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Ethnic Minorities in Northern Mountains of Vietnam: Poverty, Income and Assets

Nguyen Viet Cuong¹

Abstract

This study examines the asset and income pattern of poor ethnic minorities in Northern Mountains of Vietnam using data from a 2010 Northern Mountain Baseline Survey (NMBS) of the Second Northern Mountains Poverty Reduction Project and Vietnam Household Living Standard Survey (VHLSS) 2010. The poor ethnic minorities in Northern Mountains have lower assets and income than ethnic minorities in other regions. Their income is mainly from crops and livestock. Compared with Kinh/Hoa and ethnic minorities in other regions, poor ethnic minorities in Northern Mountain have substantially lower income from wages and non-farm activities. The difference in the income gap between Northern Mountain ethnic minorities and other households is mainly explained by the gap in wages and non-farm income. Northern Mountain ethnic minorities spend less time on wages and non-farm employment. Compared with other households, their non-farm income per working hours and also farm income per working hours is substantially lower.

Keywords: ethnic minority; household income; poverty; decomposition, Vietnam.

JEL Classifications: I31, I32, O12.

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1. Introduction

Vietnam has achieved high economic growth and remarkable poverty reduction during the past two decades. According Vietnam Household Living Standard Surveys, the proportion of people below the poverty line dropped dramatically from 58 percent in 1993 to 37 percent in 1998, and continued to decrease to 20 and 15 percent in 2004 and 2008, respectively. However, the speed of economic growth and poverty reduction in Vietnam is slow recently. The poverty rate in 2010 was almost the same as one in 2008. The poverty rate for ethnic minorities is very high and has been decreasing slowly. Using the 2010 VHLSS, the expenditure poverty rate of ethnic minorities is around 66 percent, while this figure for Kinh and Chinese (Hoa) is only at 13 percent.

In Vietnam, there are 54 ethnic groups and there is a large variation in living standard among ethnic groups. Kinh is the major group which account for around 85 percent of the population. Compared with other ethnic minorities, Kinh people tend to live in delta and high population density areas and have higher living standards and lower poverty. Chinese people in Vietnam are a small group but have higher income than other ethnic minorities. Ethnic minorities tend to live in mountains and highlands. There are a large proportion of ethnic minorities living in Northern Mountains. These groups rely mainly on farm income, with very limited access to infrastructure, education, health services and non-farm opportunities. They have a very high poverty rate.

Two important factors contributing to poverty reduction are economic growth and income redistribution (Dollar and Kraay, 2000; Kakwani and Pernia, 2000; Ravallion, 2004). There are numerous support programs that are targeted at the poor and ethnic minorities in Vietnam (e.g., see CEMA and UNDP, 2009). Thus high poverty in ethnic minorities can be explained by low income and consumption growth. There is a large gap in income and a large difference in income pattern between ethnic minorities and Kinh and Hoa in Vietnam. In this study, we examine the living standards and income pattern of ethnic minorities in Northern Mountains of Vietnam.

There are numerous studies on household poverty in Vietnam. A large number of studies focus on ethnic minorities, e.g., Van de Walle and Gunewardena (2001), Baulch et al. (2004), Baulch et al. (2012), Pham and Reilly (2009), Pham et al. (2009), Imai et al. (2011), Pham et al. (2012). Compared with the previous studies, this study has two different features. Firstly, it focuses on the poorest group of ethnic minorities in Northern Mountains of Vietnam by using the recent survey of Northern Mountain Baseline Surveys in 2010. Secondly, it uses different decomposition techniques to understand the income gap between these poorest ethnic minority households and other households in Vietnam.

This study has two main objectives. The first is to examine the poverty profile of ethnic minority households in poorest areas in Northern Mountains of Vietnam. It will present estimates of basic characteristics of households including poverty status, income, demographics, housing and sanitation conditions, and durables. The second is to examine household factors associated with per capita income of Northern Mountain ethnic minority households using regressions. The study examines the pattern of income and uses decomposition techniques to understand factors associated with the income gap between ethnic minorities in Northern Mountains and households in other regions.

The report is structured into six sections as follows. The second section describes data sets used in this study. The third section presents the poverty trend of ethnic minorities. The fourth section present decomposition analysis of income. The fifth section analyses factors associated with poverty of ethnic minorities in Northern Mountainous Region. Finally, conclusions and policy implications are presented in the sixth section.

2. Data set

This study relies on two main data sets. The first data set is from The Northern Mountains Baseline Survey (NMBS) 2010. The 2010 NMBS was conducted during July – September 2010 to collect baseline data for the Second Northern Mountains Poverty Reduction Project. The overall objective of the project is to reduce poverty in the Northern Mountains region. The project provides investments in productive infrastructure in poor

areas in Northern Mountains and also provides supports for the poor to promote agricultural and off-farm activities. The project covers six provinces including Hoa Binh, Lai Chau, Lao Cai, Son La, Dien Bien, Yen Bai.

The survey sampling follows a multi-stage procedure. The first stage is to select communes from 6 provinces that are covered by the project. There are 120 sampled communes. The number of communes in provinces is selected probability proportional to size of the population of the provinces. In each selected commune, 3 villages are randomly selected and then 5 households in each village are randomly selected for the interview. The total sample size is 1,800 households. The survey covered a large number of households from Tay, Thai, Muong, H'Mong and Dao.

The survey contains both household and commune data. At the household level, data collected include demography of household members, education and employment, healthcare, income, housing, durables and participation of households into targeted programs. The commune data contain information on living standards of communities such as demography, population, infrastructure and targeted programs in the communes. The commune data can be merged with the household data.

The second data set used in this study is from Vietnam Household Living Standard Survey in 2010 (VHLSS). The 2010 VHLSS covers 9,400 households and is representative at the national and regional level. The survey also collected data on communes where these sampled households were living. The 2010 VHLSS has very similar questionnaires as the 2010 NMBS. Thus the two surveys are very comparables in terms of questionnaires. However, the 2010 VHLSS contains data on household consumption expenditure, while the 2010 NMBS does not. In this study, in addition to the 2010 NMBS, the 2010 VHLSS is used to compare the living standards of the ethnic minorities in Northern Mountains with the average level of the country.

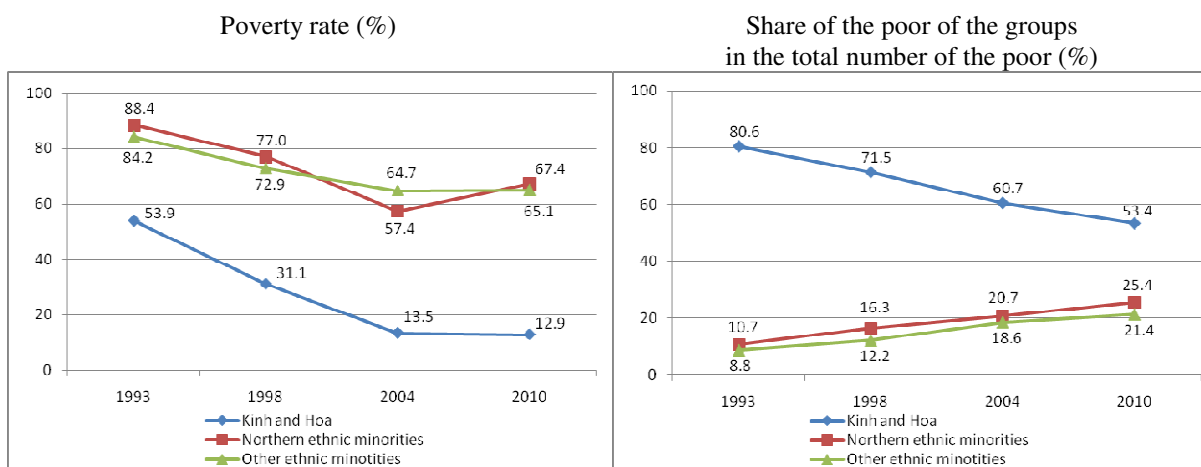
Compared with the 2010 VHLSS, the 2010 NMBS focuses on the poor ethnic minorities in Northern Mountain. The samples of the 2010 NMBS and the 2010 VHLSS are presented in Tables A.1 and A.2 in Appendix.

3. Poverty and living standards of ethnic minorities

3.1. Poverty rate

Poverty is substantially higher in ethnic minorities. Ethnic minorities in the Northern Mountain had a higher poverty rate than ethnic minorities in other regions in 1990s, but a lower poverty in 2004 (and also in 2006). In 2010, Northern Mountain ethnic minorities and ethnic minorities in other regions have a similar poverty rate. Although Northern Mountain ethnic minorities have a share of population of around 7%, they account for 25.4% of the poor of the country.

Figure 1: Poverty rate and the share of the poor



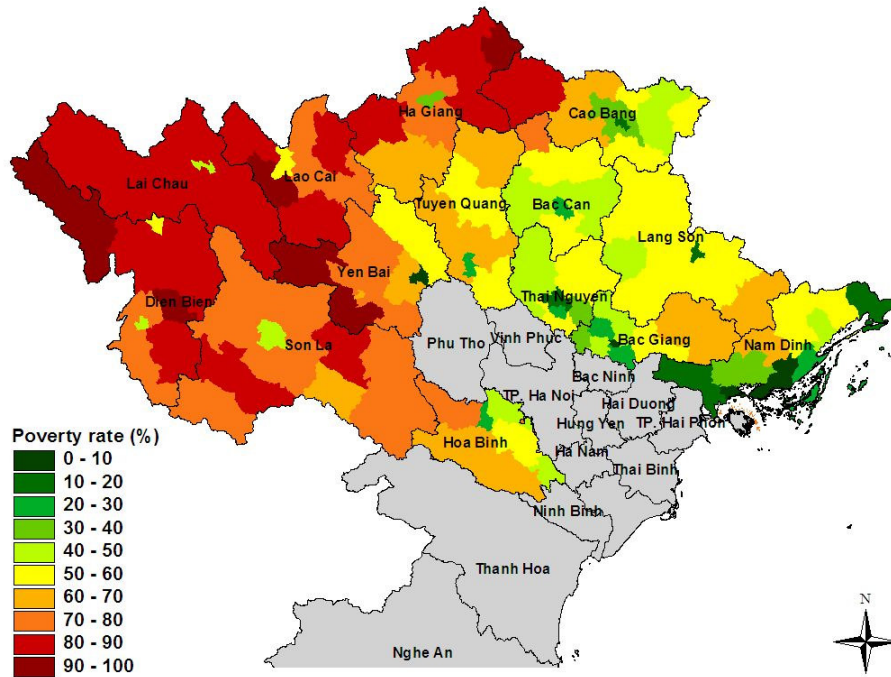
Note: The poor in this figure are those who have per capita expenditure below the expenditure poverty rate. The nominal expenditure poverty lines in 1993, 1998, 2004 and 2010 are 1160, 1790, 2077 and 7836 thousand VND/person/year.

Northern Mountains include both North West and North East of the Vietnam. The list of provinces covered in Northern Mountains are presented in Figure 2.

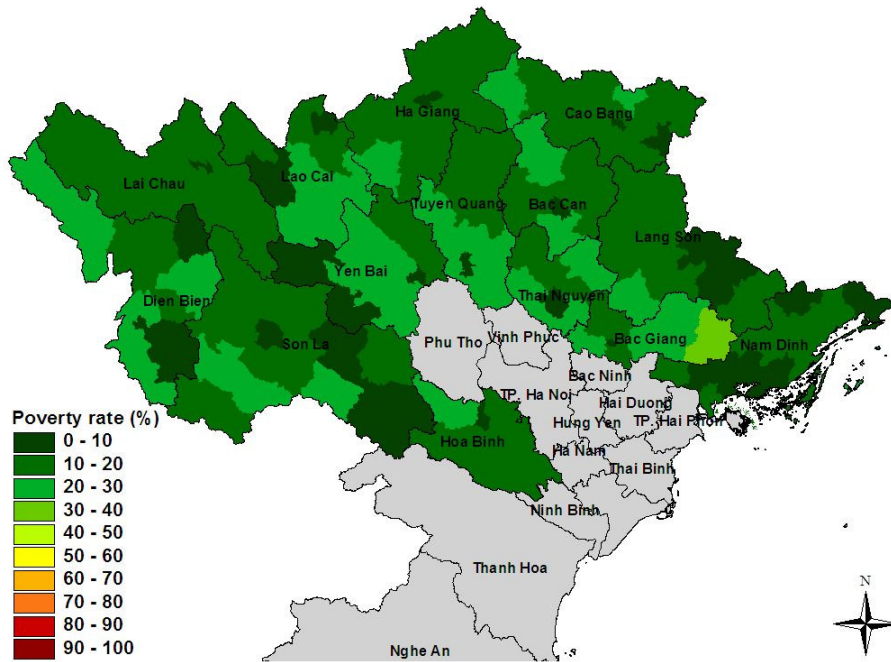
Source: Authors' estimation from VLSS 1993, 1998, and VHLSSs 2004, 2006.

Within the Northern Mountains, there is large variation in the poverty rate between provinces. Provinces in North East have lower poverty than those in North West. Within each province, there is also a large gap in poverty between ethnic minorities and Kinh/Hoa households.

Figure 2: Poverty rate of districts in 2009
Poverty rate of ethnic minorities (%)



Poverty rate of ethnic minorities (%)



Note: The poor in this figure are those who have per capita expenditure below the expenditure poverty rate. The nominal expenditure poverty line in 2010 is 7836 thousand VND/person/year.

Source: Authors' preparation using poverty estimates from Nguyen et al. (2012)

The poverty indexes of ethnic minority households in the 2010 NMBS are presented in Table 1. Since the 2010 NMBS does not contain expenditure data, we classify poor households by per capita income. The poverty line used is 400 thousand VND/person/month. This is the national poverty line for the period 2011-2015. For comparison, in most Tables, we also present the estimates for ethnic minorities in Northern Mountain, ethnic minorities in other regions, and all the households (the national level). These estimates are based on the 2010 VHLSS.

Households sampled in the 2010 NMBS are from poorest areas in Northern Mountains. Thus they have much higher poverty than overall ethnic minorities in Northern Mountains and ethnic minorities in other regions. 67.3% of the households in the 2010 NMBS are poor. There is also a large disparity in the poverty gap and severity between ethnic minorities in the 2010 NMBS and other ethnic minorities in other areas.

Table 1: Poverty indexes

	NMBS 2010		VHLSS 2010	
	Ethnic minorities in Northern Mountain	Ethnic minorities in Northern Mountain	Ethnic minorities in other regions	All households
Poverty rate (%)	67.34 (1.98)	43.92 (2.30)	34.86 (2.86)	9.94 (0.43)
Poverty gap index (P1)	0.2709 (0.0124)	0.1293 (0.0091)	0.0972 (0.0113)	0.0253 (0.0014)
Poverty severity index (P2)	0.1383 (0.0083)	0.0532 (0.0047)	0.0395 (0.0058)	0.0097 (0.0007)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table 2 examines poverty by ethnic minority groups. Kinh/Hoa and other large ethnic minorities such as Thai, Tay, Muong have lower poverty than other ethnic minorities in Northern Mountains. H'Mong, Dao and other small ethnic minorities have very high poverty rate as well as poverty severity.

Table 2: Poverty indexes by ethnic minority groups

Ethnicity	NMBS 2010			VHLSS 2010		
	Poverty rate (%)	Poverty gap index (P1)	Poverty severity index (P2)	Poverty rate (%)	Poverty gap index (P1)	Poverty severity index (P2)
Kinh & Chinese	32.15	0.1678	0.1075	5.01	0.0108	0.0037

Ethnicity	NMBS 2010			VHLSS 2010		
	Poverty rate (%)	Poverty gap index (P1)	Poverty severity index (P2)	Poverty rate (%)	Poverty gap index (P1)	Poverty severity index (P2)
	(6.38)	(0.0545)	(0.0437)	(0.30)	(0.0008)	(0.0004)
Tay	58.32	0.2068	0.0977	27.42	0.0660	0.0232
	(6.79)	(0.0271)	(0.0166)	(3.00)	(0.0094)	(0.0042)
Thai	56.72	0.2370	0.1312	47.92	0.1599	0.0693
	(4.55)	(0.0330)	(0.0227)	(5.09)	(0.0212)	(0.0110)
Muong	49.91	0.1762	0.0875	28.94	0.0637	0.0265
	(5.51)	(0.0311)	(0.0197)	(4.50)	(0.0152)	(0.0084)
H'Mong (Meo)	80.95	0.3349	0.1658	73.81	0.2634	0.1125
	(2.19)	(0.0151)	(0.0114)	(5.61)	(0.0279)	(0.0156)
Dao	65.05	0.2477	0.1216	49.80	0.1536	0.0678
	(5.38)	(0.0273)	(0.0184)	(6.63)	(0.0275)	(0.0150)
Other ethnic minorities	76.77	0.3205	0.1684	34.31	0.0867	0.0331
	(3.32)	(0.0270)	(0.0212)	(2.47)	(0.0087)	(0.0045)
Total	65.69	0.2661	0.1369	9.94	0.0253	0.0097
	(1.92)	(0.0120)	(0.0081)	(0.43)	(0.0014)	(0.0007)

Standard error in parentheses.

Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

3.2. Housing and assets of ethnic minorities

Table 3 presents the basic demographic characteristics and education of households. Ethnic minority households in Northern Mountains have a large family size with more children than other households.

Although education has been improved for children, both Kinh and ethnic minorities (e.g., MPI, 2010; Pham et al., 2011), education of adults remain very low for the poor and ethnic minorities. Education of household heads, especially the poor ethnic minorities, is lower than that of households in regions rather than Northern Mountains. 66% of household heads of Northern Mountains' poor ethnic minorities does not completed primary school, and around 20% of household heads have only primary school. It means than less than 20% of heads of these poor ethnic minority household have education above primary school.

Table 3: Demographic characteristics

urban10	Ethnic minorities in NMBS 2010			Households in VHLSS 2010		
	Poor	Non-Poor	All	Ethnic minorities in Northern Mountain	Ethnic minorities in other regions	All households
Household size	6.4 (0.1)	5.2 (0.1)	6.0 (0.1)	5.2 (0.1)	5.2 (0.1)	4.5 (0.0)
Proportion of children below 15	0.35 (0.01)	0.23 (0.01)	0.31 (0.01)	0.30 (0.01)	0.31 (0.01)	0.24 (0.00)
Proportion of elderly above 60	0.05 (0.00)	0.06 (0.01)	0.05 (0.00)	0.06 (0.00)	0.06 (0.01)	0.09 (0.00)
Proportion of working members (age above 14) to household size	0.80 (0.01)	0.82 (0.01)	0.81 (0.01)	0.85 (0.01)	0.82 (0.01)	0.74 (0.00)
Characteristics of household head						
Proportion of male head	0.95 (0.01)	0.94 (0.01)	0.94 (0.01)	0.94 (0.01)	0.85 (0.02)	0.78 (0.01)
Age of head	42.0 (0.5)	43.8 (0.7)	42.6 (0.4)	41.1 (0.5)	45.3 (0.6)	48.3 (0.2)
Education grade of head	3.1 (0.2)	5.3 (0.2)	3.8 (0.2)	5.3 (0.2)	4.4 (0.2)	7.6 (0.1)
Distribution of households by completed education of heads						
No degree	66.2 (2.3)	42.6 (3.1)	58.5 (2.3)	42.6 (2.3)	54.4 (2.8)	24.0 (0.6)
Primary	20.4 (1.8)	25.3 (2.3)	22.0 (1.6)	29.0 (1.7)	25.8 (2.3)	25.1 (0.5)
Lower- secondary	10.7 (1.4)	23.4 (2.3)	14.9 (1.4)	19.0 (1.6)	11.9 (1.8)	24.9 (0.6)
Upper- secondary	1.1 (0.3)	3.4 (0.9)	1.8 (0.4)	3.8 (0.8)	3.6 (1.0)	8.2 (0.3)
Technical degree	1.5 (0.5)	4.9 (1.4)	2.6 (0.6)	4.6 (0.8)	2.8 (0.7)	11.0 (0.4)
Post-secondary	0.0 (0.0)	0.5 (0.3)	0.2 (0.1)	1.0 (0.3)	1.5 (0.5)	6.8 (0.4)
Total	100	100	100	100	100	100

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Arable lands are important for rural and agricultural households (Lipton, 1985; Finan et al., 2005). Table 4 shows that ethnic minorities in Northern Mountains tend to have large lands, especially crop and forestry lands than ethnic minorities in other regions. Almost all households have crop lands (Table 5). The reason for a high proportion of ethnic minority households having access to lands is that most households rely on agricultural activities. In addition, there are several programs and policies that allocate

lands for ethnic minorities, e.g., the program 135 and the 5-million Hectare Aforestation Programme (for a review on programs for ethnic minorities, see Pham et al., 2011).

Table 4: Per capita land areas

Land areas per capita (m ² /person)	Ethnic minorities in NMBS 2010			Households in VHLSS 2010		
	Poor	Non-Poor	All	Ethnic minorities in Northern Mountain	Ethnic minorities in other regions	All households
All lands	3274.5 (405.9)	4040.7 (230.8)	3524.8 (318.6)	3891.1 (670.8)	2558.9 (150.4)	1308.8 (60.3)
Annual crop land	1588.2 (76.3)	2460.3 (148.4)	1873.0 (84.3)	1368.3 (83.0)	1267.5 (85.6)	611.3 (18.1)
Perennial crop land	51.3 (12.7)	174.4 (33.8)	91.5 (15.2)	128.5 (18.2)	452.4 (68.1)	261.9 (23.4)
Forestry	1533.4 (408.6)	1220.2 (211.4)	1431.1 (319.8)	2300.1 (663.1)	645.1 (138.4)	290.9 (49.5)
Water surface for fishery	9.6 (5.7)	23.4 (6.3)	14.1 (4.4)	13.8 (1.9)	43.4 (19.0)	86.4 (11.4)
Other lands	92.0 (19.0)	162.4 (18.3)	115.0 (14.5)	80.5 (14.2)	150.5 (20.5)	58.3 (3.3)

Standard error in parentheses.

Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table 5: Percentage of households having different lands

% households having the following lands:	Ethnic minorities in NMBS 2010			Households in VHLSS 2010		
	Poor	Non-Poor	All	Ethnic minorities in Northern Mountain	Ethnic minorities in other regions	All households
Annual crop land	99.6 (0.2)	98.8 (0.4)	99.3 (0.2)	97.9 (0.5)	82.6 (2.0)	54.9 (0.9)
Perennial crop land	8.3 (1.4)	24.0 (4.5)	13.4 (2.2)	30.3 (2.5)	32.3 (2.9)	16.8 (0.6)
Forestry	25.7 (2.6)	33.0 (3.2)	28.1 (2.3)	50.1 (2.4)	23.2 (3.1)	8.4 (0.4)
Water surface for fishery	10.2 (1.6)	19.9 (4.3)	13.4 (2.2)	16.9 (1.7)	9.3 (1.8)	7.9 (0.4)
Other lands	99.4 (0.3)	99.5 (0.4)	99.4 (0.2)	71.8 (2.2)	49.1 (3.4)	32.2 (0.8)

Standard error in parentheses.

Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

The living conditions are assessed in Table 6. Although there are a large number of programs that aim to improve water access and sanitation of ethnic minorities, the current access to electricity, water, and toilets remain very limited for ethnic minorities in Northern Mountains. Only 56% of Northern Mountain ethnic minority households have

electricity. As known, clean water is a crucial factor for health, especially child health. Unclean water can cause many problems to health. WHO (2004) mentions the adverse affects of drinking contaminated water which resulted in thousands of deaths every day, mostly in under-5 children in developing countries. UNDP (2006) claims that unsafe water and shortage of basic sanitation caused 80 percent of diseases. Yet, 86.3% of ethnic minority households in the 2010 NMBS do not have clean water, while this corresponding figure for the national level is 12.6%. Less than 1% of ethnic minority households have tap water. In addition, 47.6% of Northern Mountain ethnic minority households do not have a toilet.

Table 6: Housing characteristics of households

Housing characteristics	Ethnic minorities in NMBS 2010			Households in VHLSS 2010		
	Poor	Non-Poor	All	Ethnic minorities in Northern Mountain	Ethnic minorities in other regions	All households
Living area per capita (m2)	10.8 (0.3)	14.7 (0.5)	12.1 (0.3)	14.1 (0.3)	11.4 (0.4)	18.1 (0.2)
% having electricity	52.3 (3.2)	63.5 (4.6)	55.9 (3.1)	79.9 (2.4)	86.8 (2.7)	97.0 (0.3)
Spending on electricity (thousand VND/year)	25.5 (2.1)	61.9 (6.3)	37.4 (2.9)	144.5 (72.4)	93.8 (5.8)	350.4 (10.0)
% households by solidity of house						
Permanent	7.2 (1.2)	15.0 (3.2)	9.7 (1.5)	3.2 (0.9)	15.4 (2.1)	31.2 (0.7)
Semi-permanent	74.1 (1.9)	77.8 (3.1)	75.3 (1.8)	69.0 (2.1)	63.3 (2.9)	58.6 (0.8)
Temporary	18.8 (1.8)	7.2 (1.3)	15.0 (1.3)	27.8 (2.0)	21.2 (2.4)	10.2 (0.4)
Total	100	100	100	100	100	100
% households by drinking water						
Tap water	0.1 (0.1)	0.5 (0.4)	0.2 (0.1)	1.3 (0.5)	5.7 (1.4)	26.9 (0.8)
Clean water	10.0 (1.6)	20.7 (3.0)	13.5 (1.7)	29.0 (2.4)	50.8 (3.5)	60.5 (0.9)
Other water	89.9 (1.6)	78.8 (3.0)	86.3 (1.7)	69.7 (2.5)	43.5 (3.6)	12.6 (0.5)
Total	100	100	100	100	100	100
% households by toilet types						
Flush	1.6 (0.5)	7.1 (1.4)	3.4 (0.6)	7.0 (1.2)	7.7 (1.6)	49.7 (0.8)
Others	41.8 (3.0)	63.6 (3.5)	48.9 (2.9)	65.7 (2.3)	65.5 (3.1)	43.1 (0.8)

Housing characteristics	Ethnic minorities in NMBS 2010			Households in VHLSS 2010		
	Poor	Non-Poor	All	Ethnic minorities in Northern Mountain	Ethnic minorities in other regions	All households
No-toilet	56.5 (3.1)	29.3 (3.2)	47.6 (2.9)	27.3 (2.2)	26.8 (2.9)	7.1 (0.4)
Total	100	100	100	100	100	100

Note: Clean water is defined as water from solid wells and water from other sources using purification.
Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table 7 presents the proportion of households having different durables and assets. There is a large disparity in the proportion of having durables between Northern Mountain ethnic minority households and households in other groups. Within Northern Mountain ethnic minorities, the non-poor are substantially more likely to have durables than the poor.

Detailed analysis of household characteristics for different ethnic minority groups is presented in Tables in Appendix.

Table 7: Durables of households

% households having the following durables:	Ethnic minorities in NMBS 2010			Households in VHLSS 2010		
	Poor	Non-Poor	All	Ethnic minorities in Northern Mountain	Ethnic minorities in other regions	All households
Bike	8.6 (1.4)	22.0 (3.0)	12.9 (1.6)	33.6 (2.3)	35.3 (2.8)	58.5 (0.7)
Motorbike	61.5 (2.3)	77.3 (2.4)	66.6 (2.0)	71.9 (1.8)	66.4 (2.5)	80.7 (0.5)
Color television	44.5 (2.5)	67.6 (3.1)	52.0 (2.4)	71.5 (2.2)	70.3 (2.7)	90.0 (0.4)
Black & white television	2.6 (0.7)	4.1 (1.2)	3.1 (0.7)	2.3 (0.6)	2.6 (0.8)	1.1 (0.1)
Radio	1.5 (0.5)	1.0 (0.5)	1.3 (0.3)	6.0 (1.0)	10.4 (1.8)	19.1 (0.5)
Electricity cooker	3.9 (0.9)	19.2 (2.9)	8.9 (1.3)	23.9 (1.9)	32.7 (2.7)	77.4 (0.6)
Desk telephone	12.1 (1.7)	28.0 (3.3)	17.3 (1.9)	19.3 (1.8)	16.3 (1.9)	41.1 (0.7)
Mobile	23.9 (2.0)	48.8 (3.5)	32.0 (1.9)	44.4 (2.3)	34.0 (2.7)	72.4 (0.6)
Electricity fan	25.5 (2.4)	51.3 (3.6)	33.9 (2.4)	59.2 (2.5)	49.2 (3.2)	85.3 (0.5)

% households having the following durables:	Ethnic minorities in NMBS 2010			Households in VHLSS 2010		
	Poor	Non-Poor	All	Ethnic minorities in Northern Mountain	Ethnic minorities in other regions	All households
Good bed	34.9 (2.7)	52.3 (3.5)	40.6 (2.5)	57.2 (2.5)	76.0 (2.8)	81.3 (0.6)
Wardrobe	24.1 (2.2)	56.8 (3.7)	34.7 (2.4)	50.7 (2.4)	52.7 (2.9)	79.9 (0.6)
Table	12.7 (1.5)	40.3 (3.0)	21.7 (1.9)	34.8 (2.2)	33.9 (2.7)	65.8 (0.7)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

4. Decomposition methods

4.1. Decomposition of income gap

As presented, there is a large gap in per capita income between the poor and non-poor ethnic minorities in Northern Mountains, as well as between Northern Mountain ethnic minorities and other households. To have better understanding of the income gap, we decompose the income gap into different components. Following Haughton et al. (2001), we decompose household income into income from employment activities and income from non-employment activities (such as rental and transfers):

$$Y = Y_e + Y_{ne}, \quad (1)$$

where Y is household income, Y_e and Y_{ne} are employment income and non-employment income, respectively. Per capita income can be expressed as follows:

$$\frac{Y}{N} = \frac{Y_e}{N} + \frac{Y_{ne}}{N} = \left(\frac{Y_e}{H}\right) \times \left(\frac{H}{L}\right) \times \left(\frac{L}{N}\right) + \left(\frac{Y_{ne}}{N}\right), \quad (2)$$

where N is household size, H is the total number of working hours of workers (age above 14), L is the number of workers. The income gap between ethnic minorities and other households is decomposed into a gap in income per working hour, a gap in the working

time, and a gap in the proportion of working members to household size, the gap in non-employment income, and a remainder as follows:

$$\Delta\left(\frac{Y}{N}\right) = \left(\frac{Y}{N}\right)_O - \left(\frac{Y}{N}\right)_E = \left[\left(\frac{Y_e}{H}\right)\left(\frac{H}{L}\right)\right]_A \Delta\left(\frac{L}{N}\right) + \left[\left(\frac{Y_e}{H}\right)\left(\frac{L}{N}\right)\right]_A \Delta\left(\frac{H}{L}\right) + \left[\left(\frac{H}{L}\right)\left(\frac{L}{N}\right)\right]_A \Delta\left(\frac{Y_e}{H}\right) + \Delta\left(\frac{Y_{ne}}{N}\right) + R. \quad (3)$$

Subscripts ‘E’ and ‘O’ denote ethnic minority households and other households, respectively. The term in bracket with low subscript ‘A’ is the average level of the ethnic minority households and other households. R denotes the remaining income.

Equation (3) is slightly different from decomposition in Haughton et al. (2001). Firstly, Haughton et al. (2001) decompose the income gap between two years, while we decompose the income gap between two groups of households. Secondly, in Haughton et al. (2001), the gaps in each component are multiplied with the terms of the first group. In equation (3), we use the average value of two groups (terms within brackets with lower subscript A), since this way produces smaller values of remainders (R).

We further decompose the income gap into the gap in income of different sources: wages, farm and non-farm income, and non-employment income.

$$\begin{aligned} \frac{Y}{N} &= \frac{Y_w}{N} + \frac{Y_f}{N} + \frac{Y_{nf}}{N} + \frac{Y_{ne}}{N} \\ &= \left(\frac{Y_w}{H_w}\right)\left(\frac{H_w}{N}\right) + \left(\frac{Y_f}{H_f}\right)\left(\frac{H_f}{N}\right) + \left(\frac{Y_{nf}}{H_{nf}}\right)\left(\frac{H_{nf}}{N}\right) + \left(\frac{Y_{ne}}{N}\right), \end{aligned} \quad (4)$$

where the lower subscript ‘w’, ‘f’, and ‘nf’ denote ‘wage’, ‘farm’ and ‘non-farm’, respectively. For simplicity, decomposition in equation (4) drops the component ‘proportion of working members in households’. The income gap between ethnic minorities in Northern Mountains and other households is decomposed as follows:

$$\begin{aligned}
\Delta\left(\frac{Y}{N}\right) &= \left(\frac{Y}{N}\right)_O - \left(\frac{Y}{N}\right)_E \\
&= \left[\left(\frac{H_w}{N}\right)_A \Delta\left(\frac{Y_w}{H_w}\right) + \Delta\left(\frac{H_w}{N}\right) \left(\frac{Y_w}{H_w}\right)_A \right] + \left[\left(\frac{H_f}{N}\right)_A \Delta\left(\frac{Y_f}{H_f}\right) + \Delta\left(\frac{H_f}{N}\right) \left(\frac{Y_f}{H_f}\right)_A \right] \\
&\quad + \left[\left(\frac{H_{nf}}{N}\right)_A \Delta\left(\frac{Y_{nf}}{H_{nf}}\right) + \Delta\left(\frac{H_{nf}}{N}\right) \left(\frac{Y_{nf}}{H_{nf}}\right)_A \right] + \Delta\left(\frac{Y_{ne}}{N}\right).
\end{aligned} \tag{5}$$

4.2. Regressions and decomposition

In this section, we use regression analysis to examine the association between household characteristics and per capita income. We assume log of per capita income as a function of household and community variables as follows:

$$\ln(Y_i) = \alpha + X_i\beta + \varepsilon_i, \tag{6}$$

where Y_i is per capita income of household i , X_i is a vector of household and community variables of household i . ε_i is unobserved variables that follow a normal distribution with zero mean.

In this study, we also use the decomposition analysis to examine the factors associated with the gap in income between ethnic minorities in Northern Mountain and other households. We run separate regressions for ethnic minorities in Northern Mountain and other households as follows:

$$\ln(Y_E) = \alpha_E + X_E\beta_E + \varepsilon_E, \tag{7}$$

$$\ln(Y_O) = \alpha_O + X_O\beta_O + \varepsilon_O. \tag{8}$$

The subscript i is dropped for simplicity. Subscripts ‘ E ’ and ‘ O ’ denote ethnic minority households in Northern Mountains and other households, respectively.

The Oaxaca-Blinder decomposition technique is widely used to decompose gaps in the dependent variable (log of per capita income in this study) between two groups into a

gap due to differences in explanatory variables and a gap due to differences in coefficients of the explanatory variables (Blinder, 1973 and Oaxaca, 1973). The estimator of the income gap is presented as follows:

$$\begin{aligned}
\Delta \hat{E}[\ln(Y)] &= \hat{E}[\ln(Y_o)] - \hat{E}[\ln(Y_e)] \\
&= (\hat{\alpha}_o + \bar{X}_o \hat{\beta}_o) - (\hat{\alpha}_e + \bar{X}_e \hat{\beta}_e) \\
&= (\bar{X}_o - \bar{X}_e) \left(\frac{\hat{\beta}_o + \hat{\beta}_e}{2} \right) + (\hat{\beta}_o - \hat{\beta}_e) \left(\frac{\bar{X}_o + \bar{X}_e}{2} \right) + (\hat{\alpha}_o - \hat{\alpha}_e),
\end{aligned} \tag{9}$$

whether $\hat{\alpha}$ and $\hat{\beta}$ are estimators of parameters in regression (2) and (3). \bar{X}_e and \bar{X}_o are the average of explanatory variables of Northern Mountain Ethnic minority households and other households, respectively.

The first term in equation (9) is the gap in per capita income between Northern Mountain ethnic minority households and other households resulting from the difference in household characteristics. The second term can be explained as the difference in per capita income due to the different returns to household characteristics. The third term is the difference that is still unexplained by the current income model.²

5. Decomposition results

5.1. Per capita income

Table 8 presents per capita income. Ethnic minority households in the poorest areas of Northern Mountain have per capita income of 4724.9 thousand VND/person/year. This income level is lower than average income of other ethnic minorities in other regions.

² Oaxaca-Blinder decompositions can have other expressions as follows:

$$\Delta E[\ln(Y)] = (\bar{X}_o - \bar{X}_e) \hat{\beta}_o + (\hat{\beta}_o - \hat{\beta}_e) \bar{X}_e + (\hat{\alpha}_o - \hat{\alpha}_e).$$

$$\Delta E[\ln(Y)] = (\bar{X}_o - \bar{X}_e) \hat{\beta}_e + (\hat{\beta}_o - \hat{\beta}_e) \bar{X}_o + (\hat{\alpha}_o - \hat{\alpha}_e).$$

For a neutral selection of the coefficients of the differences, we use equation (4) in this study.

There is a large gap in income between the poor and non-poor in Northern Mountains. Per capita income of the poor and the non-poor is 2869.0 and 8551.3 thousand VND, respectively.

Income pattern is largely different between ethnic minorities in the 2010 NMBS and ethnic minorities in other regions (Table 8). Most household income of ethnic minorities in Northern Mountains is from agricultural activities, especially crops and livestock. Less than 20% of household income is from wages and non-farm activities. Ethnic minorities in other areas also have a high share of farm income, but still lower than Northern Mountain ethnic minorities. Figure 8 highlights the difference in the income pattern between ethnic minorities in the 2010 NMBS and ethnic minorities in the 2010 VHLSS. Incomes from crop account for 54% and 37% of total income for ethnic minorities the 2010 NMBS and ethnic minorities in other areas, respectively. Share of wages in total household income of ethnic minorities the 2010 NMBS is around one-third of that of other ethnic minorities.

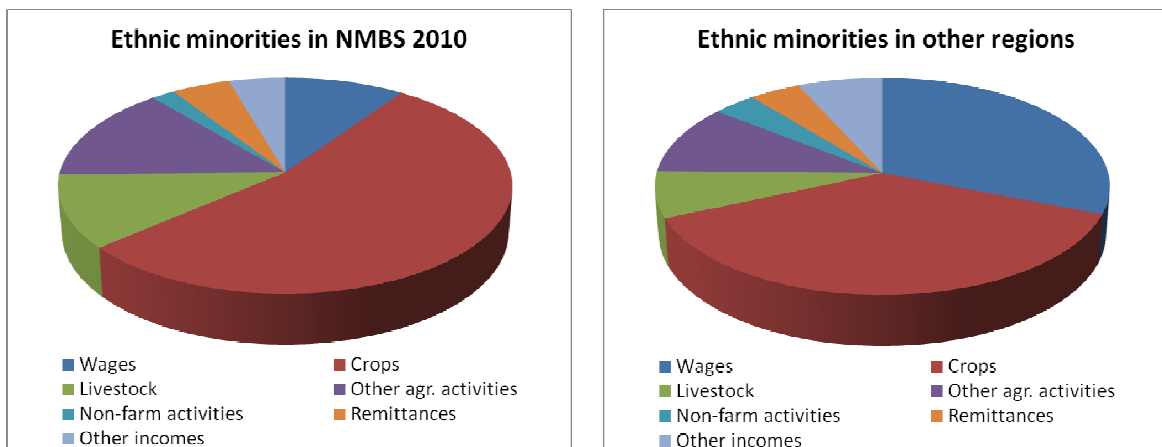
Table 8: Per capita income by income sources

	Ethnic minorities in NMBS 2010			Households in VHLSS 2010		
	Poor	Non-Poor	All	Ethnic minorities in Northern Mountain	Ethnic minorities in other regions	All households
Per capita income (thousand VND/year/person)	2869.0 (51.6)	8551.3 (262.5)	4724.9 (159.8)	6859.0 (226.0)	7844.1 (334.9)	17445.2 (401.8)
Share of income by sources (%)						
Wages	6.4 (0.7)	16.2 (1.7)	9.6 (0.9)	18.5 (1.1)	31.0 (1.8)	40.1 (0.5)
Crops	57.7 (1.1)	46.7 (1.8)	54.1 (1.1)	44.6 (1.2)	37.4 (1.7)	19.0 (0.4)
Livestock	10.3 (0.4)	12.7 (0.8)	11.0 (0.4)	11.3 (0.4)	6.9 (0.7)	5.0 (0.2)
Other agricultural activities	15.5 (0.5)	11.4 (0.7)	14.2 (0.5)	12.9 (0.6)	10.3 (1.1)	4.9 (0.2)
Non-farm activities	1.3 (0.2)	3.1 (0.6)	1.9 (0.3)	3.4 (0.5)	3.5 (0.6)	18.2 (0.4)
Remittances	4.2 (0.6)	5.8 (0.9)	4.7 (0.5)	4.4 (0.4)	4.1 (0.5)	6.9 (0.2)
Other incomes	4.7 (0.3)	4.2 (0.5)	4.5 (0.3)	4.8 (0.3)	6.8 (0.7)	5.8 (0.2)

Standard error in parentheses.

Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Figure 3: Share of income sources



Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table 9 presents the proportion of households having incomes from different activities. Income sources of ethnic minorities are quite diversified. Almost all ethnic minority households in the 2010 NMBS are involved in agricultural activities, both crops and livestock, and also other agricultural activities such as forestry and hunting. 31% of households have income from wages, and 12.7% of households have non-farm incomes. Interestingly, a large number of households, more than 70%, receive remittances.

Tables in Appendix present the income pattern of different ethnic minorities in both the 2010 NMBS and the 2010 VHLSS. H'Mong has a very low proportion of wages and non-farm incomes compared with other ethnic minorities.

Table 9: The proportion of households having different income sources (%)

	Ethnic minorities in NMBS 2010			Households in VHLSS 2010		
	Poor	Non-Poor	All	Ethnic minorities in Northern Mountain	Ethnic minorities in other regions	All households
Wages	23.9 (2.0)	45.8 (2.8)	31.0 (1.9)	49.5 (2.2)	69.1 (2.6)	70.2 (0.6)
Crops	99.8 (0.1)	99.4 (0.2)	99.7 (0.1)	98.3 (0.5)	89.4 (1.5)	61.4 (0.9)
Livestock	91.2 (1.0)	95.3 (1.0)	92.6 (0.8)	93.7 (0.9)	67.5 (2.6)	45.9 (0.8)
Other agricultural activities	98.9 (0.4)	96.1 (1.2)	98.0 (0.5)	94.7 (1.0)	75.4 (2.7)	33.5 (0.8)

	Ethnic minorities in NMBS 2010			Households in VHLSS 2010		
	Poor	Non-Poor	All	Ethnic minorities in Northern Mountain	Ethnic minorities in other regions	All households
Non-farm activities	11.5 (1.9)	15.2 (2.1)	12.7 (1.5)	21.0 (1.9)	13.4 (1.8)	37.1 (0.7)
Remittances	76.6 (2.8)	77.4 (3.4)	76.8 (2.4)	74.7 (2.4)	77.0 (3.2)	83.9 (0.6)
Other incomes	75.5 (2.2)	72.4 (2.6)	74.5 (1.9)	75.2 (1.9)	73.2 (2.6)	65.0 (0.7)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

5.2. Decomposition of income by earning and working time

Table 10 presents the decomposition results. We decompose the income gap between different groups. The first is the decomposition of the income gap between the ethnic minorities in the 2010 NMBS and all the households in the 2010 VHLSS. The difference in per capita income between these two groups is 12,720 thousand VND. 73.4% of this income gap is attributed to the difference in income per working hour. Only 6.5% of the gap is due to the gap in the number of working hours, and 1.5% of the gap is due to the gap in the proportion of working members in households. The difference in non-production or non-employment income accounts for 16.4% of the per capita income gap. The remainders have very small values.

The second is the decomposition of income gap between ethnic minorities in the 2010 NMBS and ethnic minorities in other regions. The income gap is 3,561 thousand VND, of which 82.3% results from the gap in income per hour, 12.6% results from the gap in non-employment income.

The third decomposition is applied for the income gap between the poor and non-poor of ethnic minorities in the 2010 NMBS. As mentioned, there is a large gap in per capita income between the poor and non-poor, at around 5,682 thousand VND. The main reason for the income gap is also the gap in earning per hour. However, the difference in the proportion of working members between the poor and non-poor account for a large

proportion of the income gap, at 17.6%. So the poor have low income since they have lower earning per hour and lower proportions of working members.

Table 10: Decomposition of differences in income

	Group 1: The national group Group 2: Ethnic minorities in NMBS		Group 1: Ethnic minorities in other regions Group 2: Ethnic minorities in NMBS		Group 1: Non-poor ethnic minorities in NMBS Group 2: Poor ethnic minorities in NMBS	
	Difference in income sources	%	Difference in income sources	%	Difference in income sources	%
Per capita income of group 1	17,445.2*** (410.3)		8,285.9*** (329.2)		8,551.3*** (265.2)	
Per capita income of group 2	4,724.9*** (156.7)		4,724.9*** (160.6)		2,869.0*** (53.6)	
Difference in per capita income	12,720.3*** (436.7)	100	3,561.0*** (364.7)	100	5,682.3*** (272.2)	100
Difference in income per hour	9,339.2*** (379.9)	73.4*** (1.6)	2,932.4*** (325.0)	82.3*** (5.4)	3,721.8*** (259.7)	65.5*** (3.3)
Difference in working hour	831.4*** (164.3)	6.5*** (1.3)	-88.6 (167.2)	-2.5 (4.8)	374.7** (161.0)	6.6** (2.8)
Difference in the proportion of working members	195.8 (135.3)	1.5 (1.1)	251.0* (132.9)	7.0* (3.6)	1,000.2*** (126.8)	17.6*** (2.1)
Difference in non-employment income	2,088.1*** (134.4)	16.4*** (1.0)	448.0*** (102.2)	12.6*** (2.7)	608.8*** (121.9)	10.7*** (2.2)
Remainders	265.7*** (31.9)	2.1*** (0.3)	18.2 (14.4)	0.5 (0.4)	-23.2 (15.1)	-0.4 (0.3)
Observations	11,113		2,331		1,714	

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table 11 presents the results of decomposition. The difference in wages contributes largely to the income gap between Northern Mountain ethnic minorities and the national households. The wage gap is mainly from the gap in the number of working hours for wages, not the average wage per hour. Similarly, the gap in non-farm earning per working hour is small, but the gap in non-farm working time is large. However, the gap in earning per farm working hour between Northern Mountain ethnic minorities and the national households is rather high.

This finding implies that Northern Mountain ethnic minorities have much lower farm productivity than other households. There is not a large gap in wages per hour and non-farm productivity between Northern Mountain ethnic minorities and the national

households. However, since the working time for wages and non-farm production is substantially lower for Northern Mountain ethnic minorities, their income is lower.

Table 11: Decomposition of differences in income by income sources

	Group 1: The national group Group 2: Ethnic minorities in NMBS		Group 1: Ethnic minorities in other regions Group 2: Ethnic minorities in NMBS		Group 1: Non-poor ethnic minorities in NMBS Group 2: Poor ethnic minorities in NMBS	
	Difference in income sources	%	Difference in income sources	%	Difference in income sources	%
Difference in per capita income	12,720.3*** (453.8)	100	3,561.0*** (384.0)	100	5,682.3*** (271.0)	100
Difference in wage per hour	2,138.1*** (190.4)	16.8*** (1.4)	375.0** (145.8)	10.5*** (3.6)	914.8*** (150.5)	16.1*** (2.4)
Difference in working hours for wage	4,447.4*** (188.1)	35.0*** (1.6)	1,772.4*** (166.3)	49.8*** (5.4)	594.7*** (127.3)	10.5*** (2.2)
Difference in farm income per hour	4,570.2*** (564.9)	35.9*** (3.5)	1,657.3*** (302.8)	46.5*** (5.9)	2,399.5*** (201.8)	42.2*** (3.4)
Difference in working hours for farm	-4,293.4*** (309.6)	-33.8*** (2.0)	-1,260.3*** (204.9)	-35.4*** (5.7)	873.1*** (205.3)	15.4*** (3.5)
Difference in non-farm income per hour	641.1** (279.4)	5.0** (2.2)	-151.1 (130.2)	-4.2 (3.6)	189.0*** (52.6)	3.3*** (0.9)
Difference in working hours for nonfarm	3,128.7*** (267.3)	24.6*** (2.3)	719.8*** (147.2)	20.2*** (4.0)	102.3** (44.0)	1.8** (0.8)
Difference in non-employment income	2,088.1*** (131.5)	16.4*** (1.0)	448.0*** (83.6)	12.6*** (2.1)	608.8*** (136.2)	10.7*** (2.3)
Observations	11,113		2,331		1,714	

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

5.3. Decomposition using regressions

Tables 12 and 13 present regressions of income and decomposition of income gaps. Household variables include basic demographic characteristics, age and education of household head, assets. Community variables are availability of good road (passable during the whole year) to commune. We tend to use more exogenous explanatory variables and keep statistically significant variables. Variables such as occupation of household heads and market, electricity of communes are not statistically significant, thereby not being used.

Table 12 presents the regression of log of per capita income for all the households using the 2010 VHLSS (column (5)) and for Northern Mountains ethnic minorities using the 2010 NMBS (column (4)), respectively. It also presents the decomposition of the gap between the income mean of Northern Mountain ethnic minorities and the national average. All the explanatory variables have the same and expected signs in the national income model and the income model of Northern Mountain ethnic minorities. The magnitude of variables ‘household size’, ‘education of household head’, ‘access to tap water’ and ‘living area per capita’ is very similar in the two models.

Education and access to land are important factors for income in developing countries. In Vietnam, land and agricultural policies are argued as one of important reasons for poverty reduction in many studies (e.g., Griffin et al., 2002; World Bank, 2003; Nguyen, 2012). For ethnic minorities, education of heads and the size of annual and perennial crop lands play an important role in per capita income. A 1000m² increase in land, either annual crop or perennial crop lands, is associated with a 15-percent increase in per capita income of ethnic minorities in Northern Mountains.

Availability of a good road to the commune center is important for rural households by increasing access to market and public services (Van de Walle, 2002; Walle and Cratty, 2002; Mu and Van de Walle; 2007; Nguyen, 2011). Similarly to Nguyen (2011), we found that availability of a good road can increase per capita income of ethnic minority households by around 10 percent.

Columns (6) and (7) present the difference in the explanatory variables and the effect of these variables on per capita income between ethnic minorities and other households, respectively. Columns (8) and (9) present the percentage contribution of variables to the income gap between ethnic minorities in Northern Mountains and households in general. Differences in household size and proportion of children contribute to 5.6 and 3.9 percent of the income gap, respectively. Differences in education and housing conditions contribute largely to the income gap. In total, the difference in household and commune characteristics in regression models explains 57% of the income gap. Interestingly, differences in the return of income to the household and commune characteristics reduce the income gap between ethnic minorities and the all households by

23%. The remaining factors that are not explained by the observed variables in the income models have a contribution of 66% of the income gap.

Northern Mountain ethnic minorities have much lower income than ethnic minorities in other regions. Table 13 examines the income gap between Northern Mountain ethnic minorities and ethnic minorities in other regions. 50% of the income gap is contributed to the difference in the observed characteristics in the income model. The difference in the coefficients of the observed characteristics helps reduce the income gap by 38%. The remaining factors that are not explained by the observed variables in the income models have a contribution of 88% of the income gap.

Table 12: Decomposition of the gap of log of per capita income between ethnic minority households in Northern Mountains and all the households

Variables	X_O	X_E	β_O	β_E	$(X_O - X_E)^*$ $((\beta_O + \beta_E)/2)$	$(\beta_O - \beta_E)^*$ $((X_O + X_E)/2)$	Contribution of X (%)	Contribution of β (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(9)	(10)
Household size	3.871*** (0.019)	5.198*** (0.079)	-0.043*** (0.005)	-0.040*** (0.008)	0.055*** (0.007)	-0.013 (0.048)	4.570*** (0.547)	-1.056 (4.005)
Proportion of children	0.205*** (0.002)	0.304*** (0.008)	-0.494*** (0.041)	-0.459*** (0.091)	0.047*** (0.007)	-0.009 (0.025)	3.902*** (0.525)	-0.746 (2.050)
Proportion of elderly	0.125*** (0.003)	0.057*** (0.004)	-0.309*** (0.036)	-0.185 (0.151)	-0.017*** (0.006)	-0.011 (0.015)	-1.394*** (0.481)	-0.930 (1.226)
Age of head	48.72*** (0.173)	41.46*** (0.379)	-0.000 (0.001)	0.005*** (0.002)	0.017*** (0.006)	-0.209** (0.080)	1.376** (0.518)	-17.22*** (6.699)
Household head with primary school	0.247*** (0.005)	0.228*** (0.015)	0.146*** (0.019)	0.097** (0.043)	0.002 (0.002)	0.012 (0.011)	0.189 (0.160)	0.960 (0.896)
Household head with lower-secondary school	0.246*** (0.005)	0.167*** (0.015)	0.208*** (0.020)	0.219*** (0.059)	0.017*** (0.004)	-0.002 (0.012)	1.391*** (0.345)	-0.190** (0.983)
Household head with upper-secondary school	0.081*** (0.003)	0.024*** (0.005)	0.349*** (0.029)	0.438*** (0.123)	0.022*** (0.004)	-0.005 (0.007)	1.839*** (0.359)	-0.388 (0.582)
Household head with technical degree	0.115*** (0.004)	0.029*** (0.006)	0.518*** (0.025)	0.422*** (0.109)	0.040*** (0.006)	0.007 (0.008)	3.305*** (0.498)	0.568 (0.667)
Household head with post-secondary school	0.075*** (0.004)	0.003 (0.002)	0.874*** (0.035)	1.223*** (0.295)	0.076*** (0.017)	-0.014 (0.017)	6.241*** (1.428)	-1.122 (1.427)
Having income from wages	0.679*** (0.006)	0.323*** (0.020)	0.117*** (0.017)	0.258*** (0.038)	0.067*** (0.008)	-0.071*** (0.020)	5.496*** (0.705)	-5.824*** (1.641)
Having income from non-farm activities	0.346*** (0.006)	0.115*** (0.012)	0.235*** (0.015)	0.116 (0.078)	0.041*** (0.010)	0.028* (0.018)	3.340*** (0.836)	2.269* (1.478)
Having tap water	0.273*** (0.008)	0.003*** (0.002)	0.626*** (0.030)	0.619** (0.268)	0.168** (0.063)	0.001 (0.062)	13.863*** (5.072)	0.089 (5.110)
Having clean water	0.614*** (0.008)	0.158*** (0.020)	0.351*** (0.025)	0.106* (0.054)	0.104*** (0.014)	0.095*** (0.023)	8.587*** (1.203)	7.797*** (1.932)
House using electricity	0.974*** (0.002)	0.594*** (0.029)	0.214*** (0.046)	0.049 (0.042)	0.050*** (0.012)	0.129** (0.048)	4.123*** (1.029)	10.67** (4.028)
Per capita of living area (m2)	20.63***	13.39***	0.009***	0.013***	0.082***	-0.066	6.788***	-5.408

Variables	X_0	X_E	β_0	β_E	$(X_0 - X_E)^*$ $((\beta_0 + \beta_E)/2)$	$(\beta_0 - \beta_E)^*$ $((X_0 + X_E)/2)$	Contribution of X (%)	Contribution of β (%)
	(0.236)	(0.307)	(0.001)	(0.003)	(0.014)	(0.060)	(1.159)	(4.968)
Per capita annual crop land (1000 m ²)	0.610*** (0.020)	1.883*** (0.090)	0.032*** (0.006)	0.147*** (0.013)	-0.114*** (0.011)	-0.144*** (0.018)	-9.364*** (0.923)	-11.86*** (1.477)
Per capita perennial crop land (1000 m ²)	0.273*** (0.028)	0.096*** (0.017)	0.031*** (0.010)	0.150*** (0.049)	0.016** (0.006)	-0.022* (0.012)	1.326** (0.522)	-1.810** (0.984)
Good road to commune	0.963*** (0.003)	0.793*** (0.026)	0.113*** (0.035)	0.097* (0.052)	0.018*** (0.006)	0.014 (0.058)	1.469*** (0.489)	1.187 (4.807)
Constant			8.497*** (0.064)	7.697*** (0.118)				
Observations			9,389	1,709				
R-squared in regression			0.427	0.387				
Decomposition								
	$\ln(Y_0) - \ln(Y_E)$	Contribution of X	Contribution of β	Contribution of α	Contribution of β & α			
Absolute	1.213*** (0.031)	0.692*** (0.069)	-0.279* (0.153)	0.801*** (0.138)	0.522*** (0.068)			
Percentage	100	57.05*** (5.44)	-23.02** (12.73)	66.03*** (11.49)	43.01*** (5.43)			

Standard error in parentheses. Standard errors are estimated using bootstrap with 500 replications

* significant at 10%; ** significant at 5%; *** significant at 1%.

Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table 13: Decomposition of the gap of log of per capita income between ethnic minority households in Northern Mountains and ethnic minority households in other regions

Variables	X_o	X_E	β_o	β_E	$(X_o - X_E)^*$ $((\beta_o + \beta_E)/2)$	$(\beta_o - \beta_E)^*$ $((X_o + X_E)/2)$	Contribution of X (%)	Contribution of β (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(9)	(10)
Household size	4.430*** (0.075)	5.198*** (0.079)	-0.037** (0.016)	-0.040*** (0.008)	0.030*** (0.008)	0.016 (0.090)	5.287*** (1.468)	2.759 (16.12)
Proportion of children	0.268** (0.010)	0.304*** (0.008)	-0.371** (0.149)	-0.459*** (0.091)	0.015*** (0.006)	0.025 (0.048)	2.708*** (1.000)	4.439 (8.717)
Proportion of elderly	0.079*** (0.008)	0.057*** (0.004)	-0.167 (0.159)	-0.185 (0.151)	-0.004 (0.003)	0.001 (0.015)	-0.710 (0.547)	0.215 (2.656)
Age of head	45.14*** (0.558)	41.46*** (0.379)	0.003 (0.003)	0.005*** (0.002)	0.014** (0.006)	-0.072 (0.127)	2.466** (1.148)	-12.88 (22.85)
Household head with primary school	0.242*** (0.019)	0.228*** (0.015)	0.099* (0.059)	0.097** (0.043)	0.001 (0.003)	0.001 (0.018)	0.242 (0.460)	0.098 (3.150)
Household head with lower-secondary school	0.129*** (0.016)	0.167*** (0.015)	0.204** (0.082)	0.219*** (0.059)	-0.008 (0.005)	-0.002 (0.015)	-1.436 (0.933)	-0.378 (2.803)
Household head with upper-secondary school	0.039*** (0.009)	0.024*** (0.005)	0.125 (0.146)	0.438*** (0.123)	0.004 (0.004)	-0.010 (0.006)	0.722 (0.632)	-1.756 (1.157)
Household head with technical degree	0.039*** (0.008)	0.029*** (0.006)	0.602*** (0.106)	0.422*** (0.109)	0.005 (0.005)	0.006 (0.005)	0.901 (0.966)	1.090 (0.927)
Household head with post-secondary school	0.023*** (0.006)	0.003 (0.002)	1.015*** (0.095)	1.223*** (0.295)	0.023** (0.009)	-0.003 (0.006)	4.071** (1.586)	-0.486 (1.055)
Having income from wages	0.683*** (0.024)	0.323*** (0.020)	0.201*** (0.063)	0.258*** (0.038)	0.083*** (0.015)	-0.029 (0.039)	14.681*** (3.105)	-5.095 (6.805)
Having income from non-farm activities	0.151*** (0.018)	0.115*** (0.012)	0.299*** (0.072)	0.116 (0.078)	0.007 (0.005)	0.024* (0.014)	1.307 (0.932)	4.323* (2.613)
Having tap water	0.082*** (0.015)	0.003*** (0.002)	0.384*** (0.103)	0.619*** (0.268)	0.040** (0.021)	-0.010 (0.020)	7.075* (3.642)	-1.766 (3.405)
Having clean water	0.528*** (0.032)	0.158*** (0.020)	0.280*** (0.063)	0.106** (0.054)	0.071*** (0.017)	0.060** (0.029)	12.694*** (3.030)	10.63* (5.299)
House using electricity	0.878*** (0.022)	0.594*** (0.029)	-0.044 (0.083)	0.049 (0.042)	0.001 (0.014)	-0.068 (0.072)	0.118 (2.602)	-12.16 (13.05)
Per capita of living area (m2)	13.55***	13.39***	0.016***	0.013***	0.002	0.037	0.426	6.514

Variables	X_0	X_E	β_0	β_E	$(X_0 - X_E)^*$ $((\beta_0 + \beta_E)/2)$	$(\beta_0 - \beta_E)^*$ $((X_0 + X_E)/2)$	Contribution of X (%)	Contribution of β (%)
	(0.432)	(0.307)	(0.003)	(0.003)	(0.008)	(0.064)	(1.436)	(11.27)
Per capita annual crop land (1000 m ²)	1.306***	1.883***	0.047***	0.147***	-0.056***	-0.160***	-9.923***	-28.40***
	(0.093)	(0.090)	(0.013)	(0.013)	(0.014)	(0.031)	(2.729)	(5.489)
Per capita perennial crop land (1000 m ²)	0.448***	0.096***	0.098***	0.150***	0.044***	-0.014	7.770***	-2.510
	(0.065)	(0.017)	(0.017)	(0.049)	(0.015)	(0.017)	(2.700)	(3.009)
Good road to commune	0.911***	0.793***	0.076***	0.097*	0.010	-0.017	1.820	-3.081
	(0.020)	(0.026)	(0.091)	(0.052)	(0.007)	(0.093)	(1.175)	(16.48)
Constant			8.194***	7.697***				
			(0.181)	(0.118)				
Observations			616	1,709				
R-squared in regression			0.459	0.387				
Decomposition								
	$\ln(Y_0) - \ln(Y_E)$	Contribution of X	Contribution of β	Contribution of α	Contribution of β & α			
Absolute	0.563***	0.283***	-0.216	0.497**	0.281***			
	(0.049)	(0.043)	(0.210)	(0.222)	(0.049)			
Percentage	100	50.22***	-38.45	88.31**	49.86***			
		(7.09)	(37.28)	(38.44)	(7.09)			

Standard error in parentheses. Standard errors are estimated using bootstrap with 500 replications significant at 10%; significant at 5%; significant at 1%.

Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

6. Conclusions

Vietnam has achieved the great success in poverty reduction during the past years. However poverty remains very high in ethnic minorities, especially ethnic minorities in Northern Mountains. There is a large variation in poverty between ethnic minority groups as well as between geographical units such as districts and provinces in Northern Mountains. H'Mong, Dao and small ethnic minority groups have lower assets, lower income and higher poverty rate than Tay, Muong, and Thai. Ethnic minorities in North West have higher poverty than those in North East.

Households covered in the 2010 NMBS are the poorest in the country. According to the income poverty line of 400 thousand VND/person/month, the poverty rate of ethnic minorities in this survey is 67.3 percent. Meanwhile, the poverty rate of ethnic minorities in other regions and the whole country is 34.9 and 9.9 percent, respectively.

Compared with Kinh/Hoa and ethnic minorities in other regions, poor ethnic minorities in Northern Mountain have substantially lower income from wages and non-farm activities. The difference in the income gap between Northern Mountain ethnic minorities and other households is mainly explained by the gap in wages and non-farm income. Northern Mountain ethnic minorities spend less time on wages and non-farm employment. Compared with other households, their non-farm income per working hours and also farm income per working hours is substantially lower.

We further decompose the income gap between Northern Mountain ethnic minorities and all the households in general into an income gap due to the difference in household characteristics, an income gap due to the return of income to these household characteristics and an income gap due to other unexplained factors. The observed characteristics include education, demography, land and road to commune. It is found that the difference in household and commune characteristics explains 57% of the income gap. Interestingly, differences in the return of income to the household and commune characteristics reduce the income gap between ethnic minorities and the all households by 23%. It means that the return to assets of ethnic minorities is even higher than that of other

households. The remaining factors that are not explained by the observed variables in the income models have a contribution of 66% of the income gap.

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Appendix

Table A.1. Sample size by provinces of the 2010 NMBS

Province	Number of sampled households	Percent
Hoa Binh	240	13.3
Lai Chau	180	10.0
Lao Cai	405	22.5
Son La	450	25.0
Dien Bien	255	14.2
Yen Bai	270	15.0
Total	1,800	100

Source: Authors' estimation from the 2010 NMBS.

Table A.2. Sample size of the 2010 NMBS and 2010 VHLSS by ethnic minorities

Ethnic groups	NMBS 2010		VHLSS 2010	
	Number of households	Percent	Number of households	Percent
Kinh & Chinese	86	4.8	7,798	83.0
Tay	129	7.2	329	3.5
Thai	323	17.9	236	2.5
Muong	205	11.4	133	1.4
H'Mong(Meo)	618	34.3	129	1.4
Dao	196	10.9	111	1.2
Other ethnic minorities	243	13.5	663	7.1
Total	1,800	100	9,399	100

Note: In the 2010 NMBS, among 243 households in 'Other ethnic minorities': there are 62 Nung households, and small ethnic minority groups with less than 26 sampled households.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.3. Per capita income (thousand VND)

Per capita income (thousand VND)	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	2294.2 (388.0)	10784.5 (1073.7)	8055.1 (1072.3)	3928.5 (49.6)	19898.7 (475.9)	19098.1 (457.7)
Tay	3097.6 (140.5)	10056.6 (1101.1)	5998.1 (571.0)	3729.3 (104.0)	12196.1 (583.2)	9874.6 (509.4)
Thai	2794.6 (157.5)	8857.1 (528.1)	5418.6 (443.6)	3215.3 (122.2)	9644.3 (720.7)	6563.5 (474.2)
Muong	3105.5 (176.6)	7827.5 (495.6)	5470.6 (372.9)	3742.9 (194.5)	10762.2 (783.1)	8730.7 (720.4)
H'Mong (Meo)	2814.0 (67.9)	7657.1 (455.6)	3736.7 (147.5)	3100.4 (113.0)	7950.1 (798.6)	4370.5 (362.5)
Dao	2972.1 (132.3)	9202.4 (569.4)	5149.4 (409.4)	3412.2 (169.0)	7972.4 (476.0)	5701.3 (396.6)
Other ethnic minorities	2796.0 (119.4)	8191.1 (772.5)	4049.1 (256.3)	3672.9 (88.3)	10416.6 (392.4)	8102.8 (295.4)
Total	2855.8 (51.3)	8758.8 (258.5)	4881.4 (163.2)	3678.6 (38.7)	18964.4 (434.4)	17445.2 (401.8)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.4. Proportion of households having income from wages (in percent)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	31.6 (14.7)	41.5 (7.1)	38.3 (8.1)	55.9 (2.7)	72.7 (0.6)	71.9 (0.6)
Tay	39.4 (8.1)	68.6 (6.3)	51.6 (5.8)	46.7 (6.2)	66.2 (3.6)	60.8 (3.3)
Thai	20.1 (5.1)	34.9 (4.7)	26.5 (4.3)	39.3 (5.8)	57.7 (6.9)	48.9 (4.5)
Muong	53.4 (7.2)	66.0 (6.1)	59.7 (5.4)	73.6 (6.5)	89.6 (4.0)	85.0 (3.5)
H'Mong (Meo)	12.1 (2.0)	31.6 (4.4)	15.8 (2.2)	26.5 (5.5)	26.6 (6.9)	26.6 (4.7)
Dao	42.1 (5.8)	40.8 (7.5)	41.7 (5.5)	25.3 (7.6)	41.6 (7.6)	33.5 (5.6)
Other ethnic minorities	22.0 (4.1)	53.9 (6.9)	29.4 (3.9)	61.5 (3.9)	71.6 (2.4)	68.1 (2.2)
Total	24.0 (2.0)	45.4 (2.6)	31.4 (1.9)	51.7 (1.9)	72.2 (0.6)	70.2 (0.6)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.5. Proportion of households having income from crops (in percent)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	95.9 (4.2)	76.6 (10.3)	82.8 (7.2)	75.7 (2.3)	55.2 (1.0)	56.2 (0.9)
Tay	100.0 (0.0)	99.7 (0.3)	99.9 (0.1)	98.3 (1.5)	86.3 (2.6)	89.6 (2.0)
Thai	99.5 (0.3)	99.8 (0.2)	99.7 (0.2)	98.4 (1.4)	94.1 (2.1)	96.2 (1.3)
Muong	100.0 (0.0)	97.9 (1.2)	99.0 (0.6)	97.5 (2.5)	93.1 (2.9)	94.4 (2.2)
H'Mong (Meo)	99.8 (0.2)	100.0 (0.0)	99.8 (0.2)	100.0 (0.0)	98.0 (2.0)	99.5 (0.5)
Dao	100.0 (0.0)	100.0 (0.0)	100.0 (0.0)	99.7 (0.3)	97.6 (1.7)	98.7 (0.8)
Other ethnic minorities	99.9 (0.1)	98.5 (1.1)	99.6 (0.3)	91.1 (3.0)	84.5 (2.0)	86.8 (1.7)
Total	99.7 (0.1)	97.3 (1.2)	98.9 (0.4)	87.2 (1.3)	58.5 (0.9)	61.4 (0.9)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.6. Proportion of households having income from livestock (in percent)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	74.7 (12.5)	75.4 (6.6)	75.2 (5.2)	52.7 (2.9)	39.7 (0.9)	40.3 (0.9)
Tay	94.6 (2.3)	93.5 (3.7)	94.1 (2.1)	91.3 (3.4)	81.0 (3.1)	83.8 (2.6)
Thai	89.1 (2.5)	98.5 (0.8)	93.2 (1.6)	93.2 (2.7)	90.4 (2.7)	91.7 (2.0)
Muong	81.2 (4.9)	91.3 (2.9)	86.2 (3.0)	80.7 (6.9)	87.5 (3.4)	85.6 (3.0)
H'Mong (Meo)	93.0 (1.5)	94.3 (3.1)	93.2 (1.6)	93.9 (2.7)	95.4 (3.2)	94.3 (2.1)
Dao	97.5 (1.4)	99.1 (1.0)	98.0 (1.0)	97.2 (2.5)	94.9 (2.5)	96.0 (1.7)
Other ethnic minorities	89.4 (2.7)	92.1 (3.8)	90.0 (2.6)	69.8 (3.9)	63.4 (2.8)	65.6 (2.4)
Total	90.9 (1.1)	93.5 (1.3)	91.8 (0.9)	70.2 (1.8)	43.3 (0.8)	45.9 (0.8)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.7. Proportion of households having income from other agricultural activities (in percent)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	98.5 (1.5)	71.9 (9.0)	80.5 (6.5)	50.1 (2.9)	23.9 (0.7)	25.2 (0.7)
Tay	100.0 (0.0)	90.7 (5.5)	96.1 (2.4)	92.2 (3.3)	73.4 (3.8)	78.6 (3.0)
Thai	98.1 (1.2)	98.6 (1.1)	98.3 (0.9)	97.5 (2.4)	91.2 (2.6)	94.2 (1.7)
Muong	100.0 (0.0)	93.7 (4.0)	96.8 (2.1)	88.0 (8.1)	78.3 (5.5)	81.1 (5.1)
H'Mong (Meo)	98.2 (0.7)	95.9 (1.5)	97.8 (0.8)	99.2 (0.8)	98.0 (2.0)	98.9 (0.8)
Dao	100.0 (0.0)	100.0 (0.0)	100.0 (0.0)	98.3 (1.4)	79.6 (11.5)	88.9 (6.4)
Other ethnic minorities	99.5 (0.4)	93.6 (2.8)	98.1 (0.8)	86.7 (3.4)	69.6 (3.1)	75.5 (2.5)
Total	98.9 (0.4)	93.8 (1.6)	97.1 (0.6)	74.2 (1.8)	29.1 (0.7)	33.5 (0.8)

Standard error in parentheses.

Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.8. Proportion of households having income from non-farm activities (in percent)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	3.7 (2.8)	32.4 (7.8)	23.2 (6.1)	20.0 (2.2)	41.3 (0.7)	40.2 (0.7)
Tay	7.2 (2.8)	16.1 (5.3)	10.9 (2.8)	15.1 (4.4)	31.3 (3.6)	26.9 (3.1)
Thai	24.5 (6.8)	14.8 (4.3)	20.3 (4.7)	11.7 (3.7)	16.6 (4.1)	14.2 (3.0)
Muong	3.1 (2.2)	10.6 (4.1)	6.9 (2.3)	4.9 (3.4)	17.9 (5.0)	14.1 (3.7)
H'Mong (Meo)	10.4 (2.5)	18.0 (4.9)	11.9 (2.4)	18.8 (4.8)	22.6 (8.1)	19.8 (4.6)
Dao	5.7 (2.7)	17.2 (5.6)	9.8 (2.9)	7.3 (4.5)	19.7 (6.6)	13.5 (4.6)
Other ethnic minorities	7.5 (2.4)	16.7 (5.6)	9.6 (2.3)	13.0 (2.6)	22.2 (2.4)	19.0 (1.9)
Total	11.3 (1.8)	16.8 (2.1)	13.2 (1.5)	15.9 (1.3)	39.4 (0.7)	37.1 (0.7)

Standard error in parentheses.

Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.9. Proportion of households having remittances (in percent)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	94.2 (3.5)	83.0 (6.4)	86.6 (4.6)	85.7 (2.1)	85.3 (0.7)	85.3 (0.6)
Tay	98.0 (1.9)	92.8 (5.9)	95.8 (2.7)	71.4 (6.0)	78.5 (3.6)	76.6 (3.3)
Thai	48.4 (7.7)	57.7 (7.0)	52.4 (5.6)	52.3 (7.7)	58.5 (6.2)	55.5 (5.4)
Muong	86.5 (6.0)	92.4 (4.0)	89.4 (4.5)	87.5 (6.2)	75.6 (7.8)	79.1 (6.4)
H'Mong (Meo)	82.8 (4.2)	80.0 (5.3)	82.2 (4.0)	85.0 (7.3)	73.0 (10.6)	81.9 (7.0)
Dao	92.0 (4.7)	89.0 (8.2)	90.9 (5.8)	52.2 (10.2)	75.1 (8.8)	63.7 (8.3)
Other ethnic minorities	72.7 (7.3)	79.4 (7.7)	74.2 (6.4)	82.1 (3.4)	84.3 (2.5)	83.6 (2.1)
Total	77.0 (2.8)	77.9 (3.1)	77.3 (2.3)	78.5 (1.9)	84.5 (0.6)	83.9 (0.6)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.10. Proportion of households having other sources (in percent)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	86.3 (7.2)	68.4 (7.4)	74.1 (5.8)	71.0 (2.6)	63.2 (0.7)	63.6 (0.7)
Tay	50.0 (9.2)	36.5 (6.0)	44.4 (6.6)	62.9 (5.8)	67.4 (3.4)	66.2 (3.0)
Thai	84.5 (4.8)	84.2 (4.1)	84.4 (3.7)	79.7 (4.8)	76.0 (6.1)	77.8 (4.3)
Muong	65.7 (8.4)	72.1 (5.6)	68.9 (5.6)	82.7 (8.3)	75.0 (5.2)	77.2 (4.6)
H'Mong (Meo)	76.9 (3.1)	73.2 (4.6)	76.2 (2.9)	89.7 (3.9)	93.0 (3.8)	90.6 (3.1)
Dao	67.6 (5.9)	76.2 (5.1)	70.6 (4.5)	71.1 (7.7)	55.2 (10.4)	63.1 (7.5)
Other ethnic minorities	82.9 (4.5)	66.4 (7.6)	79.1 (4.7)	80.8 (3.1)	67.8 (2.7)	72.3 (2.2)
Total	75.8 (2.1)	72.1 (2.5)	74.5 (1.8)	75.6 (1.6)	63.8 (0.7)	65.0 (0.7)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.11. Share of wages in total household income (in percent)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	14.1 (7.2)	28.2 (5.7)	23.7 (5.8)	29.9 (1.8)	43.2 (0.6)	42.5 (0.5)
Tay	10.0 (2.5)	25.9 (4.2)	16.6 (2.6)	16.1 (3.0)	33.5 (2.5)	28.7 (2.2)
Thai	5.5 (1.7)	13.0 (3.7)	8.8 (2.4)	11.6 (2.3)	25.6 (3.9)	18.9 (2.5)
Muong	19.0 (3.3)	29.8 (3.3)	24.4 (2.9)	34.1 (3.8)	44.7 (3.4)	41.7 (2.8)
H'Mong (Meo)	2.5 (0.5)	7.4 (1.6)	3.4 (0.5)	6.6 (1.7)	7.2 (3.0)	6.7 (1.5)
Dao	11.7 (2.7)	10.1 (2.3)	11.1 (2.1)	8.7 (3.1)	10.5 (2.6)	9.6 (2.1)
Other ethnic minorities	5.4 (1.4)	15.9 (3.2)	7.8 (1.5)	25.9 (2.5)	32.7 (1.9)	30.4 (1.6)
Total	6.6 (0.7)	17.4 (1.7)	10.3 (0.9)	23.3 (1.1)	42.0 (0.5)	40.1 (0.5)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.12. Share of crop income in total household income (in percent)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	48.3 (6.6)	22.6 (5.2)	30.8 (6.2)	26.8 (1.4)	15.0 (0.4)	15.6 (0.4)
Tay	50.6 (3.2)	39.0 (3.3)	45.8 (2.5)	48.4 (2.6)	29.0 (2.1)	34.3 (1.9)
Thai	61.3 (2.5)	54.2 (3.4)	58.2 (2.5)	48.7 (4.2)	39.1 (3.4)	43.7 (2.9)
Muong	52.2 (3.8)	34.5 (3.8)	43.3 (3.7)	35.1 (3.9)	23.9 (2.1)	27.1 (2.1)
H'Mong (Meo)	61.7 (1.3)	50.4 (2.7)	59.5 (1.3)	52.6 (3.0)	52.3 (5.0)	52.5 (2.9)
Dao	45.9 (3.5)	45.8 (4.7)	45.9 (3.2)	53.9 (3.2)	58.0 (4.7)	56.0 (3.0)
Other ethnic minorities	57.1 (2.2)	46.5 (3.2)	54.7 (1.8)	39.9 (2.1)	35.9 (1.8)	37.3 (1.5)
Total	57.4 (1.1)	44.5 (1.9)	53.0 (1.1)	37.3 (1.1)	17.0 (0.4)	19.0 (0.4)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.13. Share of livestock income in total household income (in percent)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	10.4 (3.6)	8.5 (1.7)	9.1 (1.7)	7.2 (0.7)	4.2 (0.2)	4.3 (0.2)
Tay	14.4 (1.3)	14.6 (2.6)	14.5 (1.4)	11.2 (1.1)	9.9 (1.1)	10.3 (0.9)
Thai	7.9 (0.8)	14.9 (1.5)	10.9 (0.8)	11.0 (1.7)	9.1 (1.4)	10.0 (1.2)
Muong	8.2 (1.0)	13.5 (2.4)	10.9 (1.4)	8.9 (1.7)	9.8 (1.8)	9.5 (1.5)
H'Mong (Meo)	11.6 (0.6)	9.8 (0.9)	11.3 (0.6)	12.5 (1.3)	13.3 (2.3)	12.7 (1.2)
Dao	11.2 (1.0)	10.9 (1.4)	11.1 (0.9)	14.3 (2.0)	12.1 (1.4)	13.2 (1.4)
Other ethnic minorities	8.6 (1.0)	9.4 (1.5)	8.8 (1.0)	7.5 (0.8)	6.0 (0.5)	6.5 (0.4)
Total	10.3 (0.4)	12.3 (0.8)	11.0 (0.4)	8.8 (0.4)	4.6 (0.2)	5.0 (0.2)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.14. Share of other-agricultural-activities income in total household income (in percent)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	16.0 (2.3)	9.1 (3.1)	11.3 (2.5)	7.4 (0.9)	3.7 (0.2)	3.8 (0.2)
Tay	19.4 (2.1)	11.3 (1.9)	16.0 (1.7)	12.9 (1.5)	9.3 (1.1)	10.3 (1.0)
Thai	16.3 (1.0)	10.6 (1.0)	13.8 (0.8)	18.7 (2.5)	14.7 (2.6)	16.6 (1.8)
Muong	13.4 (0.9)	9.5 (1.2)	11.5 (0.9)	10.0 (1.8)	5.6 (0.8)	6.9 (1.0)
H'Mong (Meo)	13.1 (0.6)	8.2 (1.1)	12.1 (0.6)	14.8 (1.4)	14.4 (4.0)	14.7 (1.6)
Dao	21.4 (2.3)	23.4 (3.4)	22.1 (2.0)	12.8 (1.5)	7.9 (1.8)	10.3 (1.4)
Other ethnic minorities	15.9 (1.5)	9.4 (1.2)	14.4 (1.3)	14.2 (1.5)	7.5 (0.9)	9.8 (0.8)
Total	15.5 (0.5)	11.2 (0.7)	14.0 (0.5)	11.6 (0.7)	4.2 (0.2)	4.9 (0.2)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.15. Share of non-farm income in total household income (in percent)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	1.4 (1.1)	18.8 (6.1)	13.2 (4.4)	9.7 (1.3)	21.0 (0.5)	20.5 (0.5)
Tay	1.9 (0.9)	4.7 (2.1)	3.1 (1.1)	3.6 (1.7)	9.6 (1.7)	7.9 (1.3)
Thai	2.6 (0.8)	2.6 (1.0)	2.6 (0.6)	0.4 (0.2)	4.3 (1.6)	2.4 (0.9)
Muong	0.3 (0.3)	3.4 (1.3)	1.9 (0.7)	0.8 (0.5)	6.9 (2.1)	5.1 (1.6)
H'Mong (Meo)	1.1 (0.4)	2.1 (0.8)	1.3 (0.4)	1.9 (0.8)	3.6 (1.6)	2.3 (0.8)
Dao	0.6 (0.4)	3.9 (2.1)	1.8 (0.9)	0.8 (0.6)	3.2 (1.4)	2.0 (0.9)
Other ethnic minorities	0.7 (0.3)	2.9 (1.8)	1.2 (0.4)	2.2 (0.6)	6.6 (0.9)	5.0 (0.7)
Total	1.3 (0.2)	4.5 (0.8)	2.4 (0.3)	5.2 (0.6)	19.6 (0.5)	18.2 (0.4)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.16. Share of remittances in total household income (in percent)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	3.3 (0.9)	1.9 (0.7)	2.4 (0.5)	11.7 (0.8)	7.2 (0.2)	7.4 (0.2)
Tay	2.4 (0.4)	2.9 (1.1)	2.6 (0.5)	3.6 (0.7)	4.4 (0.7)	4.2 (0.6)
Thai	1.4 (0.4)	2.2 (0.9)	1.7 (0.5)	2.0 (0.5)	3.5 (0.9)	2.8 (0.5)
Muong	2.3 (0.5)	2.9 (0.6)	2.6 (0.4)	4.3 (1.4)	4.5 (1.0)	4.4 (0.9)
H'Mong (Meo)	4.9 (1.3)	17.0 (3.4)	7.2 (1.4)	4.6 (0.8)	4.8 (1.3)	4.6 (0.7)
Dao	5.0 (1.5)	2.2 (0.9)	4.0 (1.1)	5.4 (2.2)	4.0 (1.9)	4.7 (1.5)
Other ethnic minorities	7.2 (1.5)	9.4 (3.0)	7.7 (1.4)	3.2 (0.6)	5.4 (0.6)	4.6 (0.5)
Total	4.1 (0.6)	5.4 (0.9)	4.6 (0.5)	7.0 (0.4)	6.9 (0.2)	6.9 (0.2)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.17. Share of other incomes in total household income (in percent)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	6.5 (2.8)	10.9 (3.2)	9.5 (2.3)	7.3 (0.7)	5.8 (0.2)	5.8 (0.2)
Tay	1.2 (0.4)	1.7 (0.9)	1.4 (0.4)	4.1 (1.0)	4.2 (0.6)	4.2 (0.5)
Thai	5.0 (0.9)	2.6 (0.5)	3.9 (0.6)	7.6 (1.6)	3.8 (0.7)	5.6 (0.9)
Muong	4.4 (0.9)	6.5 (1.4)	5.5 (0.9)	6.8 (1.9)	4.7 (0.8)	5.3 (0.8)
H'Mong (Meo)	5.2 (0.5)	5.0 (0.7)	5.1 (0.4)	7.0 (1.1)	4.4 (1.4)	6.3 (0.9)
Dao	4.2 (1.1)	3.7 (1.9)	4.1 (1.0)	4.1 (1.1)	4.4 (1.6)	4.2 (1.0)
Other ethnic minorities	5.1 (0.8)	6.6 (1.7)	5.5 (0.9)	7.2 (1.0)	6.0 (0.7)	6.4 (0.6)
Total	4.7 (0.3)	4.8 (0.6)	4.7 (0.3)	6.9 (0.4)	5.7 (0.2)	5.8 (0.2)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.18. Per capita total lands (m2)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	972.3 (340.5)	1966.9 (475.2)	1647.2 (375.1)	820.0 (86.4)	1013.8 (41.4)	1004.1 (39.6)
Tay	2424.5 (326.3)	3144.3 (402.8)	2724.5 (278.6)	3109.9 (866.3)	3337.4 (379.4)	3275.0 (366.2)
Thai	2123.9 (241.2)	3712.1 (323.6)	2811.4 (239.9)	1890.8 (269.9)	2773.3 (277.4)	2350.4 (198.1)
Muong	2187.3 (451.5)	2769.2 (331.9)	2478.8 (311.1)	1368.0 (219.8)	2143.6 (323.9)	1919.1 (248.1)
H'Mong (Meo)	2552.9 (115.6)	4636.3 (419.1)	2949.8 (143.7)	2398.1 (272.0)	5320.2 (863.9)	3163.4 (376.4)
Dao	4364.1 (1561.3)	5402.2 (614.1)	4726.8 (1045.3)	5687.2 (1487.2)	5845.4 (1200.6)	5766.6 (984.1)
Other ethnic minorities	6912.7 (2339.1)	5705.4 (1523.3)	6632.3 (2101.0)	3013.5 (1011.6)	3291.3 (574.7)	3196.0 (715.0)
Total	3221.6 (397.5)	3848.0 (222.6)	3436.5 (306.1)	1938.2 (251.9)	1239.3 (48.8)	1308.8 (60.3)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.19. Per capita annual crop lands (m2)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	412.4 (66.4)	523.0 (99.7)	487.4 (80.0)	375.6 (24.8)	506.8 (18.6)	500.2 (17.7)
Tay	565.5 (63.6)	1181.8 (190.4)	822.4 (113.0)	770.8 (69.1)	892.9 (87.5)	859.4 (71.0)
Thai	1656.1 (171.5)	2855.8 (285.7)	2175.4 (199.7)	1204.1 (209.2)	1532.7 (212.6)	1375.2 (161.1)
Muong	1069.4 (258.7)	1199.1 (223.5)	1134.4 (223.9)	534.6 (105.5)	854.4 (156.0)	761.9 (119.5)
H'Mong (Meo)	2125.1 (106.0)	3680.7 (235.0)	2421.5 (117.8)	1601.1 (180.1)	3959.7 (864.2)	2218.8 (330.6)
Dao	984.0 (214.0)	2242.6 (370.7)	1423.8 (242.3)	1299.0 (198.0)	1937.3 (231.8)	1619.4 (175.6)
Other ethnic minorities	1328.1 (93.8)	2772.5 (343.3)	1663.6 (130.2)	1018.1 (97.1)	1405.4 (97.8)	1272.5 (75.2)
Total	1561.2 (76.2)	2280.3 (143.2)	1807.9 (84.1)	785.0 (43.9)	592.2 (19.0)	611.3 (18.1)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.20. Per capita perennial crop lands (m2)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	91.1 (51.5)	184.1 (73.1)	154.2 (61.0)	112.0 (24.8)	268.0 (28.1)	260.2 (26.8)
Tay	48.6 (26.6)	196.2 (76.5)	110.1 (43.8)	64.5 (18.4)	344.1 (108.1)	267.4 (80.1)
Thai	63.7 (28.5)	264.3 (68.4)	150.5 (40.4)	94.3 (40.5)	161.4 (61.7)	129.3 (39.5)
Muong	0.8 (0.8)	80.7 (53.3)	40.8 (27.0)	59.0 (46.0)	167.7 (79.4)	136.2 (59.2)
H'Mong (Meo)	26.8 (9.5)	36.8 (21.8)	28.7 (9.8)	61.2 (33.1)	49.7 (26.4)	58.2 (25.5)
Dao	92.1 (47.2)	337.1 (145.5)	177.7 (61.5)	154.9 (100.4)	202.1 (110.3)	178.6 (75.9)
Other ethnic minorities	98.7 (56.0)	93.0 (62.0)	97.4 (45.2)	193.9 (38.3)	517.2 (78.0)	406.3 (54.6)
Total	52.2 (12.4)	175.3 (31.3)	94.5 (14.8)	120.3 (16.0)	277.5 (25.9)	261.9 (23.4)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.21. Per capita forestry lands (m2)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	333.1 (259.2)	1025.5 (434.9)	802.9 (323.7)	179.5 (68.6)	93.0 (14.0)	97.3 (13.9)
Tay	1672.9 (330.9)	1519.5 (446.4)	1608.9 (316.8)	2201.2 (861.9)	1989.8 (369.6)	2047.8 (361.1)
Thai	337.5 (207.1)	403.1 (188.2)	365.9 (152.2)	537.9 (265.6)	940.1 (313.7)	747.3 (210.4)
Muong	922.8 (289.2)	1230.7 (273.0)	1077.0 (211.6)	647.6 (216.7)	974.2 (251.1)	879.6 (205.9)
H'Mong (Meo)	334.7 (96.5)	781.8 (372.8)	419.8 (112.4)	710.4 (209.2)	1258.2 (423.1)	853.8 (199.2)
Dao	3197.4 (1518.5)	2718.3 (664.5)	3030.0 (1029.7)	4177.7 (1468.7)	3421.3 (1101.7)	3798.0 (946.0)
Other ethnic minorities	5310.6 (2352.4)	2673.3 (1524.7)	4698.0 (2119.3)	1617.6 (1002.8)	1200.9 (560.6)	1343.9 (707.1)
Total	1505.8 (399.3)	1202.1 (198.3)	1401.6 (305.3)	905.6 (246.5)	223.1 (31.6)	290.9 (49.5)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.22. Per capita water surface for fisheries (m2)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	0.0 (0.0)	2.3 (2.3)	1.6 (1.6)	103.2 (42.8)	96.2 (13.5)	96.6 (13.3)
Tay	0.7 (0.7)	0.0 (0.0)	0.4 (0.4)	6.2 (2.2)	21.2 (4.5)	17.1 (3.4)
Thai	11.0 (2.8)	54.5 (16.1)	29.8 (7.4)	12.8 (3.9)	15.2 (4.3)	14.0 (3.1)
Muong	0.0 (0.0)	1.0 (0.9)	0.5 (0.5)	3.8 (2.9)	14.8 (5.8)	11.6 (4.3)
H'Mong (Meo)	16.7 (14.7)	2.2 (1.1)	13.9 (11.9)	0.8 (0.6)	7.1 (3.6)	2.4 (1.1)
Dao	0.4 (0.4)	17.0 (11.7)	6.2 (4.2)	5.4 (2.8)	10.6 (3.8)	8.0 (2.5)
Other ethnic minorities	5.5 (2.1)	35.1 (18.4)	12.4 (4.9)	38.1 (29.0)	50.7 (19.6)	46.4 (19.3)
Total	9.3 (5.6)	21.4 (5.8)	13.5 (4.2)	55.2 (19.6)	89.9 (12.2)	86.4 (11.4)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.23. Per capita other lands (m2)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	135.7 (28.4)	232.0 (50.9)	201.1 (36.6)	49.7 (6.3)	49.8 (3.5)	49.8 (3.3)
Tay	136.8 (23.4)	246.9 (67.5)	182.7 (36.9)	67.2 (16.8)	89.4 (24.5)	83.3 (18.3)
Thai	55.6 (5.2)	134.4 (29.9)	89.7 (14.0)	41.7 (8.7)	124.0 (43.3)	84.6 (24.6)
Muong	194.4 (33.9)	257.6 (42.5)	226.1 (28.5)	122.9 (34.2)	132.6 (23.6)	129.8 (20.1)
H'Mong (Meo)	49.7 (3.8)	134.7 (45.1)	65.9 (9.7)	24.6 (6.6)	45.6 (11.2)	30.1 (6.2)
Dao	90.3 (13.0)	87.2 (8.4)	89.2 (9.3)	50.2 (11.6)	274.1 (198.9)	162.6 (101.1)
Other ethnic minorities	169.8 (122.2)	131.6 (40.4)	161.0 (94.3)	145.8 (33.6)	117.1 (17.6)	126.9 (18.4)
Total	93.0 (18.6)	168.9 (17.4)	119.0 (14.0)	72.1 (8.5)	56.7 (3.5)	58.3 (3.3)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.24. Proportion of households having annual crop lands (in percent)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	95.7 (2.9)	69.3 (10.0)	77.8 (7.2)	67.1 (2.7)	48.3 (1.0)	49.3 (0.9)
Tay	100.0 (0.0)	96.5 (2.1)	98.5 (0.9)	97.8 (1.5)	81.8 (3.1)	86.2 (2.4)
Thai	99.2 (0.6)	100.0 (0.0)	99.6 (0.3)	98.6 (1.4)	91.6 (2.7)	95.0 (1.6)
Muong	99.6 (0.4)	96.7 (1.7)	98.1 (1.0)	100.0 (0.0)	90.3 (3.4)	93.1 (2.5)
H'Mong (Meo)	99.5 (0.2)	99.7 (0.2)	99.6 (0.2)	99.3 (0.7)	98.0 (2.0)	99.0 (0.7)
Dao	99.4 (0.6)	100.0 (0.0)	99.6 (0.4)	99.7 (0.3)	92.2 (4.4)	95.9 (2.2)
Other ethnic minorities	99.9 (0.1)	98.5 (1.1)	99.6 (0.3)	85.2 (3.5)	78.7 (2.3)	80.9 (2.0)
Total	99.5 (0.2)	96.1 (1.3)	98.3 (0.5)	82.2 (1.5)	51.9 (0.9)	54.9 (0.9)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.25. Proportion of households having perennial crop lands (in percent)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	10.0 (5.7)	14.0 (5.3)	12.7 (4.8)	15.2 (2.0)	14.4 (0.6)	14.4 (0.6)
Tay	9.2 (3.8)	19.6 (6.8)	13.5 (4.2)	29.1 (6.0)	34.4 (4.2)	32.9 (3.7)
Thai	15.9 (4.8)	52.8 (8.5)	31.9 (6.8)	23.6 (5.5)	20.2 (4.6)	21.8 (3.8)
Muong	0.4 (0.4)	3.9 (2.0)	2.2 (1.1)	12.3 (6.2)	26.7 (6.3)	22.5 (5.6)
H'Mong (Meo)	3.8 (1.1)	5.4 (2.1)	4.1 (1.0)	13.3 (4.9)	30.3 (11.4)	17.7 (5.0)
Dao	9.0 (3.2)	20.1 (6.1)	12.9 (3.1)	21.0 (8.1)	22.4 (9.0)	21.7 (6.2)
Other ethnic minorities	13.0 (3.7)	9.8 (4.1)	12.3 (3.3)	33.9 (4.1)	39.6 (3.3)	37.7 (2.8)
Total	8.3 (1.3)	23.0 (4.1)	13.4 (2.1)	21.2 (1.7)	16.3 (0.6)	16.8 (0.6)

Standard error in parentheses.

Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.26. Proportion of households having forestry lands (in percent)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	12.6 (7.5)	29.5 (7.9)	24.1 (6.7)	7.5 (1.7)	3.6 (0.3)	3.8 (0.3)
Tay	60.9 (8.4)	54.8 (8.3)	58.4 (6.8)	48.5 (6.2)	45.5 (4.1)	46.3 (3.4)
Thai	5.4 (2.4)	17.0 (4.8)	10.4 (2.9)	26.2 (7.4)	36.9 (7.5)	31.8 (5.7)
Muong	38.8 (6.6)	41.3 (6.5)	40.1 (5.4)	46.8 (10.9)	48.3 (6.0)	47.9 (5.8)
H'Mong (Meo)	13.6 (2.7)	20.6 (4.7)	14.9 (2.6)	32.2 (6.9)	41.9 (11.2)	34.7 (6.3)
Dao	62.8 (7.1)	67.2 (9.2)	64.4 (6.7)	65.1 (8.5)	63.3 (8.1)	64.2 (6.5)
Other ethnic minorities	34.4 (8.1)	30.0 (8.2)	33.4 (7.1)	32.4 (4.3)	23.5 (2.8)	26.6 (2.6)
Total	25.4 (2.5)	32.6 (3.0)	27.9 (2.2)	24.0 (1.9)	6.7 (0.4)	8.4 (0.4)

Standard error in parentheses.

Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.27. Proportion of households having water surface (in percent)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	0.0 (0.0)	0.9 (0.9)	0.6 (0.6)	8.8 (1.8)	6.9 (0.4)	7.0 (0.4)
Tay	1.8 (1.8)	0.0 (0.0)	1.1 (1.0)	13.7 (4.2)	17.7 (3.1)	16.6 (2.8)
Thai	27.7 (5.0)	49.0 (8.5)	36.9 (6.0)	23.8 (6.1)	21.2 (4.1)	22.4 (4.0)
Muong	0.0 (0.0)	1.9 (1.8)	1.0 (1.0)	7.3 (4.2)	13.8 (3.5)	11.9 (2.8)
H'Mong (Meo)	7.4 (1.7)	4.8 (2.8)	6.9 (1.6)	3.8 (2.2)	15.4 (7.7)	6.8 (2.7)
Dao	0.6 (0.6)	7.8 (5.5)	3.1 (2.0)	12.8 (5.5)	15.5 (5.0)	14.1 (4.1)
Other ethnic minorities	10.3 (3.6)	21.7 (7.2)	13.0 (4.2)	8.1 (2.1)	8.7 (1.8)	8.5 (1.5)
Total	10.0 (1.5)	18.2 (4.0)	12.8 (2.1)	10.5 (1.2)	7.6 (0.4)	7.9 (0.4)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.28. Proportion of households having other lands (in percent)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	100.0 (0.0)	97.3 (1.8)	98.2 (1.2)	44.3 (3.0)	26.7 (0.8)	27.6 (0.8)
Tay	98.8 (1.2)	98.5 (1.2)	98.7 (0.9)	72.7 (5.7)	59.0 (3.9)	62.7 (3.5)
Thai	99.4 (0.6)	98.9 (1.1)	99.2 (0.6)	69.2 (7.5)	76.2 (6.0)	72.8 (5.3)
Muong	100.0 (0.0)	100.0 (0.0)	100.0 (0.0)	85.9 (5.8)	70.0 (5.8)	74.6 (5.2)
H'Mong (Meo)	99.2 (0.7)	100.0 (0.0)	99.4 (0.6)	45.7 (8.0)	59.7 (12.6)	49.4 (7.2)
Dao	100.0 (0.0)	100.0 (0.0)	100.0 (0.0)	70.2 (7.9)	70.4 (6.4)	70.3 (6.0)
Other ethnic minorities	99.5 (0.5)	100.0 (0.0)	99.6 (0.4)	53.6 (4.7)	46.1 (3.4)	48.6 (3.0)
Total	99.4 (0.3)	99.3 (0.4)	99.4 (0.2)	54.2 (2.2)	29.8 (0.8)	32.2 (0.8)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.29. Proportion of households having permanent & semi-permanent house (in percent)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	81.6 (12.9)	87.3 (6.1)	85.5 (7.9)	77.1 (2.3)	92.8 (0.4)	92.0 (0.4)
Tay	80.4 (6.1)	94.4 (2.4)	86.3 (4.1)	68.6 (5.8)	83.7 (2.9)	79.6 (2.7)
Thai	85.1 (2.8)	93.2 (2.8)	88.7 (2.0)	59.3 (6.5)	76.3 (5.3)	68.1 (4.4)
Muong	84.5 (5.7)	92.2 (3.2)	88.4 (3.5)	54.1 (10.0)	82.2 (5.1)	74.1 (5.5)
H'Mong (Meo)	78.3 (3.3)	90.8 (2.9)	80.7 (2.8)	66.7 (6.0)	76.8 (9.0)	69.3 (5.0)
Dao	83.6 (6.2)	95.7 (2.1)	87.8 (4.2)	59.8 (8.2)	59.4 (6.0)	59.6 (5.9)
Other ethnic minorities	79.2 (4.5)	88.2 (3.9)	81.3 (3.9)	81.9 (3.1)	81.2 (2.3)	81.4 (1.9)
Total	81.1 (1.8)	92.1 (1.4)	84.9 (1.3)	73.0 (1.7)	91.5 (0.4)	89.7 (0.4)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.30. Proportion of households having clean water (in percent)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	67.9 (14.8)	56.7 (10.8)	60.3 (11.4)	88.7 (1.9)	94.9 (0.3)	94.6 (0.4)
Tay	19.4 (3.9)	40.1 (8.1)	28.0 (4.8)	33.3 (5.6)	59.2 (4.2)	52.1 (3.8)
Thai	5.1 (2.8)	8.5 (3.2)	6.6 (2.2)	14.6 (6.1)	32.1 (6.1)	23.7 (4.8)
Muong	48.6 (8.7)	65.6 (6.7)	57.2 (6.4)	45.7 (9.8)	56.2 (7.3)	53.2 (6.7)
H'Mong (Meo)	4.7 (1.4)	8.5 (3.6)	5.4 (1.5)	10.6 (5.8)	18.3 (11.3)	12.6 (5.3)
Dao	11.7 (5.9)	3.8 (2.3)	8.9 (4.1)	9.1 (5.5)	36.7 (11.6)	22.9 (7.3)
Other ethnic minorities	2.9 (1.8)	6.0 (3.1)	3.7 (1.6)	45.1 (4.7)	65.6 (3.4)	58.6 (3.0)
Total	11.4 (1.8)	24.5 (3.2)	15.9 (1.9)	55.2 (2.2)	91.0 (0.5)	87.4 (0.5)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.31. Proportion of households having toilet in house (in percent)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	91.3 (5.4)	92.4 (3.4)	92.0 (3.4)	92.6 (1.5)	96.2 (0.3)	96.0 (0.3)
Tay	74.1 (7.2)	94.6 (2.3)	82.6 (4.6)	71.3 (5.8)	92.2 (2.2)	86.5 (2.6)
Thai	63.1 (7.2)	87.4 (4.3)	73.7 (5.6)	82.4 (5.1)	87.6 (3.8)	85.1 (3.3)
Muong	91.6 (3.2)	87.8 (4.7)	89.7 (3.2)	89.1 (5.1)	94.5 (2.8)	93.0 (2.3)
H'Mong (Meo)	11.3 (2.7)	23.6 (4.8)	13.6 (2.5)	28.8 (7.7)	48.1 (11.9)	33.9 (7.1)
Dao	54.7 (7.1)	63.5 (7.4)	57.8 (5.8)	66.4 (8.5)	84.8 (4.4)	75.6 (5.3)
Other ethnic minorities	48.3 (7.1)	54.5 (8.6)	49.7 (6.5)	56.0 (4.5)	74.0 (3.0)	67.8 (2.8)
Total	44.5 (3.1)	72.5 (2.9)	54.1 (2.8)	75.6 (1.8)	94.8 (0.3)	92.9 (0.4)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.32. Living area per capita (m2)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	9.9 (2.0)	17.8 (1.9)	15.3 (1.7)	13.0 (0.4)	19.3 (0.2)	19.0 (0.2)
Tay	16.8 (1.0)	21.9 (1.9)	18.9 (1.1)	13.5 (0.9)	18.4 (0.8)	17.1 (0.7)
Thai	11.2 (0.4)	14.7 (1.0)	12.7 (0.6)	10.3 (0.6)	14.5 (0.8)	12.5 (0.5)
Muong	10.1 (0.4)	13.7 (0.7)	11.9 (0.4)	9.7 (0.5)	14.0 (0.9)	12.7 (0.7)
H'Mong (Meo)	9.1 (0.3)	12.9 (0.8)	9.8 (0.3)	9.1 (0.5)	14.3 (1.0)	10.4 (0.5)
Dao	12.7 (0.8)	13.8 (0.9)	13.1 (0.7)	11.8 (0.8)	16.0 (1.7)	13.9 (1.0)
Other ethnic minorities	10.5 (0.7)	13.8 (1.0)	11.3 (0.7)	9.6 (0.4)	14.1 (0.5)	12.5 (0.4)
Total	10.7 (0.2)	15.0 (0.5)	12.2 (0.3)	11.5 (0.2)	18.9 (0.2)	18.1 (0.2)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.33. Proportion of households having electricity (in percent)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	98.8 (1.2)	96.4 (2.4)	97.2 (1.8)	97.0 (1.3)	99.4 (0.1)	99.2 (0.1)
Tay	78.3 (8.9)	95.1 (2.9)	85.3 (6.2)	94.8 (3.2)	95.2 (1.8)	95.1 (2.0)
Thai	50.3 (7.2)	49.6 (10.1)	50.0 (7.3)	81.4 (5.8)	75.8 (7.6)	78.5 (5.6)
Muong	98.9 (0.8)	96.1 (2.5)	97.5 (1.5)	87.0 (7.9)	95.8 (3.1)	93.3 (4.0)
H'Mong (Meo)	32.2 (4.9)	34.5 (6.8)	32.6 (4.6)	39.1 (8.3)	63.7 (11.2)	45.6 (7.6)
Dao	59.6 (9.6)	68.7 (7.8)	62.7 (7.5)	48.1 (10.2)	88.8 (4.5)	68.5 (7.4)
Other ethnic minorities	62.1 (7.3)	64.6 (9.0)	62.7 (7.0)	86.2 (3.0)	90.1 (2.1)	88.8 (1.8)
Total	53.3 (3.2)	66.5 (4.3)	57.9 (3.0)	85.6 (1.7)	98.3 (0.2)	97.0 (0.3)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.34. Per capita annual expenditure on electricity (thousand VND)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	137.1 (62.8)	135.0 (19.6)	135.7 (25.5)	124.7 (6.1)	401.0 (10.0)	387.2 (9.7)
Tay	50.6 (6.7)	109.0 (12.9)	74.9 (8.1)	64.8 (4.8)	165.5 (12.0)	137.9 (9.6)
Thai	26.7 (5.6)	54.6 (14.8)	38.8 (8.0)	40.8 (4.1)	111.9 (20.1)	77.8 (10.8)
Muong	62.3 (4.6)	100.1 (10.7)	81.2 (6.8)	54.6 (9.5)	190.6 (54.7)	151.2 (39.9)
H'Mong (Meo)	8.8 (1.4)	14.3 (3.4)	9.9 (1.4)	17.5 (3.9)	45.4 (12.7)	24.8 (5.0)
Dao	25.1 (4.4)	59.5 (11.5)	37.1 (5.8)	31.5 (7.2)	1255.0 (1155.1)	645.7 (590.4)
Other ethnic minorities	33.8 (6.1)	60.0 (15.8)	39.9 (6.6)	57.4 (4.2)	129.1 (8.3)	104.5 (6.0)
Total	28.1 (2.5)	68.7 (6.3)	42.0 (3.2)	80.6 (3.4)	380.2 (10.8)	350.4 (10.0)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.35. Proportion of households having a bike (in percent)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	70.4 (14.1)	63.6 (6.1)	65.8 (7.3)	67.0 (2.6)	62.1 (0.8)	62.4 (0.7)
Tay	32.7 (7.1)	36.6 (9.7)	34.3 (6.5)	55.8 (6.4)	49.5 (3.7)	51.2 (3.5)
Thai	3.4 (1.6)	15.1 (4.0)	8.5 (2.2)	16.0 (4.0)	31.5 (5.1)	24.1 (3.6)
Muong	45.8 (7.2)	57.0 (7.7)	51.4 (6.3)	48.0 (8.0)	55.7 (6.9)	53.5 (5.8)
H'Mong (Meo)	2.1 (0.9)	0.6 (0.6)	1.8 (0.8)	8.3 (3.4)	0.0 (0.0)	6.1 (2.6)
Dao	4.3 (2.5)	16.3 (5.5)	8.5 (2.9)	7.5 (4.5)	29.2 (10.6)	18.4 (6.4)
Other ethnic minorities	2.2 (1.5)	12.0 (5.7)	4.5 (2.2)	31.1 (4.0)	41.7 (3.2)	38.1 (2.6)
Total	10.0 (1.6)	25.8 (3.1)	15.4 (1.8)	44.3 (2.0)	60.1 (0.7)	58.5 (0.7)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.36. Proportion of households having a motorbike (in percent)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	37.8 (14.1)	74.0 (9.9)	62.4 (10.9)	48.1 (2.9)	84.4 (0.5)	82.6 (0.5)
Tay	55.1 (6.7)	58.4 (9.5)	56.5 (5.4)	60.8 (5.7)	85.1 (2.5)	78.5 (2.8)
Thai	66.8 (5.2)	88.2 (3.6)	76.0 (4.1)	61.9 (6.8)	86.9 (3.6)	74.9 (4.2)
Muong	58.4 (6.7)	80.3 (3.8)	69.4 (4.4)	48.1 (9.8)	86.2 (3.1)	75.1 (3.5)
H'Mong (Meo)	66.5 (3.2)	74.2 (5.0)	68.0 (2.8)	47.7 (6.1)	66.0 (9.2)	52.5 (5.0)
Dao	68.5 (6.8)	82.0 (5.4)	73.2 (5.4)	57.9 (8.7)	75.0 (6.1)	66.5 (5.4)
Other ethnic minorities	41.3 (6.9)	56.1 (7.4)	44.8 (6.3)	52.8 (3.9)	73.5 (2.4)	66.4 (2.2)
Total	60.9 (2.3)	77.0 (2.3)	66.4 (1.9)	52.0 (1.9)	83.9 (0.5)	80.7 (0.5)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.37. Proportion of households having a television (either color or black-white one) (in percent)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	97.7 (1.8)	91.8 (4.7)	93.7 (3.2)	78.7 (2.2)	94.6 (0.3)	93.8 (0.3)
Tay	79.5 (7.4)	86.6 (5.2)	82.4 (5.6)	97.5 (1.2)	89.7 (2.0)	91.8 (1.5)
Thai	60.2 (5.2)	86.4 (4.6)	71.6 (4.1)	71.7 (5.8)	76.0 (6.5)	73.9 (4.6)
Muong	74.3 (5.4)	80.4 (4.9)	77.3 (3.9)	71.9 (8.7)	88.9 (3.3)	84.0 (4.0)
H'Mong (Meo)	23.0 (3.0)	37.9 (5.3)	25.9 (2.8)	25.8 (5.5)	55.0 (12.2)	33.4 (5.6)
Dao	59.7 (6.4)	70.3 (8.6)	63.4 (5.0)	43.9 (8.5)	83.2 (5.0)	63.6 (6.5)
Other ethnic minorities	50.8 (5.7)	55.2 (9.2)	51.9 (5.5)	63.4 (4.3)	78.6 (2.2)	73.4 (2.1)
Total	48.2 (2.5)	73.4 (2.7)	56.9 (2.3)	69.9 (1.8)	93.2 (0.3)	90.9 (0.4)

Standard error in parentheses.

Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.38. Proportion of households having a electricity fan (in percent)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	97.4 (2.0)	91.0 (3.2)	93.0 (2.6)	76.8 (2.5)	91.1 (0.4)	90.4 (0.4)
Tay	73.1 (8.3)	70.4 (7.4)	72.0 (6.5)	78.8 (4.9)	83.7 (3.1)	82.4 (2.7)
Thai	22.4 (4.2)	50.8 (8.3)	34.7 (4.6)	48.9 (8.0)	54.4 (6.6)	51.7 (5.7)
Muong	67.2 (7.2)	80.7 (5.0)	73.9 (5.2)	56.5 (9.0)	88.2 (3.1)	79.0 (4.5)
H'Mong (Meo)	4.5 (1.2)	11.9 (3.6)	5.9 (1.2)	6.9 (3.4)	19.8 (8.7)	10.3 (3.5)
Dao	54.4 (7.1)	66.1 (8.8)	58.5 (6.3)	40.3 (8.8)	74.7 (7.3)	57.6 (7.5)
Other ethnic minorities	16.9 (5.6)	35.9 (7.1)	21.3 (5.7)	35.2 (3.9)	57.1 (3.0)	49.6 (2.6)
Total	27.2 (2.6)	55.0 (3.4)	36.7 (2.5)	56.6 (2.1)	88.5 (0.5)	85.3 (0.5)

Standard error in parentheses.

Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.39. Proportion of households having a desk telephone or mobile phone (in percent)

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	10.0 (5.6)	28.5 (7.6)	22.6 (5.8)	16.6 (2.1)	46.3 (0.8)	44.8 (0.8)
Tay	5.0 (2.2)	29.0 (12.6)	15.0 (6.1)	15.3 (4.1)	35.1 (3.8)	29.7 (3.1)
Thai	26.1 (4.8)	48.2 (6.4)	35.7 (5.1)	16.8 (4.4)	34.3 (5.9)	25.9 (4.1)
Muong	21.3 (8.4)	11.4 (3.7)	16.4 (4.6)	12.6 (7.1)	26.7 (5.4)	22.6 (4.2)
H'Mong (Meo)	5.0 (1.2)	15.0 (4.0)	6.9 (1.3)	2.1 (2.0)	0.0 (0.0)	1.6 (1.5)
Dao	13.1 (4.3)	21.0 (5.6)	15.8 (3.7)	13.3 (4.9)	21.9 (5.7)	17.6 (4.0)
Other ethnic minorities	8.4 (3.4)	23.8 (6.7)	12.0 (3.2)	8.5 (2.1)	19.1 (2.2)	15.5 (1.6)
Total	12.0 (1.6)	28.1 (3.1)	17.5 (1.9)	13.3 (1.2)	44.1 (0.7)	41.1 (0.7)

Standard error in parentheses.

Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.40. Average household size

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	4.5 (0.4)	4.0 (0.2)	4.2 (0.2)	4.5 (0.1)	4.4 (0.0)	4.4 (0.0)
Tay	4.8 (0.3)	4.7 (0.3)	4.8 (0.2)	4.9 (0.2)	4.5 (0.1)	4.6 (0.1)
Thai	6.5 (0.3)	5.7 (0.3)	6.1 (0.2)	5.8 (0.3)	5.1 (0.2)	5.5 (0.2)
Muong	4.8 (0.2)	4.6 (0.2)	4.7 (0.1)	4.8 (0.2)	4.6 (0.2)	4.7 (0.1)
H'Mong (Meo)	7.2 (0.2)	5.6 (0.2)	6.9 (0.2)	6.4 (0.3)	5.1 (0.3)	6.0 (0.2)
Dao	6.2 (0.3)	5.4 (0.2)	5.9 (0.2)	5.5 (0.3)	4.5 (0.1)	5.0 (0.2)
Other ethnic minorities	5.9 (0.2)	4.6 (0.2)	5.6 (0.2)	5.6 (0.2)	4.9 (0.1)	5.1 (0.1)
Total	6.3 (0.1)	5.1 (0.1)	5.9 (0.1)	5.1 (0.1)	4.4 (0.0)	4.5 (0.0)

Standard error in parentheses.

Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.41. Proportion of children (below 15) in household

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	0.34 (0.04)	0.24 (0.05)	0.27 (0.04)	0.29 (0.01)	0.22 (0.00)	0.23 (0.00)
Tay	0.29 (0.02)	0.13 (0.03)	0.23 (0.02)	0.29 (0.03)	0.21 (0.01)	0.23 (0.01)
Thai	0.30 (0.02)	0.20 (0.02)	0.26 (0.01)	0.32 (0.02)	0.23 (0.02)	0.27 (0.02)
Muong	0.25 (0.02)	0.18 (0.02)	0.21 (0.01)	0.38 (0.04)	0.20 (0.02)	0.25 (0.02)
H'Mong (Meo)	0.44 (0.01)	0.35 (0.02)	0.42 (0.01)	0.48 (0.02)	0.31 (0.04)	0.43 (0.02)
Dao	0.31 (0.02)	0.27 (0.02)	0.30 (0.01)	0.35 (0.04)	0.25 (0.03)	0.30 (0.02)
Other ethnic minorities	0.34 (0.02)	0.28 (0.03)	0.33 (0.02)	0.41 (0.02)	0.28 (0.01)	0.32 (0.01)
Total	0.35 (0.01)	0.23 (0.01)	0.31 (0.01)	0.34 (0.01)	0.23 (0.00)	0.24 (0.00)

Standard error in parentheses.

Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.42. Proportion of elderly (above 60) in household

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	0.09 (0.03)	0.10 (0.03)	0.10 (0.02)	0.15 (0.01)	0.10 (0.00)	0.10 (0.00)
Tay	0.06 (0.01)	0.09 (0.03)	0.07 (0.01)	0.07 (0.02)	0.08 (0.01)	0.08 (0.01)
Thai	0.05 (0.01)	0.05 (0.01)	0.05 (0.01)	0.04 (0.01)	0.05 (0.01)	0.04 (0.01)
Muong	0.06 (0.01)	0.09 (0.02)	0.07 (0.01)	0.03 (0.01)	0.09 (0.02)	0.07 (0.01)
H'Mong (Meo)	0.05 (0.01)	0.07 (0.01)	0.05 (0.01)	0.02 (0.01)	0.05 (0.02)	0.02 (0.01)
Dao	0.06 (0.01)	0.02 (0.01)	0.05 (0.01)	0.05 (0.02)	0.06 (0.02)	0.05 (0.01)
Other ethnic minorities	0.06 (0.01)	0.04 (0.01)	0.06 (0.01)	0.05 (0.01)	0.08 (0.01)	0.07 (0.01)
Total	0.05 (0.00)	0.07 (0.01)	0.06 (0.00)	0.09 (0.01)	0.09 (0.00)	0.09 (0.00)

Standard error in parentheses.

Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.43. Proportion of working member (above 14 years old) in household

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	0.74 (0.05)	0.86 (0.03)	0.82 (0.03)	0.74 (0.01)	0.72 (0.00)	0.72 (0.00)
Tay	0.80 (0.02)	0.79 (0.03)	0.79 (0.02)	0.86 (0.02)	0.79 (0.02)	0.81 (0.01)
Thai	0.81 (0.02)	0.84 (0.03)	0.82 (0.02)	0.85 (0.02)	0.83 (0.02)	0.84 (0.01)
Muong	0.79 (0.03)	0.80 (0.02)	0.79 (0.02)	0.87 (0.03)	0.79 (0.03)	0.81 (0.02)
H'Mong (Meo)	0.81 (0.01)	0.82 (0.02)	0.81 (0.01)	0.89 (0.02)	0.89 (0.04)	0.89 (0.02)
Dao	0.77 (0.02)	0.82 (0.02)	0.79 (0.02)	0.84 (0.03)	0.89 (0.02)	0.86 (0.01)
Other ethnic minorities	0.81 (0.02)	0.80 (0.02)	0.80 (0.01)	0.84 (0.02)	0.82 (0.01)	0.83 (0.01)
Total	0.80 (0.01)	0.82 (0.01)	0.81 (0.01)	0.80 (0.01)	0.73 (0.00)	0.74 (0.00)

Standard error in parentheses.

Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.44. Proportion of household heads male

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	0.79 (0.13)	0.76 (0.08)	0.77 (0.08)	0.77 (0.02)	0.76 (0.01)	0.76 (0.01)
Tay	0.90 (0.04)	0.92 (0.04)	0.91 (0.03)	0.90 (0.03)	0.85 (0.02)	0.86 (0.02)
Thai	0.94 (0.02)	0.94 (0.02)	0.94 (0.02)	0.99 (0.01)	0.95 (0.02)	0.97 (0.01)
Muong	0.92 (0.03)	0.94 (0.02)	0.93 (0.02)	0.94 (0.04)	0.81 (0.05)	0.85 (0.04)
H'Mong (Meo)	0.96 (0.01)	0.92 (0.02)	0.95 (0.01)	0.98 (0.01)	0.91 (0.05)	0.96 (0.02)
Dao	0.94 (0.02)	0.95 (0.03)	0.95 (0.02)	0.96 (0.02)	0.95 (0.03)	0.95 (0.02)
Other ethnic minorities	0.96 (0.02)	0.97 (0.02)	0.96 (0.01)	0.86 (0.03)	0.83 (0.02)	0.84 (0.02)
Total	0.94 (0.01)	0.92 (0.01)	0.94 (0.01)	0.86 (0.01)	0.77 (0.01)	0.78 (0.01)

Standard error in parentheses.

Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.45. Average age of head

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	40.3 (1.9)	44.8 (2.7)	43.4 (2.1)	48.9 (0.8)	49.1 (0.2)	49.1 (0.2)
Tay	41.9 (1.0)	46.5 (2.5)	43.8 (1.2)	40.3 (1.1)	45.5 (0.9)	44.1 (0.7)
Thai	42.9 (1.1)	46.1 (1.3)	44.3 (0.8)	42.1 (1.3)	41.7 (1.0)	41.9 (0.9)
Muong	42.3 (1.0)	43.8 (1.0)	43.0 (0.7)	39.7 (1.7)	44.8 (1.1)	43.3 (1.0)
H'Mong (Meo)	41.3 (1.0)	41.0 (1.2)	41.2 (0.8)	37.2 (1.3)	38.6 (2.2)	37.5 (1.1)
Dao	45.2 (1.5)	42.4 (1.0)	44.2 (1.0)	37.7 (1.5)	40.5 (1.6)	39.1 (1.1)
Other ethnic minorities	40.4 (1.3)	40.1 (1.8)	40.4 (1.1)	42.3 (1.1)	47.0 (0.8)	45.4 (0.6)
Total	42.0 (0.5)	43.9 (0.7)	42.6 (0.4)	44.3 (0.5)	48.7 (0.2)	48.3 (0.2)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

Table A.46. Completed education grades of household heads

Ethnicity	NMBS 2010			VHLSS 2010		
	Poor	Non-Poor	All	Poor	Non-Poor	All
Kinh & Chinese	8.1 (0.3)	9.0 (0.5)	8.7 (0.4)	5.9 (0.2)	8.1 (0.1)	8.0 (0.1)
Tay	6.3 (0.4)	7.7 (0.4)	6.9 (0.4)	5.8 (0.4)	8.2 (0.3)	7.6 (0.3)
Thai	3.9 (0.3)	5.7 (0.4)	4.7 (0.3)	4.6 (0.4)	6.6 (0.5)	5.6 (0.3)
Muong	6.3 (0.4)	7.7 (0.5)	7.0 (0.4)	5.6 (0.6)	7.1 (0.4)	6.7 (0.3)
H'Mong (Meo)	1.7 (0.2)	2.8 (0.4)	1.9 (0.2)	2.2 (0.4)	3.0 (0.6)	2.4 (0.4)
Dao	2.2 (0.3)	3.2 (0.4)	2.5 (0.3)	2.8 (0.4)	3.7 (0.5)	3.3 (0.3)
Other ethnic minorities	2.8 (0.4)	4.2 (0.6)	3.1 (0.4)	3.2 (0.3)	4.5 (0.2)	4.0 (0.2)
Total	3.2 (0.2)	5.6 (0.2)	4.0 (0.2)	4.7 (0.1)	7.9 (0.1)	7.6 (0.1)

Standard error in parentheses.
Source: Authors' estimation from the 2010 NMBS and the 2010 VHLSS.

