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MULTIDIMENSIONAL POVERTY: EVIDENCE FROM VIETNAM

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Abstract

This study examines multidimensional poverty in Vietnam using the method of Alkire and Foster (2007, 2011) and household data from Vietnam Household Living Standard Surveys 2010 and 2012. The poverty is analyzed in five dimensions including health, education, insurance and social support, living condition, and social participation. The result shows that multidimensional poverty has decreased slightly during the 2010-2012 period. There is a large difference between multidimensional poverty and expenditure/income based poverty. While Northern Mountain is the poorest region in terms of income or expenditure, Mekong River Delta is the poorest region in terms of multidimensional poverty. The decomposition analysis shows that the ethnic minority group has a small proportion of population but contributes largely to the national multidimensional poverty. We also decompose the total multidimensional poverty into the contribution of five dimensions. We find that the deprivation of dimension 'Social insurance and social assistance' contributes the most to the total poverty, while the deprivation of dimension 'Living conditions' contributes the least to the total poverty.

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1. Introduction

Over the last decades, there is a growing interest in the concept of multidimensional poverty among researchers and policymakers. Traditionally, poverty has been defined in a one-dimensional way, using income or consumption expenditure levels. The development of the capability approach (Sen, 1985) and the evolution of the human development paradigm in 1990 have challenged this perspective, viewing poverty in a much broader context. Proponents of the capability approach criticize poverty measurement based solely on income or resources, since 'resources availability says nothing about what people do – or could do – with those resources' (Mancero and Villatoro, 2013). Capability indicates people's possibilities or degrees of freedom to achieve certain functions such as education, health, nutrition, gender equality and self-respect to lead the life they value (Alkire, 2002; Hicks, 2004 and Wagle, 2002). In this sense, poverty is defined as the inability to satisfy certain basic functions.

Empirical evidence in India also suggested that counting people as poor based on their income alone might result in omitting a large proportion of poor people in some areas and in overreporting poverty in others. Specifically, a study conducted by Ruggieri-Laderchi (2003) found out that 43 percent of children and over half of adults who were capability-poor (in terms of health and education) were not poor using money metric indicator. In this case, using monetary measurements would significantly misidentify deprivations in other dimensions.

A second argument justifying the need for multidimensional poverty is that monetary variables alone do not provide a comprehensive evaluation of human well-being and, hence its poverty, which is a manifestation of insufficient well-being (Bourguignon and Chakravarty, 2003). Human well-being depends on both monetary and non-monetary attributes. Poverty measurements based solely on income can demonstrate the capacity of people to consume through the market; but it does not capture their access to public goods (education, health care, infrastructure, etc.) which are not captured in household income. Therefore, income should be supplemented by other variables to be able to capture the multiple aspects that contribute to poverty.

Multidimensional poverty has gained prominence not only in academic discussion but also in policy agenda, both nationally and internationally. For instance, in 2009, Mexico's National Council for the Evaluation of Social Policy adopted a multidimensional approach to measure the national poverty. In 2011, a five-dimensional poverty reduction strategy was employed by the Government of Colombia, using a variant of the Alkire and Foster (2011) method to quantify progress (Ferreira and Lugo, 2012). At the international level, UNDP (2007) started introducing multidimensional poverty in its 1997 *Human Development Report*. The Millennium Declaration and the Millennium Development Goals also highlighted multidimensional poverty in the agenda since 2000 (United Nations, 2000). Recently, UNDP (2010) has used the Multidimensional Poverty Index (MPI) to measure poverty of 104 countries in its 2010 *Human Development Report.*

Since the pioneering works of Sen (1985) and Bourguignon and Chakravarty (2003), the literature on multidimensional poverty has blossomed quickly, featuring a number of approaches to measure or analyze poverty in more than one dimension such as Gordon et al. (2003); Chakravarty et al. (2008); Deutsch and Silber (2005); Duclos et al. (2006); Wagle (2008); Maasoumi and Lugo (2008); Ravallion (2011) and Alkire and Foster (2011), among others. Most of the studies used education, health and living standards to

define multidimensional poverty. However, those studies differed in how they measure multidimensional poverty. While some scholars, such as Bourguignon and Chakravarty (2003), employed the union approach (poor in any dimension), others advocated the intersection approach (poor in two or more dimension) (Gordon et al., 2003) or relative approach (Wagle, 2008) in defining the poverty line. Furthermore, while scholars like Alkire and Foster (2011) and Massoumi and Lugo (2008) favored the scalar indices which seek to combine, in a single number, information from various poverty dimensions, Ravallion (2011), on the other hand, proposed a dashboard approach, which emphasized the development of 'the best possible distinct measures of the various dimensions of poverty […] aiming for a credible set of 'multiple indices' rather than a single 'multidimensional index' (Ravallion, 2011, page 13).

Vietnam has been very successful in economic growth and poverty reduction over the last decades. The poverty rate decreased from 58.1 percent in 1993 to 14.5 percent in 2008 and to about 10 percent in 2012. Poverty rate has declined in all population groups, both in urban and rural areas, among the Kinh majority and the ethnic minorities, and in all geographical regions. The depth of poverty, measured by the poverty gap index and poverty severity index, also decreased remarkably for the whole country as well as different population groups and geographic areas (World Bank, 2013). [1]

Despite of successes in poverty reduction, there are still a large number of challenges for Vietnam in sustaining the achieved results in poverty reduction. Firstly, poverty rate remains very high in remote areas where there is a high proportion of ethnic minorities. In some areas, more than 80 percent of people remain to live below the poverty line (Nguyen, 2011; Lanjouw et al., 2013; Nguyen et al., 2015). Secondly, poverty is not sustainable. According to the Vietnam Household Living Standard Surveys 2010 and 2012, the proportion of non-poor households in 2010 falling back into poverty in 2012 account for around 30 percent of the total number of poor households in 2012. Thirdly, there are poverty issues in urban areas, where there are a large number of migrants working in informal sector. They are vulnerable to poverty, but not supported by social assistance programs (Nguyen et al., 2012).

To reduce the poverty sustainably, there has been an increasing attention in the approach of multidimensional poverty in Vietnam. It is consistently agreed among researchers and policy makers in Vietnam that poverty is a multi-faceted phenomena and insufficient income is not perfectly coincident with the multidimensional poverty. For example, a significant number of children in non-poor households by the income poverty line have not attended schools. According to VHLSS 2012 statistics, about 66% of children who already left out of school belonged to non-poor households. Poverty can be more sustainably reduced if all the dimensions of the poverty such as education, healthcare, and living conditions are taken into account in designing social assistance policies.

In Vietnam, the multidimensional poverty has been examined in few studies. UNICEF (2008) measures child poverty in a multidimensional approach using Multiple Indicator Cluster Surveys (MICS). UNDP (2012) estimates Multidimensional Poverty Index using data from the Urban Poverty Survey in Ha Noi city and Ho Chi Minh City in 2009-2010.

In this study, we will examine the multidimensional poverty in Vietnam using the Vietnam Household Living Standard Surveys 2010 and 2012. We will apply a widely-used

[1] For poverty measurement in Vietnam, see for example Nguyen (2011) and Nguyen and Tran (2014).

method of Alkire and Foster (2007, 2011). Compared with previous studies on multidimensional poverty in Vietnam, this study has several different aspects. Firstly, we will use the nationally representative surveys (VHLSSs) to examine the multidimensional poverty of the whole country and different geographic regions and population groups over the period 2010-2012. Previous studies tend to focus the analysis of multidimensional poverty for specific regions (for example for Hanoi and Ho Chi Minh city in UNDP (2010)) or groups of population (for example for children in UNICEF (2008)). Secondly, we conduct a decomposition analysis to examine the contribution to the total multidimensional poverty of different regions and groups of population. Thirdly, we investigate the difference in multidimensional poverty estimates and income poverty estimates.

The paper comprises of five sections. The second section introduces data sets used in this study. The third section presents the estimation method of Alkire and Foster (2007, 2011). The fourth section presents the empirical results. Finally, conclusion and policy recommendations are presented in the fifth section.

2. Data set

In this study, to measure the multidimensional poverty in Vietnam, we use Vietnam Household Living Standards Survey (VHLSSs) in 2010 and 2012. The surveys were conducted by the General Statistics Office of Vietnam (GSO) every two years. The most recent VHLSS were conducted in 2010 and 2012. Each survey covered 9,399 households. The sample is representative for the whole country, rural and urban areas, and six geographic regions.

The VHLSSs are widely used in Vietnam for poverty and living standard analysis. The VHLSSs contain detailed data on household living standards including basic demography, employment and labor force participation, education, health, income, expenditure, housing, fixed assets and durable goods, participation of households in poverty alleviation programs.

3. Alkire-Foster's Method

Recently, the Alkire and Foster method has attracted a great international attention, since it is a simple tool for measuring and ranking multi-dimensional poverty (Alkire and Foster, 2007, 2011). The method has been applied to analyze poverty in a large number of countries. The method is started with identifying number of dimensions included in multidimensional poverty analysis. Basic dimensions may include health, education, living standards etc. Each dimension is measured by component indicators (denoted as I_k). The next step is to define threshold of deprivation of each component indicator. When thresholds of deprivation of component indicators are available, we can estimate deprivation score of household i using the following formula:

$$c_i = \sum_{k=1}^{K} w_k I_{ki}, \qquad (1)$$

where w_k is weight of I_{ki}, and I_{ki} is value of component k of household i, and K is number of total components. Component I_{ki} is defined as a binary indicator with 1 denoted deprivation and 0 otherwise. Values of weights depend on the number of dimensions and

the number of component indicators within each dimension. Weights are often summed to be 1, $\sum_{k=1}^{K} w_k = 1$.

Higher value of the deprivation score c means the higher level of deprivation or higher multidimensional poverty. To estimate the poverty rate, we need to define the poverty cut-off, denoted as L. A household is regarded as poor if their poverty score is higher than the cut-off, i.e $c_i \geq L$. For instance, Alkire and Foster (2007, 2011) have employed a threshold of 1/3: households having the deprivation score below this threshold are classified as the multidimensionally poor.

After calculating the number of multidimensionally poor households, proportion of the poor is estimated (normally called as headcount ratio, denoted as H):

$$H = \frac{q}{n}, \tag{2}$$

where q and n are the number of poor household and the total number of households, respectively. The individual poverty rate is calculated by dividing the number of poor people by the number of population.

The headcount ratio cannot reflect the level or the depth of deprivation of poor households as households deprived in all dimensions or households deprived in 1/L dimensions are all regarded as the poor. The headcount ratio does not take into account numbers of deprived dimensions of poor households. Consequently, Alkire and Foster (2007, 2011) propose estimation of multidimensional poverty intensity A as:

$$A = \frac{\sum_{i=1}^{n} c_i(L)}{n}, \tag{3}$$

where $c_i(L)$ is censored deprivation score, with:

$c_i(L) = c_i$ if the household is poor.

$c_i(L) = 0$ if the household is non-poor.

Finally, we have the Multidimensional Poverty Index (or adjusted headcount ratio) as a product of the headcount ratio H and Poverty Intensity A:

$$\text{MPI} = H \times A. \tag{4}$$

The higher MPI, the higher level of multidimensional poverty. The MPI reflects not only the poverty rate but also the deprivation depth of the poor. Put differently, according to Alkire and Foster (2007, 2011), the MPI reflects the ratio of multidimensionally poor population adjusted by the poverty intensity.

There are no standard procedures in determining weights for MDP dimensions and indicators. A common way is to use equal weights of dimensions as well as its sub-dimensions (Alkire and Foster, 2007, 2011). In this study, we also use equal weights in estimating multidimensional poverty.

4. Emprical analysis

4.1. Estimation of multidimensional poverty

A key challenge in multidimensional poverty analysis is to determine poverty dimensions and measurement indicators. In this study, we use several criteria to select measurement

indicators including (i) Reflect basic needs of people; (ii) Reflect aggregate welfare outcomes; (iii) Be objectively and easily measured; (iv) Be internationally comparable. After reviewing the legal documents in Vietnam and other emprical studies on multidimensional poverty in other countries (for example see Alkire and Foster, 2007, 2011 for review), we select 5 dimensions for multidimensional poverty analysis as follows:

- Health
- Education
- Social insurance and social assistance
- Living conditions
- Access to information and social participation

The dimensions of Health, Education, Social insurance and social assistance, Living conditions reflect the access to basic social services of households. In addition, we also propose the dimension of information access and social participation, since better access to information and social network can increase opportunities in employment and social services for households.

However, there are no data from VHLSSs on indicators of the dimension 'access to information and social participation'. Thus, we use private transfer receipt as a proxy indicator of this dimension. Table 1 presents the list of indicators on which there are data from VHLSSs. Weights attached to indicators are also presented in Table 1. The last two columns of this table present the mean of indicators in VHLSS 2010 and VHLSS 2012. These can be interpreted as the proportion of households who are deprived by these indicators. For example, 65.5% and 59.4% of households had at least a household member without health insurance in 2010 and 2012, respectively. Overall, the proportion of deprivation decreased during 2010-2012 for most of the indicators. Only three indicators experienced an increase in deprivation during 2010-2012. However, the t-test does not reject the difference in these indicators between 2010 and 2012.

Table 1: Indicators of multidimensional poverty from VHLSSs

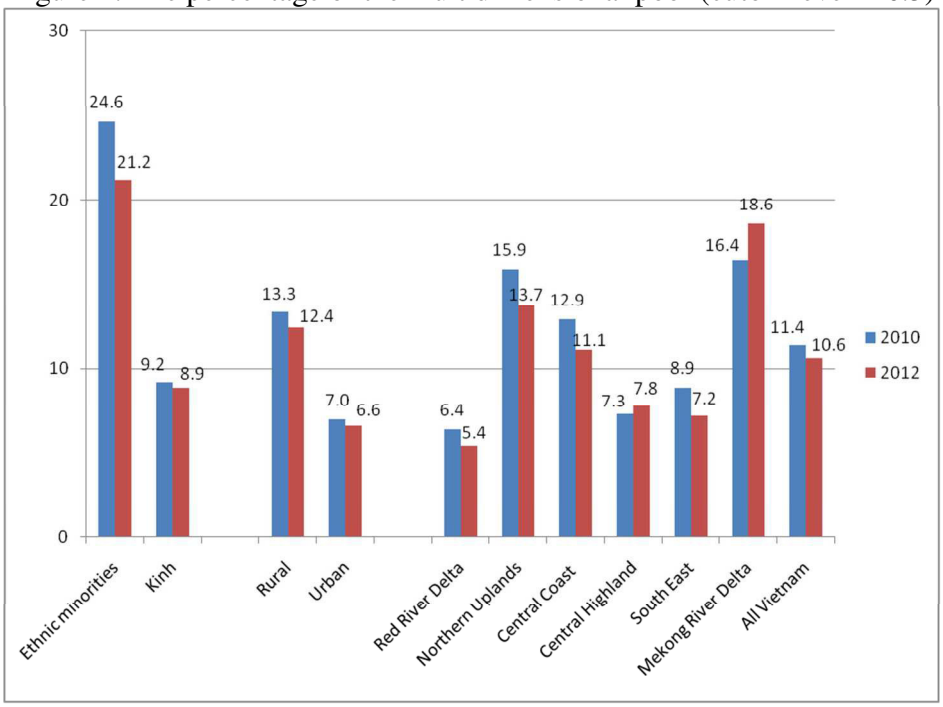
Dimensions	Indicators	Weight	VHLSS 2010	VHLSS 2012
1. Health	At least a household member not having health insurance	1/15	0.655	0.594
	No household members using health care service during the past 12 months	1/15	0.210	0.241
	No household members using health care service in district-level hospitals or higher-level hospitals during the past 12 months	1/15	0.478	0.504
2. Education	At least a household member not having upper-secondary school or vocational training degrees	1/10	0.652	0.641
	At least a child from 5 to 15 not attending school	1/10	0.055	0.045
3. Social insurance and social assistance	Household members not having social insurance	1/10	0.839	0.840
	Household member not having contributory pensions (for women from 55 years old, and men from 60 years old)	1/10	0.280	0.315
4. Living	Household not using electricity from the	1/40	0.026	0.024

Dimensions	Indicators	Weight	VHLSS 2010	VHLSS 2012
conditions	national grid			
	Household not having safe drinking water	1/40	0.094	0.083
	Household not having hygienic latrine	1/40	0.299	0.265
	Household not having permanent house	1/40	0.154	0.135
	Living area per capita less than 8m2	1/40	0.131	0.100
	Household not having television	1/40	0.107	0.081
	Household not having motorbike	1/40	0.241	0.196
	Household not having telephone	1/40	0.205	0.151
5. Access to information and social participation	Household not receiving any private transfers	1/5	0.157	0.140

Source: estimation from VHLSSs 2010 and 2012

After computing the deprivation score using the value and weight of indicators for all the households in the sample, we will define a household as multidimensionally poor if this household has the deprivation score below the poverty cut-off. In this study, we use different poverty cut-offs to examine the sensitivity of the poverty estimates to different poverty cut-off. The cut-off levels include 1/3 (0.33), 2/5 (0.4) and 1/2 (0.5).

Figure 1: The percentage of the multidimensional poor (cutoff level = 0.5)



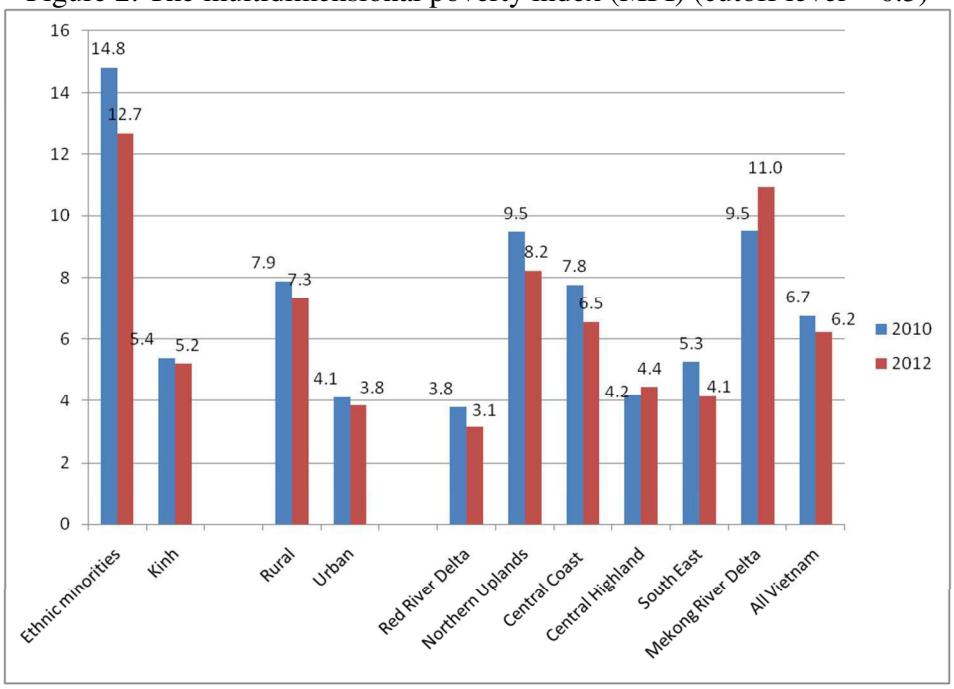
Source: Estimation from VHLSSs 2010-2012

We used different poverty cut-off levels, and the ranking of the multidimensional poverty of regions using different poverty cut-off levels is quite similar. For interpretation, we use the poverty cut-off equal to ½ (the highest cut-off level in this study). Figure 1 shows that the proportion of the multidimensional poor decreased from 11.4% in 2010 to

10.6% in 2012. As expected, the ethnic minorities and rural households had a higher proportion of the multidimensional poor than Kinh and urban households. By regions, Mekong River Delta is the region having the highest rate of multidimensional poverty, while Red River Delta is the region having the lowest rate of multidimensional poverty. This analysis is different from the poverty analysis using income or expenditure poverty lines in which Northern Mountain is often regarded as the poorest region and South East is the least poor region.

In Figure 2, we present the MPI using the cutoff level of ½. By regions, Mekong River Delta is still the region having the highest MPI, followed by the Northern Mountains and Uplands. Red River Delta has the lowest MPI. Ethnic minorities and rural households have higher MPI than Kinh and urban households. However, the gap between the urban and rural households as well as the gap between ethnic minorities and Kinh was much larger in the MPI than in the headcount index.

Figure 2: The multidimensional poverty index (MPI) (cutoff level = 0.5)



Source: Estimation from VHLSSs 2010-2012

4.2. Decomposition of MPI by regions and dimensions

The method of Alkire and Foster (2007, 2011) allows for decomposition of the MPI by population sub-groups or by dimensions. The decomposition of MPI by population sub-groups is very simple, since the national MPI is equal to the weighted average of MPI of sub-groups with the weights equal to the share of sub-group population in the national population. Table 2 presents the share of sub-group population and the contribution of sub-groups to the national MPI. It shows that the ethnic minority group has a small proportion of population but contributes largely to the national multidimensional poverty.

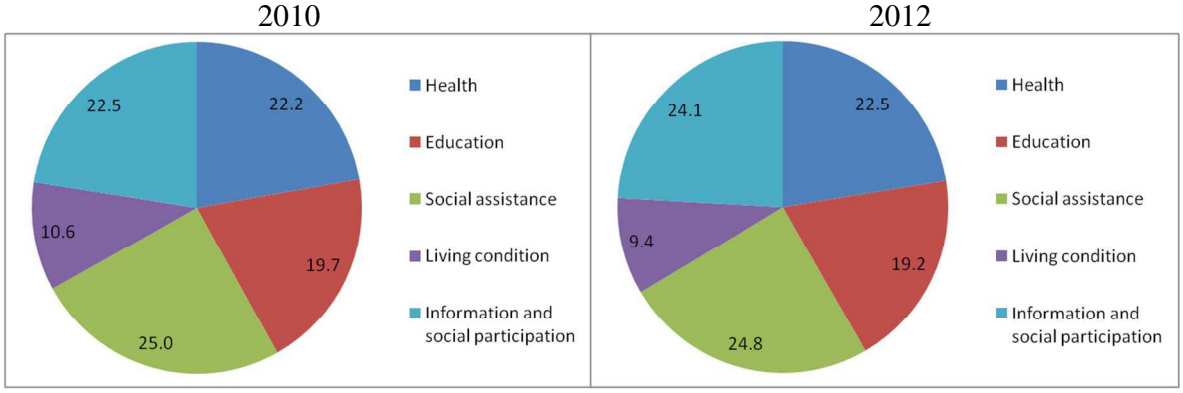
Table 2: Decomposition of MPI by population groups

	The share of sub-group population in total population		Contribution to the total MPI of the country (%)	
	2010	2012	2010	2012
Ethnic minorities	0.14	0.14	30.3	28.4
Kinh	0.86	0.86	69.7	71.6
Rural	0.69	0.70	81.4	82.0
Urban	0.31	0.30	18.6	18.0
Red River Delta	0.25	0.24	14.0	12.1
Northern Uplands	0.13	0.13	17.8	16.8
Central Coast	0.22	0.22	25.1	23.1
Central Highland	0.05	0.05	3.4	3.8
South East	0.17	0.17	13.2	11.2
Mekong River Delta	0.19	0.19	26.6	33.0
All Vietnam	1.00	1.00	100.0	100.0

Source: Estimation from VHLSSs 2010-2012

Next, we decompose the total MPI into the contribution of 5 dimensions. It shows that the deprivation of dimension 'Social insurance and social assistance' contributes the most to the total poverty. Meanwhile, the deprivation of dimension 'Living conditions' contributes the least to the total poverty.

Figure 3: Contribution of dimensions to the total MPI (%)

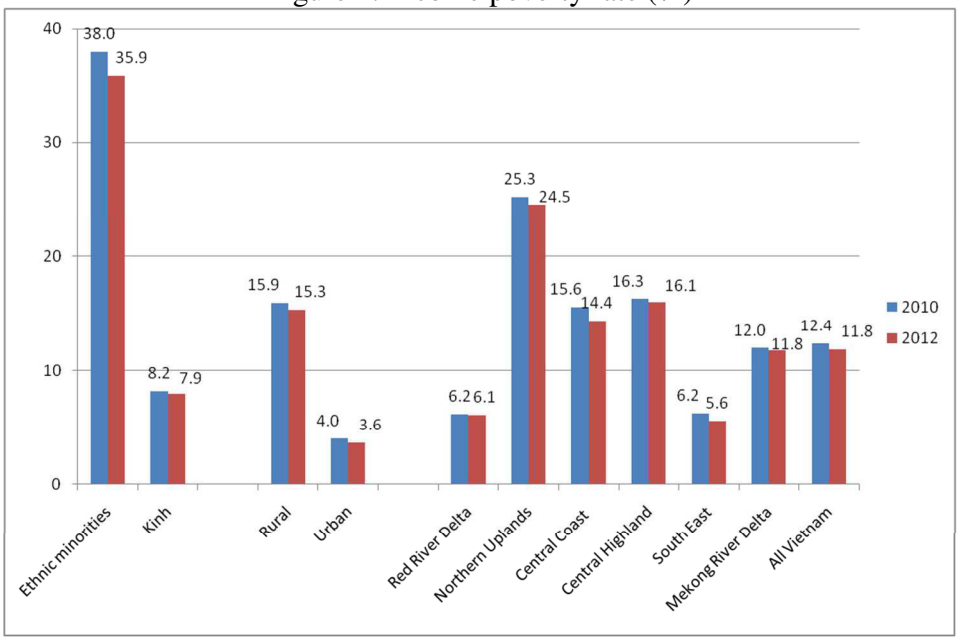


Source: Estimation from VHLSSs 2010-2012

4.3. Differences between multidimensional poverty and income poverty

In Vietnam, official poverty is measured by Ministry of Labor, Invalid and Social Affairs (MOLISA). Figure 4 presents the poverty rate using the income poverty of MOLISA estimated using the VHLSSs 2010 and 2012. Unlike the multidimensional poverty, the income poverty rate is highest in Northern Mountain and lowest in South East.

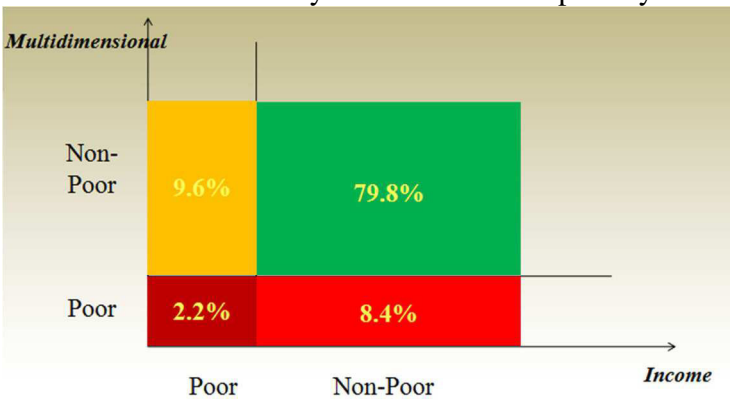
Figure 4: Income poverty rate (%)



Source: Estimation from VHLSSs 2010-2012

Figure 5 presents the comparison of the poverty classification using the income poverty approach and the multidimensional poverty approach (using the cut-off level of ½). There is a remarkable difference between the income poor and the multidimensional poor. More specifically, only 2.2% of households are both income poor and multidimensionally poor. Around 9.6% of households are income poor but non-poor by the multidimensional approach. On the other hand, about 8.4% of households are classified as the poor by the multidimensional approach but non-poor by the income poverty line.

Figure 5: Classification of household by multidimensional poverty and income poverty



Source: Estimation from VHLSSs 2010-2012

5. Conclusion

This study measures multidimensional poverty in Vietnam using the method of Alkire and Foster (2007, 2011). According this method, poor people or poor households are

determined based on deprivation levels on poverty dimensions. Based on the data availability from the 2010 and 2012 VHLSSs, five selected dimensions include Health care, Education, Insurance and social support, Living condition, Information approach and social participation. These dimensions are measured by 14 component indicators.

The result shows that multidimensional poverty has decreased in the 2010-2012 period. If we use the poverty cut-off equal to 0.5, the proportion of the multidimensional poor decreased from 11.4% in 2010 to 10.6% in 2012. By regions, Mekong River Delta was the region having the highest rate of multidimensional poverty, while Red River Delta was the region having the lowest rate of multidimensional poverty. The multidimensional poverty is different from the income poverty in which Northern Mountain is the poorest region and South East is the least poor region.

The analysis result also indicates that there is a significant difference between multidimensional poverty and income poverty. Households who were multidimensionally poor but income non-poor (and vice versa) accounted for a large proportion, while households who were both multidimensionally poor and income poor accounted for a small proportion. This confirms income or expenditure only reflects one-dimension in the needs of poor households.

The findings indicate gaps of poverty reduction policies when the policies support for health, education and living conditions have not covered all people who are deprived in these dimensions. The combination of identifying beneficiaries can rely on both income and multidimensional poverty measure. Households who are poor in both income and multidimensional dimensions are the poorest group, and they need to be supported by many poverty reduction policies including employment support and access to basic social services. Households who are income poor but multidimensionally non-poor can be supported by policies to improve income as job training and job seeking assistance. In contrast, those who are multidimensionally poor but income non-poor can be targeted by policies that improve access to basic social services.

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