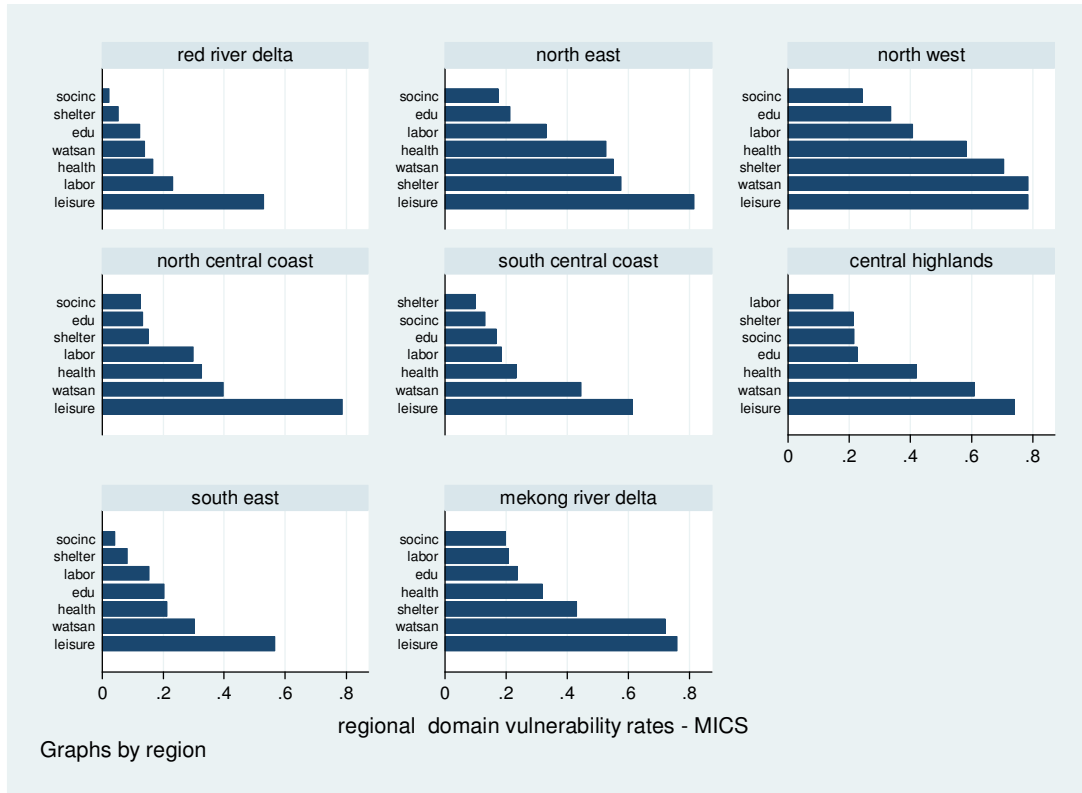
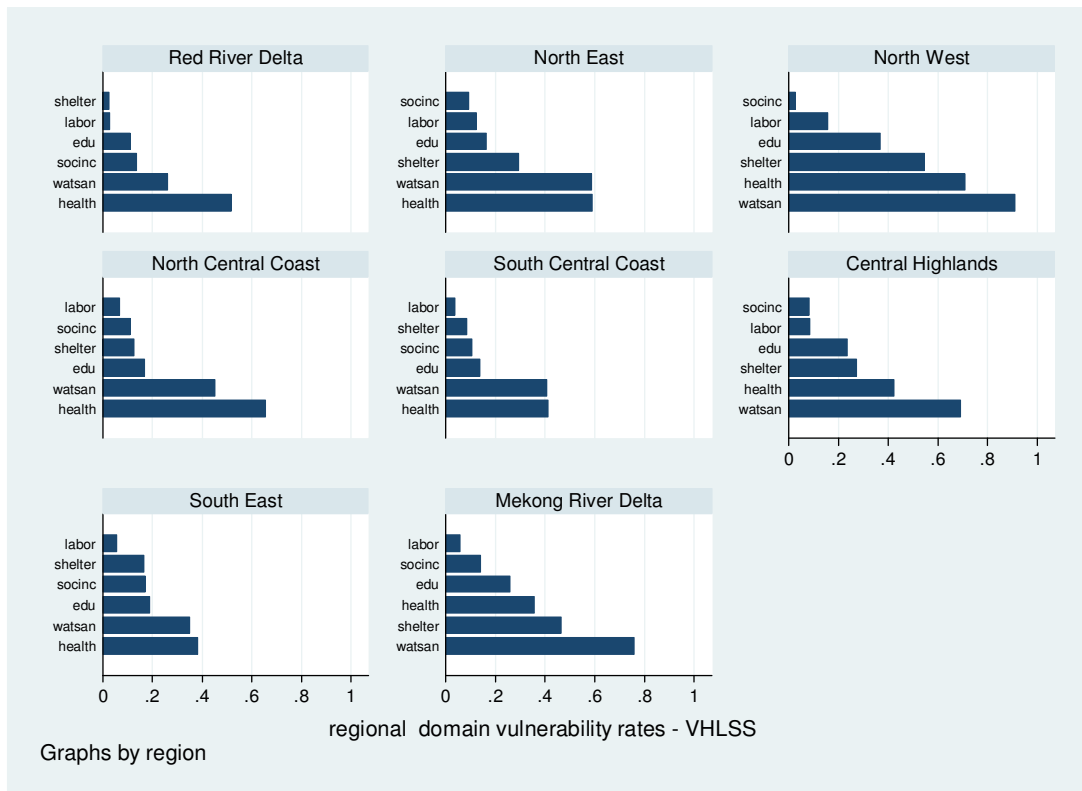


Figure 19 Domain poverty by region based on VHLSS data



8) Results – Child Poverty Rate

Estimates for overall child poverty based on MICS and VHLSS data are presented in Table 6. The first columns contain poverty estimates based on the one-domain poverty line (children are defined to be poor when they are poor in at least one domain) while the second columns display the Child Poverty Rate figures based on the two-domain poverty line (children are defined to be poor when they are poor in at least two domains). As expected from the methodological discussion, the rates based on the one-domain poverty line in the first columns are considerably higher than the CPR estimates for all levels of decomposition. Child poverty based on the one-domain poverty line by definition means that a child is considered poor when it does not meet the threshold of at least one indicator. Hence, the results of one out of all indicators can push the composite poverty figures and inflate the overall deprivation rate. Using the CPR methodology avoids the composite figure to be biased towards one badly performing indicator or domain and provides not only lower but also more robust results. Further, robustness checks in Annex 4 indicate that regional ranks based on the Child Poverty Rate using MICS and VHLSS data primarily change when the poverty line is set at more than two domains. Considering that the CPR uses two domains as a poverty line, this implies that the CVP is a robust poverty measure¹⁴.

Table 6 Child Poverty Estimates

	<i>MICS, n=10874</i>		<i>VHLSS, n=10696</i>	
	<i>Child poverty based on one-domain poverty line</i>	<i>Child Poverty Rate (two-domain poverty line)</i>	<i>Child poverty based on one-domain poverty line</i>	<i>Child Poverty Rate (two-domain poverty line)</i>
<i>Total</i>	66.97	36.65	63.05	30.72
<i>Male</i>	66.39	36.86	63.59	30.47
<i>Female</i>	67.58	35.42	62.48	30.99
	***	***	***	***
<i>Urban</i>	38.80	12.04	39.05	11.25
<i>Rural</i>	74.70	43.40	69.97	36.33
	***	***	***	***
<i>Red River Delta</i>	47.63	11.26	44.51	9.66
<i>North East</i>	80.20	58.76	68.42	36.16
<i>North West</i>	93.09	77.65	92.41	63.12
<i>North Central Coast</i>	68.49	30.95	61.91	25.75
<i>South Central Coast</i>	60.61	28.79	53.59	18.50
<i>Central Highlands</i>	74.21	40.53	76.58	39.33
<i>South East</i>	55.14	22.63	47.48	20.24
<i>Mekong River Delta</i>	83.20	59.95	84.30	56.31
	***	***	***	***
<i>Kinh/Chinese</i>	61.51	28.27	56.55	24.08

¹⁴ This type of robustness check to test for the appropriateness of cutoff values within a multidimensional approach was presented by Sabina Alkire at the 12th EADI General Conference in Geneva, 24-28 June 2008.

<i>Other ethnicity</i>	93.96	78.09	93.99	62.34
			***	***
<i>Monetary poor</i>	na	na	87.70	55.24
<i>Non-monetary poor</i>	na	na	55.84	23.55
<i>0-2</i>	82.98	51.12	66.63	27.87
<i>3-4</i>	76.50	52.04	78.23	41.61
<i>5</i>	60.52	28.08	70.74	38.40
<i>6-10</i>	56.21	27.30	58.22	25.76
<i>11-14</i>	65.38	35.05	59.55	29.45
<i>15</i>	73.59	36.14	67.29	40.44

Note: ***<0.001, significance level chi-squared group equality of means

According to the Child Poverty Rate, 31% (VHLSS) to 37% (MICS) of all children below 16 years of age can be considered to be poor. In absolute numbers, this amounts to around 7 million children in Vietnam. The poverty estimates based on the one-domain poverty line in Table 6 also prove that single indicators do inflate the overall poverty rates. Almost twice as many children are poor when the one-domain poverty line is used compared to the two-domain poverty line. Indicators with high poverty rates such as leisure (for MICS) and water and sanitation cause a very high percentage to be identified as poor when only one domain is used as the poverty line. Despite the large differences in total poverty estimates, however, decomposition by various demographic groups does not indicate that either one of the poverty line is biased towards one or more of these groups. Figures in Table 6 show that the patterns for poverty measures based on poverty lines for different demographic groups are similar to those observed for the poverty indicators for both MICS and VHLSS data. There is no significant difference in poverty incidence for boys and girls. Furthermore, poverty is much higher in rural areas than it is in urban areas, regardless of the poverty line used. About 70% of all children living in rural areas are poor based on the one-domain poverty line and an estimated 40% of all children living in rural areas are poor based on the two domain CPR. Regional figures point towards the North West and North East regions as bad performers while the Red River Delta and South East regions are good performers. CPR estimates a poverty rate of 10-11% in the Red River Delta, while this amounts to 64-78% in the North West region. With respect to age groups, we observe high rates of poverty for the youngest children, in age brackets 0-2 and 3-4, and the oldest children at age 15. These results by age group, however, should be interpreted with caution. Not all indicators are observable for all children. For example, 7 indicators are observable for children in age bracket 6-10 while 9 indicators are observable for those in age bracket 3-4. Hence, the latter group by definition has more chance to be included in the poverty figures. Higher poverty rates for younger children might thus be a reflection of the methodology used rather than the actual poverty situation. Figures 20 to 23 illustrate the poverty rates per demographic group in a comparative matter, further underlining the observations above. Child poverty estimates for Vietnam do not display gender inequality, do suggest a high urban-rural divide, strong regional disparities and a disadvantaged situation for ethnic minorities. Differences between age groups are inconclusive due to the poverty method used.

Figure 20 Child poverty rates by gender based on MICS and VHLSS data

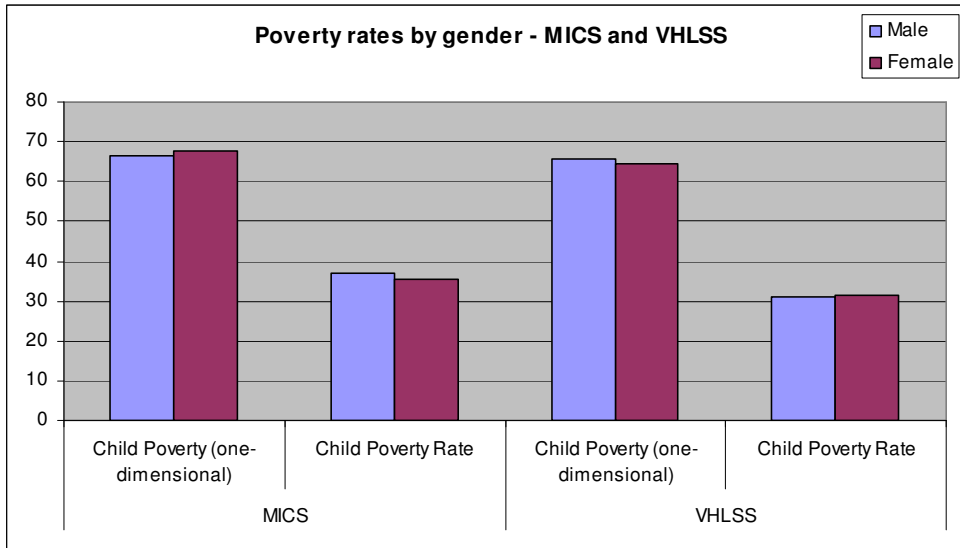


Figure 21 Child poverty rates by area based on MICS and VHLSS data

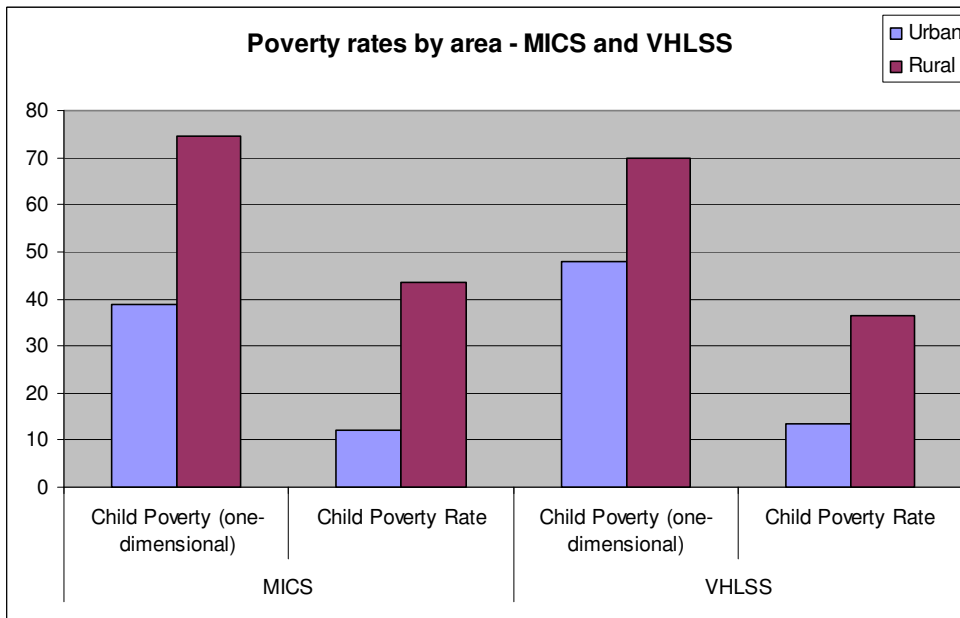


Figure 22 Child poverty rates by region based on MICS and VHLSS data

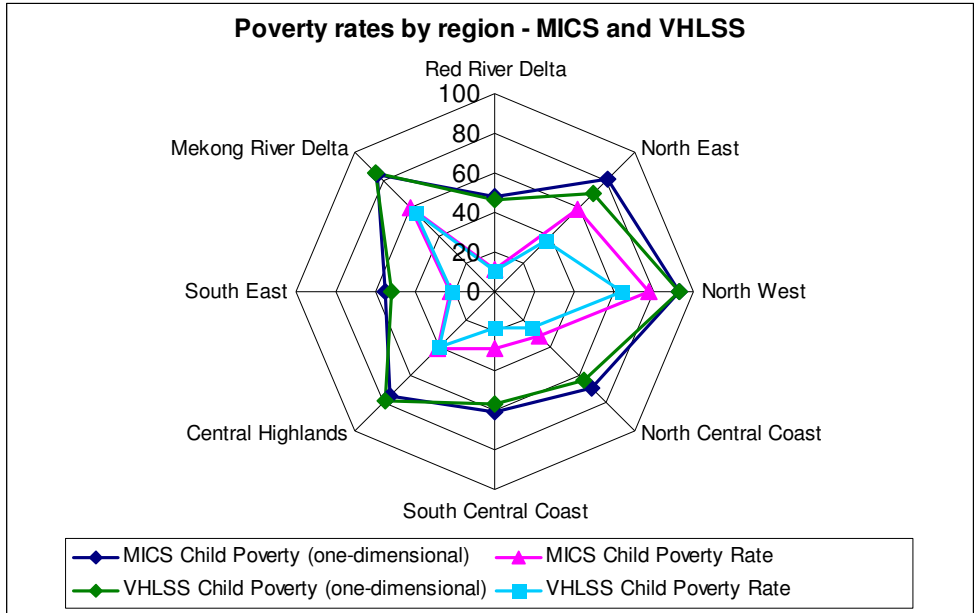
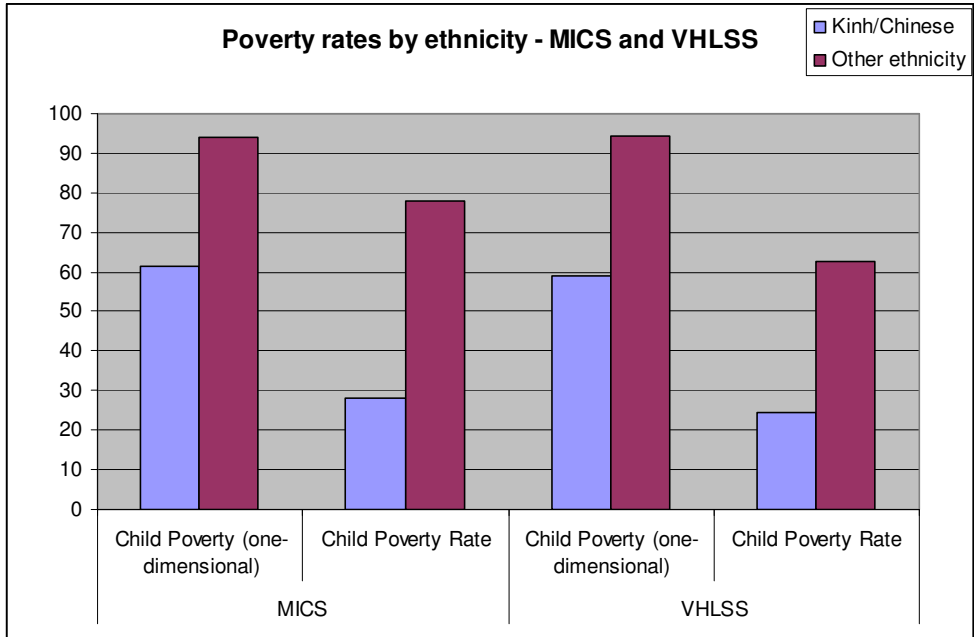


Figure 23 Child poverty rates by ethnicity based on MICS and VHLSS data



9) Results – Child Poverty Index

This section presents the results for the Child Poverty Index (CPI), which is used to track regional performance with respect to child poverty in more detail. This methodology is only applied to the MICS data. Considering the similar patterns observed in indicator poverty rates, domain poverty rates and the overall Child Poverty Rate for the eight different regions in Vietnam, we do not expect to find a much different outcome using the CPI method. There is little variability in the data as it is only representative on the regional level, causing the Child Poverty Index to provide similar results as already seen for both the MICS and VHLSS data.

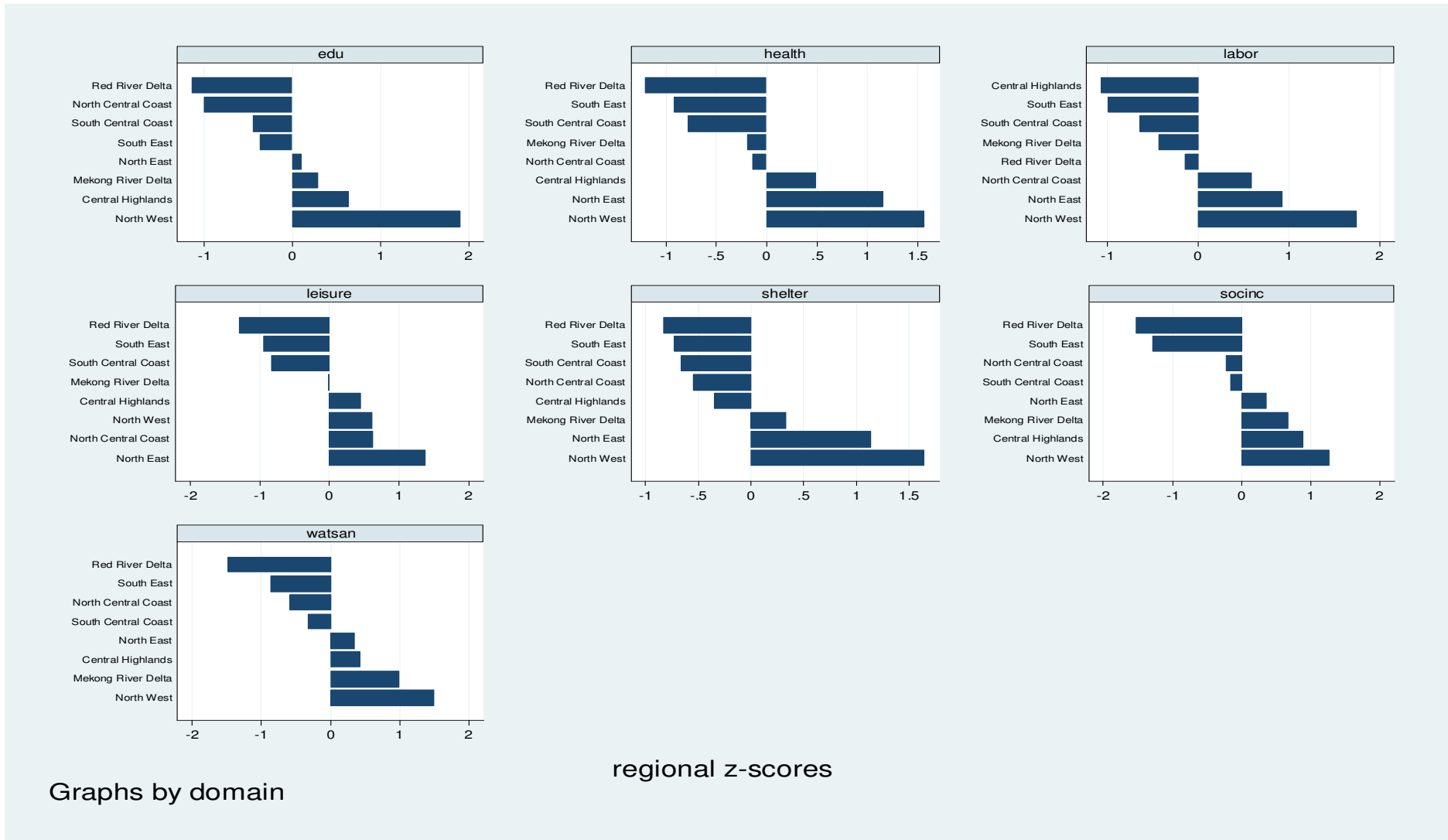
Before presenting results of the composite index, we firstly investigate regional poverty per domain. Figure 24 presents league tables with regional z-scores by domain, providing a direct comparison of regional performance compared to the average performance within the specified domain. The method of z-scores is a normalization method for indicators (see Box 8) and converts indicators into a common scale with a mean of zero and standard deviation of one. One calculates the normalized indicator value by dividing the difference between the raw regional indicator value and average regional indicator value by the standard deviation.

$$\text{Z-score} = \frac{(\text{raw indicator value} - \text{average value})}{\text{standard deviation}}$$

When used to calculate a composite index figures, Z-scores have an implicit weight in the composite index due to its calculation method (Bradshaw et al., 2006). The farther away the indicator value is from the average value, the larger the z-score. Hence, outstanding (positive or negative) performances have a greater impact on the output of the composite index score. Considering that a higher poverty rate indicates a more severe situation with respect to that domain, a positive z-score indicates a worse situation than a negative z-score.

The league tables in Figure 24 provide similar results to those observed in earlier sections with respect to regional performances. The Red River Delta scores best in comparison to the average of all domains, except in the labor domain, and the South East ranks second in all domains, except for education. Apart from the leisure domain, the North West region consistently ranks last. Figures for the education and labor domains further display that the z-scores for the North West are considerably higher than those of the Central Highlands and North East regions. Considering the methodology of the z-score, this implies that the North West region is presented with a more “severe” state of affairs in those domains compared to other regions. By the same token, the situation in the North East region with respect to leisure is considerably more severe than in the North Central Coast and North West regions. Further, while the South Central Coast and South East regions consistently report negative z-scores regardless of the specific domain, the North East region consistently holds positive z-scores. The North Central Coast, Central Highlands and Mekong River Delta regions alternate between negative and positive z-scores, suggesting a better or worse situation compared to the average depending on the domain.

Figure 24 League tables regional performance by domain based on z-scores



Graphs by domain

regional z-scores

Table 7 presents the regional rankings on the basis of CPI and the concurrent regional rankings by domain. Note that these are not based on z-scores but on the previously discussed methodology. A high ranking implies a relatively good situation with respect to child poverty. We can observe that the overall rank hides considerable variations in the ranking on the different domains. Regions can do very well on some dimensions and lag behind in others. In accordance with the outcomes of the z-score rankings, the Red River Delta and South East regions rank first and second on average as well as in all but one domain. Further, the North West and North East regions rank seventh and eighth on average with similar results with respect to domain rankings. Further, when we consider the health and shelter domains, we observe that the regional rankings are in line with the overall rankings. However, findings in other domains and the middle rankings suggest greater variation. The North Central Coast region, for example, ranks second to seventh, depending on the domain. With respect to the composite CPI, it holds the fourth position. Results for the labor domain show that it is not consistent with the overall ranking of regions. The Central Highlands, which is among the lowest four ranks for all other domains, ranks first with respect to child work. The Red River Delta, by the same token, ranks fifth while it holds the first rank for all other domains. Nevertheless, the ranking results of the CPI using this specific methodology (squared domain severity index) appear to be robust. Regional rankings are rather consistent, irrespective of the methodology employed (see Annex 4).

Table 7 Regional rankings (= based on indicator distance from 0% as reference value) based on MICS data

	<i>CPI</i>	<i>Education</i>	<i>Health</i>	<i>Shelter</i>	<i>Water and Sanitation</i>	<i>Child work</i>	<i>Leisure</i>	<i>Social Inclusion and Protection</i>
<i>Red River Delta</i>	1	1	1	1	1	5	1	1
<i>South East</i>	2	4	2	2	2	2	2	2
<i>South Central Coast</i>	3	3	3	3	4	3	3	4
<i>North Central Coast</i>	4	2	5	4	3	6	7	3
<i>Mekong River Delta</i>	5	6	4	6	7	4	4	6
<i>Central Highlands</i>	6	7	6	5	6	1	5	7
<i>North East</i>	7	5	7	7	5	7	8	5
<i>North West</i>	8	8	8	8	8	8	6	8

The outcomes of the CPI ranking might induce action in the regions at the lower end of the ranking to improve their performance. The rankings by domain provide more detailed information about the area in which to direct policy efforts for the improvement with respect to child poverty in comparison to other regions. However, as mentioned previously, the results of the CPI in the current report are very similar to those of the CPR due to little variability in the data. If we were dependent on aggregate data at the level of the geographical unit under comparison, the CPI would be of greater value added to monitor and evaluate child poverty. If data collection efforts at the provincial level are pursued, the CPI methodology might prove highly useful for the assessment of provincial child poverty performances in the future.

10) Analysis of overlaps in domain poverty

The analysis of overlap in domain poverty examines the extent to which child poverty in one domain is correlated to child poverty in other domains. Tables 8 and 9 present the overlap in domain poverty based on MICS and VHLSS data, providing an insight into combinations of poverty dimensions. The correlation coefficients belonging to the percentages of children experiencing poverty in two domains simultaneously are presented in Annex 6. The analysis of the combination of one or more poverty dimensions among children can provide valuable information for policy design and planning as it indicates which areas within multidimensional poverty occur simultaneously and whether there is a strong correlation. Note, however, that overlap in domain poverty can only be observed for limited groups of children as not all indicators are observed for all age groups. Only the shelter and water and sanitation indicators are observed for all children in MICS, while this holds for shelter, water & sanitation and social inclusion in the case of VHLSS. Hence, when interpreting overlap in domain poverty, careful attention has to be paid to the age group referred to.

Table 8 Proportions of children experiencing poverty in two domains based on MICS data

	<i>education</i> 5-15	<i>health</i> 2-4	<i>shelter</i> 0-15	<i>water and sanitation</i> 0-15	<i>child work</i> 5-14	<i>leisure</i> 0-4	<i>social inclusion and protection</i> 0-4
<i>education</i>	5-15, n=8167 18.71	x	5-15, n=8167 6.71	5-15, n=8167 10.92	5-14, n=7228 4.79	x	x
<i>health</i>		2-4, n=1627 31.37	2-4, n=1627 12.75	2-4, n=1627 19.16	x	2-4, n=1627 23.20	2-4, n=1627 4.19
<i>shelter</i>			0-15, n=10874 24.57	0-15, n=10874 20.40	5-14, n=7228 7.08	0-4, n=2707 22.80	0-4, n=2707 6.74
<i>water and sanitation</i>				0-15, n=10874 44.07	5-14, n=7228 12.05	0-4, n=2707 39.50	0-4, n=2707 9.44
<i>child work</i>					5-14, n=7228 23.67	x	x
<i>leisure</i>						0-4, n=2707 69.06	0-4, n=2707 11.53
<i>social inclusion and protection</i>							0-4, n=2707 12.37

Table 9 Proportions of children experiencing poverty in two domains based on VHLSS data

	<i>education</i> 5-15	<i>health</i> 2-4	<i>shelter</i> 0-15	<i>water and sanitation</i> 0-15	<i>child work</i> 6-15	<i>social inclusion and protection</i> 0-15
<i>education</i>	5-15, n=8326 20.67	x	5-15, n=8326 3.22	5-15, n=8326 12.58	6-15, n=7800 5.10	5-15, n=8326 1.25
<i>health</i>		2-4, n=1428 47.81	2-4, n=1428 11.55	2-4, n=1428 23.93	x	2-4, n=1428 6.27
<i>shelter</i>			0-15, n=10696 20.99	0-15, n=10696 18.72	6-15, n=7800 3.08	0-15, n=10696 1.34
<i>water and sanitation</i>				0-15, n=10696 48.79	6-15, n=7800 6.51	0-15, n=10696 2.99
<i>child work</i>					6-15, n=7800 8.91	6-15, n=7800 0.40
<i>social inclusion and protection</i>						0-15, n=10696 8.01

Tables 8 and 9 present the proportions of children that are poor in a combination of two domains. The age groups for which the combination of vulnerabilities is observable and the number of children in that group and the proportion of children in that groups suffering poverty in both domains are clearly specified. Logically, we observe the largest percentages for those combinations of domains that include one or two domains with high poverty rates. Considering MICS, 40% of all children aged 0-4 are poor in the water and sanitation and leisure domain and 23% of children aged 2-4 is health and leisure poor. Small proportions of children aged 2-4 and aged 5-14 suffer combined poverty in respectively health and social inclusion and child work and education.

Percentages of overlap in domain poverty are lower when based on the VHLSS data than on MICS data due to the exclusion of the leisure domain and its high poverty rate. Almost one out of four children aged 2-4 suffer from a combination of health and water and sanitation poverty and 19% of all children are poor with respect to shelter and water and sanitation. Relatively small proportions of children in various age groups suffer from combined poverty when the child work and social inclusion and protection domains are included, which is of course a result of their low domain poverty rates

11) Analysis of child poverty using a multidimensional and monetary poverty method

In this section, we consider the overlap in poverty when measured with the CPR method and monetary poverty method¹⁵. Do these two different methods identify the same children as poor or do they capture different groups of children? And if so, who are these children? To investigate this question, we compare child poverty results on the basis of the CPR method to the monetary method. The VHLSS allows us to calculate poverty using both approaches as it holds information on monetary (income and expenditures) as well as non-monetary issues and to analyze the various poverty groups along demographic and domain poverty lines. Table 10 is a comparative table with monetary child poverty figures and child poverty figures based on our child poverty approach. We can observe that 23% of all children below 16 years of age are monetary poor¹⁶, compared to 31% for CPR. In absolute numbers, this amounts to approximately 5 million children living in monetary poverty and almost 7 million children being poor according to CVPR. Demographic decomposition shows that monetary poverty figures do not display a significant degree of gender inequality but divergent poverty rates for different areas, regions and age groups. According to the monetary method, a considerably smaller proportion of children living in urban areas are poor in comparison to rural areas. Further, the monetary method identifies the South East region as the region with the smallest level of poverty (9%), compared to the Red River Delta for CPR (10%). Both methods identify the North West region as the region with the highest level of child poverty (59-63%). Remarkably, the monetary method identifies only 13% of all children living in the Mekong River Delta as being poor while this amounts to 56% for the CPR. Decomposition of poverty by ethnicity indicates that the ethnic minorities are greatly

¹⁵ The monetary poverty method used in this section is based on the combined food and non-food poverty line from World Bank Vietnam and GSO for 2006.

¹⁶ As monetary poverty is based on household poverty, monetary child poverty is based on the percentage of children living in household that are monetary poor.

disadvantaged in terms of both monetary poverty and child poverty. However, it can also be observed that children of Kinh/Chinese ethnicity are poorer in terms of child poverty compared to monetary poverty. Poverty figures by age group show that the monetary method does not find significant differences in poverty between children up to 10 years of age but a sharp decrease in poverty levels for 15-year olds. According to the monetary figure, 13% of all 15-year old children are poor while this compares to 40% for the CPR, which is the highest poverty rate for different age groups. Note that the monetary poverty is purely based on household data while CPR in part captures individual children's situation. The underlying indicators and the different age groups they capture, form an explanation for these different poverty rates by age groups.

Table 10 Monetary Child Poverty Rate and CPR based on VHLSS data

	<i>VHLSS, n=10696</i>	
	<i>Monetary Child Poverty Rate</i>	<i>Child Poverty Rate</i>
<i>Total</i>	22.62	30.72
<i>Male</i>	22.40	30.47
<i>Female</i>	22.85	30.99
	***	***
<i>Urban</i>	5.42	11.25
<i>Rural</i>	27.58	36.33
	***	***
<i>Red River Delta</i>	13.22	9.66
<i>North East</i>	34.05	36.16
<i>North West</i>	58.94	63.12
<i>North Central Coast</i>	37.99	25.75
<i>South Central Coast</i>	16.73	18.50
<i>Central Highlands</i>	37.16	39.33
<i>South East</i>	9.08	20.24
<i>Mekong River Delta</i>	12.59	56.31
	***	***
<i>Kinh/Chinese ethnicity</i>	14.50	24.08
<i>Other ethnicity</i>	61.25	62.34
	***	***
<i>0-2</i>	27.14	27.87
<i>3-4</i>	27.50	41.61
<i>5</i>	26.45	38.40
<i>6-10</i>	25.21	25.76
<i>11-14</i>	19.35	29.45
<i>15</i>	13.46	40.44

*Note: ***<0.001, significance level chi-squared group equality of means*

The descriptive statistics in Table 10 provide a first insight into the comparison of monetary child poverty and our multidimensional measure. Considerable differences in poverty rates can be observed, especially with respect to specific demographic groups, suggesting that both methods do not necessarily capture and identify the same groups of children as being poor.

Figure 25 presents the Venn diagram displaying the overlap between the groups of children identified as poor by the CPR and monetary approach. Group A consists of those children only identified as poor by CPR, group B contains those children that are only monetary poor, group AB are those children that are identified as being poor by both approaches and group C are the non-poor children. We can observe that almost half of all children belong to either one of the poverty groups and are CPR poor and/or monetary poor. 18% of all children are only identified as poor by the CPR method while 11% is considered only to be poor according to the monetary approach. Hence, the proportion of children captured by only of the approaches is 29%, while 12% of all children is captured by both approaches. In other words, the CPR and monetary poverty methods identify quite different groups of children, implying that they do not draw the same pictures of child poverty. To gain a better understanding of the characteristics of the different poverty groups, we consider their demographics and domain vulnerabilities.

Figure 25 Venn diagram CPR and monetary poverty based on VHLSS data

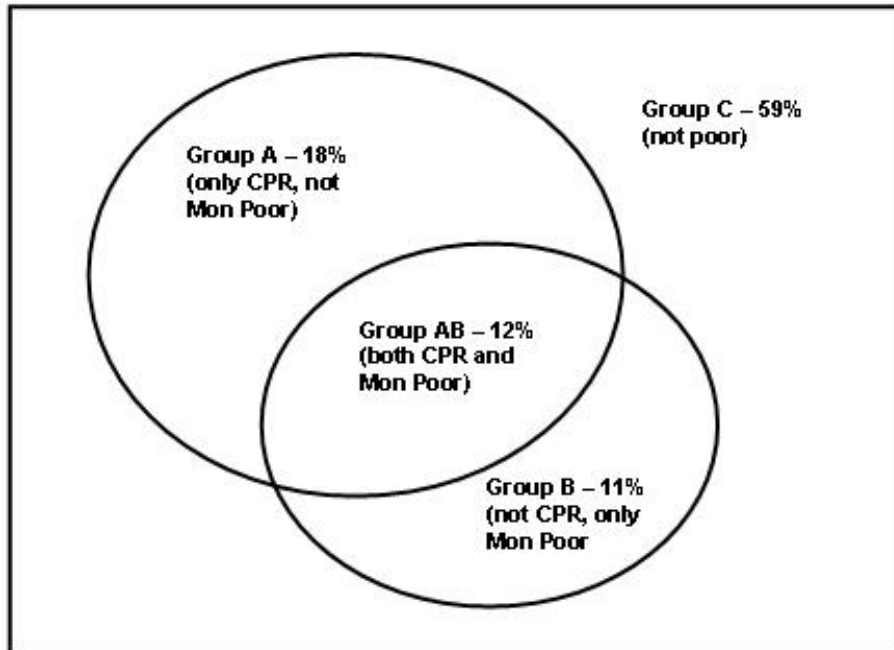


Table 11 provides information about the poverty groups constituted by combining the CPR and monetary approaches in terms of demographic characteristics and domain poverties. Per demographic group, the shares of the four poverty groups are presented as percentages of the total demographic group. In other words, when considering all boys aged 0-15 in Vietnam, for example, 17% of them are only CPR poor, 12% is only monetary poor, 13% is both CPR and monetary poor and 57% is not poor at all.

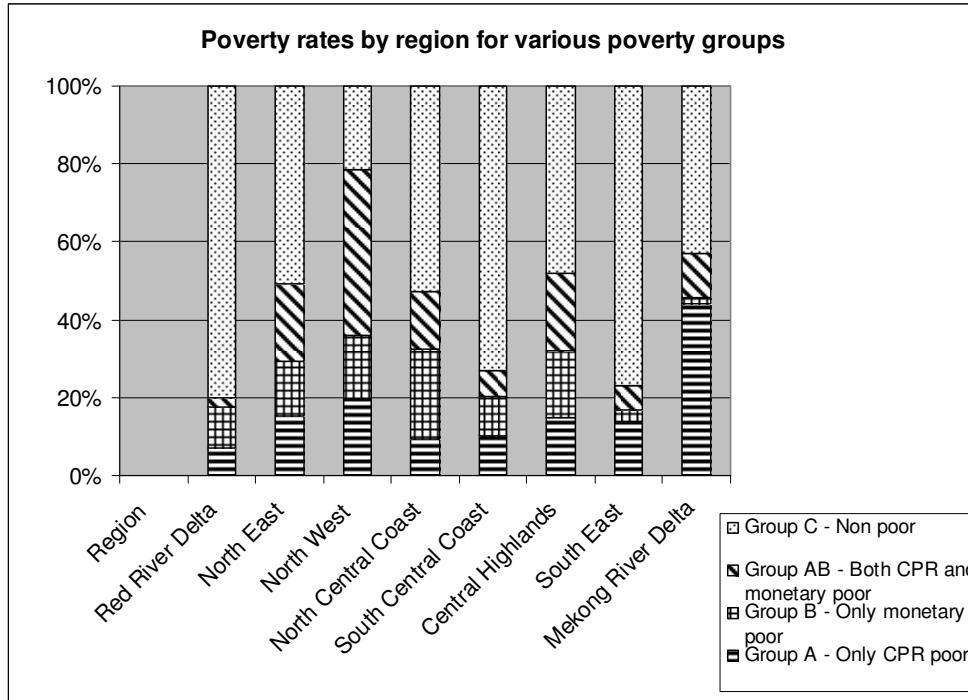
Table 11 Poverty rates for demographic characteristics as a proportion of child in specific poverty group based on VHLSS data

	Group A Only CPR poor	Group B Only monetary poor	Group AB Both CPR and monetary poor	Group C Non-poor	Total
	<i>Poverty rate</i>	<i>Poverty rate</i>	<i>Poverty rate</i>	<i>non-poor</i>	
<i>Total</i>	17.70	10.80	11.82	59.67	100
Gender					
<i>Male</i>	17.15	10.82	11.58	60.45	100
<i>Female</i>	18.28	10.78	12.07	58.87	100
Area	***	***	***	***	
<i>Urban</i>	9.79	4.05	1.37	84.80	100
<i>Rural</i>	19.99	12.75	14.83	52.43	100
Region	***	***	***	***	
<i>Red River Delta</i>	6.84	10.74	2.47	79.95	100
<i>North East</i>	15.34	14.03	20.03	50.60	100
<i>North West</i>	19.63	16.41	42.53	21.43	100
<i>North Central Coast</i>	9.44	23.08	14.91	52.57	100
<i>South Central Coast</i>	10.19	10.13	6.60	73.07	100
<i>Central Highlands</i>	14.80	17.41	19.74	48.05	100
<i>South East</i>	13.80	3.10	5.98	77.11	100
<i>Mekong River Delta</i>	44.30	1.52	11.06	43.11	100
Children in hh.	***	***	***	***	
<i>1 child <16 in hh</i>	20.34	3.65	5.82	70.19	100
<i>2 children <16 in hh</i>	17.13	8.34	8.13	66.41	100
<i>3 children <16 in hh</i>	18.86	17.00	16.30	47.84	100
<i>More than 3 children <16 in hh</i>	11.62	26.5	33.38	28.51	100
Ethnicity		***	***	***	
<i>Kinh/Chinese ethnicity</i>	17.28	8.46	6.04	68.21	100
<i>Other ethnicity</i>	19.70	21.92	39.33	19.05	100
Age group	***	***	***	***	
<i>0-2</i>	13.84	13.40	13.73	59.02	100
<i>3-4</i>	21.20	10.76	16.74	51.30	100
<i>5</i>	21.06	11.18	15.28	52.49	100
<i>6-10</i>	16.42	12.21	13.00	58.37	100
<i>11-14</i>	17.88	9.84	9.51	62.77	100
<i>15</i>	21.46	6.10	7.37	65.08	100

Note: ***<0.001, significance level chi-squared group equality of means

The demographic figures show that the gender composition of the poverty groups is not biased towards either boys or girls. The proportions of boys and girls over the various poverty groups do not display significant differences, regardless of the poverty method used. However, considering the decomposition by area shows that children living in rural areas are disproportionately poorer than children living in urban areas in all poverty groups. While 85% of all children in urban areas are not poor, half of those in rural areas belong to one of the poverty groups. Regional disparities are also large and observable for all poverty groups, although not with the same pattern. The stacked-bars graph in Figure 26 clearly displays that the distribution of poverty over the various poverty groups differs by region.

Figure 26 Poverty rates for poverty groups by region based on VHLSS data



Overall, the Red River Delta is the region with the largest proportion of non-poor children, namely 80%. However, while the region holds the lowest poverty rates with respect to groups A and AB, it is among the middle-poor regions with respect to group B. In other words, the findings suggest that monetary poverty disproportionately captures poor children living in the Red River Delta compared to the CPR method. The Mekong River Delta presents another example. While 44% of all children living in this region belong to group A and are thus only CPR poor, only 2% are only captured by monetary poverty and belong to group B. These estimates indicate that other dimensions than the monetary one are the main determinants of child poverty in this region.

When considering the other demographic groups, it can be observed from Table 11 that children living in households with more than 3 children typically belong to the various poverty groups in a disproportionate manner when compared to children living in households with fewer children. While poverty rates increase with the number of children for groups B (only monetary poor) and AB (CPR and monetary poor), rates drop with an increasing number of children for group A (only CPR). These findings suggest that the CPR disproportionately captures children with small numbers of children below the age of 16 that are present in the household. By the same token, the monetary approach seems to capture children living in households with more siblings. The aspect of ethnicity shows that children of another ethnicity than the Kinh/Chinese ethnicity are at a higher risk of poverty. While 81% of children of other ethnicities are belong to one of the poverty groups, this rate amounts to only 32% for those of Kinh/Chinese ethnicity. The poverty group shares by age group do not display a consistent pattern that could lead to the conclusion that younger or older children are more prone to poverty than others.

Table 12 Domain poverty rates for the various poverty groups based on VHLSS data

	Group A Only CPR poor	Group B Only monetary poor	Group AB Both CPR and monetary poor	Group C Non-poor
<i>Total</i>	18.00	11.94	13.15	56.91
Domains				
<i>Education</i>	25.85	2.08	20.68	na
<i>Health</i>	19.19	7.01	25.71	na
<i>Shelter</i>	61.93	2.82	71.37	na
<i>Water and sanitation</i>	90.34	60.43	97.76	na
<i>Child work</i>	9.81	0.28	5.34	na
<i>Social Inclusion and Protection</i>	17.07	3.08	9.97	na
<i>No domain (only monetary poor)</i>	na	24.29	na	na

Table 12 provides insight into the domain poverties suffered by children in the various poverty groups. The domain poverty rates represent the percentages of children in the specific poverty group suffering from domain poverty. As domains poverties are not mutually exclusive, a single child can suffer poverty in more than one domain. Hence, the total of all domain poverty rates for poverty groups A (only CPR poor) and AB (both CPR and monetary poor) do not add up to 100% (because by definition children are poor in at least two domains to belong to these groups). Children in group B (only monetary poor) can only suffer one or no domain poverty (otherwise they were captured in group A or AB), amounting to a total of 100% when all domain poverty are added together.

A small proportion of children that are only monetary poor, 2%, suffers from education poverty, compared to poverty rates that are almost ten times as high for children that are only CPR (group A) poor or both CPR and monetary poor (group AB). In other words, little of the educational poverty is captured by the monetary method alone. The same holds for the health, shelter, child work and social inclusion and protection domains. While 3% of the children identified as poor by only the monetary method suffer shelter poverty, this rate amounts to 62% and 71% for children that are only CPR poor or both CPR and monetary poor. Figures for the water and sanitation domain indicate that almost all children in group AB and 90% of the children in group A are poor with respect to this dimension. But also more than half of all children only identified as monetary poor suffer poverty to water and sanitation, suggesting considerable correlation between these two types of deprivation. Finally, it can be observed that 24% of all children in group B are only monetary poor and do not suffer any other type of poverty. Hence, these children would also not have been considered deprived in case we employed the one domain poverty line for the calculation of child poverty. A possible explanation for the existence of this group is that the children belonging to that group find themselves in households just below the monetary poverty line. This situation ensures that they, one the one hand, have access to a number of services that are provided especially to the monetary poor and, one the other hand, are in a household that has enough resources to meet the thresholds for the other indicators.

The analysis above provides insight into the demographic and domain poverty structure of the different poverty groups. The results suggest that the CPR and monetary method capture different groups of children in terms of demographic characteristics as well as the domain vulnerabilities suffered. It provides valuable information about those children that would be captured by using either one of the approaches but also provides insight to, maybe more importantly, the characteristics of those children that are not captured by either one of the approaches. However, most striking about the analysis of the overlap between monetary and multidimensional child poverty is the notion that the two measures indeed capture different groups and what this means in terms of policies and targeting. As current social protection policies are predominantly focused on and targeted towards the monetary poor, these results imply that a considerable group of children is left out of consideration. The group of children that is only identified to be poor according to the new multidimensional method are not targeted through any policy at the moment, despite the serious disadvantages they face.

12) Individual and household characteristics influencing child poverty

In this section, we explore which factors increase or decrease a child's probability to be poor. We consider a range of individual and household characteristics that might play a role in determining or impacting child poverty risk. Such an analysis is useful as input into policy efforts directed towards the reduction of child poverty in terms of, for example, targeting. We firstly present a so-called unconditional poverty profile that displays child poverty rates for groups of children with specific individual or household characteristics. Secondly, we use regression modeling to assess whether these characteristics also have explanatory power with respect to child poverty risk.

a) Individual and household characteristics

Factors that possibly influence a child's likelihood to be poor include a vector of individual characteristics as well as a vector of household characteristics. The choice of factors to be included in the estimation model is based on previous research in the field of poverty regression (e.g. Baulch and McCulloch 2002, De Silva 2008, Wodon 2000) as well as data availability. Table 13 presents descriptive statistics for the selection of factors for MICS and VHLSS, which includes the child's gender, the area that children live in, the child's age, the number of children below 16 years of age present in the household, the number of elderly above 59 years of age in the household, the total number of household members, the educational level of the household head, occupational status of the household head, age of the household head, gender of the household head, ethnicity, the region the child lives in, marital status of the household head and finally the monetary poverty status of the household that the child lives in. The figures in the columns indicate the total number of children in the sample in that specific category and the proportion of children in that category being poor.

Table 13 Breakdown of individual and household characteristics based on MICS and VHLSS data

<i>Indicator</i>	MICS		VHLSS	
	total # children in sample	CPR	total # children in sample	CPR
<i>Child poverty</i>				
<i>Total</i>	10874	36.65	10696	30.72
<i>Gender</i>				
<i>Male</i>	5595	36.86	5441	30.47
<i>Female</i>	5279	35.42	5255	30.99
<i>Area</i>				
<i>Urban</i>	2127	12.04	2147	11.25
<i>Rural</i>	8747	43.40	8549	36.33
<i>Age group</i>				
<i>0-2</i>	1632	51.12	1416	27.87
<i>3-4</i>	1077	52.04	954	41.61
<i>5</i>	608	28.08	526	38.40
<i>6-10</i>	3176	27.30	3146	25.76
<i>11-14</i>	3442	35.05	3656	29.45
<i>15</i>	939	36.14	998	40.44
<i>Number of children in hh.</i>				
<i>1 child <16 in hh</i>	2372	31.91	2549	26.16
<i>2 children <16 in hh</i>	4560	33.52	4702	26.82
<i>3 children <16 in hh</i>	2421	40.58	2181	36.66
<i>4 children <16 in hh</i>	868	51.57	828	41.29
<i>5 children <16 in hh</i>	435	55.44	280	52.86
<i>6 children <16 in hh</i>	96	58.58	84	66.02
<i>7 children <16 in hh</i>	98	65.75	56	61.34
<i>8 children <16 in hh</i>	24	48.92	16	100.00
<i>Number of elderly in hh.</i>				
<i>no elderly in hh</i>	8380	37.91	8233	30.19
<i>1 elderly <59 in hh</i>	1798	32.56	1759	31.97
<i>2 elderly <59 in hh</i>	669	32.90	675	34.40
<i>3 elderly <59 in hh</i>	27	40.14	26	13.22
<i>4 elderly <59 in hh</i>	0	Na	3	33.33
<i>Members in hh.</i>				
<i>1 hh member</i>	0	na	0	na
<i>2 hh members</i>	105	47.16	83	34.14
<i>3 hh members</i>	702	37.88	774	29.08
<i>4 hh members</i>	3158	29.92	3278	26.00
<i>5 hh members</i>	2748	35.61	2769	28.59
<i>6 hh members</i>	1850	38.33	1841	34.42
<i>7 hh members</i>	1028	43.52	949	35.18
<i>>7 hh members</i>	1283	50.38	1002	44.75
<i>Educational level of hh. head</i>				
<i>hh. head has no education</i>	1094	77.20	3164	51.83
<i>hh. head has primary education</i>	2975	53.79	2959	34.31
<i>hh. head has lower sec education</i>	4385	29.56	2676	19.19
<i>hh. head has higher sec education</i>	1472	16.20	764	13.93

<i>hh. head has non-standard education</i>	105	53.87	na	na
<i>hh. head has vocational education</i>	450	10.98	796	12.06
<i>hh head has higher education</i>	393	2.72	337	3.30
Occupational status hh head				
<i>hh head has no work</i>	na	na	930	45.32
<i>hh head is gov/party leader</i>	na	na	213	18.15
<i>hh head is high level professional</i>	na	na	176	1.38
<i>hh head is mid level professional</i>	na	na	217	13.52
<i>hh head is white collar staff</i>	na	na	91	20.80
<i>hh head is skilled sales and services staff</i>	na	na	248	11.99
<i>hh head is skilled agricultural staff</i>	na	na	431	29.91
<i>hh head is skilled manual worker</i>	na	na	1082	14.47
<i>hh head is assembler/machine operator</i>	na	na	241	13.04
<i>hh head is unskilled staff</i>	na	na	7043	34.88
Age hh. head		***		***
<i>Age hh head 18-29</i>	917	59.66	525	43.01
<i>Age hh head 30-39</i>	3983	35.00	3919	30.62
<i>Age hh head 40-49</i>	3547	33.69	3508	27.43
<i>Age hh head 50-59</i>	1300	38.41	1362	27.44
<i>Age hh head 60-69</i>	655	34.72	738	34.83
<i>Age hh head 70-79</i>	384	33.78	531	42.46
<i>Age hh head 80-99</i>	88	27.15	113	41.51
Gender hh head		***		***
<i>Household head male</i>	9169	38.46	8755	31.63
<i>Household head female</i>	1705	27.94	1941	26.93
Ethnicity		***		***
<i>Kinh/Chinese ethnicity</i>	2941	28.27	2439	24.08
<i>Other ethnicity</i>	7933	78.09	8257	62.34
Region		***		***
<i>Red River Delta</i>	1350	11.26	1755	9.66
<i>North East</i>	1096	58.76	1533	36.16
<i>North West</i>	1360	77.65	742	63.12
<i>North Central Coast</i>	1441	30.95	1322	25.75
<i>South Central Coast</i>	1320	28.79	1010	18.50
<i>Central Highlands</i>	1826	40.53	1063	39.33
<i>South East</i>	1255	22.63	1339	20.24
<i>Mekong River Delta</i>	1226	59.95	1932	56.31
Marital status hh head				***
<i>hh head is single</i>	na	na	92	35.99
<i>hh head is married</i>	na	na	9422	39.99
<i>hh head is widowed</i>	na	na	1036	37.06
<i>hh head is divorced</i>	na	na	90	23.97
<i>hh head is separated</i>	na	na	56	30.40

<i>Monetary poverty status hh</i>				***
<i>Poor</i>	na	na	2766	55.24
<i>Non-poor</i>	na	na	7930	23.55

Note: ***<0.001, significance level chi-squared group equality of means

The descriptive statistics provide an indication of the possible effect of the characteristics displayed in Table 13. If there are big differences in child poverty rates between different categories under the same characteristic, this might suggest that this characteristic plays a role in determining child poverty and impacting the child poverty risk. Table 13 displays that CPR rates do not differ significantly between boys and girls, suggesting that gender is not a strong determinant of child poverty. The area that children live in, urban or rural, however does seem to have a large effect on the chances to be poor. Around 40% of all children living in rural areas are poor compared to about 12% of all children in urban areas. With respect to educational attainment of the household head, we can observe that child poverty figures are decreasing with increasing levels of educational attainment of the household head. Educational attainment of the household head is thus expected to decrease the chance of a child to be poor. Children living in female households experience a lower poverty rate. This difference is much more pronounced with respect to ethnicity. While 78% of all children with another ethnicity than Kinh/Chinese are identified to be poor while this is only 28% for children with the Kinh/Chinese ethnicity (MICS). Child poverty rates are generally higher for children living in households with more children or elderly but these results are less consistent and significant than for other characteristics. With respect to the total number of household members, it appears that poverty is higher among children living in relatively small households (2-3 members) and that the rates decrease up to an ideal number of household members. When the household grows bigger than 5 household members, child poverty rates increase again.

The analysis of the descriptive statistics provides a first insight into possible factors influencing the likelihood of child poverty. While gender of the child and of the household head can be expected to play less important role, the large differences in poverty estimates for different educational attainment levels of the household suggest that this is an important factor in the determination of child poverty.

b) Effects of the individual and household characteristics on child poverty

To assess the effect that the various individual and household characteristics have on child poverty, we use regression modeling. The exact methodology and method used for this poverty analysis is explained in detail in Box 10. In this section, we will focus on the outcomes of the regression modeling and discuss its intuitive results. A full overview of results can be found in Annex 7.

Box 10 Regression model to analyze child poverty based on MICS and VHLSS data

The probability of a child being poor is the dependent variable within the estimation model while the factors possibly influencing this outcome are the independent or explanatory variables. When testing for the probability of such a binary outcome, a regression model based on ordinary least squares (OLS) causes a number of problems (Long, 1997, Diekmann and Jann, 2008). The most prominent problem is that of its functional form. A linear regression model assumes that the level of change in the dependent variable is constant for all levels of the independent variables. However, when the dependent variable consists of a probability, it is very likely that the impact of the independent variables increases or decreases as the predicted probability approaches 0 or 1 (Long, 1997). To overcome this and other problems when estimating a regression model with a binary outcome, one can use logistic regression. This method does not assume a linear relationship between the dependent and independent variables and is therefore more appropriate. However, as a result the coefficients of the explanatory variables do not have a clear interpretable meaning (Diekmann and Jann, 2008). In order to obtain a more intuitive interpretation of the coefficients, we calculate and present marginal effects in the text.

The dependent variable in the estimation model is Child Poverty (CPR) and is defined as follows:

*CPR = 1, if a child is poor
CPR = 0, if a child is not poor*

The logistic regression model

$$\text{Logit}[\text{Pr}(\text{CPR}=1)] = \beta_0 + \beta_1 \text{gender} + \beta_2 \text{age} + \beta_3 \text{age_sq} + \beta_4 \text{area} + \beta_5 \text{totchild} + \beta_6 \text{totchild_sq} + \beta_7 \text{totelderly} + \beta_8 \text{totelderly_sq} + \beta_9 \text{tothmem} + \beta_{10} \text{tothmem_sq} + \beta_{11} \text{eduhead} + \beta_{12} \text{occuphead} + \beta_{13} \text{ethnicity} + \beta_{14} \text{region} + \beta_{15} \text{genderhead} + \beta_{16} \text{agehead} + \beta_{17} \text{agehead_sq} + \beta_{18} \text{marital} + \beta_{19} \text{poverty} + \varepsilon_i$$

where Pr stands for the probability, β_i represents the coefficient of the specific independent variable and the ε_i stands for the standard error.

The individual and household characteristics that were presented in Table 12 are all included in the estimation model as explanatory variables. Rather than incorporating the numerical values of the age, totchild and agehead variables, we use the squared values of these variables.

The model is estimated separately for the urban and rural samples. Performing separate estimations and analyses is useful when model effects are not the same for two populations (see e.g. Alexandrova 2006, Grootaert 1997, Ravallion and Wodon 2004, Wodon 2000). Results from previous research and the unconditional poverty profile above indicate a significant urban-rural divide with respect to all individual and household characteristics and suggest that a separate estimation of child poverty would be appropriate. We used a counterpart of the Chow test to estimate whether the model parameters of the rural group are significantly different from the urban group. This test strongly rejects the hypothesis that the factor effects are the same for the rural and urban samples (chi-squared=409.4, $p < 0.000$), indicating that the model should be estimated for the two groups separately. In distributive terms, this implies that children in rural areas are disproportionately affected by poverty than children in urban areas.

A reduced version of the regression results are presented in Table 14 based on VHLSS and MICS data. The table displays the percentage point change in the probability for a child to be poor on the basis of the various characteristics, assuming that all other characteristics stay the same¹⁷. For example, considering VHLSS data, a child's probability to be poor (also referred to as poverty risk) decreases by 6 percentage points when the household head has attained primary education compared to the situation when the household head does not have any educational attainment. The results are presented separately for children living in urban and rural areas as the effects are very different for these two groups. In case the effects were found to be statistically insignificant, the percentage point effects are not reported. Furthermore, characteristics that did not play a significant role at all in explaining child poverty in either urban or rural areas based on VHLSS and MICS data are totally excluded from Table 14. The excluded characteristics include gender, the total number of children in the household, the total number of elderly in the household and the age of the household head. The results of the regression model suggest that these characteristics do not play any role in predicting the risk to child poverty.

Table 14 Percentage point change in child poverty risk

<i>Characteristic</i>	VHLSS		MICS	
	<i>Urban</i>	<i>Rural</i>	<i>Urban</i>	<i>Rural</i>
<i>Age of the child</i>	not significant	not significant	not significant	4
<i>Number of hh members</i>	not significant	not significant	not significant	18
<i>Hh head has primary education (compared to no education)</i>	-4	-6	-7	-17
<i>Hh head has low sec education (compared to no education)</i>	-6	-11	-12	-33
<i>Hh head has upper sec education (compared to no education)</i>	-5	-15	-17	-44
<i>Hh head has vocational education (compared to no education)</i>	-9	-18	-21	-55
<i>Hh head has higher education (compared to no education)</i>	-8	-44	-26	-78
<i>Hh head is gov/party leader (compared to no work)</i>	-16	-41	na	na
<i>Hh head is high level professional (compared to no work)</i>	not significant	-67	na	na
<i>Hh head is mid level professional (compared to no work)</i>	-8	-37	na	na
<i>Hh head is white collar staff (compared to no work)</i>	-14	-32	na	na

¹⁷ Please note that the effects refer to *percentage point* changes rather than *percentual* changes. The child poverty risk or probability to be poor is a percentage in itself and changes to this percentage are therefore reflected in percentage points.

<i>Hh head is skilled sales and services staff (compared to no work)</i>	not significant	-51	na	na
<i>Hh head is skilled agricultural staff (compared to no work)</i>	not significant	-46	na	na
<i>Hh head is skilled manual worker (compared to no work)</i>	-9	-45	na	na
<i>Hh head is assembler/machine operator (compared to no work)</i>	-8	-49	na	na
<i>Hh head is unskilled staff (compared to no work)</i>	-5	-40	na	na
<i>Being of Kinh/Chinese ethnicity (compared to ethnic minority)</i>	-4	-24	not significant	-43
<i>Living in North East region (compared to Red River Delta)</i>	10	20	not significant	27
<i>Living in North West region (compared to Red River Delta)</i>	13	31	not significant	40
<i>Living in North Central Coast region (compared to Red River Delta)</i>	11	14	12	21
<i>Living in South Central Coast region (compared to Red River Delta)</i>	not significant	16	not significant	23
<i>Living in Central Highlands region (compared to Red River Delta)</i>	12	25	not significant	21
<i>Living in South East region (compared to Red River Delta)</i>	not significant	25	not significant	26
<i>Living in Mekong River Delta region (compared to Red River Delta)</i>	18	55	10	58
<i>Hh head is a woman (compared to a man)</i>	-3	-7	not significant	-9
<i>Household is monetary poor (compared to not poor)</i>	6	21	na	na

The child's age significantly impacts the child poverty risk in rural areas based on MICS data. If a child grows one year older, the poverty risk increases by 4 percentage points. The total number of members in the household also increases a child's probability to be poor significantly in rural areas. One extra member present in the household increases the poverty risk by 18 percentage points based on MICS data. When considering the effects of educational attainment of the household head, it can be observed that this characteristic significantly decreases a child's probability to be poor in urban and rural areas for both data sets. This impact is higher for higher levels of educational attainment of the household head. When a household head has attained primary education compared to

having no education at all, the child poverty risk decreases by 4 to 17 percentage points in urban and rural areas based on VHLSS and MICS data. The percentage point changes amount to 44 and 78 in rural areas when a household head has obtained higher education, which largely decreases a child's probability to be poor. The occupational status of the household head also has strong but not always significant effects on child poverty. Child poverty risks are most strongly decreased when a household head is a high level professional, skilled sales or services staff member or machine operator or assembler in comparison the being unemployed. Ethnicity plays an important role in determining the poverty risk in especially rural areas. Being of Kinh/Chinese ethnicity decreases a child's poverty risk in comparison to belonging to an ethnic minority by 24 percentage points in case of VHLSS and 43 percentage points for MICS data. Regional effects are mostly significant for rural areas and consider the change in child poverty risk when the child lives in any other region than the Red River Delta region. In those cases with significant effects, it can be seen that living in any other region than the Red River Delta increases a child's probability to be poor. The poverty risk increases most when children live in the Mekong River Delta and North West regions. The gender of the household head has a small but significant impact on a child's poverty risk with a decrease in risk that ranges from 3 to 9 percentage points. Finally, the model takes into consideration whether the household's monetary poverty status has an impact on child poverty. It can be observed that children living in households that are monetary poor experience an increased chance of being child poor, ranging from 6 percentage points in the urban areas to 21 percentage points in the rural areas.

Based on the analysis of the regression results, we can draw conclusive results on a number of factors. Estimates consistently displayed that there is no significant relation between the gender of the child and the probability to poverty. The total number of children and elderly present in the household also do significantly impact the poverty risk of the children living in those households. Increasing levels of educational attainment of the household head go hand in hand with decreasing poverty risks in urban as well as rural areas. Children living in households whose head is employed compared to unemployed experience a lower chance to be poor. The degree to which the poverty risk is decreased is generally higher in rural areas and is dependent on the type of occupation. Poverty risks are higher when living in any other area than the Red River Delta with the Mekong River Delta and North West regions being the regions with the highest poverty risks. Being of Kinh/Chinese ethnicity strongly decreases the probability of being poor, although this effect is more relevant in rural than urban areas. Children living in female headed household face a slightly smaller probability to be poor while children living in households that are monetary poor experience a higher poverty risk.

13) Conclusion and Key lessons learned

A thorough process including a literature review, stakeholder consultations and data assessment led to the development of a Vietnam child poverty approach. The approach is multidimensional, child-focused and country-specific, taking into account those issues that are deemed to appropriately reflect child poverty in Vietnam. Poverty estimates are based on existing data from 2006 MICS and VHLSS surveys.

Overall child poverty amounts to 37% using MICS data and 31% using VHLSS data. In absolute numbers, this means that approximately 7 million children are poor in Vietnam. Child poverty rates do not differ for boys and girls but they do display a large urban-rural divide and great regional disparities. Children in rural areas, the northern mountainous regions and the Mekong River Delta region are considerably poorer than those living in urban areas and other regions. The result for the Mekong River Delta is remarkable as the region is doing relatively well in economic terms and experiences little monetary poverty. Furthermore, children of ethnic minority are much more disadvantaged compared to children belonging to the Kinh or Chinese ethnic group. Whereas 63 % of all ethnic minority children are poor, this figure stands at 25% for the Kinh and Chinese ethnic groups.

A breakdown of the aggregate child poverty estimates by indicator and domain shows that the most pressing areas for development are water and sanitation, leisure and health. Almost half of all children in Vietnam do not have a hygienic sanitation facility in their house. Two out of three children up to the age of five do not have a book, indicating an under-prioritization of the issue of leisure. Analogous to the overall child poverty estimates, we do not find gender inequality for any of the indicators or domains but do observe a large discrepancy between urban and rural areas, different regions and ethnic groups.

An in-depth analysis of the overlap between the application of the monetary poverty and the child poverty approach shows that both methods capture different groups of children. While there is a group of children that is identified as poor according to both methods, there is also a group that is only identified as poor by the child poverty approach but not by the monetary method and vice versa. Furthermore, the demographic and poverty characteristics of these groups differ, suggesting that the monetary and multidimensional poverty approaches capture different socio-demographic groups. For example, the findings suggest that monetary poverty disproportionately captures poor children living in the Red River Delta in comparison to the CPR child poverty method. The Mekong River Delta presents another example. While 44% of all children living in this region are only identified to be multidimensionally poor (and not monetary poor), only 2% are only captured by monetary poverty (and not multidimensional poor). These estimates indicate that other dimensions than the monetary one are the main determinants of child poverty in this region. By the same token, findings indicate that the CPR multidimensional method disproportionately captures children living in households with small numbers of children below the age of 16. Furthermore, the monetary approach seems to capture children living in households with more siblings. Basing policy design and targeting measures would thus imply that a substantial number of children would be “left behind”.

Only using the monetary approach as input into the policy process would result in the exclusion of children that are only captured by the child poverty approach but are not poor according to the monetary method. This includes children that suffer poverty in the areas of, for example, water and sanitation, health, leisure or shelter. Despite the fact that the monetary means of the households are considered to be sufficient, they still experience poverty in at least two areas of deprivation. By the same token, basing poverty policies on the basis of the child poverty approach only would lead to the exclusion of the group of children that is only identified as poor according to the monetary method but not by the child poverty approach. The children that belong to this group are most likely children living in households that find themselves just below the monetary poverty line. This situation ensures that they, on the one hand, have access to a number of services that are provided especially to the monetary poor and, on the other hand, are in a household that has enough resources to meet the thresholds for the other indicators. In conclusion, only policies based on a combination of poverty methods ensures that children that are identified as poor by only one of the approaches are also captured by child poverty reduction efforts.

Poverty analysis focusing on the characteristics of individual children as well as their households provided information about predictive factors of child poverty. Generally, the poverty risks for children are much higher in rural areas than in urban areas. Interestingly, estimates consistently show that there is no significant relation between the gender of the child and the probability to poverty or between the number of children or elderly in the household and child poverty. Increasing levels of educational attainment of the household head, however, go hand in hand with decreasing poverty risks in urban as well as rural areas. Children living in households whose head is employed compared to unemployed have a lower chance of being poor. In rural areas, a child's poverty risk is reduced by at least 40 percentage points when the household is employed rather than unemployed. The degree to which the poverty risk is decreased is generally higher in rural areas and is dependent on the type of occupation of the household head. In the rural case, poverty risks for children are higher when living in any other area than the Red River Delta. Living in the Mekong River Delta and North West regions considerably increases as child's poverty risks compared to living in the Red River Delta region. The probability to be poor for children living in the Mekong River Delta is 55 percentage points higher than for children living in the Red River Delta. Being of Kinh/Chinese ethnicity strongly decreases the probability of being poor in comparison to children belonging to ethnic minority groups, although this effect is more relevant in rural than urban areas. Children living in female headed households face a slightly smaller probability to be poor while children living in households that are monetary poor experience a higher poverty risk.

Key Lessons Learned

The process of developing and applying a multidimensional approach to child poverty in Vietnam has led to the identification of a number of key lessons learned. These key lessons not only refer to the poverty outcomes of the approach but also to the use of the child poverty approach for Vietnam and the way forward.

- *Monetary poverty ≠ multidimensional child poverty*

The findings in the report clearly indicate that measuring child poverty in terms of monetary poverty does not identify the same group of children as the multidimensional poverty method does and vice versa. There is a group of children that is identified as poor by both approaches but there are also two groups of children that are identified as poor by either only the monetary approach or the multidimensional approach. In order to gain an in-depth and comprehensive understanding of child poverty in Vietnam, the now customary monetary poverty measurement method be complemented by the use of the multidimensional approach. Only a combination of both approaches allows for poverty analysis and monitoring that adheres to current standards in the poverty monitoring and evaluation framework and takes into account developmental issues especially relevant for children in Vietnam.

- *It is important to be aware of underlying concepts and definitions when interpreting child poverty rates at indicator, domain and overall level.*

The following reasons explain why extra caution is required in interpreting the various child poverty results throughout the report. Firstly, as most indicators were selected during a consultation process with national stakeholders, their definitions are meant to apply to the Viet Nam context and may occasionally differ from more standard international indicators that measure similar issues (such as the MICS indicators for primary school completion and immunization). As a consequence of differences in indicator definitions, indicator values are not always the same as those presented in the MICS or VHLSS survey reports. For example, the indicators used within the education and child work domains were formulated in such a way to fit the approach's conceptual framework and Vietnam social and cultural context, leading to different definitions than those commonly used. Secondly, indicators are measured for children in different age brackets due to survey questionnaire design and do not always refer to the same groups of children. As a result, indicator and domain poverty rates do not always apply to all children but restricted age groups. Finally, the two different surveys used for the measurement of child poverty (MICS and VHLSS) differ with respect to questionnaire design. Although certain indicators refer to the same issue, the underlying definition might differ as a result of the way in which the questions are posed in the respective survey (for example, child work issues). A direct comparison of issues is often not possible due to different underlying definitions of the indicators and its threshold. Awareness of the differences in underlying indicator definitions is important in interpreting the outcomes of the child poverty approach.

- *Further conceptual thinking and data collection efforts are required to improve the operationalization of the child poverty approach*

The process of developing the approach's conceptual framework, estimating the poverty estimates and analyzing child poverty in further detail made it clear that ongoing efforts are required 1) to stimulate conceptual thinking about domains and indicators that are more difficult to grasp and define and 2) to consider and suggest integration of missing indicators and domains in existing surveys in order to improve data availability. Domains that proved difficult to conceptualize in terms of child

poverty include health, child work, leisure and social inclusion and protection. Further thinking in terms of conceptualization is desirable to gain a better understanding of these issues, what they mean within the Vietnamese context and how they can be represented by clear and appropriate indicator. Domains for which little information is available to formulate suitable indicators include health, leisure and social inclusion and protection. Efforts should be directed towards integration of questions on these topics in the existing MICS and VHLSS questionnaires.

- *Improvements in the methodology of the child poverty approach should focus on measuring depth and severity of poverty*

The application of the child poverty approach in this report only focuses on the estimation of a poverty headcount and does not include a measure for poverty depth and severity. The exclusion of these kinds of figures from the applied methodology is largely due to the data at hand. As information for the calculation of indicators is not available for children of all ages, the total number of observable indicator poverties differs for children from different age groups. As a result, a total count of indicator poverty for children from different age groups would provide biased result and underestimate poverty for those children for whom not all indicators were observable from the data. The calculation of the poverty depth and severity is dependent on the count of total indicator poverty. Hence, to be able to extend the application of the child poverty approach to include poverty gap and severity measures, the methodology of the child poverty approach is to be reconsidered and improved. Options for the imputation of missing values are to be explored.

- *Complementary data collection and analysis is required to learn more about the groups of children excluded from the child poverty analysis*

The survey data used for the application of the child poverty approach employs sampling frames that are based on the official household registration. This implies that the extremely vulnerable groups within society, including children, are left out of consideration as they typically do not belong to an officially registered household. Excluded groups include unregistered migrants, children living in institutions and street children. The child poverty estimates in this report do not take these groups of children into account and are thus likely to be an underestimation of the actual situation in Vietnam. Additional data collection, quantitative as well qualitative, can provide more information about the sizes of these groups as well as their living conditions.

- *Data collection efforts at the provincial level could lead to potential greater use of the child poverty index*

In this report, the Child Poverty Index has only been calculated at regional level at Vietnam because data at lower levels of geographic disaggregation are not available. This does not only lead to little value added to the Child Poverty Rate as the outcomes are mostly the same but it also holds little direct implications for policy makers in Vietnam. Regions are used as statistical monitoring areas but do not represent a level at which policies are designed or implemented. Rather, provinces are the second policy level after the national level at which policy makers can be held accountable for policy outcomes. The calculation of the Child Poverty Index at the

provincial level and ranking of provinces according to their score thus has the potential to induce more action by policy makers in the area of child poverty.

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Annex 1 Exact definitions individual child poverty indicators as based on MICS and VHLSS data

Table 15 Exact definitions selected indicators based on MICS data

Domain	Indicators	Definition of indicator	Definition of threshold and remarks on indicator definition
Education poverty	Enrollment poverty rate	children in age 5 not attending pre-school as a percentage of all children in age 5	Age definition used for calculating net enrollment rate per level of schooling: taking into account birth date and start of school year. including over-achieving children that are in a higher level than appropriate for their age
		children in age 6-10 not attending primary school as a percentage of all children in age 6-10	
		children in age 11-15 not attending lower primary school as a percentage of all children in age 11-15	
	Completion poverty rate	children in age 11-15 that have not completed primary education as a percentage of all children 11-15	All children aged 11-15 at the time of interview are considered poor when they have not completed primary school
Health poverty	Immunization poverty rate	children in age 2-4 that have not received full immunization as a percentage of all children in age 2-4	A full immunization package includes BCG vaccination against TB, three vaccinations against DPT, three vaccinations against polio and a measles vaccination
Shelter poverty	Electricity poverty rate	children living in a dwelling without electricity as a percentage of all children in age 0-15	
	Roofing poverty rate	children living in a dwelling with natural/grass roof as a percentage of all children in age 0-15	natural roof includes thatch, straw, palm leaf, bamboo tree-trunk, wood and other materials
	Flooring poverty rate	children living in a dwelling with natural/mud floor as a percentage of all children age 0-15	natural/improper floor includes materials as earth, simple bamboo, palm, wood plank and other materials
Water and Sanitation poverty	Sanitation poverty rate	children living in a dwelling without a hygienic sanitation facility as a percentage	Hygienic sanitation facilities includes flush toilets into sewerage, septic tanks or pit latrines, ventilated improved

		of all children in age 0-15	pit latrine, pit latrine with slab and composting latrines (following def. improved sanitation facilities – MICS)
	Water poverty rate	children not drinking safe drinking water as a percentage of all children in age 0-15	Safe drinking water sources include private piped water into house and house's yard, public piped water, protected dug well, rain water and bottled water (following definition of improved sources – MICS)
Child work	Child work rate	children age 5-14 that have worked for an employer, in household production or were self-employed in the last 12 months as a percentage of all children in age 5-14	Child work includes any work performed (regardless of number of days and hours worked) for a member outside of the home (paid and unpaid) as well as household production (on the rice field, family business or begging on the streets) and self-employment in the last 12 months
Leisure poverty	Toy poverty rate	children in age 0-4 that do not have store bought or home-made toys as a percentage of all children age 0-4	-
	Book poverty rate	children in age 0-4 not having at least one children's or picture book as a percentage of all children age 0-4	-
Social Inclusion and Protection poverty	Birth registration poverty rate	children in age 0-4 not having a birth registration as a percentage of all children age 0-4	-

Table 16 Exact definitions selected indicators based on VHLSS data

Domain	Indicators	Definition of indicator	Definition of threshold and remarks on indicator definition
Education poverty	Enrollment poverty rate	children in age 5 not attending pre-school as a percentage of all children in age 5	Age definition used for calculating net enrollment rate per level of schooling: taking into account birth date and start of school year, including over-achieving children that are in a higher grade than appropriate for
		children in age 6-10 not attending primary school as a percentage of all children in age 6-10	

		children in age 11-15 not attending lower primary school as a percentage of all children in age 11-15	their age
	Completion poverty rate	children in age 11-15 that have not completed primary education as a percentage of all children 11-15	All children aged 11-15 at the time of interview are considered vulnerable when they have not completed primary school
Health poverty	Health visit poverty rate	Children in age 2-4 not having visited a professional health facility in the last 12 months as a percentage of all children aged 2-4	Professional health facilities include village health center, commune health center, regional general clinics, district hospital, provincial hospital, central hospital, other state-owned hospital, private hospital, other hospital and private clinics. Traditional herb doctors and other health centers are excluded
Shelter poverty	Electricity poverty rate	children living in a dwelling without electricity as a percentage of all children in age 0-15	-
	Housing poverty rate	children not living in proper housing as a percentage of all children in age 0-15	Proper dwellings include villas, strong houses with private and shared facilities and semi-permanent houses. Shift-made or other houses are considered improper dwellings
Water and Sanitation poverty	Sanitation poverty rate	children living in a dwelling without a hygienic sanitation facility as a percentage of all children in age 0-15	Hygienic sanitation includes flush toilet, suilabh and double vault compost latrine. Toilets directly over water, other facilities or no toilet are considered unhygienic.
	Water poverty rate	children not drinking safe drinking water as a percentage of all children in age 0-15	Safe drinking water sources include private tap water from inside and outside the house, deep drill wells, hand-dug and reinforced wells, hand-dug, non-reinforced and covered wells, protected springs, rain water and bought water Unsafe drinking water includes unprotected springs, small water tank, water tank, rivers, lakes and ponds and

			others
Child work	Child work rate	children age 6-15 that have worked for an employer or in household production in the last 12 months as a percentage of all children in age 6-15	Child work includes having worked for wage/salary, household production or trading or business for the household regardless of the number of hours or days worked
Leisure poverty	-	-	-
	-	-	-
Social Inclusion and Protection poverty	Caregiver poverty rate	children in age 0-15 living in households with heads that do not work due to disablement or old age, age 0-4	Includes heads of household that can not work due to disablement, old age/retirement.

Annex 2 Sensitivity analysis of indicators

Figure 27 Sensitivity analysis for selected indicators based on MICS data

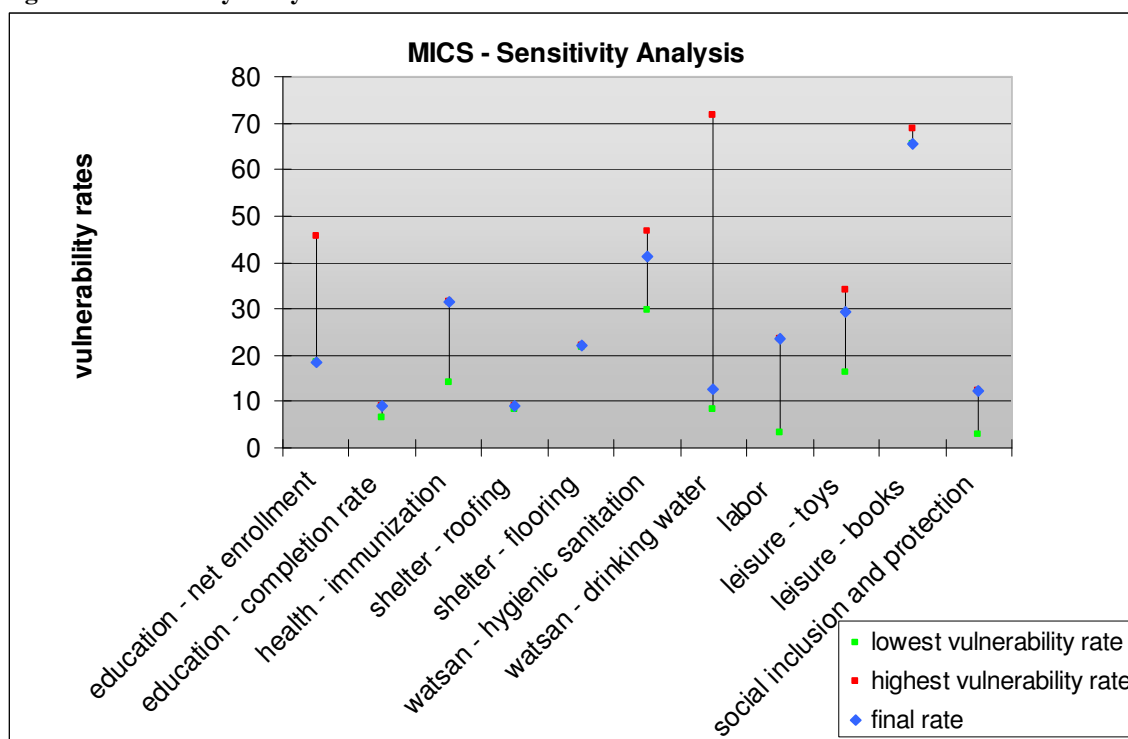


Table 17 Definitions used for sensitivity analysis for selected indicators based on MICS data

Indicator	Definition lowest poverty rate	Definition highest poverty rate	Definition final poverty rate
<i>Enrollment poverty rate</i>	Children not enrolled in the level of schooling appropriate for their age, taking into account the date of birth and date of interview (18.4%)	Children not enrolled in the level of schooling appropriate for their age, taking into account age of child, disregarding date of birth and date of interview (46%)	Children not enrolled in the level of schooling appropriate for their age, taking into account the date of birth and date of interview (18.4%)
<i>Completion poverty rate</i>	Children not having completed primary school, aged 12 and older (6.4%)	Children not having completed primary school, aged 11 and older (9.1%)	Children not having completed primary school, aged 11 and older (9.1%)
<i>Immunization poverty rate</i>	Children not having received 4 vaccinations (BCG vaccination, one DPT, one polio and measles) (14%)	Children not having received the full immunization package (31%)	Children not having received the full immunization package (31%)
<i>Roofing poverty rate</i>	Children living in a dwelling with a natural roof including thatch, straw, palm leaf, bamboo and tree-trunk (8.3%)	Children living in a dwelling with a natural roof including thatch, straw, palm leaf, bamboo, tree-trunk, wood and other	Children living in a dwelling with a natural roof including thatch, straw, palm leaf, bamboo, tree-trunk, wood and other

		materials (9.0%)	materials (9.0%)
<i>Flooring poverty rate</i>	Children living in a dwelling with natural/improper floor including materials as earth, simple bamboo, palm and wood plank (21.8%)	Children living in a dwelling with natural/improper floor including materials as earth, simple bamboo, palm, wood plank and other materials (22%)	Children living in a dwelling with natural/improper floor including materials as earth, simple bamboo, palm, wood plank and other materials (22%)
<i>Sanitation poverty rate</i>	Children living in dwellings without hygienic sanitation facilities, which include flush toilets into sewerage, septic tanks or pit latrines, ventilated improved pit latrine, pit latrine with and without slab and composting latrines (29.5%)	Children living in dwellings without hygienic sanitation facilities, which include flush toilets into sewerage, septic tanks or pit latrines, ventilated improved pit latrine and composting latrines (46.6%)	Children living in dwellings without hygienic sanitation facilities, which include flush toilets into sewerage, septic tanks or pit latrines, ventilated improved pit latrine, pit latrine with slab and composting latrines (following def. improved sanitation facilities – MICS) (41.1%)
<i>Water poverty rate</i>	Children drinking water that has not been treated (boiled or purified) (8.5%)	Safe drinking water sources, which include protected dug well and bottled water (71.8%)	Safe drinking water sources, which include private piped water into house and house's yard, public piped water, protected dug well, rain water and bottled water (following definition of improved sources – MICS) (12.6)
<i>Child work rate</i>	Children that have worked for an employer or were self-employed in the last 12 months (3.3%)	Children that have worked for an employer, in household production or were self-employed in the last 12 months (23.7%)	Children that have worked for an employer, in household production or were self-employed in the last 12 months (23.7%)
<i>Toy poverty rate</i>	Children that do not have household objects, natural materials, store bought or home-made toys (16.3%)	Children that do not have store bought toys (34.0%)	Children that do not have store bought or home-made toys (29.3%)
<i>Book poverty rate</i>	Children that do not have at least one children's or picture book (65.6%)	Children that do not have at least two children's or picture book (68.6%)	Children that do not have at least one children's or picture book (65.6%)
<i>Birth registration poverty rate</i>	Children that were left alone with another child at least once in the last 7 days (3.1%)	Children that do not have a birth registration (12.4%)	Children that do not have a birth registration (12.4%)

Figure 28 Sensitivity analysis for selected indicators based on VHLSS data

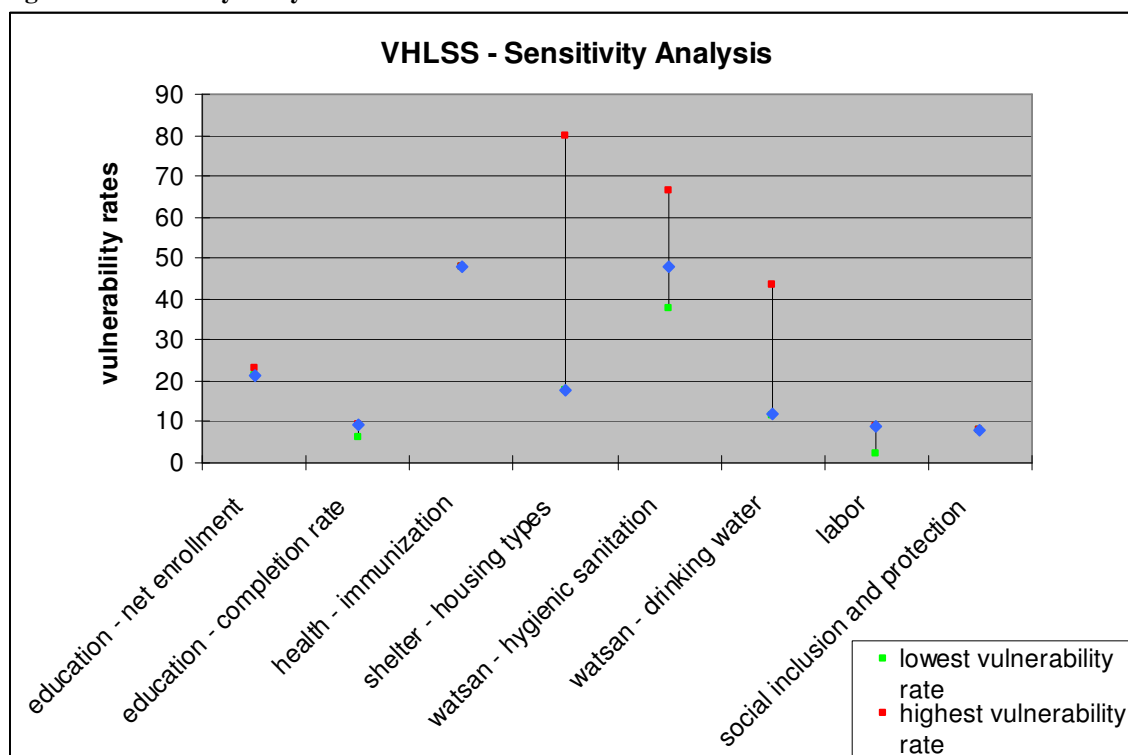


Table 18 Definitions used for sensitivity analysis for selected indicators based on VHLSS data

Indicator	Definition lowest poverty rate	Definition highest poverty rate	Definition final poverty rate
Enrollment poverty rate	Children not enrolled in the level of schooling appropriate for their age, taking into account the date of birth and date of interview (21.4%)	Children not enrolled in the level of schooling appropriate for their age, taking into account age of child, disregarding date of birth and date of interview (23.3%)	Children not enrolled in the level of schooling appropriate for their age, taking into account the date of birth and date of interview (21.4%)
Completion poverty rate	Children not having completed primary school, aged 12 and older (6.3%)	Children not having completed primary school, aged 11 and older (9.2%)	Children not having completed primary school, aged 11 and older (9.2%)
Health visit poverty rate	Children not having visited a professional health facility in the last 12 months (47.8%)	Children not having visited a professional health facility in the last 12 months (47.8%)	Children not having visited a professional health facility in the last 12 months (47.8%)
Housing poverty rate	Children not living in proper dwellings including villas, strong houses with private and shared facilities and semi-permanent houses. Shift-made or other houses are considered improper dwellings (17.9%)	Children not living in proper dwellings including villas, strong houses with private and shared facilities. Semi-permanent houses, shift-made or other houses are considered improper dwellings (79.7%)	Children not living in proper dwellings including villas, strong houses with private and shared facilities and semi-permanent houses. Shift-made or other houses are considered improper dwellings (17.9%)

<i>Sanitation poverty rate</i>	Children living in dwellings without hygienic sanitation, which include flush toilet, suilabh, double vault compost latrine and toilets directly over water. Other facilities or no toilet are considered unhygienic. (37.7%)	Children living in dwellings without hygienic sanitation, which include flush toilet and suilabh. Double vault compost latrines, toilets directly over water, other facilities or no toilet are considered unhygienic. (66.5%)	Children living in dwellings without hygienic sanitation, which include flush toilet, suilabh and double vault compost latrine. Toilets directly over water, other facilities or no toilet are considered unhygienic. (47.7%)
<i>Water poverty rate</i>	Children not drinking safe drinking water, which includes private tap water from inside and outside the house, deep drill wells, hand-dug and reinforced wells, hand-dug, non-reinforced and covered wells, protected springs, small water tank, water tank, rain water and bought water Unsafe drinking water includes unprotected springs, rivers, lakes and ponds and others (11.5%)	Children not drinking safe drinking water, which includes private tap water from inside and outside the house, deep drill wells, , protected springs, rain water and bought water Unsafe drinking water includes unprotected springs, hand-dug and reinforced wells, hand-dug, non-reinforced and covered wells small water tank, water tank, rivers, lakes and ponds and others (43.4%)	Children not drinking safe drinking water, which includes private tap water from inside and outside the house, deep drill wells, hand-dug and reinforced wells, hand-dug, non-reinforced and covered wells, protected springs, rain water and bought water Unsafe drinking water includes unprotected springs, small water tank, water tank, rivers, lakes and ponds and others (11.8%)
<i>Child work rate</i>	Children that have worked for an employer in the last 12 months (2.3%)	Children that have worked for an employer or in household production in the last 12 months (8.9%)	Children that have worked for an employer or in household production in the last 12 months (8.9%)
<i>Caregiver poverty rate</i>	Children living in households with heads that do not work due to disablement or old age (8%)	Children living in households with heads that do not work due to disablement or old age (8%)	Children living in households with heads that do not work due to disablement or old age (8%)

Annex 3 Technical notation of child poverty approaches

Standard Monetary Poverty Approach

The formal notations for the headcount index, poverty gap and poverty severity measure as presented below are taken from Ravallion (1994).

The headcount index denotes the proportion of the population with a monetary resource measure y below a monetary poverty line z :

$$H = q / n \quad (1)$$

where H stands for the headcount index, q represents the population below the poverty line and n is the total population

The poverty gap is based upon the distance of the monetary resource of the unit of analysis (individual or household) to the monetary poverty line.

$$PG = \sum_{i=1}^q (1 - y_i / z) / n \quad (2)$$

where PG stands for the poverty gap, i represents the unit of analysis (individual or household) and y_i is the monetary resource of the unit of analysis i . As we are only considering the population below the poverty line z , y_i is by definition lower than z .

The poverty severity can be measured by the Foster-Greer-Thorbecke measure, which gives larger weights to larger poverty gaps.

$$FGT = \sum_{i=1}^q (1 - y_i / z)^2 / n \quad (3)$$

where FGT stands for the Foster-Greer-Thorbecke measure (which can also be denoted as P_2).

Corak's Practical Approach

Corak's practical approach can be denoted in the same manner as the headcount index for the monetary poverty approach. In this case, the poverty line z is determined by 50% of the median income of the individual and resource measure y stands for individual equivalized household income after taxes and transfers.

Bristol Deprivation Approach

The formal notation of the Deprivation approach below is taken from Roelen, Gassmann and De Neubourg (2007).

The percentage of children falling below the specified threshold per indicator is denoted as the indicator deprivation rate.

$$IV = \frac{\sum_{i=1}^n I_i}{n} \quad (4)$$

where n stands for all children for which the indicator is observable and I_i represents a dichotomous variable with value 1 if the child is below the indicator threshold and thus vulnerable and value 0 if the child meets the threshold and is not vulnerable.

The domain deprivation rate reflects the rate of children experiencing deprivation within a specific domain as a percentage of children for whom the indicators within that domain are observable. The domain deprivation rate is given by

$$DV = \frac{\sum_{i=1}^n D_i}{n} \quad (5)$$

where n represents all children for which the indicators are observable and D_i stands for domain deprivation, a dichotomous variable with value 1 if the child suffers deprivation within the specific domain and value 0 if the child does not suffer deprivation. A child is considered to suffer domain poverty if it experiences indicator deprivation for at least one indicator within that domain:

$$D_i = 1 \quad \text{if } \sum_{i=1}^d I_i \geq 1 \quad (6)$$

where d stands for the total number of indicators identified per domain.

The construction of the aggregate child poverty figures upon the domain deprivation. The rates for severe deprivation and absolute poverty can be written as follows:

$$SevDep = \frac{\sum_{i=1}^N Sev_i}{N} \quad (7)$$

$$AbsPov = \frac{\sum_{i=1}^N Abs_i}{N} \quad (8)$$

where N represents the full sample size of children aged 0-16 and Sev_i and Abs_i represent dichotomous variables with value 1 if a child suffers severe deprivation or absolute poverty:

$$Sev_i = 1 \quad \text{if } \sum_{i=1}^D D_i \geq 1 \quad (9)$$

$$Abs_i = 1 \quad \text{if } \sum_{i=1}^D D_i \geq 2 \quad (10)$$

where D stands for the total number of domains within the specific approach.

Annex 4 Robustness check

Figure 29 MICS Robustness check

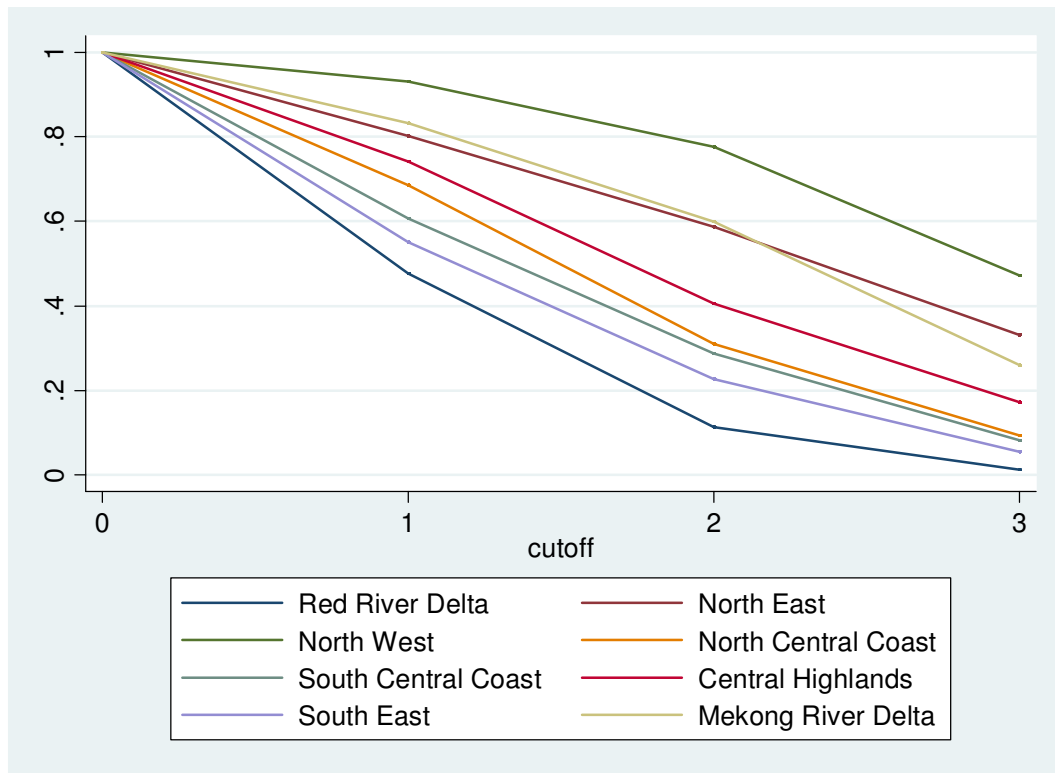
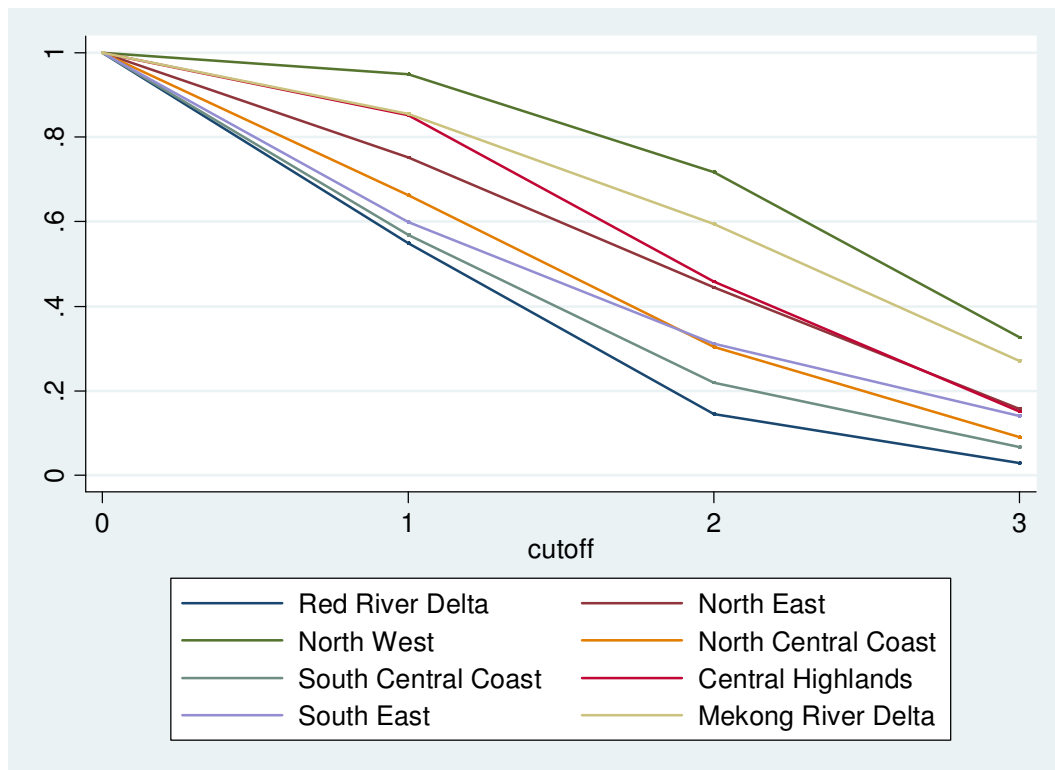


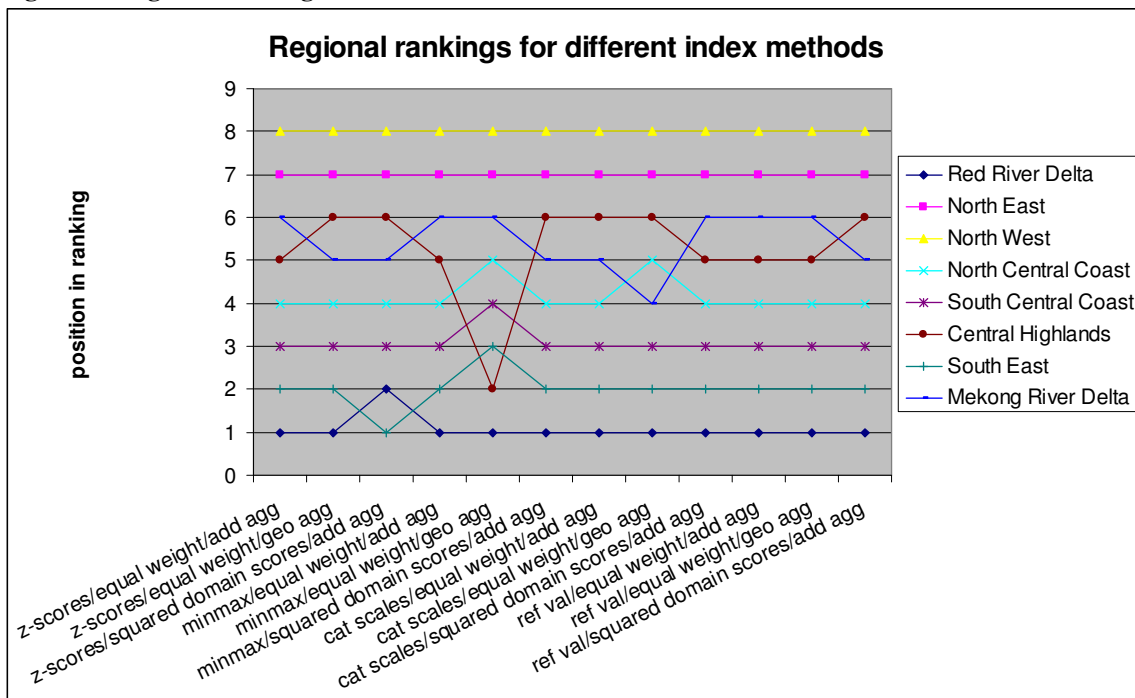
Figure 30 VHLSS Robustness check



Annex 5 Regional rankings for different methods of calculation for the CPI

The figure below displays that the ranking of regions based on their performance with respect to Child Poverty is rather stable, regardless of the specific methods used. The North West and North East region consistently rank as the worst performing regions. The top three of best performing regions include the Red River Delta, South East and South Central, with the exception of the minmax index employing equal weights and geometric aggregation. Calculating the CPI with this methodology puts the Central Highlands region on the second position of the ranking. Most frequent shifts in ranking occur around the center positions, number 4, 5 and 6. These positions are interchangeably occupied by the Mekong River Delta, Central Highlands and North Central Coast regions.

Figure 31 Regional rankings for different index methods MICS



Annex 6 Collinearity tables for multiple domain poverty

Table 19 Collinearity tables based on MICS data

	<i>education</i> 5-15	<i>health</i> 2-4	<i>shelter</i> 0-15	<i>water and sanitation</i> 0-15	<i>child work</i> 5-14	<i>leisure</i> 0-4	<i>social inclusion and protection</i> 0-4
<i>education</i>	5-15, n=8167	x	5-15, n=8167	5-15, n=8167	5-14, n=7228	x	x
	18.71		6.71	10.92	4.79		
	1.0000*		0.1626*	0.1654*	0.1309*		
<i>health</i>		2-4, n=1627	2-4, n=1627	2-4, n=1627	x	2-4, n=1627	2-4, n=1627
		31.37	12.75	19.16		23.20	4.19
		1.000*	0.2745*	0.2209*		0.2084*	0.2029*
<i>shelter</i>			0-15, n=10874	0-15, n=10874	5-14, n=7228	0-4, n=2707	0-4, n=2707
			24.57	20.40	7.08	22.80	6.74
			1.000*	0.4351*	0.1167*	0.2574*	0.2730*
<i>water and sanitation</i>				0-15, n=10874	5-14, n=7228	0-4, n=2707	0-4, n=2707
				44.07	12.05	39.50	9.44
				1.000*	0.1043*	0.3232*	0.2660*
<i>child work</i>					5-14, n=7228	x	x
					23.67		
					1.000*		
<i>leisure</i>						0-4, n=2707	0-4, n=2707
						69.06	11.53
						0.1000*	0.2257*
<i>social inclusion and protection</i>							0-4, n=2707
							12.37
							1.000*

Table 20 Collinearity tables based on VHLSS data

	<i>education</i> 5-15	<i>health</i> 2-4	<i>shelter</i> 0-15	<i>water and sanitation</i> 0-15	<i>child work</i> 6-15	<i>social inclusion and protection</i> 0-15
<i>education</i>	5-15, n=8326	x	5-15, n=8326	5-15, n=8326	6-15, n=7800	5-15, n=8326
	20.67		3.22	12.95	5.10	1.25
	1.000*		0.1289*	0.1286*	0.2894*	0.0076
<i>health</i>		2-4, n=1428	2-4, n=1428	2-4, n=1428	x	2-4, n=1428
		47.81	11.55	23.93		6.27
		1.000*	0.0837*	0.0475		0.0548

<i>shelter</i>			0-15, n=10696	0-15, n=10696	6-15, n=7800	0-15, n=10696
			20.99	18.72	3.08	1.34
			1.000*	0.4162*	0.1156*	-0.0360*
<i>water and sanitation</i>				0-15, n=10696	6-15, n=7800	0-15, n=10696
				48.79	6.51	2.99
				1.000*	0.1662	-0.0705*
<i>child work</i>					6-15, n=7800	6-15, n=7800
					8.91	0.40
					1.000*	-0.0273
<i>social inclusion and protection</i>						0-15, n=10696
						8.01
						1.000*

Annex 7 Results logistic regression models

Table 21 Marginal effects and standard errors logistic regression based on VHLSS and MICS data

	VHLSS		MICS	
	Urban model	Rural model	Urban model	Ruralmodel
	dy/dx se	dy/dx se	dy/dx se	dy/dx se
gender (0=male, 1=female)	-0.003 (0.010)	0.005 (0.012)	0.0166 (0.010)	-0.0021 (0.015)
age	-0.003 (0.004)	0.010 (0.005)	0.0073 (0.004)	0.0444*** (0.007)
age_sq	0.014 (0.018)	-0.011 (0.025)	-0.0559** (0.018)	-0.2667*** (0.030)
totchild	0.009 (0.041)	0.073 (0.040)	-0.0914 (0.047)	0.0380 (0.044)
totchild_sq	-0.018 (0.118)	-0.087 (0.124)	0.2575 (0.135)	-0.0211 (0.141)
totelderly	0.048 (0.038)	-0.062 (0.051)	0.0026 (0.041)	0.0561 (0.062)
totelderly_sq	-0.059 (0.050)	0.031 (0.063)	-0.0284 (0.052)	-0.1253 (0.076)
tothmem	-0.044 (0.026)	0.059 (0.030)	0.0250 (0.021)	0.1786*** (0.042)
tothmem_sq	0.169 (0.126)	-0.445** (0.150)	-0.1111 (0.106)	-0.9479*** (0.205)
_Ieduhead_1 (hh head has primary educ)	-0.037** (0.014)	-0.055*** (0.016)	-0.0657** (0.025)	-0.1718*** (0.028)
_Ieduhead_2 (hh head has lower sec educ)	-0.055*** (0.016)	-0.107*** (0.018)	-0.1181*** (0.027)	-0.3281*** (0.028)
_Ieduhead_3 (hh head has upper sec educ)	-0.048* (0.021)	-0.146*** (0.030)	-0.1651*** (0.029)	-0.4359*** (0.035)
_Ieduhead_4 (hh head has vocational educ)	-0.088*** (0.023)	-0.177*** (0.034)	-0.2108*** (0.040)	-0.5522*** (0.056)
_Ieduhead_5 (hh head has higher educ)	-0.079* (0.033)	-0.443*** (0.110)	-0.2613*** (0.036)	-0.7782*** (0.118)
_Ioccuphead_1 (hh head is gov/party leader)	-0.105* (0.046)	-0.410*** (0.063)	na na	na na
_Ioccuphead_2 (hh head is high level professional)		-0.666*** (0.174)	na na	na na
_Ioccuphead_3 (hh head is mid level professional)	-0.080** (0.031)	-0.369*** (0.066)	na na	na na
_Ioccuphead_4 (hh head is white collar staff)	-0.139* (0.066)	-0.320*** (0.079)	na na	na na
_Ioccuphead_5 (hh head is skilled sales and services staff)	-0.090** (0.030)	-0.508*** (0.063)	na na	na na
_Ioccuphead_6 (hh head is skilled agricultural staff)	-0.048 (0.027)	-0.456*** (0.044)	na na	na na

_Ioccuphead_7 (hh head is skilled manual worker)	-0.088*** (0.023)	-0.450*** (0.040)	na na	na na
_Ioccuphead_8 (hh head is assembler/machine operator)	-0.084** (0.030)	-0.491*** (0.062)	na na	na na
_Ioccuphead_9 (hh head is unskilled staff)	-0.051*** (0.015)	-0.401*** (0.034)	na na	na na
ethnicity (0=other, 1=Kinh/Chinese)	-0.044* (0.020)	-0.239*** (0.020)	-0.0009 (0.029)	-0.4344*** (0.025)
_Iregion_2 (North East)	0.098*** (0.026)	0.203*** (0.026)	0.0086 (0.043)	0.2657*** (0.033)
_Iregion_3 (North West)	0.128*** (0.032)	0.307*** (0.033)	0.0357 (0.033)	0.4042*** (0.037)
_Iregion_4 (North Central Coast)	0.110*** (0.028)	0.137*** (0.025)	0.1153*** (0.024)	0.2046*** (0.029)
_Iregion_5 (South Central Coast)	0.052 (0.030)	0.155*** (0.029)	0.0126 (0.026)	0.2259*** (0.030)
_Iregion_6 (Central Highlands)	0.117*** (0.026)	0.245*** (0.030)	-0.0100 (0.029)	0.2055*** (0.029)
_Iregion_7 (South East)	0.048 (0.026)	0.253*** (0.027)	0.0362 (0.024)	0.2586*** (0.032)
_Iregion_8 (Mekong River Delta)	0.181*** (0.024)	0.547*** (0.023)	0.1032*** (0.023)	0.5812*** (0.029)
genderhead (0=male, 1=female)	-0.033** (0.012)	-0.067*** (0.020)	-0.0171 (0.013)	-0.0933*** (0.025)
agehead	-0.009 (0.005)	-0.004 (0.008)	0.0040 (0.005)	0.0040 (0.009)
agehead_sq	0.132 (0.075)	0.043 (0.106)	-0.0632 (0.074)	-0.0465 (0.117)
Monetary poverty (0=not-poor, 1=poor)	0.060** (0.020)	0.207*** (0.015)	na na	na na
_cons	na na	na na	na na	na na
Number of observations	1998	8543	2127	8747
P-value	0.0000	0.0000	0.0000	0.0000
Pseudo R-Square	0.2328	0.2305	0.2069	0.2679
BIC	1.398.604	8.943.696	1.447.270	9.010.905