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## **Group-based inequalities**

The case of Viet Nam

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**Abstract:** This paper examines the issue of horizontal inequalities in Viet Nam over the past 20 years. Using data from three recent Viet Nam population censuses (1989, 1999, and 2009) and three Viet Nam Household Living Standard Surveys (1998, 2008, 2012), we estimated numerous measures on inequalities between different ‘ethnic’ groups against several welfare indicators. Our results show that horizontal inequality matters in Viet Nam, in particular for ethnicity, region, and rural/urban groups. While there has been an improvement in horizontal inequality in education, this paper shows little change in other welfare indicators, in particular poverty. We also found that horizontal inequality does matter for poverty reduction in Viet Nam and it needs more attention when designing poverty policies in the future.

**Keywords:** Viet Nam, horizontal inequality, ethnics, regions, poverty, education

**JEL classification:** C25, D63, I24, I32, O18

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## 1 Introduction

In parallel with rapid economic growth, Viet Nam has achieved a remarkable reduction in poverty over the last decades of development. The poverty rate has been successfully reduced from 58 per cent in 1993 to about 15 per cent in 2014. However, this pattern does not apply equally to all groups in society (Do Thien Kinh 2015; Vu and Dang 2015). Some groups have been falling far behind in poverty reduction, such as ethnic-minority groups, groups of households in rural areas, or some regions and provinces of Viet Nam. For example, Vu and Dang (2015) find that the headcount poverty rate of the ethnic majority group in Viet Nam fell from 26 per cent in 2002 to 9.9 per cent in 2012, while that of ethnic-minority groups has only fallen from 74 per cent to 59 per cent. This trend is more or less the same based on various welfare indicators. On the one hand, this contributes to the trend of increasing inequality in Viet Nam. The Gini coefficient increased from 0.35 in 1994 to 0.42 in 2012. On the other hand, this creates social division in the society and threatens social stability (UNICEF and FHI 360 2015). This context has stimulated a number of studies on inequality and social division in Viet Nam, such as Glewwe et al. (2002), Lee (2008), Rodger and Menon (2010), and Nguyen (2012).

The studies show that group inequality exists in Viet Nam in various forms and persists across several indicators. Nguyen and Luu (2015), Doan et al. (2015), Nguyen and Luu (2015), Luong (2015), Lee (2008), Rodger and Menon (2010), Nguyen (2012), and Glewwe et al. (2002) show a significant gap in income/wages, education, and healthcare between several groups, such as between rural and urban groups, regions, and genders in Viet Nam. In particular, some studies (Dang 2012; Singhal 2015; Van de Walle and Gunewardena 2001) found a welfare gap between ethnic groups. However, almost all of these studies use simple proportional methods to examine group inequality. Each of them also uses the data from one type of survey—either the Viet Nam Household Living Standard Survey (VHLSS) or population census data. None of them provide the aggregate measure of horizontal inequality (HI), except the study by Vu et al. (2012). However, the Vu et al. study investigates only one measure of HI and touches upon only the aspect of healthcare. In addition, the study does not use the national representative data, but only the limited data from its own survey. In short, there is a lack of a study on the aggregate HI, using HI measures, which can be used to make comparisons across nations and groups and which thoroughly examines the issues of HI in Viet Nam over time, across different groups, covering different aspects, and using different survey datasets. Moreover, none explicitly focus on the aggregate measure of HI by ethnic groups. This paper aims at filling this research gap on inequality in Viet Nam.

The paper contributes to stimulating the cross-national study of HI and offers insights in consideration of HI (with a focus on ethnic groups) in rapidly developing economic environments more generally. The study is distinguished among the current literature on group inequality in Viet Nam in several aspects. First, it calculates the various commonly used aggregate HI measures for Viet Nam, including group-weighted coefficient of variation (GCOV), group-weighted Gini coefficient (GGini), group-weighted Theil (GTheil), cross-cuttingness (CC), and cross-fractionalization (CF). This enables international and across-group comparison. Second, it uses the datasets from both surveys in order to draw a sound conclusion about HI in Viet Nam and to compare the usability of two datasets for HI. Third, the paper examines the inequality among different groups over time. The group selection is based on the results of the current literature. Combined with calculation of the aggregate HI for different groups, this feature allows identification of the type of groups that require more attention to address inequality. Fourth, the paper applies a logistic regression model on poverty determinants to study the relationship

between HI and poverty in Viet Nam, which will provide insights on how HI may affect poverty reduction.

The results of calculations show that Viet Nam is not a highly divided society in terms of the share of population in different ethnic and religious groups. The fractionalization index for ethnic and religious groups of Viet Nam was around 0.24–0.29 during 1989–2012, which is much lower than the international average of about 0.44 (Gisselquist and McDoom 2015). The polarization tends to be higher, around 0.39–0.58. However, when the welfare indicators are taken into account, the society seems to be highly divided, especially in terms of the headcount poverty rate among ethnic groups and regions. This paper shows that after 1999 Viet Nam seemed to achieve some improvement in the HI in education, but the results are less obvious recently. Conversely, the HI in poverty and assets still follows a downward trend, which may require stronger measures than education. However, the society is less divided in terms of education, health insurance, and asset ownership. This paper shows that in the context of less availability of Viet Nam Population Census (VPC) data, the VHLSS data are reliable enough for the purpose of examining the issues of group-based inequality in education and other welfare indicators. This paper shows that besides the typical features of ethnic group poverty in Viet Nam, Viet Nam also needs to consider the poverty dimension relating to regions and urban/rural differences. The paper shows a consistent trend and patterns of group-based inequality between GCOV, GGini, and GTheil indicators. Finally, the paper provides a good illustrative example of the negative effects of HI on poverty. In other words, the issue of HI could be one of the factors that need to be taken into account in designing poverty-reduction policies.

The rest of the paper is organized as follows. Section 2 briefly discusses the data used for calculations. Section 3 discusses group diversity in Viet Nam, and shows the results of fractionalization and polarization indices of ethnic and religious groups in Viet Nam. Section 4 shows and discusses the results on various indicators of HI in Viet Nam, including education, health insurance, poverty, household consumption, and asset ownership. Section 5 examines the relationship between HI and poverty. The paper concludes with Section 6, exploring several key factors that may underlie the trends and patterns thus mapped.

## 2 Data

This paper uses the results of two sets of surveys, the VPC and the VHLSS, which are the two most relevant national representative datasets when examining the issues of HI in Viet Nam. The VPC has been conducted every 10 years and the VHLSS every two years. Four rounds of the VPC<sup>1</sup> have been conducted, in 1979, 1989, 1999, and 2009. However, only the results of the most recent three rounds are accessible. Information collected in the census was very basic, covering gender, ethnic group, religion, location (rural/urban; there are eight economic regions in Viet Nam), education (by grades and a more detailed six-point educational scale), accommodation (living areas in the VPC 2009), employment, fertility (women), and death. The information on employment in the three most recent rounds was obtained from the representative survey part, whose sample was 5 per cent, 3 per cent, and 15 per cent of the population of the census rounds in 1989, 1999, and 2009, respectively.

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<sup>1</sup> In fact, there were three more population surveys in Viet Nam, which were in 1960 and 1973 for North Viet Nam and in 1976 for South Viet Nam.

The data from the VHLSS are used for poverty measurement, welfare, and distribution analysis in Viet Nam. These consist of series of national representative surveys, which have been carried out since 1992. The second one was in 1998, and it has been carried out every two years since 2002. The most up-to-date one for which the data are available was in 2012. This type of survey has two modules; the VHLSS-expenditure module (the smaller one) is used for poverty measurement by the Viet Nam General Statistics Office (VGSO) and the VHLSS-income module (with a bigger sample) is used for income measurement, although the former also includes the question on income. The latter module is representative at the provincial level, the former is representative only at the regional level. The data from the VHLSS are very useful for measuring household income and wealth. In addition to the variable on expenditure/consumption (usually used for poverty measurement), the data include other information such as household members' characteristics (age, education, gender), labour and other income, asset ownership, and health. This paper will examine the HI on two input welfare indicators (education and durable assets) and two welfare indicators in terms of outputs (poverty status and household consumption).

There are three main poverty lines used in Viet Nam, as presented in Appendix A1. To be comparable with the results of other countries in the project, we used the national poverty line in this paper. This poverty line has changed over time based on the national budget capacity as well as poverty-reduction targets for Viet Nam. Details on specific poverty lines used for calculations for the whole period are presented in Appendix A1.

In order to allow comparisons with other countries in the project, the paper examines issues in education for two groups in the population: those older than 15 years and those older than 25 years (see Appendix A4 for information on the education system in Viet Nam). Poverty and asset indicators are applied at the household level due to the availability of data and the sensibility of the indicators at this level. The rest are examined at the individual level. The VPC recorded the information on ethnicity at the individual level, but the VHLSS data recorded only ethnicity of the household head. Therefore, the calculations/estimations using VHLSS data at the individual level make an assumption that all family members have the same ethnicity as the household head, and the same poverty status as the other household members.

### **3 Group diversity in Viet Nam**

Viet Nam officially has 54 ethnic groups, of which Kinh is an ethnic majority with more than 80 per cent of the population, as shown in Table 1. Among the 53 ethnic minorities, none of them accounts for more than 2 per cent of the population (see Appendix A2 for detailed population shares by the 54 ethnic groups). Table 1 also shows that most Vietnamese (82.1 per cent in 2009) do not officially follow any religion.<sup>2</sup>

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<sup>2</sup> In reality, most Vietnamese unofficially practise some form of Buddhism.

Table 1: Viet Nam population by ethnicity and religion

Data source	Groups		1989	1998	1999	2008	2009	2012
VPC	Ethnic	Kinh	87.1		86.7		85.8	
		Others	12.9		13.3		14.2	
	Religious group	No	N/A		78.9		82.1	
		Yes			21.1		17.9	
VHLSS	Ethnic	Kinh		83.8		86.0		84.1
		Others		16.2		14.0		15.9
	Religious group	No		70.4		N/A		N/A
		Yes		29.7				

Note: N/A = not available.

Source: author's calculations using VPC and VHLSS data.

The data in Table 2 show that ethnic minorities are highly concentrated in a few regions. In 2009, ethnic minorities accounted for more than 79 per cent of the population in three provinces in the north-west region and more than 37 per cent in the north-east and central highland. Ethnic minorities account for a very low share of the population in the remaining regions.

Table 2: Share of ethnic minorities by region (percentages)

	1989	1999	2009
Red river delta	4.2	0.3	0.8
North-east	32.0	33.8	37.1
North-west	78.0	79.1	79.6
North central coastal	9.4	11.6	11.9
South central coastal	5.9	5.4	6.3
Central highland	34.4	30.9	38.1
South-east	10.1	8.7	8.0
Mekong river delta	7.5	6.8	7.8

Source: author's calculations using VPC data.

The results of calculating the fractionalization index for ethnicity and religion in Viet Nam over the period 1989–2012 using both datasets are shown in Table 3. The table indicates that Viet Nam is a fairly homogeneous society in terms of the population share of ethnicity and religion. The data show a trend of slightly increasing fractionalization over time using VPC data. It is notable that the fractionalization index using VHLSS data tends to be higher than that using VPC data, and the trend is different over time. However, in terms of absolute numbers, the values are not much different, around 0.24–0.29. It is also noted that the fractionalization values are slightly higher when the ethnicity data are more disaggregated. For example, the value of fractionalization for two ethnic groups (Kinh and ethnic minorities) was 0.23, while it was 0.246 when the share of 46 ethnic groups was taken into account.

Table 3: Fractionalization

Data sources	Groups	1989	1998	1999	2008	2009	2012
VPC	Ethnic (two ethnic groups)	0.224		0.230		0.244*	
	Ethnic (more than two groups)	0.239		0.246			
VHLSS	Religious group	N/A		0.361		0.294	
	Ethnic (two ethnic groups)		0.270		0.240		0.267
	Ethnic (more than two groups)		0.295		0.258		0.291
	Religious group		0.466		N/A		N/A

Note: data from the VPC in 1989 had 54 ethnicities; in 1999, 46 ethnicities and eight religions; in 2009, two ethnicities and two religious. Data from VHLSS in 1988 had 21 ethnicities and eight religions; in 2008, 46 ethnicities; in 2012, 51 ethnicities. It is notable that data from the VPC 2009 have 4.9 million observations out of 14.5 million missing data on ethnicities. However, the results of the calculation of the share of ethnic minorities in the population are more or less the same as the official statistics (VGSO 2010). N/A = not available.

Source: author's calculations using VPC and VHLSS data.

Table 4 shows the results of the polarization index for the two types of groups over the period 1989–2012 using different datasets. It shows a similar pattern as the fractionalization index.

Table 4: Polarization

Data sources	Groups	1989	1998	1999	2008	2009	2012
VPC	Ethnic	0.397		0.405		0.488	
	Religious group	NA		0.586		0.587	
VHLSS	Ethnic		0.464		0.421		0.459
	Religious group		0.719		N/A		N/A

Note: Data from the VPC in 1989 had 54 ethnicities; 1999 had 46 ethnicities and eight religions; in 2009, two ethnicities and two religions. Data from the VHLSS in 1988 had 21 ethnicities and eight religions; in 2008, 46 ethnicities; in 2012, 51 ethnicities. N/A = not available.

Source: author's calculations using VPC and VHLSS data.

Table 5 shows a high value of cross-cuttingness between ethnicity and religion, and between ethnicity and region.

Table 5: Cross-cuttingness between ethnics and religion, region

	1989	1999	2009
Ethnicity (two groups); religion (two groups)	N/A	0.94	0.97
Ethnicity (more than two groups); religion (two groups)	N/A	0.83	N/A
Ethnicity (more than two groups); religion (more than two groups)	N/A	0.67	N/A
Ethnicity (two groups); regions	0.71	0.62	0.64
Ethnicity more than two groups); regions	0.68	0.55	N/A

Note: N/A = not available.

Source: author's calculation using VPC data.

## 4 Horizontal inequality in Viet Nam: findings and discussions

### 4.1 Education

Table 6 presents the results on three HI indicators—GCOV, GGini, and GTheil—of various groups in the population greater than 15 years old regarding education during 1989–2012 using two different sources of data. The results on population older than 25 years show a similar pattern, presented in Appendix A3.

Table 6: HI in education for the population older than 15 years (years of education)

	Data source	Year	Ethnicity	Religion	Region	Gender	Rural/urban
GCOV	VPC	1989	0.095		0.123	0.072	0.124
		1999	0.152	0.083	0.140	0.075	0.118
		2009	0.117	0.069	0.138	0.057	0.142
	VHLSS	1998	0.181	0.090	0.130	0.079	0.101
		2008	0.154		0.145	0.065	0.120
		2012	0.152		0.157	0.053	0.126
GGini	VPC	1989	0.028		0.068	0.036	0.051
		1999	0.041	0.030	0.077	0.037	0.052
		2009	0.039	0.027	0.063	0.029	0.066
	VHLSS	1998	0.055	0.036	0.070	0.040	0.043
		2008	0.046		0.080	0.032	0.054
		2012	0.050		0.088	0.027	0.058
GTheil	VPC	1989	0.005		0.008	0.003	0.007
		1999	0.015	0.004	0.010	0.003	0.007
		2009	0.007	0.002	0.010	0.002	0.010
	VHLSS	1998		0.043	0.009	0.003	0.005
		2008	0.015		0.011	0.002	0.007
		2012	0.014		0.012	0.001	0.008

Source: author's calculations using VPC and VHLSS data.

The results show that there are differences in the values of HI indicators for education when using different data sources, but the trend and relative magnitude of HI indicators among different groups are similar. For example, the GCOV value for ethnicity in Viet Nam was around 0.12–0.15 during 1999–2009 when using the VPC, while it was a bit higher, about 0.15–0.18, when using the VHLSS during 1998–2008. The survey sample of the VPC is larger than that of the VHLSS and it is designed to survey the Vietnamese population, while the VHLSS is designed to examine the living standards (income and expenditure) of households. In this sense, VPC data tend to be more reliable.<sup>3</sup> However, the data from the VPC are less up-to-date compared to the VHLSS due to less frequent surveys. In addition, as shown in Table 6, the gap between two values of the two datasets is not very significant, especially in the regional disaggregation and, recently, probably due to the increasing quality of VHLSS survey data. The GCOV of region was about 0.138 in 2009 when using VPC data and 0.145 in 2008 when using VHLSS data. In short, the results in Table 6 show that the VHLSS data are a reliable source for studying the HI in education of various groups.

<sup>3</sup> Although the errors of data of the larger sample can be influenced more by measurement errors compared to the smaller sample.



The results show that GCOV of ethnicity in education was in the range 0.11–0.15 recently. This is a similar range to some other countries in the region (Indonesia was around 0.10 and the Philippines was 0.14–0.15 (Gisselquist and McDoom 2015)). The value for ethnic groups increased from 0.028 in 1989 to 0.05 in 2012. This number is a bit lower than the education GGini average level of other countries, which are around 0.076 (mean education GGini value of 95 countries) (UNICEF and FHI 360 2015).

GCOV for ethnicity increased significantly during 1989–99, from 0.095 to 0.152, but experienced a decreasing trend since 1999, significantly during 1999–2009. Recently, the reduction of this GCOV indicator of ethnicity was very modest, from 0.154 in 2008 to 0.152 in 2012. The reduction could be a result of various policies on providing assistance to ethnic minorities and remote and less developed areas of Viet Nam. Since the late 1980s, the government issued policies on helping ethnic-minority people to study at university. In addition, the government supports building schools through public programmes in ethnic-minority areas (named programme 135), which started to be implemented in 1998. These provided various types of assistance to ethnic minorities and less developed areas, including assistance in education.<sup>4</sup>

Beside the educational divide among ethnic groups, the results show that regional and rural/urban divides in education are also notable in Viet Nam. The GCOVs of regions and rural/urban in education was 0.15 and 0.12 in 2012, respectively. More importantly, these indicators tend to increase over time for regions, from about 0.12 in 1989 to about 0.15 in 2012, and tend to be maintained over time for rural/urban, at about 0.12 during 1989–2012. These urban/rural and regional divides in education do not necessarily reflect the ethnic divide as mentioned above. This is due to the fact that the GCOV of region and urban/rural in education in 2012 was still at the same level, about 0.16 and 0.11, when three high-density ethnic-minority regions (north-east, north-west, and central highland, as shown in Table 2) were taken out of the sample.

Table 6 also shows that education inequality matters less for religion and gender groups than ethnicity, region, and rural/urban groups, as mentioned above. The GCOV in education by gender has been reduced from 0.072 to about 0.053 during 1989–2012. The GCOV of religion group shared a similar trend. Table 6 demonstrates a similar trend in three HI indicators—GCOV, GGini, and GTheil—for all five groups over time.

## 4.2 Health insurance

Table 7 indicates the GCOV on health insurance by ethnic and other groups. Health insurance is measured by mean percentage of people in the groups having health insurance. The results show that the value of GCOV for ethnic groups was reduced from 0.429 in 1998 to 0.332 in 2008, then was reduced to 0.253 in 2012. These GCOV values on health insurance, on average, were higher than those for education shown in Table 6. However, the interpretation of GCOV on health insurance is very different to the GCOV on education when the simple proportion indicators of health insurance are examined. The survey data show that the share of the ethnic majority (Kinh people) having health insurance was 40.4 per cent, while the share of ethnic minorities was 71.6 per cent in 2008; the share was 49.3 per cent and 80.5 per cent in 2012, respectively. In other words, unlike GCOV on education, the high value of ethnic GCOV for health insurance did not reflect the disadvantage of ethnic minorities in health insurance access compared to the ethnic majority, but actually the opposite. This is probably the result of government policies to support

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<sup>4</sup> The programme of economic and social development of special difficulty communes in mountainous and ethnic minority areas issued in 1998 by Decision No. 135 (QĐ 135/1998/QĐ-TTg), usually called by the popular short name ‘programme 135’ in Viet Nam.

health insurance for the poor, who are mainly ethnic minorities, as shown in the next section. However, given a big income gap between ethnic minorities and the majority, the government support of health insurance for the poor seem not to be enough to have a significant impact on their poverty status. This also shows that GCOV indicators should be examined together with simple proportion indicators in order to obtain the correct picture on HI.

Table 7: HI in health insurance

		Ethnics	Regions	Urban/rural
GCOV	1998	0.429	0.366	0.447
	2008	0.332	0.285	0.036
	2012	0.253	0.202	0.056
GGini	1998	0.120	0.205	0.193
	2008	0.110	0.151	0.016
	2012	0.087	0.106	0.025
GTheil	1998		0.072	0.088
	2008	0.045	0.039	0.001
	2012	0.027	0.019	0.002

Source: author's calculations using VHLSS data.

Table 7 also indicates almost no recent significant difference in health insurance between rural/urban groups. This is a result of government policies on providing free health insurance for the poor, the majority of which live in rural areas.

### 4.3 Poverty and household consumption

Table 8 shows the GCOV on the poverty rate and household consumption for three types of group. Poverty is measured by the mean headcount poverty rate of groups; consumption is measured by mean annual household consumption per capita. This indicator is calculated at the household level using the VHLSS.

In terms of poverty, the results show a significant high GCOV for ethnicity during 2008–12, at 1.313 and 1.759. These values reflect a big gap in the poverty rate between ethnic groups in Viet Nam. In fact, the headcount poverty rate of ethnic minorities in Viet Nam was 30.07 per cent, while the rate of the ethnic majority was as low as 3.21 per cent in 2012, and was 36.84 and 6.18 in 2008, respectively. It is notable that the value of the GCOV on poverty of ethnic minorities increased over time, although the poverty rates of all groups fell. This seems to be in line with the widening gap between the living standards of the ethnic majority and minorities, as shown in the literature (Singhal and Beck 2015). This also shows that all the government's efforts to help the poor in general and ethnic minorities in particular could not narrow this gap during 1998–2012.<sup>5</sup> In particular, unlike the decreasing trend of HI in education and ethnicity during 1998–2012 shown in Table 6, HI in poverty kept rising during this period. This illustrates that in addition to the assistance for ethnic minorities in education, to narrow the welfare gap between ethnic groups the Vietnamese government needs to expend greater effort in improving the economic development of the areas in which ethnic minorities are located.

<sup>5</sup> Beside programme 135 mentioned above, Viet Nam also had a national programme on poverty in general and a programme on rapid and sustainable poverty reduction for 61 poor districts, which started to be implemented in 2008 (issued by Resolution number 30A by the government (NQ 30a/2008/NQ-CP)), named programme 30a.

Table 8: HI in poverty and household consumption

		Poverty			Consumption		
		Ethnicity	Regions	Urban/rural	Ethnicitys	Regions	Urban/rural
GCOV	1998	0.436	0.400	0.432	0.219	0.320	0.431
	2008	1.313	0.728	0.497	0.200	0.296	0.386
	2012	1.759	0.886	0.455	0.211	0.236	0.337
GGini	1998	0.152	0.213	0.180	0.077	0.158	0.180
	2008	0.378	0.386	0.222	0.069	0.152	0.173
	2012	0.525	0.443	0.208	0.075	0.127	0.154
GTheil	1998	0.078	0.087	0.128	0.025	0.046	0.081
	2008		0.255	0.165	0.025	0.040	0.068
	2012		0.339	0.129	0.028	0.027	0.053

Source: author's calculations using VHLSS data.

The poverty gap among regions was about 0.886 in 2012, and was lower between rural and urban groups, at about 0.455. It is notable that the GCOV in education for regions tended to increase over time during 1998–2012, while the trend of urban and rural groups was not clear; it slightly increased during 1988–2008, then slightly decreased recently.

Table 8 shows that the HI in household consumption during 1998–2012 was not as strikingly high as that in poverty. This demonstrates that the gap in living standards among ethnic groups was more severe between the lowest extreme and the one above the poverty line. In particular, the gap among ethnic groups was reduced during 1998–2008, but started rising again recently.

#### 4.4 Assets ownership

Table 9 shows the results of three HI indicators by three types of groups on asset ownership, measured by the mean values of durable assets owned by the households in different groups. The values of GCOV on asset ownership were 0.258 for ethnic groups to the disadvantage of ethnic-minority households and 0.367 on rural/urban groups to the disadvantage of rural households. The trend of these indicators has the same pattern as the indicators in consumption in Table 8.

Table 9: HI in assets ownership

		Ethnicity	Regions	Urban/rural
GCOV	1998	0.386	0.586	0.676
	2008	0.241	0.350	0.448
	2012	0.258	0.270	0.367
GGini	1998	0.132	0.283	0.293
	2008	0.084	0.187	0.203
	2012	0.094	0.140	0.168
GTheil	1998	0.075	0.146	0.194
	2008	0.038	0.058	0.091
	2012	0.044	0.036	0.062

Source: author's calculations using VHLSS data.

## 5 Horizontal inequality and poverty

In this section we examine the correlation between HI and poverty. In general, it is argued that changes in inequality can have a significant impact on poverty reduction (Naschold 2002). Inequality can have a direct effect on poverty, but more importantly an indirect effect through their link with economic growth. HI may create discrimination between different groups in accessing the opportunities to escape poverty. Birdsall et al. (1996) illustrated that highly skewed distribution of human capital is a major constraint to reducing poverty in Latin America and sub-Saharan Africa.

In this section we use a logistic regression model on poverty determinants using the VHLSS data at the individual level for those aged older than 15 years. The dependent variable is the poverty status of the individual in 2012; 0 is non-poor and 1 is poor. Since poverty status is defined at the household level (as mentioned in Section 2), individuals in the same household have the same poverty status. Independent variables are the main poverty determinants in Viet Nam, as identified in the poverty literature (Dang 2011). These include seven variables: years of education; total value of assets; ethnicity; gender; age; rural/urban; and region. These variables are identified as in the previous sections of this paper. In addition, in order to examine the relation between HI and poverty, six variables on HI are included in six logistic regression models, as shown in Table 10. These are GCOV indicators in education, assets, and consumption of two types of groups at the provincial level: region and urban/rural group.<sup>6</sup> The hypothesis here is that individuals located in the provinces that have a bigger gap in education or asset ownership or household consumption between either regions or rural/urban areas will have a higher probability of being poor.

The results of six models are presented in Table 10. It shows that all HI variables have a statistical negative relation with the poverty status of individuals. It implies that a higher degree of HI in education, asset ownership, and consumption between regions and urban/rural areas make poverty reduction more difficult. In short, HI matters for poverty reduction.

<sup>6</sup> Viet Nam had 63 provinces in 2012.

Table 10: Effects of horizontal inequality and poverty

	HI on education by ethnicity	HI on education by rural/urban	HI on assets by ethnicity	HI on assets by rural/urban	HI on consumption by ethnicity	HI on consumption by rural/urban
Years of education	-0.1325*** (0.0002)	-0.1394*** (0.0002)	-0.1395*** (0.0002)	-0.1433*** (0.0002)	-0.1326*** (0.0002)	-0.1412*** (0.0002)
Total value of assets	-0.0002*** (0.0000)	-0.0002*** (0.0000)	-0.0002*** (0.0000)	-0.0002*** (0.0000)	-0.0002*** (0.0000)	-0.0002*** (0.0000)
Ethnicity	1.2423*** (0.0014)	1.4113*** (0.0013)	1.3522*** (0.0015)	1.3473*** (0.0013)	1.1628*** (0.0014)	1.3310*** (0.0013)
Gender	0.0364*** (0.0012)	0.0432*** (0.0012)	0.0415*** (0.0012)	0.0465*** (0.0012)	0.0356*** (0.0012)	0.0419*** (0.0012)
Age	-0.0311*** (0.0001)	-0.0329*** (0.0001)	-0.0329*** (0.0001)	-0.0336*** (0.0001)	-0.0308*** (0.0001)	-0.0328*** (0.0001)
Age squared	0.0002*** (0.0000)	0.0002*** (0.0000)	0.0002*** (0.0000)	0.0002*** (0.0000)	0.0002*** (0.0000)	0.0002*** (0.0000)
Urban	-0.4742*** (0.0019)	-0.4719*** (0.0019)	-0.4757*** (0.0019)	-0.4172*** (0.0019)	-0.4720*** (0.0019)	-0.4188*** (0.0019)
Regions	Control	Control	Control	Control	Control	Control
GCOV in education by ethnicity	1.4890*** (0.0051)					
GCOV in education by rural/urban		0.8255*** (0.0086)				
GCOV in assets by ethnicity			0.3881*** (0.0028)			
GCOV in assets by rural/urban				0.9397*** (0.0029)		
GCOV in consumption by ethnicity					1.6397*** (0.0040)	
GCOV in consumption by rural/urban						1.9445*** (0.0052)

Constant	0.6291*** (0.0041)	0.7959 (0.0041)	0.7778 (0.0041)	0.5560*** (0.0041)	0.4758*** (0.0041)	0.2995*** (0.0043)
Observations	27,724	27,724	27,724	27,724	27,724	27,724
Pseudo R <sup>2</sup>	0.3700	0.3677	0.3680	0.3705	0.3725	0.3717

Notes: dependent variable: individual poverty status (1 = poor, 0 = non-poor); GCOV is a HI indicator; robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Source: author's calculations based on VHLSS data for 2012.

## 6 Conclusions

This paper uses two sets of the most relevant survey data for Viet Nam to examine the issues of group-based inequality. The results show that Viet Nam's society is quite homogeneous in terms of population share by both ethnic and religious groups, whereas the picture is very different when the HI in welfare indicators is taken into consideration. The society becomes highly divided in terms of the poverty headcount rate between ethnic groups. More importantly, the trend becomes worse over time and there has been no sign of recent improvement. The paper shows that the gap in education may not be the major explanation as this educational gap has become narrower over time. Rather, it is argued that many other factors, as pointed out in other studies, should be considered. For example, some factors could be the disadvantages of ethnic minorities in other areas such as land holding and access to credit, and also returns on assets for reasons such as being in remote locations (Glewwe et al. 2002) or less diversification of income (Singhal and Beck 2015).

In addition to poverty, the paper shows a less divided society in terms of education, health insurance, and asset ownership. Although the gap in possession of health insurance exists, the share of ethnic minorities having health insurance was much higher than that of the ethnic majority. This is a result of government support of health insurance for the poor. However, it is not enough to close the poverty gap between ethnic minorities and the majority unless more policy efforts can be made.

This paper shows that in the context of less frequent VPC data collection, the VHLSS data are reliable enough to examine the issues of group-based inequality in education and other welfare indicators. This paper also indicates that HI indicators should be used together with simple proportion indicators in order to get the correct picture of the nature of group-based inequality. The paper also indicates that GCOV, GGini, and GTheil are consistent in showing the trend and patterns of group-based inequality.

Finally, despite recognized rapid reduction in poverty, Viet Nam still face challenges in managing poverty reduction for ethnic minorities. In this sense, the issue of HI matters for poverty reduction and it should be given due attention when designing poverty policies in the future.

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## Appendix

### A1 Poverty lines used in Viet Nam and in this paper

There are three main poverty lines used in Viet Nam:

- The administrative national poverty line is mainly used for targeting social government poverty-reduction programmes. This is developed and led by the Ministry of Labor, Invalids, and Social Affairs (MOLISA) and based on income. It is sometimes named the government poverty line (Gabriel and Vu 2015). This poverty line is adjusted every five years by the government and is based on the government's financial ability to support the poor. This type of poverty line is mainly for the purposes of government poverty-reduction support rather than discussion of the trend of poverty reduction.
- The GSO-WB poverty line is the most rigorous one in Viet Nam for assessing poverty reduction over time, because it is kept relatively constant in real purchasing power of households. It is developed by a joint effort between the World Bank and GSO of Viet Nam based on consumption and basic needs approaches since 1993. However, the poverty line from 2010 onward is not comparable to the previous one. This change is due to a change in the design and sampling of the survey used to calculate the poverty line (the VHLSS) and the change in the welfare aggregates, which reflects a wealthier society compared to the past.
- The international poverty line has two popular poverty line variants: less than \$1.25 per day (2005 PPP) and \$2 per day (2005 PPP). These are sometimes used in Viet Nam and for international comparison rather than national poverty assessment. Data for calculating poverty in Viet Nam are from the VHLSS, which is now conducted every two years.

Table A1.1: Poverty line used in this paper (administrative national poverty line of Viet Nam) (VND thousands per person per year)

	1998	2002	2004	2006	2008	2010	2012
Rural	1,788	1,920	2,040	2,400	3,480	4,800	6,360
Urban	1,788	1,920	2,640	3,120	3,840	6,000	7,920

Source: author's calculations from various sources.

### A2 Ethnic groups in Viet Nam (1989–2009)

	Ethnic group	1989		2009	
		Freq.	Percentage	Freq.	Percentage
1	Kinh	2,286,557	87.13	12,162,975	85.79
2	Tay	46,579	1.77	2,014,613	14.21
3	Thai	40,419	1.54		
4	Hoa	39,866	1.52		
5	Kho Me	35,900	1.37		
6	Muong	35,531	1.35		
7	Nung	28,493	1.09		
8	Hmong	20,394	0.78		
9	Dao	19,785	0.75		
10	Gia Rai	7,377	0.28		
11	Ngai	34	0		
12	E De	10,260	0.39		

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13	Ra Na	6,599	0.25
14	Xu Dang	3,054	0.12
15	San Chay	3,366	0.13
16	Co Ho	2,573	0.1
17	Cham	4,568	0.17
18	San Diu	4,203	0.16
19	Hre	4,196	0.16
20	Mnong	2,431	0.09
21	Raglai	1,962	0.07
22	Xtieng	1,905	0.07
23	Bru-Van Kieu	1,531	0.06
24	Tho	2,571	0.10
25	Giay	2,399	0.09
26	Co Tu	1,700	0.06
27	Gie Trieng	785	0.03
28	Ma	1,279	0.05
29	Kho mu	806	0.03
30	Co	1,190	0.05
31	Ta Oi	1,199	0.05
32	Cho Ro	996	0.04
33	Khang	147	0.01
34	Xinh Mum	573	0.02
35	Ha Nhi	625	0.02
36	Chu Ru	4	0
37	Lao	700	0.03
38	La Chi	217	0.01
39	La Ha	0	0
40	Phu La	183	0.01
41	La Hu	66	0
42	Lu	133	0.01
43	Lo Lo	10	0
44	Chut	64	0
45	Mang	0	0
46	Pa Then	328	0.01
47	Co Lao	5	0
48	Cong	2	0
49	Bo y	26	0
50	Si La	2	0
51	Pu Peo	8	0
52	Brau	4	0
53	Foreigner	261	0.01
54	Others	317	0.01

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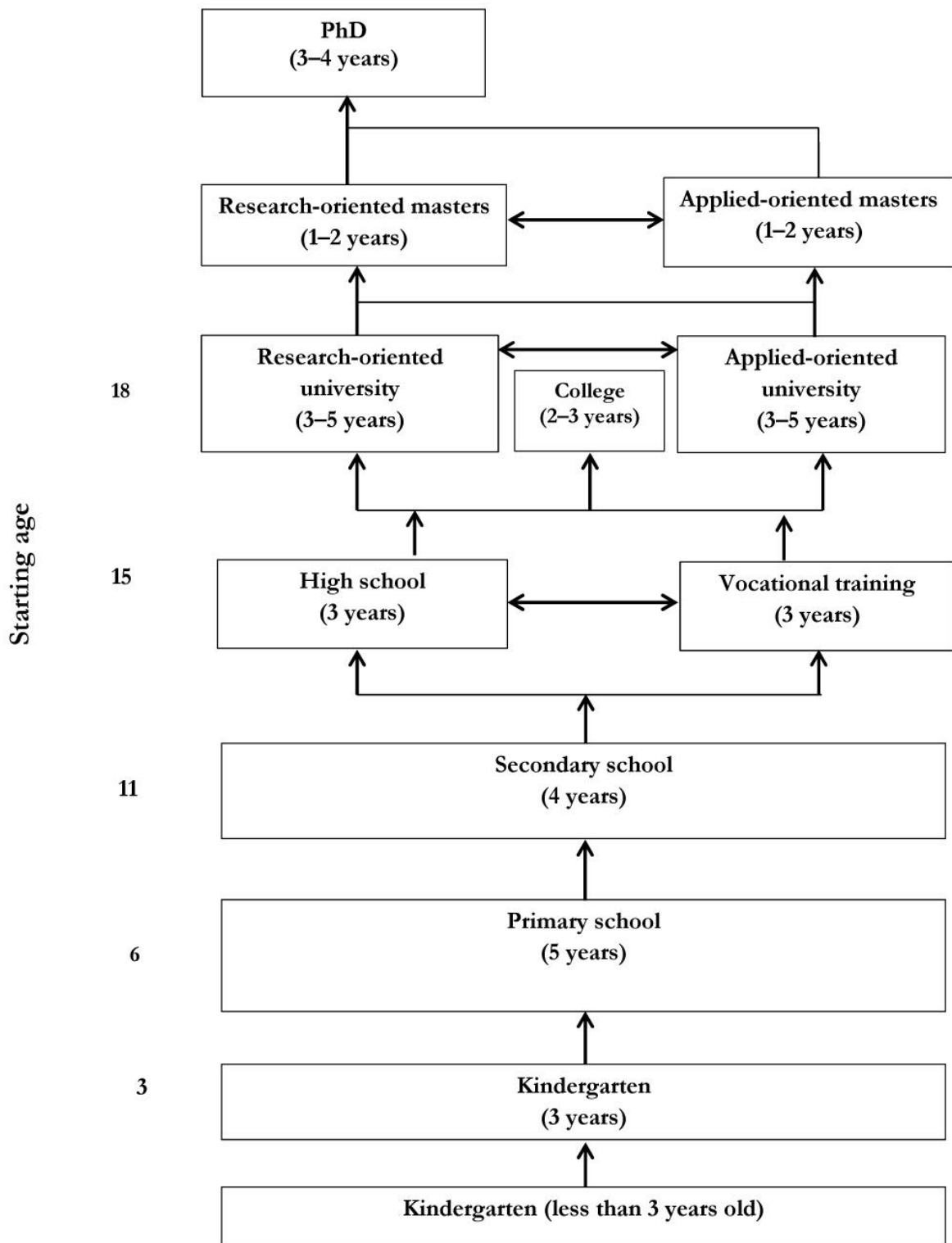
Source: author's calculations using VPC data.

### A3 Horizontal inequality in education for the population older than 25 years

	Data source	Year	Ethnicity	Religion	Region	Gender	Rural/urban
GCOV	VPC	1989	0.089		0.139	0.105	0.148
		1999	0.154	0.090	0.146	0.104	0.146
		2009	0.136	0.077	0.154	0.154	0.167
	VHLSS	1998	0.187	0.106	0.149	0.130	0.124
		2008	0.182		0.174	0.095	0.163
		2012	0.179		0.185	0.081	0.169
GGini	VPC	1989	0.026		0.075	0.052	0.062
		1999	0.040	0.034	0.080	0.052	0.064
		2009	0.044	0.030	0.061	0.040	0.077
	VHLSS	1998	0.056	0.044	0.083	0.065	0.054
		2008	0.054		0.097	0.048	0.074
		2012	0.058		0.104	0.040	0.078
GTheil	VPC	1989	0.004		0.010	0.005	0.010
		1999	0.016	0.004	0.011	0.005	0.010
		2009	0.010	0.003	0.011	0.003	0.013
	VHLSS	1998		0.006	0.011	0.008	0.007
		2008	0.022		0.015	0.005	0.013
		2012	0.021		0.017	0.003	0.014

Source: author's calculations using VPC and VHLSS data.

A4 Viet Nam's education system



Source: based on Decision No. 1981/QĐ-TTg in 2016 by the prime minister on the education system framework.