Pro-poor growth, poverty, and inequality in rural Vietnam: welfare gap between the ethnic majority and minority

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Abstract
This study explores the effects of Vietnam's transition on the welfare of the ethnic majorities (Kinh and Chinese) and minority groups in rural Vietnam. It draws on five rounds of household surveys. It is first observed that the pace of poverty reduction for minorities has surpassed the former over the period 2002 to 2006, although national poverty is still concentrated in the minority group. Secondly, the disparity in living standards has been widening. In particular, the contribution of inequality between the majority and minority to total inequality has doubled over these periods. Thirdly, the study shows that the pure effect of economic growth on poverty is estimated to have been greater if inequality remained constant. It is noted that economic growth between 1993 and 2006 was relatively "pro-poor" for the Khmer, and Central Highland minorities while it was "non pro-poor" for the majority, Northern Upland and other minorities. Finally, decomposition analysis also confirms that the ethnic minority are poorer not necessarily because they hold lower endowments than the majority, but because they have lower returns to their endowments even if they have the same level of characteristics as the majority. This suggests that the programmes of the government and the development agencies that aim to enhance the endowment of the minority may be less effective than other approaches. For example, an anti-poverty programme to address the existing structural differences such as improving the quality of their endowments is vital for further poverty reduction and this requires precise investigation of the different socio-economic circumstances affecting the minority groups.

Key words: Vietnam, Ethnic minority, Growth, Poverty, Inequality, Decomposition

JEL codes: C21, I32, P36

1. Introduction

Vietnam has shown a distinguished performance in poverty alleviation since the *Doi moi*, economic reforms were enacted in 1986. As an early achiever of UN's Millennium Development Goals (MDGs), Vietnam has been now keeping steady progress towards its own and more specific targets – the Vietnam Development Goals (VDGs). The poverty headcount ratio has plummeted in recent years: from 57.1 % in 1993, 37.3 % in 1998, 28.8 % in 2002, 19.5 % in 2004, to 16.0 % in 2006[1]. However these aggregate numbers, disguise the chronic poverty of Vietnam's ethnic minorities and for the VDGs, enhancing the living standards of these groups will prove to be a more demanding challenge, as they still account for a disproportionately large share of the poor. Furthermore, vulnerability as expected poverty (VEP), for all of the minority groups is also much higher remains (in 2006) well above that of the majority (see Chaudhuri, Jalan and Suryahadi, 2002)[2]. This study focuses on the changes of poverty, inequality and growth as they apply to minority communities in rural Vietnam during the latter years of the transition. It aims to both chart the changes over the period since 1993, and so offer insights on the effectiveness of government and donor policy responses.

Vietnam is a multi-ethnic society, consisting of 54 ethnic groups, of which Kinh Vietnamese accounts for 86% of national population. Kinh along with Chinese (Hoa) are usually classified together as the majority and the remaining 52 smaller ethnic groups are referred to as the minorities. On the other hand, Baulch, Chuyen, Haughton and Haughton (2007) classified the minorities into several homogenous categories, following discussion

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[1] Poverty rates used here are based on the international poverty line which was devised by the Vietnamese General Statistics Office (GSO) to reflect food expenditure for an intake of 2100 calories a day and corresponding non-food expenditure. The basket of food and non-food items is determined by the consumption patterns of the third quintile of households in terms of per capita expenditure. The poverty lines were VND 1.16 million per person per year in 1993, VND 1.79 million in 1998, VND 1.92 million in 2002, VND 2.07 million in 2004 and 2.56 million in 2006.

[2] Drawing upon the 2006 Vietnam Household Living Standards Survey (VHLSS), the estimate of VEP for the rural minority groups was 0.44, i.e. the minority groups has, on average, 40% of probability of falling into poverty in the future. This is highly contrasted with 4.2% of probability for the majority group.

with local anthropologists – Kinh majority, Hoa (Chinese), Khmer, Central Highland (CH) minority, Northern Upland (NU) minority. Although they had integrated smaller minority groups, which was defined as "Other minority" in VLSS, into NU and CH minority groups, we define these as being "Other ethnicity". This is because the households in the "other" category are spread across the country and their geographical living conditions are likely to be very different from the circumstances of Northern Upland and Central Highland regions. The ethnic categorization for the present study is therefore as follows: Majority (Kinh Vietnamese and Chinese) and Minorities (Khmer; NU minority; CH minority; Other ethnicity).

The minorities tend to inhabit less productive areas geographically (remote or mountainous areas), with poor access to infrastructures or health and education facilities and to have lower living standards than the majority. Yet their geographic location explains only part of the disparities living standards between two groups (Van de Walle and Gunewardena, 2001; Swinkels and Turk, 2006; Baulch et al., 2007; Baulch, Pham and Reilly, 2008; World Bank, 2008).

Previous studies to explain welfare gap between ethnic majority and minorities applied the Blinder-Oaxaca decomposition which separately identifies the wage gap between two groups into a part due to differences in socio-economic characteristics and another part due to structural differences in the returns to these characteristics (Blinder, 1973; Oaxaca, 1973). Using 1993 Vietnam Living Standard Survey (VLSS), Van de Walle and Gunewardena (2001) show that there are systematic differences in characteristics and the returns to those characteristics, most of which are in favour of the majority group. Baulch et al. (2007) using VLSS1998 and Imai and Gaiha (2007) using VHLSS 2002 and 2004 show a similar result to Van de Walle and Gunewardena (2001) and confirm that structural component, in general, has became larger. However, none of these studies has explored how economic growth during

Vietnam's transition towards market economy had differently influenced on the poverty and inequality according to ethnicity.

This study attempts to address three main questions: (1) how the incidences of poverty and inequality have changed during the twenty years of economic transition; (2) to what extent any changes in poverty by ethnic group can be explained by variations in economic growth and inequality; and (3) how the welfare disparity between the ethnic majority and minority groups evolved over time and what is the main driver of any disparities between the two groups. Several analytical tools which were recently developed will be employed to answer these questions. For the last question, the present study will take advantage of regression-based analyses used in the associated literature, and so will confirm whether the established findings still hold. To chart the changes over the period since 1993, the study draws upon five rounds of Vietnamese household data covering most of the economic transitional period from 1993 to 2006.

2. Data

The present study makes use of the Vietnam Living Standard Surveys (VLSS) 1993 and 1998, and Vietnam Household Living Standard Surveys (VHLSS) 2002, 2004 and 2006, ensuring near complete coverage of the entire transition period. Both VLSSs and VHLSSs were designed to collect detailed data on households and communities (and market prices in the case of the VLSSs), and were implemented by Vietnam Government Statistical Office (GSO) under donor funding and technical support. Both VLSSs and VHLSSs are multi topic household surveys with nationally representative household samples[34]: They commonly cover

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[3] While VLSSs were widely recognised as being of high quality, they required additional surveys, called Multi-Purpose Surveys (MPHS), to provide estimates at provincial level due to the relatively small sample sizes; the total sample size of VLSS 1993 and 1998 are 4,800 and 6,000 households respectively. In 2002, VLSSs and

a wide range of issues, including household composition and characteristics (e.g. education and health), expenditures on food, non-food items, health and education, income by source (e.g. wage and salary, farm or non-farm production), employment and labour force participation, housing, ownership of assets and durable goods. The accompanying commune survey collects information on rural infrastructure and commune characteristics. The total sample size of VHLSS 2002, 2004 and 2006 are 30,000, 9,300 and 9189 households respectively, with each have similar modules, including income and consumption expenditure data (Small sample version). Due to our focus on rural Vietnam as well as missing observations, the present study relies on a final sample size of 3,590 for 1993, 3,615 for 1998, 22621 for 2002, 6,737 for 2004 and 5,493 households in 2006.

3. Growth, Inequality and Poverty

3.1. Incidence of Poverty between 1993 and 2006

Poverty head count ratio in Vietnam fell from 57.1 % in 1993 to 16.0 % in 2006 (Table 1). Table 1 shows that the urban poverty rate has been stabilised, although it appears to have slightly increased in the most recent survey, as it approaches zero. In contrast, the rural sector has maintained a rapid pace of poverty reduction though the level of reduction has slowed, reporting a fall of 4.5 percentage points per year in the 1990s and 3.8 percentage points per year in 2000s. In Vietnam, poverty is largely a rural phenomenon and approximately 13.7 million of people were estimated to be poor in 2006.

(Table 1 here)

MPHS were merged into VHLSSs to cover the larger sample of household with some simplification of the questionnaires to minimize measurement errors (Imai, Gaiha and Kang, 2007).
[4] VHLSSs, in particular 2002 survey, is often criticised regarding the way of sampling method (e.g. lack of information with regard to migrants in urban areas). See Pincus and Sender (2006) Evans and Harkness (2008)

One notable trend with regard to Vietnam's poverty appears in the ethnic minority data. The annual rate of decline in poverty during the 1990s for these groups was much lower than for their majority counterparts, who were the major beneficiaries of economic growth in the initial stages of the transition. However, the pace of poverty reduction for the former groups surpassed the latter over the period 2002 to 2006 (4.5 vs. 3.9 percentage points per year). Although more than half of the ethnic minority population still lack the resources to satisfy the minimum basic necessities of living standards. This recent more rapid decline might be partly explained by the government's national targeted programmes (NTPs). Two of the most successful NTPs are Programme 135 (P135) and the Hunger Eradication and Poverty Reduction programme (HEPR): P135 was established in 1998 aiming to improve the living standards of mainly ethnic minority people, who lagged behind economic growth; while HERP was established in 1996 to provide the poor (as defined by Ministry of Labour, Invalids and Social Affairs (MOLISA)) with a number of supports including credit, health care and education.[5] These reductions, however, cannot be attributed sorely to these government interventions. Rather, it might be more plausible to argue that while the ethnic majorities have been able to adapt themselves to the new market economy quickly because of socio-economic as well as geographical advantages, the minorities were incorporated into the market based system as the transition process has matured.

Table 1 also provides poverty estimates for each defined minority group – Khmer, NU minority, CH minority and the Other ethnicity category. The Khmer are the better-off group among these, recording not only the lowest incidence of poverty in each survey year (34.6% in 2006) but also the fastest poverty reduction, an annual 3.3 percentage points decline, during

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[5] The current second phase of P135 as a five year programme (2006-2010) targets the poorest, the most disadvantaged ethnic minority in 1,644 poor and mountainous communes. It consists of four broad components: 1) Market-oriented agricultural production, 2) Community infrastructure, 3) Capacity building and 4) Improved socio-cultural livelihoods.

the entire transition period. The Khmer, are ranked second following the Thai Vietnamese, and are likely to have enjoyed better economic opportunities than other minority groups since they inhabit the Mekong Delta and the South East coast while other ethnic minorities live the more mountainous areas of Vietnam.

3.2. Pro-Poor Growth

It is evident that the prominent driver of poverty reduction for both the majority and minorities in rural Vietnam has been long-run economic growth. The arising question is whether and how much the gains from economic growth were distributed in favour of the poor? This sub-section examines how economic growth has had different effects on the living standards of the households according to their ethnicity. One way of such investigation is providing the summary measure of the rates of pro-poor growth that takes account of the extent to which the poor has benefitted from the economic boom over a certain period. Ravallion and Chen (2003) define the "Growth Incidence Curve" (GIC) as to show how the growth rate for the pth percentile varies across population ranked by income (or consumption expenditure) and propose a rate of pro-poor growth as the mean growth rate for the poor (rather than the growth rate in the mean for the poor)[6].

The GIC over the period 1 to 2 can be calculated as follows:

$$g_{1,2}(p) = \left[\frac{y_2(p)}{y_1(p)} \right] - 1 = \frac{\mu_2 L_2'(p)}{\mu_1 L_1'(p)} - 1$$

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[6] There are a number of different definitions of pro-poor growth. See Kakwani, Khandker and Son (2004) for the summary of the existing measures of pro-poor growth.

where $y_t(p)$ is the income of the pth percentile at time t; μ_t and $L_t(p)$ represent respectively mean income and the Lorenz curve that shows the cumulative proportion of the population and the cumulative proportion of income ($L_t'(p)$ is the slope of the Lorenz curve).

The rate of pro-poor growth is defined as follows:

$$\text{Pro-Poor Growth} = \frac{\int_0^{H_1} g_{1,2}(p)dp}{H_1}$$

where H_1 $(= F_1(z))$ is the headcount ratio of poverty at time 1.

Table 2 provides the estimated rates of the pro-poor growth for the overall population at the 10th, 20th, and 30th percentiles of the population and Figure 1 plots the annual consumption growth rate following the consumption expenditure percentile.

(Table 2 here)

(Figure 1 here)

As shown in Table 2, the 10th, 20th, and 30th percentiles (the poorest groups) regardless of their ethnic category except the other ethnicity group have benefited from high economic growth. Note that the lowest annual growth in per capita expenditure is 2.89 % at the poorest 30th percentile of the NU minority. Most groups, however, report lower estimates than the average of overall population, indicating that the economic growth during transition to a market economy was not pro-poor in a relative sense. Specifically that, the higher percentile groups in the "Vietnam", "Rural" and "Majority" categories, appear to achieve the higher growth rates. On the other hand, it should be noted that the poorest 10th to 20th percentiles

group in the minority group record a higher growth rate than the mean rate for the overall (minority) population.

Rates are also provided for sub-groups of the ethnic minorities. It is clear that economic growth was non pro-poor for the NU minority while it was pro-poor for CH minority in relative as well as absolute terms. We have already seen in the previous section that the NU minority not only records lower a poverty headcount ratio than the CH minority but also higher annual rate of declining poverty. Therefore, the higher percentiles groups among the NU minority poor, just below the poverty threshold, are thought to have been benefited from economic growth and been able to escape from poverty relatively easily. For the CH minority, the progress of poverty reduction seems to be slower as economic growth has promoted the living standards of the very poorest more than those just below poverty line. The most lagging category is the other ethnicity group. It not only has the lowest mean growth rate among ethnic minority groups in rural Vietnam, but also shows a negative consumption growth rate for the poorest percentiles within the group.

3.3. Change in Inequality

In this section we examine how the growth process during the transition has affected the initial level of inequality. Taking 1993 as a base year we track the Gini coefficient, which is based on the Lorenz curve and two versions of the Generalised Entropy (GE) measure.

The Gini coefficient is defined as follows:

$$Gini = \frac{1}{2N^2 \overline{y}} \sum_{i=1}^{N} \sum_{j=1}^{N} \left| y_i - y_j \right|$$

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where $\bar{y}$ is mean income (or consumption expenditure) and N is the number of households in sample

The Gini coefficient ranges from 0 to 1, representing perfect inequality with 1. Although the coefficient is a popular measure of inequality, it cannot be easily be decomposed (the sum of the Gini coefficients of population sub-groups is not equal to the total Gini coefficient of the population)[7].

As an alternative to the Gini coefficient, we also calculate the General Entropy (GE) class of measures. This measure satisfies the desirable properties mentioned in footnote 8. It is defined as:

$$GE(\theta) = \frac{1}{\theta(\theta - 1)} \left[\frac{1}{N} \sum_{i=1}^{N} \left(\frac{y_i}{\bar{y}} \right)^{\theta} - 1 \right]$$

where θ is a discretionary parameter that represents the weight given to distances between incomes at different parts of the income distribution, and can take any real value.

The value of GE measure ranges from zero to infinity, representing higher inequality with higher value. It is more sensitive to changes at the lower (upper) tail of the distribution (i.e. the poorest) for lower (higher) values of θ, and is equally sensitive to changes across the distribution for θ equal to 1.

With $\theta = 0$, we obtain Theil's L index, often referred to as the Mean Log Deviation:

$$GE(0) = \frac{1}{N} \sum_{i=1}^{N} \log \frac{\bar{y}}{y_i}$$

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[7] The criteria for a desirable measure of inequality: Income Scale Independence, Principle of Population, Anonymity, Decomposability. See Litchfield (1999) for the excellent summary of Inequality measure.

With $\theta = 1$, we obtain Theil's T index:

$$GE(1) = \frac{1}{N}\sum_{i=1}^{N}\frac{y_i}{\bar{y}}\log\frac{y_i}{\bar{y}}$$

And with $\theta = 2$, we obtain:

$$GE(2) = \frac{1}{2N\bar{y}^2}\sum_{i=1}^{N}(y_i - \bar{y})^2$$

Under the GE measures, total inequality I can be decomposed into a component of inequality between different sub-groups of the population or different regions, I_b and the remaining within group component, I_w.

$$I = I_w + I_b = \sum_{j=1}^{k}v_j^{\theta}w_j^{1-\theta}GE(\theta)_j + \frac{1}{\theta(\theta-1)}\left[\sum_{j=1}^{k}w_j\left(\frac{\bar{y}_j}{\bar{y}}\right)^{\alpha} - 1\right]$$

where v_j is the income share of group j $(j = 1, 2, ...k)$; w_j is the population share of group j and $\bar{y}_j$ is the mean income of group j.

Table 3 reveals that rural Vietnam has shown, using both measures, a moderate increase in inequality in per capita consumption expenditure between 1993 and 2006.

(Table 3 here)

While there was a decline in inequality in the first period (1993-1998), both Gini coefficient and GE measures have gradually risen since 2002. In particular, the higher rate of increase given by GE(0) than GE(1) (17.1% vs. 13.8%) implies that the distribution of consumption expenditure per capita became more unfavourably at the lower part of the

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distribution (i.e. for the poor). On the other hand, By decomposing GE(0) index it is observed that the increase in total inequality is more likely to be attributed to rising inequality between the ethnic majority group and the minorities. The share of the "between" component of inequality has doubled during the transition period, accounting for 14% of total inequality in 2006. Furthermore, in contrast to the majority group where the change in inequality is moderate, though the level of inequality is high, inequality within the ethnic minorities has worsened significantly between 1993 and 2006.

In the earlier section, one reason of the recent declining poverty ratio for minorities group was given to their progressive integration into the new economic system. We might interpret the relatively worsening of "within" inequality in ethnic minorities as the result of the different socio-economic behaviour according to ethnic origin. Among 52 minorities, certain ethnic minority groups still retain their own culture, economic behaviour and even their own language whereas other groups are relatively homogeneous and assimilated with the Kinh majority including the Chinese Vietnamese. It, therefore, is possible that the latter have better economic opportunities to benefit from transition than the former, following the majority who had incorporated themselves in earlier stages of the transition into the new economic system. The arguments put by Baulch et al. (2007) follow this line - that *"There are, therefore, at least two paths to prosperity for the ethnic minorities. One path is to assimilate, both economically and culturally, with the majority group…. A second path, pursued by such groups as the Khmer and Thai, is to integrate economically with the Kinh while retaining their own group's cultural identity."* (Baulch et al. 2007; pp.1174)

3.4. Decomposition of Changes in Poverty

The change of poverty can be decomposed into two effects: one resulting from the change in mean income or consumption expenditure (found by isolating the change while holding the distribution of wealth among population constant); and a distribution effect (found by holding mean income constant). It is, for example, possible that poverty could decline without any economic growth in a given period, so long as redistribution took place towards the poor. We, hence, go on to investigate the relative contributions of growth and the redistribution components to the poverty changes. This provides useful insights for understanding the impact of economic growth in rural Vietnam and its effect on the poor.

There are several frameworks that offer a means decomposing changes in poverty into growth and redistribution components. Datt and Ravallion (1992) devised a method with the initial period as a reference anchor point which decomposes the change of poverty into growth, redistribution and residual components. Of course this prompts questions on interpretation of the residual term, being the difference between the growth (redistribution) components evaluated at the terminal and initial Lorenz curves (mean incomes) respectively, in essence it arises due to the index number problem. Since it occasionally can be larger than the other components, alternative methods have been suggested. Another limitation is asymmetry consideration of the initial and terminal periods by using a benchmark period.

To overcome these limitations, Kakwani (1997) developed an alternative formulation using axiomatic approach in which the residual term is averaged between the other components. Another alternative is a Shapley-valued based decomposition, proposed by Shorrocks (1999). Although these alternative methods adopt different terminologies in decomposing poverty change into the effects of growth and redistribution components, they produce essentially the same results, which suggest the exact decomposition and symmetry

factors. The idea underlying of these alternatives is computing the effect of each component by taking an average of the corresponding components based on the initial and the terminal year (Duclos and Araar, 2006). Formally:

$$\Delta P = P_1 - P_0 = G + D$$

$$G = \frac{1}{2}\left[P\left(\frac{z}{\mu_1}, L_0\right) - P\left(\frac{z}{\mu_0}, L_0\right)\right] + \frac{1}{2}\left[P\left(\frac{z}{\mu_1}, L_1\right) - P\left(\frac{z}{\mu_0}, L_1\right)\right]$$

$$D = \frac{1}{2}\left[P\left(\frac{z}{\mu_0}, L_1\right) - P\left(\frac{z}{\mu_0}, L_0\right)\right] + \frac{1}{2}\left[P\left(\frac{z}{\mu_1}, L_1\right) - P\left(\frac{z}{\mu_1}, L_0\right)\right]$$

where G and D represent the growth and redistribution effects respectively; z is the poverty line; μ_t is the mean income at period; L_t is the Lorenz curve representing the structure of relative income inequalities at each period[8].

Our decomposition of poverty changes is reported in Table 4 and illustrated in Figure 2[9]. It is clear that poverty reduction in Vietnam's case has largely been determined by increases in consumption expenditure as a proxy of households' welfare.

(Table 4 here)

(Figure 2 here)

The positive sign on the redistribution component indicates a negative impact on poverty reduction due to worsening inequality. Hence, the national poverty would have

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[8] The poverty measure is homogenous of degree zero in μ_t, and z, meaning that poverty will remain unchanged if both indicators change by the same portion. If an expected function of the Lorenz curve is chosen from either Beta or General Quadratic (GQ) forms, one can calculate the poverty measures (the head count index, the poverty gap index, and the squared poverty gap index)   using the formulas in Datt (1998). See Datt (1998) for more details of computational tools for poverty measure.

[9] For poverty decomposition, the present study use Distributive Analysis Stata Package (DASP). See Araar and Duclos (2007).

declined further as a result of economic growth if inequality had not changed - i.e. a realised decline of -0.392 versus a potential -0.412 decline (as given by the growth component during 1993-2006).

In contrast to the pattern observed with the majorities where the inequality component continued to offset the growth impact within each period, the contribution of inequality to poverty change has declined for minorities. Moreover, during the most recent period (2004-2006), poverty reduction within minority groups has been driven both by economic growth (-0.07) and by redistribution (-0.017). The decomposition results for the Khmer minority shows the greatest volatility (not only in terms of sign but also magnitude). For instance, this group benefited from an exceptionally high economic growth effect on poverty reduction during 2002-2004, but suffered from an offsetting substantial inequality: the realised decline was 0.153 versus a potential 0.237 decline due to growth. However, during the following 2004-2006 period, a relatively large contribution was observed from improving inequality change. The decline in poverty in the same period resulted predominantly from the change in distribution. For the Northern Upland minority, the contribution of redistribution into poverty change is, regardless of being positive or negative, small in each period. Distributional changes within this group during 1993-2002 reduced the effect of growth on poverty change, whereas in the later periods greater equity augmented the impact of growth on poverty reduction. On the other hand, the size of inequality component for the Central Highland minority had increased over time and reduced the contribution of economic growth to the decline in poverty except in the 2002-2004 period. Specifically, it reduced the effect of growth from a potential -0.095 to a realised reduction of -0.045.

We have seen how poverty and inequality have evolved over the period since 1993; in addition, that the poverty orientation of growth (measured by increase in consumption expenditure per capita) has differentially reduced poverty in ethnic groups.

In next section, we will investigate the size and changes of the welfare disparities during the same period. We will discuss whether these disparities arise more from differences in household endowments or from structural differences (specified in terms of a measure of 'discrimination') using regression based analyses.

4. Regression Analysis

Many studies have explored the welfare gap between Vietnamese ethnic majority and minorities groups (Van de Walle and Gunewardena, 2001; Baulch et al., 2007; Imai and Gaiha, 2007; Baulch et al., 2008). One common methodological adopted is the regression based decomposition analysis, given by the well-known the Blinder-Oaxaca decomposition, proposed by Blinder (1973) and Oaxaca (1973) in order to identify wage discrimination in labour market[10]. This study takes advantage of that approach in order to examine the welfare gap between two groups. We set up models taking account of the determinants of consumption and poverty within each ethnic majority and minority group in the first two-sub sections, and discuss the decomposition analysis results in the final sub-section.

4.1. Determinants of Consumption

In investigating the determinants of households' consumption for ethnic majority and minorities, it is crucial to allow for unobserved geographic effects on the level of living standard since the location of a household might be an important exogenous factor

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[10] The application of Blinder-Oaxaca type of decomposition to Vietnam can also be found from Glewwe, Gragnolati and Zaman (2002), Takahashi (2007), and O'Donnell, Doorslaer, Wagstaff and Lindelow (2008) (Chapter 12), though these studies do not examine the inequality on ethnicity.

determining the household's living standards and be correlated with the explanatory variables describing a household's characteristic. Molini and Wan (2008), for instance, find that the most important determinant of inequality in rural Vietnam during 1993-1998 was location[11]. In addition, the highest incidence of poverty is observed in the location where ethnic minority households are predominant. Although domestic migration during the 1990s had increased, migrants are mainly observed in the three biggest cites (Hanoi, Da Nang, and Ho Chin Minh City) and mobility between rural areas is still limited (Van de Walle and Gunewardena, 2001; Niimi, Pham and Reilly, 2008). Omitting the location controls, thus, could result in biased estimates (Van de Walle and Gunewardena, 2001; Gang, Sen and Yun, 2008).

Following the model specification adopted in previous studies, we estimate the log of per capita consumption expenditure for i^{th} household of ethnic group j in k^{th} commune ($\ln c_{ijk}$) taking into account a vector of household characteristics (X_{ijk}), commune fixed effects (η_{ij}) and a random error term (ε_{ijk})[12]

$$\ln c_{ijk} = \alpha_j + X_{ijk}\beta_j + \eta_{ij} + \varepsilon_{ijk}$$

where α_j is a constant error term and ε_{ijk} is a random error term.

Household characteristics (X_{ijk}) include the age of a household head, gender of the head of household, their marital status, the share of female members, the dependency burden, the highest educational attainment of household members, the ratio of household members

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[11] Molini and Wan (2008) investigate the determinants of total inequality in rural Vietnam during 1993-1998. Their approach, proposed by Wan (2004), is appealing in that it quantifies the contributions of fundamental variables to total inequality, while the Blinder-Oaxaca decomposition decomposes the welfare gap between two population groups.
[12] The (unobserved) commune fixed effects is included into the model, it can be eliminated by transforming the data in deviations from within commune means (Wooldridge, 2002).

working in the industrial sector, the sizes of agricultural, sylvicultural, and aquacultural lands. We also include a dummy variable for whether a household receives remittances external to the household members, and dummy variables describing whether a household resides in a temporary as a base, semi-permanent or permanent dwelling.

Instead of a commune fixed effects specification, we also run a regression with an alternative specification that includes a series of regional dummy variable as follows:

$$\ln c_{ijk} = \alpha_j + X_{ijk}\beta_j + D_j\gamma_j + \varepsilon_{ijk}$$

where D_j denotes the serious of regional dummy variables.

4.2. Determinants of Poverty

The analysis of the determinants of poverty is carried out by estimating households' probability of being consumption poor. A probit model, therefore, is used to estimate whether a household's per capita consumption expenditure was below the poverty line, conditioned on a vector of household characteristics including the regional dummy variables (X_{ij})[13].

$$\Pr(Y_{ij} = 1) = \Phi(X_{ij}\beta_j)$$

where Y_{ij} is a binary choice variable, taking one if $\ln c_{ij} < \ln z$ and zero otherwise, and $\Phi(.)$ is a standard normal cumulative distribution function

4.3. Decomposition analysis

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[13] Although the conditional fixed-effects logit model can be specified alternatively, it is not carried out for the present study. Imai and Gaiha (2007) analyse the determinants of poverty, based on both the probit and the conditional fixed effects logit model specifications for 2002 and 2004.

As mentioned earlier, we implement the Blinder-Oaxaca decomposition (1973) for the mean difference in consumption per capita and the likelihood of poverty between majority and minority groups. Following Yun (2004), the general form of decomposition at meal level can be expressed as follows:

$$\overline{V}_{ma} - \overline{V}_{mi} = \sum_{i=1}^{k} W_{\Delta X}^{i} \left[\overline{(F(X_{ma}\hat{\beta}_{ma})} - \overline{(F(X_{mi}\hat{\beta}_{ma})} \right] + \sum_{i=1}^{k} W_{\Delta\hat{\beta}}^{i} \left[\overline{(F(X_{mi}\hat{\beta}_{ma})} - \overline{(F(X_{mi}\hat{\beta}_{mi})} \right]$$

where V is a dependent variable indicating, in this study, consumption expenditure per capita ($\ln c$) or the probability of poverty (P).

$$W_{\Delta X}^{i} = \frac{(\overline{X}_{ma}^{i} - \overline{X}_{mi}^{i})\hat{\beta}_{ma}^{i}}{(\overline{X}_{ma} - \overline{X}_{mi})\hat{\beta}_{ma}},$$

$$W_{\Delta\hat{\beta}}^{i} = \frac{\overline{X}_{mi}^{i}(\hat{\beta}_{ma}^{i} - \hat{\beta}_{mi}^{i})}{\overline{X}_{mi}(\hat{\beta}_{ma} - \hat{\beta}_{mi})}, \text{ and } \sum_{i=1}^{k} W_{\Delta X}^{i} = \sum_{i=1}^{k} W_{\Delta\hat{\beta}}^{i} = 1.$$

The first term indicates the contribution of different household's characteristics or endowments to mean difference of the dependent variable – *the characteristic component* (C); and the second term represents the contribution of different returns to those households' characteristics – *the structural component* (S). The detailed decomposition methodology using weights, as an extension of the Blinder-Oaxaca decomposition proposed by Yun (2004), and disaggregates the differences in C and S into individual contributions. While the characteristic component could reflect discrimination itself (i.e. a lower endowment for the ethnic minority), the structural component could be non-zero even if there is no discrimination against a group as returns could be lower due to locational disadvantage (e.g.

lower returns to land because of geographical isolation or other environmental factors) (Imai and Gaiha, 2007).

In this study, the general form is reduced to the following different types:

1) $\ln \bar{c}_{ma} - \ln \bar{c}_{mi} = (\bar{X}_{ma} - \bar{X}_{mi})\hat{\beta}_{ma} + \bar{X}_{mi}(\hat{\beta}_{ma} - \hat{\beta}_{mi})$

This is identical to the standard Blinder-Oaxaca decomposition equation. The previous studies in Vietnam are based on this linear model, taking the dependent variable as (log) consumption expenditure per capita.

2) $\bar{P}_{ma} - \bar{P}_{mi} = \sum_{i=1}^{k} W_{\Delta X}^{i}\left[\overline{(\Phi(X_{ma}\hat{\beta}_{ma})} - \overline{(\Phi(X_{mi}\hat{\beta}_{ma})}\right] + \sum_{i=1}^{k} W_{\Delta\hat{\beta}}^{i}\left[\overline{(\Phi(X_{mi}\hat{\beta}_{ma})} - \overline{(\Phi(X_{mi}\hat{\beta}_{mi})}\right]$

where $\bar{P}$ is the average predicted poverty. This probit decomposition is applied in Gang et al. (2008) and Imai and Gaiha (2007) in order to analyse the predicted poverty incidence gap in India and Vietnam respectively. Yun (2005) uses it to examine differences in labour market participation rates.

5. Results

5.1. The determinants of (log) consumption

We present the results of estimation based on the model described in the previous section. Table 5 contains the regression results from the equation on the determinants of household's consumption level, with commune fixed effects.

(Table 5 here)

In Table 5 we observe a similar pattern for the ethnic majority and minority across the surveyed years. For example, being more educated, working in industry, owning land and living in either permanent or semi-permanent house, in general tend to increase a household's per capita consumption level (as expected) and are statistically significant in most cases for both groups. In contrast, having a family member aged below 15 or one above 65 is likely to negatively affect a household's standard of living and is statistically significant in all cases for both groups in every year. Similarly, the higher the ratio of females to males within a household, the lower consumption expenditure is likely to be, though this is statistically insignificant is some years. The head of household's age has a positive and significant effect on household consumption for the majority, but becomes negative for the minorities and statistically insignificant in most years. While the magnitude of most covariates for the ethnic majority and minorities differ from year to year, the effects of the ratio of household members working in industry and aqua-cultural land ownership appear both economically and statistically to be significantly larger in minorities than in the majority in almost all years.

As described in section 4, we have also estimated the (log) consumption equation including a set of regional dummy variables instead of taking account of the commune fixed effects and the estimation result is reported in Table 6.

(Table 6 here)

The results are in general similar to those in Table 5. At regional level, households in the ethnic majority group living in the Central Highlands region are likely to take higher

living standards than those in Red River Delta, North East, North West and Central Coast regions, and to have lower consumption level than those in South East and Mekong River Delta regions. In contrast, living in the Central Highlands seems to negatively influence the living standards of a household belonging to minorities compared to elsewhere in rural Vietnam.

5.2. The determinants of poverty

The results of the probit estimation show simply the opposite sign of the coefficient as we investigate the determinants for the probability of poverty in the present sub-section. The positive (negative) sign, hence, is given to a coefficient if the corresponding variable is likely to be positively (negatively) associated with a household's poverty.

(Table 7 here)

For example, educational status, the higher ratio of household members working in industry, and land ownership are likely to decrease the likelihood of poverty; a higher female ratio and dependency burden are associated with the higher probability of poverty for both majority and minority groups.

5.3. Decomposition

Our decomposition analysis observes that the welfare gap can be attributed more to the difference in the structural component, which is consistent with the findings of the previous studies.

(Table 8 here)

It is useful to note some additional key findings. First, the disparity between the ethnic majority and minorities groups in rural Vietnam, measured either by per capita consumption expenditure or by the probability of poverty, had sharply increased between 1993 and 1998 and since then has oscillated around a certain level. This would be plausible as it is likely that the majority group would have taken advantage of the economic boom in the early stage of transition and the minorities somewhat later. Second, whichever a specification was used, the mean difference in per capita consumption expenditure between the ethnic majority and minorities can be explained more by the difference in the returns to their endowments than difference in a household characteristics. Moreover, the relatively larger contribution of the structural component has considerably increased over time except for 2004 where its share fell slightly. While the structural component, for example, accounted for 66.8% (in the model with commune fixed effects), and 56.9% (in the model with the regional dummy variables) of the aggregate (mean) difference in 1993, by 2006 it had risen to 78.7% and 64.4% respectively.

From poverty decomposition it is clear that the increasing contribution of the structural component is more substantial. Unlike the consumption expenditure decomposition, disparity in the probability of poverty in 1993 was decomposed into characteristic and structural components – respectively 0.13 (58.7%) and 0.09 (41.3%). However, the share of the latter on the difference of the (mean) probability of poverty between two groups has been reinforced over time, rising to 75.6 % in 2004

6. Conclusions

The present study has examined the changes of poverty, inequality and growth in rural Vietnam and the role played by ethnicity, during Vietnam's post transition economic expansion. Specifically, it has attempted to explain the welfare disparity between ethnic majority and minority groups. It is clear from the latest poverty data that although half of the minority population still fails to meet the basic needs for their life, the pace of annual poverty reduction for these groups has now surpassed that of majority group over the period 2002 to 2006. This implies that Vietnam's growth has benefited majority first (as theory predicts), and latterly promoted the living standards of minority groups. Economic growth during the transition period has generally been, in a relative sense, non-pro-poor. The estimated the growth rate by ethnic sub-group, however, suggests more detailed investigation in to the livelihoods of each ethnic society is required as the growth was genuinely (relatively) *pro-poor* for the poorest ethnic minorities while remaining *pro-rich* for the majority group. Even among the ethnic minorities, the characteristics of economic growth differs substantially (notably between the NU minority versus. The CH minority).

Our investigation of inequality support similar conclusion. We observe greater increases of inequality within the ethnic minorities (than within the majority group) as well as an increasing spatial contribution of inequality between the two (the *Between* component) to total inequality. Hence, ethnic minorities (or some households in each ethnic group), assimilated to the ethnic majority (e.g. the Khmer minority), seems to have taken up economic opportunities created by economic reform more readily, than those who retained their culture and/or economic behaviour, or were isolated from the majority. These groups have lagged behind the assimilated minorities. For the poverty decomposition, the relative contribution of inequality within the minorities to total poverty reduction in the group has been declined, whereas

inequality within the majority group has continued to offset the growth impact within each period. It is evident from our summary measures that the minorities in rural Vietnam are very heterogeneous and have been differently influenced by Vietnam's transition (i.e. the patterns of contributions of growth and inequality vary considerably according to ethnicity).

Finally, our regression decomposition analysis confirms that the ethnic minority groups are poorer not necessarily because they hold less endowments than the majority, but because they have lower returns to their endowments (even where have the same level of endowments as the majority). Moreover, the fact the share of the difference arising from the structural component has been increased over time suggests that the targeted programmes of the government and development agencies, which aim to enhance the endowment of the minority may be less effective than other approaches. Rather, government interventions to improve the quality of their endowments and, hence, to increase the returns to their endowments are vital for increasing ethnic minority households' welfare. This can be delivered by precise research of the different socio-economic circumstances surrounding each ethnic minority groups.

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Table 1 Change in Poverty Head Count Ratio during 1993-2006

Poverty head count ratio	1993	1998	2002	2004	2006*	Annual % point change (1993-1998)	Annual % point change (2002-2006)	Annual % point change (1993-2006)
Vietnam	57.1	37.3	28.8	19.5	16.0	-4.0	-3.2	-3.2
Urban	19.7	9.1	6.5	3.6	3.9	-2.1	-0.7	-1.2
Rural	67.8	45.4	35.5	25.0	20.4	-4.5	-3.8	-3.6
				Rural				
Majorities	64.7	38.7	29.0	17.8	13.5	-5.2	-3.9	-3.9
Minorities	86.2	76.2	72.1	62.7	54.0	-2.0	-4.5	-2.5
Khmer	77.6	60.7	56.5	41.3	34.6	-3.4	-5.5	-3.3
Northern Upland	85.8	75.2	69.6	61.0	50.9	-2.1	-4.7	-2.7
Central Highland	98.1	92.0	87.0	76.1	71.5	-1.2	-3.9	-2.0
Other ethnicity	89.4	84.5	87.4	77.0	69.3	-1.0	-4.5	-1.5

Source: Author's calculation based on VLSS 1993, 1998 and VHLSS 2002, 2004, 2006
* The estimates for 2006 were based on the poverty line, 2,455 thousands VND, that deflated from 2004 poverty line using annual Consumer Price Index (CPI) over the periods. These estimates are slightly lower than World Bank's unofficial poverty ratio for 2006. For example, national, urban and rural poverty rates were estimated at 16.0%, 3.9% and 20.4% respectively. (See Vietnam Development Report 2008)

Table 2 Rates of Pro-Poor Growth and Meal Overall Growth Rate between 1993-2006

Percentile	Vietnam	Rural	Majorities	Minorities	Khmer	Northern Upland	Central Highland	Other ethnicity
10	3.82	3.71	4.56	4.53	5.19	3.21	9.07	-0.83
20	4.05	3.87	4.71	3.88	5.33	2.98	9.15	-0.73
30	4.16	4.07	4.84	3.60	5.09	2.89	9.19	-0.46
Overall population (average)	5.16	5.02	5.31	3.80	4.57	3.78	6.60	1.90

Source: Author's calculation based on VLSS 1993 and VHLSS 2006

Table 3 Inequality Measures in Rural Vietnam during 1993 - 2006

	1993	1998	2002	2004	2006	1993-2006 (% change)
Gini coefficient	0.280	0.271	0.281	0.295	0.302	7.8
GE(0) – Theil's L	0.129	0.120	0.128	0.143	0.151	17.1
Decomposition of GE(0) (Ethnic majorities/minorities)						
GE(0) within	0.120	0.108	0.114	0.125	0.130	-
GE(0) between	0.009	0.012	0.014	0.018	0.021	-
Contribution of "Between" inequality	7.0 %	10 %	10.9 %	12.6 %	13.9 %	
GE(1) – Theil's T	0.138	0.128	0.136	0.150	0.157	13.8
Within Ethnic majorities/minorities						
Gini within majorities	0.276	0.261	0.268	0.277	0.284	2.9
Gini within minorities	0.246	0.236	0.255	0.282	0.276	12.2
GE(0) within majorities	0.123	0.111	0.115	0.125	0.131	6.5
GE(0) within minorities	0.108	0.092	0.105	0.128	0.124	14.8

Source: Author's calculation based on VLSS 1993, 1998 and VHLSS 2002, 2004, 200

Table 4 Poverty Decomposition into Growth and Inequality during 1993-2006

		1993-1998	1998-2002	2002-2004	2004-2006	1993-2006
Vietnam	Poverty Change	-0.179	-0.085	-0.093	-0.035	-0.392
	Growth Component	-0.195	-0.121	-0.099	-0.028	-0.412
	Redistribution Component	0.016	0.036	0.006	-0.007	0.020
Rural	Poverty Change	-0.192	-0.099	-0.105	-0.046	-0.443
	Growth Component	-0.184	-0.117	-0.119	-0.059	-0.460
	Redistribution Component	-0.008	0.018	0.014	0.013	0.017
Majorities	Poverty Change	-0.226	-0.097	-0.111	-0.044	-0.478
	Growth Component	-0.209	-0.113	-0.125	-0.058	-0.484
	Redistribution Component	-0.017	0.016	0.014	0.014	0.006
Minorities	Poverty Change	-0.083	-0.042	-0.094	-0.087	-0.306
	Growth Component	-0.112	-0.049	-0.094	-0.070	-0.326
	Redistribution Component	0.029	0.007	0	-0.017	0.021
Khmer	Poverty Change	-0.157	-0.041	-0.153	-0.067	-0.417
	Growth Component	-0.194	-0.037	-0.237	0.023	-0.434
	Redistribution Component	0.038	-0.004	0.084	-0.090	0.016
Northern Upland	Poverty Change	-0.084	-0.056	-0.086	-0.101	-0.327
	Growth Component	-0.121	-0.065	-0.066	-0.094	-0.345
	Redistribution Component	0.037	0.008	-0.020	-0.007	0.018
Central Highland	Poverty Change	-0.061	-0.050	-0.108	-0.046	-0.266
	Growth Component	-0.069	-0.060	-0.080	-0.095	-0.283
	Redistribution Component	0.008	0.010	-0.029	0.049	0.016
Other ethnicity	Poverty Change	-0.048	0.029	-0.104	-0.077	-0.201
	Growth Component	0	0.032	-0.137	0.001	-0.155
	Redistribution Component	-0.048	-0.003	0.033	-0.078	-0.046

Source: Author's calculation based on VLSS 1993, 1998 and VHLSS 2002, 2004, 2006

Table 5 Determinants of (log) consumption (with Commune Fixed Effects)

	1993		1998		2002		2004		2006	
	Majority	Minority	Majority	Minority	Majority	Minority	Majority	Minority	Majority	Minority
Age of household head	**0.002**	**-0.003**	**0.002**	0	**0.002**	0	**0.002**	-0.001	**0.003**	-0.002
	(3.30)*	**(1.96)***	**(4.18)***	(0.24)	**(6.59)***	(0.8)	**(3.95)***	(1.24)	**(3.81)***	(1.62)
Female head	0.021	-0.006	0.033	0.021	**0.03**	0.017	0.026	-0.076	0.008	-0.099
	(1.01)	(0.12)	(1.16)	(0.36)	**(2.80)***	(0.63)	(1.04)	(1.35)	(0.29)	(1.44)
Married	-0.017	-0.029	-0.005	-0.021	-0.013	**-0.063**	0.022	-0.062	0.05	-0.065
	(0.62)	(0.57)	(0.17)	(0.38)	(1.07)	**(2.29)****	(0.77)	(1.09)	(1.53)	(0.98)
Share of female members	-0.036	**-0.142**	-0.021	-0.115	**-0.055**	-0.041	**-0.098**	-0.075	**-0.078**	**-0.15**
	(0.97)	**(2.00)***	(0.54)	(1.14)	**(3.13)***	(1.12)	**(2.62)***	(1)	**(1.78)***	**(1.72)***
Dependency burden	**-0.294**	**-0.655**	**-0.288**	**-0.283**	**-0.344**	**-0.326**	**-0.152**	**-0.16**	**-0.392**	**-0.52**
	(8.44)*	**(9.05)***	**(8.08)***	**(4.36)***	**(23.93)***	**(9.30)***	**(5.63)***	**(2.87)***	**(11.06)***	**(7.00)***
Primary Education	0.041	0.056	**-0.129**	-0.078	**-0.056**	0.018	-0.043	0.042	-0.049	-0.143
	(1.43)	(1.31)	**(1.89)***	(1.31)	**(4.22)***	(1.04)	(1.32)	(1.13)	(0.63)	(1.53)
Secondary Education	**0.123**	**0.157**	-0.112	-0.013	**0.036**	**0.103**	**0.059**	**0.171**	0.041	**-0.167**
	(4.57)*	**(2.74)***	(1.6)	(0.19)	**(2.64)***	**(5.57)***	**(1.88)***	**(4.13)***	(0.54)	**(1.74)***
Higher Education	**0.211**	**0.21**	0.018	0.097	**0.291**	**0.274**	**0.288**	**0.258**	**0.211**	0.015
	(5.83)*	**(2.99)***	(0.25)	(1.16)	**(17.00)***	**(7.87)***	**(8.45)***	**(4.07)***	**(2.68)***	(0.15)
Ratio of house members Working in industry	**0.398**	**0.796**	**0.299**	**0.664**	**0.012**	**0.12**	**0.231**	**0.701**	**0.25**	**0.513**
	(8.58)*	**(2.73)***	**(6.62)***	**(5.72)***	**(3.15)***	**(6.63)***	**(7.26)***	**(7.36)***	**(6.63)***	**(4.26)***
Agricultural land	**7.697**	**8.734**	**3.114**	**6.582**	**5.278**	**1.81**	**2.885**	**8.419**	**5.826**	2.007
	(3.95)*	**(1.96)***	**(4.92)***	**(2.84)***	**(11.97)***	**(3.07)***	**(1.94)***	**(5.21)***	**(6.17)***	(1.21)
Sylvicutural land	1.55	**8.034**	**6.877**	3.239	1.129	11.877	0.369	0.078	**1.416**	0.962
	(0.44)	**(1.84)***	**(3.85)***	(1.45)	(1.63)	(1.53)	(0.45)	(0.24)	**(1.96)***	(1.26)
Aquacultural land	**15.392**	**141.685**	**0.121**	-12.061	1.155	0.839	**5.283**	**63.825**	**11.448**	**23.132**
	(5.50)*	**(2.77)***	**(11.38)***	(0.35)	(0.88)	(1.54)	**(1.94)***	**(7.04)***	**(3.26)***	**(1.79)***
Remittance	**0.095**	0.006	**0.128**	0.001	**0.053**	-0.002	**0.061**	**0.105**	0.048	0.019
	(4.67)*	(0.15)	**(6.44)***	(0.02)	**(5.32)***	(0.13)	**(2.22)****	**(2.50)****	(1.61)	(0.43)
Permanent	**0.302**	**0.339**	**0.348**	**0.395**	**0.34**	**0.308**	**0.387**	**0.21**	**0.311**	**0.223**
	(9.45)*	**(4.46)***	**(7.92)***	**(4.25)***	**(26.71)***	**(7.95)***	**(13.88)***	**(2.98)***	**(9.82)***	**(3.82)***

Semi-Permanent	**0.197**	**0.151**	**0.222**	**0.161**	**0.201**	**0.167**	**0.217**	**0.119**	**0.139**	**0.117**
	(10.17)*	**(3.38)***	**(9.87)***	**(4.98)***	**(23.38)***	**(10.19)***	**(10.62)***	**(3.61)***	**(5.31)***	**(3.14)***
Constant	7.293	7.488	7.703	7.453	7.743	7.429	7.683	7.361	7.88	8.117
	(143.63)	(65.41)	(78.99)	(58.05)	(295.70)	(166.50)	(119.84)	(73.76)	(75.47)	(60.36)
Observations	3107	483	3034	581	18872	3749	5509	1228	4464	1029
R-squared	0.19	0.28	0.16	0.19	0.2	0.22	0.19	0.26	0.24	0.24
Joint Significance	$F_{(15,112)}$ = 54.21	$F_{(15,35)}$ = 35.87	$F_{(15,129)}$ = 49.14	$F_{(15,41)}$ = 15.55	$F_{(15,2023)}$ = 234.79	$F_{(15,506)}$ = 38.94	$F_{(15,1958)}$ = 46.26	$F_{(15,488)}$ = 15.84	$F_{(15,1829)}$ = 48.03	$F_{(15,466)}$ = 10.34
Prob. > F	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Robust t statistics in parentheses. 2.* significant at 10%; ** significant at 5%; *** significant at 1%.

Table 6 Determinants of (log) consumption (without Commune Fixed Effects, with the regional variables)

	1993		1998		2002		2004		2006	
	Majority	Minority	Majority	Minority	Majority	Minority	Majority	Minority	Majority	Minority
Age of household head	**0.002**	**-0.003**	**0.002**	0	**0.002**	0	**0.003**	0.001	**0.002**	**-0.002**
	(2.73)*	**(1.85)***	**(4.06)***	(0.08)	**(8.45)***	(0.45)	**(6.36)***	(0.56)	**(3.79)***	**(1.99)**
Female head	0.019	-0.026	**0.054**	0.033	**0.065**	0.047	**0.07**	0.047	**0.061**	-0.085
	(0.77)	(0.42)	**(1.94)***	(0.61)	**(5.91)***	(1.56)	**(3.30)***	(0.85)	**(2.58)***	(1.27)
Married	-0.008	-0.017	0.01	-0.026	-0.001	**-0.063**	0.043	-0.01	**0.059**	-0.084
	(0.28)	(0.24)	(0.33)	(0.46)	(0.07)	**(1.99)**	**(1.76)***	(0.17)	**(2.13)**	(1.25)
Share of female members	-0.059	-0.141	-0.045	-0.1	**-0.066**	**-0.076**	**-0.071**	-0.002	-0.038	-0.059
	(1.3)	(1.34)	(1.04)	(1.14)	**(3.68)***	**(2.03)**	**(2.15)**	(0.03)	(1.04)	(0.71)
Dependency burden	**-0.303**	**-0.649**	**-0.322**	**-0.246**	**-0.345**	**-0.329**	**-0.154**	-0.065	**-0.359**	**-0.392**
	(8.19)*	**(7.98)***	**(9.70)***	**(3.30)***	**(23.58)***	**(8.87)***	**(6.45)***	(1.21)	**(12.05)***	**(5.25)***
Primary Education	0.031	**0.169**	-0.101	0.025	**-0.052**	**0.106**	-0.036	**0.143**	0.02	-0.112
	(1.08)	**(3.34)***	(1.47)	(0.52)	**(4.01)***	**(6.85)***	(1.27)	**(4.21)***	(0.28)	(0.85)
Secondary Education	**0.095**	**0.258**	-0.084	**0.188**	**0.049**	**0.216**	**0.082**	**0.314**	**0.119**	-0.043
	(3.43)*	**(4.85)***	(1.23)	**(3.59)***	**(3.87)***	**(12.85)***	**(2.97)***	**(9.05)***	**(1.69)***	(0.32)
Higher Education	**0.189**	**0.323**	0.048	**0.296**	**0.348**	**0.417**	**0.345**	**0.444**	**0.351**	0.227
	(5.79)*	**(5.04)***	(0.68)	**(3.51)***	**(21.76)***	**(12.05)***	**(11.44)***	**(8.36)***	**(4.90)***	(1.64)
Ratio of house members Working in industry	**0.469**	**0.766**	**0.349**	**0.702**	**0.056**	**0.125**	**0.353**	**0.795**	**0.324**	**0.626**
	(10.71)*	**(2.85)***	**(8.40)***	**(4.24)***	**(17.24)***	**(8.51)***	**(14.58)***	**(7.90)***	**(11.00)***	**(5.88)***
Red River Delta	**-0.4**	0.035	**-0.101**	**0.406**	-0.019	**0.157**	**-0.131**	0.186	**-0.191**	-0.04
	(7.31)*	(0.3)	**(2.85)***	**(3.93)***	(1.04)	**(1.92)***	**(4.14)***	(1.34)	**(5.79)***	(0.43)
North East	**-0.458**	0.103	**-0.203**	**0.354**	0.009	**0.202**	**-0.066**	**0.159**	**-0.169**	**0.101**
	(8.10)*	(1.04)	**(4.92)***	**(7.13)***	(0.48)	**(10.55)***	**(1.96)**	**(4.09)***	**(4.82)***	**(2.21)**
North West	**-0.304**	0.034	**-0.263**	**0.212**	0.019	0.027	**-0.141**	-0.018	**-0.198**	-0.078
	(3.37)*	(0.31)	**(2.42)**	**(3.31)***	(0.46)	(1.27)	**(1.95)***	(0.43)	**(2.36)**	(1.59)
Central Coast	**-0.352**	-0.027	**-0.151**	**0.149**	-0.019	-0.025	**-0.15**	**-0.095**	**-0.244**	-0.064
	(6.45)*	(0.21)	**(4.44)***	**(2.61)***	(1.05)	(0.93)	**(4.75)***	**(1.92)***	**(7.49)***	(1.05)
South East	-0.045	**0.344**	**0.228**	**0.291**	**0.253**	**0.19**	**0.238**	**0.164**	**0.111**	0.091
	(0.77)	**(3.40)***	**(6.11)***	**(3.80)***	**(13.17)***	**(4.02)***	**(7.18)***	**(1.86)***	**(3.03)***	(0.92)
Mekong River Delta	-0.022	**0.35**	0.014	**0.553**	**0.251**	**0.451**	**0.124**	**0.456**	**0.067**	**0.418**
	(0.42)	**(3.33)***	(0.4)	**(8.47)***	**(13.70)***	**(15.69)***	**(4.03)***	**(7.33)***	**(2.03)**	**(6.08)***

Agricultural land	**8.541**	3.749	**3.256**	**10.274**	**3.527**	**6.08**	**4.095**	**5.613**	**6.93**	1.456
	(5.93)*	(1.15)	**(5.70)***	**(5.83)***	**(9.02)***	**(4.99)***	**(3.46)***	**(4.81)***	**(8.97)***	(0.96
Sylvicutural land	-0.475	**12.121**	**7.836**	**3.494**	0.343	0.008	0.009	0.181	0.897	0.413
	(0.14)	**(2.78)***	**(4.74)***	**(2.21)**	(0.45)	(0.03)	(0.01)	(0.43)	(1.53)	(1.12)
Aquacultural land	**16.318**	**120.898**	**0.104**	-23.527	2.945	**3.78**	**6.489**	**53.942**	**7.927**	**19.342**
	(2.38)	**(1.79)***	**(5.36)***	(0.6)	(1.14)	**(3.63)***	**(3.25)***	**(4.93)***	**(4.98)***	**(1.92)***
Remittance	**0.075**	**0.094**	**0.11**	0.051	**0.059**	**0.036**	**0.067**	**0.074**	**0.083**	**0.063**
	(3.87)*	**(1.74)***	**(6.03)***	(1.23)	**(7.81)***	**(2.76)***	**(3.75)***	**(2.78)***	**(4.03)***	**(1.95)***
Permanent	**0.3**	**0.22**	**0.386**	**0.453**	**0.368**	**0.355**	**0.374**	**0.359**	**0.356**	**0.359**
	(10.92)*	**(3.92)***	**(10.79)***	**(4.80)***	**(30.18)***	**(10.04)***	**(16.86)***	**(5.99)***	**(14.62)***	**(7.09)***
Semi-Permanent	**0.199**	**0.211**	**0.219**	**0.196**	**0.207**	**0.169**	**0.215**	**0.162**	**0.206**	**0.181**
	(11.40)*	**(5.71)***	**(10.83)***	**(6.14)***	**(25.53)***	**(12.24)***	**(13.20)***	**(6.37)***	**(10.55)***	**(6.63)***
Constant	7.584	7.253	7.733	6.948	7.574	7.189	7.57	6.977	7.783	7.827
	(94.67)	(48.43)	(82.17)	(60.24)	(245.35)	(129.24)	(124.46)	(65.24)	(82.30)	(43.62)
Observations	3107	483	3034	581	18872	3749	5509	1228	4464	1029
R-squared	0.27	0.34	0.25	0.47	0.25	0.34	0.27	0.38	0.31	0.32
Joint Significance	$F_{(21, 3085)}$ = 55.74	$F_{(21, 461)}$ = 9.41	$F_{(21, 3012)}$ = 45.38	$F_{(21, 559)}$ = 22.53	$F_{(21, 18850)}$ = 296.70	$F_{(21, 3727)}$ = 82.25	$F_{(21, 5487)}$ = 87.32	$F_{(21, 1206)}$ = 31.48	$F_{(21, 4442)}$ = 83.93	$F_{(21, 1007)}$ = 23.78
Prob. > F	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Robust t statistics in parentheses. 2.* significant at 10%; ** significant at 5%; *** significant at 1%.

Table 7 Determinants of the likelihood of poverty (without Commune Fixed Effects, with the regional variables)

	1993		1998		2002		2004		2006	
	Majority	Minority	Majority	Minority	Majority	Minority	Majority	Minority	Majority	Minority
Age of household head	**-0.007**	**0.016**	**-0.008**	-0.001	**-0.006**	-0.002	**-0.005**	-0.002	-0.003	**0.015**
	(3.51)*	**(2.67)***	**(3.76)***	(0.12)	**(7.39)***	(0.98)	**(3.29)***	(0.65)	(1.49)	**(3.32)***
Female head	**-0.148**	0.513	-0.053	-0.274	**-0.139**	**-0.209**	**-0.154**	-0.14	-0.061	0.304
	(1.85)*	(1.4)	(0.57)	(1.21)	**(3.71)***	**(2.25)****	**(1.90)***	(0.76)	(0.58)	(1.38)
Married	-0.073	**0.584**	0.104	-0.309	**-0.075**	**0.186**	**-0.179**	-0.107	**-0.198**	0.262
	(0.79)	**(1.72)***	(1)	(1.21)	**(1.93)***	**(1.88)***	**(2.12)****	(0.57)	**(1.75)***	(1.11)
Share of female members	0.118	-0.391	0.223	0.233	**0.167**	**0.268**	**0.194**	0.394	0.13	0.147
	(0.83)	(0.77)	(1.54	(0.6)	**(3.04)***	**(1.90)***	**(1.69)***	(1.57)	(0.82)	(0.5)
Dependency burden	**1.01**	**2.31**	**0.868**	**0.623**	**0.853**	**0.896**	**0.407**	**0.488**	**0.817**	**1.088**
	(8.33)*	**(5.35)***	**(7.88)***	**(1.78)***	**(19.41)***	**(7.02)***	**(5.05)***	**(2.66)***	**(7.08)***	**(4.53)***
Primary Education	-0.12	0.012	0.177	-0.137	**0.138**	**-0.317**	0.066	-0.117	0.117	0.482
	(1.3)	(0.05)	(0.82)	(0.57)	**(3.57)***	**(4.82)***	(0.78)	(0.93)	(0.41)	(0.89)
Secondary Education	**-0.252**	-0.251	0.155	-0.381	**-0.095**	**-0.653**	**-0.265**	**-0.633**	-0.272	0.269
	(2.75)*	(0.91)	(0.72)	(1.61)	**(2.45)****	**(9.47)***	**(3.19)***	**(5.00)***	(0.94)	(0.5)
Higher Education	**-0.45**	**-0.742**	-0.234	**-0.926**	**-0.916**	**-1.059**	**-0.875**	**-0.828**	**-0.824**	-0.447
	(4.05)*	**(2.36)****	(1.01)	**(2.70)***	**(14.61)***	**(9.16)***	**(8.06)***	**(4.55)***	**(2.72)***	(0.79)
Ratio of house members Working in industry	**-1.271**	**-2.51**	**-1.05**	**-2.376**	**-0.191**	**-0.378**	**-1.012**	**-2.057**	**-0.946**	**-2.141**
	(9.06)*	**(2.96)***	**(6.60)***	**(3.30)***	**(14.17)***	**(7.47)***	**(10.00)***	**(6.05)***	**(6.12)***	**(4.93)***
Red River Delta	**0.916**	0.446	0.089	**-1.009**	**-0.108**	-0.039	0.123	-0.476	0.259	0.514
	(5.02)*	(0.85)	(0.74)	**(2.54)****	**(1.76)***	(0.16)	(1.13)	(1.18)	(1.58)	(1.03)
North East	**1.134**	-0.176	**0.405**	**-0.609**	**-0.148**	**-0.432**	-0.033	**-0.384**	**0.284**	-0.193
	(5.82)*	(0.47)	**(3.00)***	**(2.20)****	**(2.25)****	**(5.43)***	(0.27)	**(2.65)***	**(1.70)***	(1.28)
North West	**0.953**	0.247	**0.638**	-0.323	0.049	-0.075	0.206	0.06	**0.805**	0.172
	(2.84)*	(0.57)	**(1.75)***	(0.95)	(0.38)	(0.84)	(0.88)	(0.39)	**(2.84)***	(1.09)
Central Coast	**0.747**	-0.382	**0.257**	-0.34	-0.051	0.115	**0.231**	0.182	**0.462**	0.196
	(4.13)*	(0.83)	**(2.22)****	(1.07)	(0.84)	(0.98)	**(2.19)****	(0.95)	**(3.01)***	(0.98)
South East	0.044	**-0.813**	**-0.625**	**-0.658**	**-0.677**	**-0.613**	**-0.616**	**-0.428**	-0.276	-0.184
	(0.23)	**(1.95)***	**(4.87)***	**(2.01)****	**(10.34)***	**(4.31)***	**(4.74)***	**(1.75)***	(1.37)	(0.64)
Mekong River Delta	-0.039	**-1.003**	0	**-1.272**	**-0.677**	**-1.108**	**-0.404**	**-0.937**	**-0.283**	**-1.126**
	(0.22)	**(2.60)***	(0)	**(4.19)***	**(11.09)***	**(10.56)***	**(3.73)***	**(4.58)***	**(1.83)***	**(4.45)***

Agricultural land	**-29.432**	-10.114	**-17.354**	**-27.948**	**-17.85**	-10.774	**-29.89**	**-12.756**	**-37.544**	-0.437
	(5.80)*	(0.72)	**(4.78)***	**(3.72)***	**(9.54)***	(0.39)	**(6.29)***	**(3.66)***	**(4.62)***	(0.11)
Sylvicutural land	-2.381	**-44.602**	**-55.982**	-12.365	-0.945	**-86.045**	4.04	-1.155	-2.389	-2.734
	(0.15)	**(2.09)**	**(2.78)***	(1.33)	(0.36)	**(2.20)**	(1.43)	(0.75)	(1.17)	(1.34)
Aquacultural land	**-52.799**	-481.876	**-135.914**	60.546	-1.567	**-0.365**	**-36.481**	**-512.91**	**-29.551**	**-897.996**
	(1.74)*	(1.59)	**(3.79)***	(0.34)	(0.64)	**(3.92)***	**(3.26)***	**(2.77)***	**(1.91)***	**(2.67)***
Remittance	**-0.132**	**-0.651**	**-0.217**	0.14	**-0.139**	**-0.152**	**-0.142**	-0.108	-0.147	**-0.235**
	(2.10)	**(2.85)***	**(3.48)***	(0.7)	**(5.34)***	**(2.96)***	**(2.08)**	(1.11)	(1.56)	**(2.08)**
Permanent	**-0.681**	**-0.487**	**-0.75**	**-1.604**	**-0.841**	**-0.737**	**-0.879**	**-0.814**	**-0.917**	**-0.975**
	(7.09)*	**(1.72)***	**(6.27)***	**(4.34)***	**(19.78)***	**(6.59)***	**(10.21)***	**(3.98)***	**(7.85)***	**(4.24)***
Semi-Permanent	**-0.487**	**-0.674**	**-0.519**	**-0.559**	**-0.477**	**-0.346**	**-0.504**	**-0.322**	**-0.515**	**-0.529**
	(7.85)*	**(3.44)***	**(7.21)***	**(3.60)***	**(17.82)***	**(6.46)***	**(9.24)***	**(3.58)***	**(6.45)***	**(5.22)***
Constant	0.488	0.098	-0.167	2.187	0.404	1.242	0.447	1.368	-0.328	-0.961
	(1.91)	(0.17)	(0.53)	(3.88)	(4.17)	(6.71)	(2.24)	(3.85)	(0.81)	(1.43)
Observations	3107	483	3034	581	18872	3749	5509	1228	4464	1029
Pseudo R2	0.17	0.23	0.13	0.23	0.13	0.18	0.15	0.19	0.18	0.19
Wald chi2(21)	559.28	65.42	379.99	120.28	2324.83	682.40	592.20	253.61	391.56	189.83
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Robust t statistics in parentheses. 2.* significant at 10%; ** significant at 5%; *** significant at 1%.

Table 8 Blinder-Oaxaca Decomposition

		1993		1998		2002		2004		2006	
Difference in (log) consumption	Aggregate difference	**0.306**		**0.510**		**0.494**		**0.568**		**0.503**	
		E	C	E	C	E	C	E	C	E	C
	With commune fixed effect	*0.102*	*0.204*	*0.128*	*0.381*	*0.114*	*0.380*	*0.159*	*0.409*	*0.107*	*0.396*
		(33.2%)	(66.8%)	(25.2%)	(74.8%)	(23.0%)	(77.0%)	(28.1%)	(71.9%)	(21.3%)	(78.7%)
	With the regional dummy variables	0.132	0.174	0.211	0.298	0.201	0.293	0.274	0.295	0.179	0.324
		(43.1%)	(56.9%)	(41.5%)	(58.5%)	(40.6%)	(59.4%)	(48.1%)	(51.9%)	(35.6%)	(64.4%)
Difference in the predicted poverty	Aggregate difference	**0.222**		**0.452**		**0.413**		**0.443**		**0.334**	
		E	C	E	C	E	C	E	C	E	C
	With the regional dummy variables	0.130	0.092	0.166	0.286	0.134	0.279	0.111	0.332	0.082	0.253
		(58.7%)	(41.3%)	(36.7%)	(63.3%)	(32.5%)	(67.5%)	(25.1%)	(74.9%)	(24.4%)	(75.6%)

Parenthesis indicates the relative contribution of each component to total difference
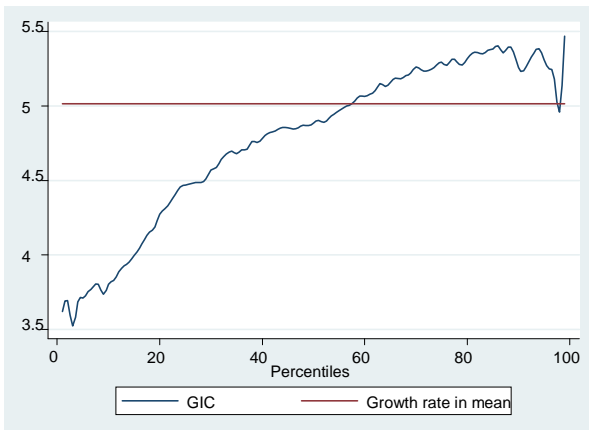
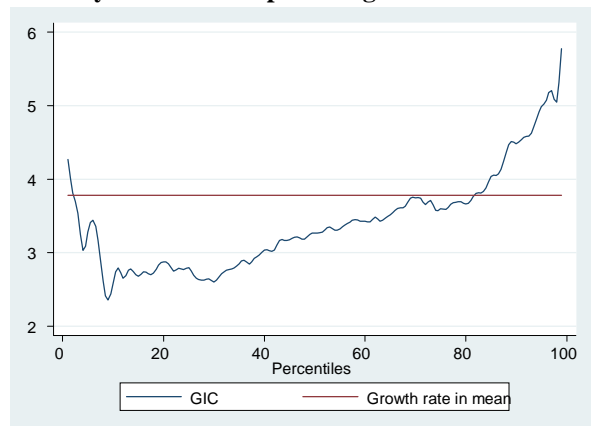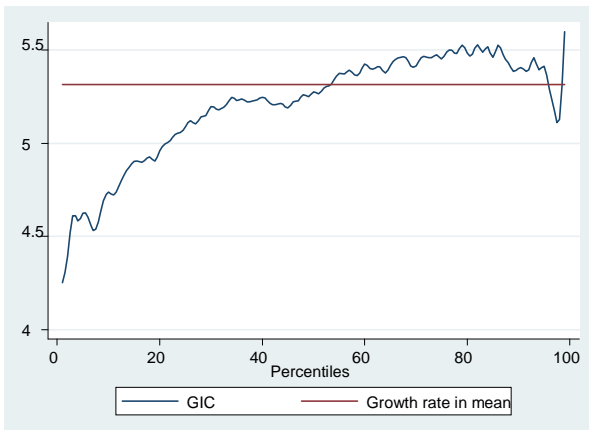**Figure1. Growth Incidence Curve (GIC) in 1993 - 2006**
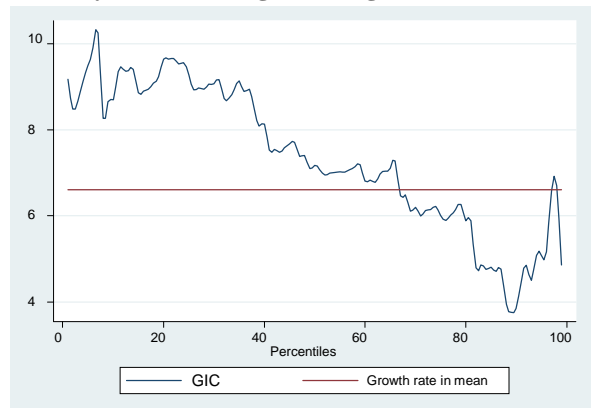
Vietnam
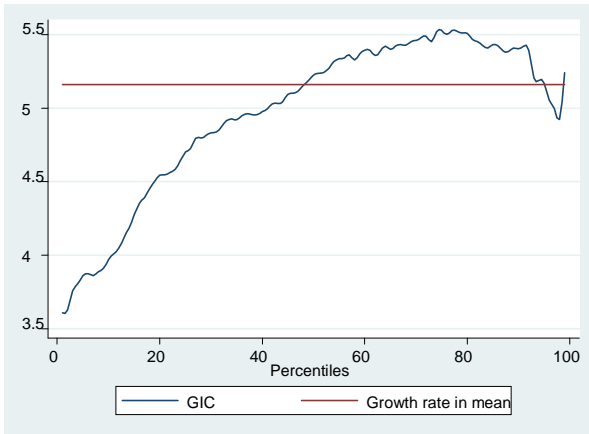
Minority – Khmer
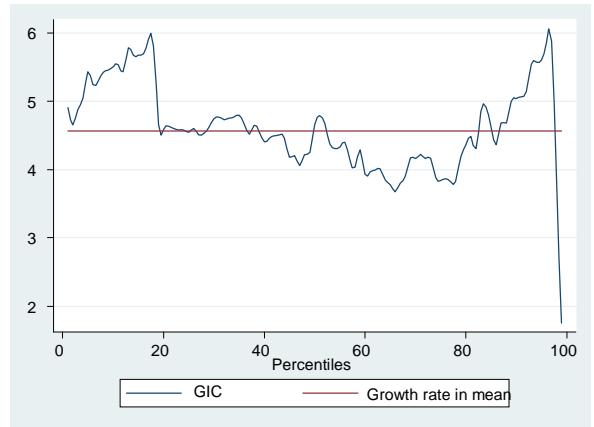
Rural

Minority – Northern Upland region

Kinh and Chinese

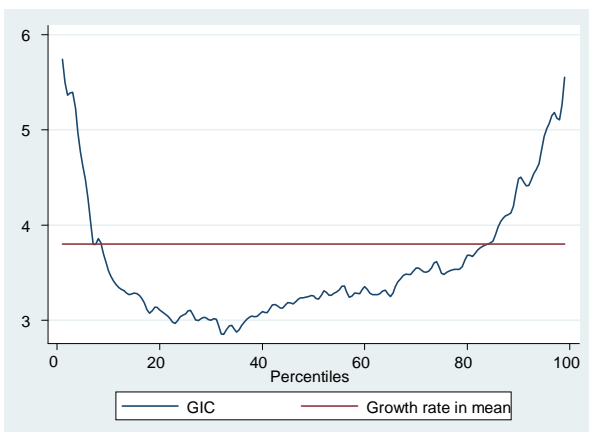**Minority – Central Highland region**
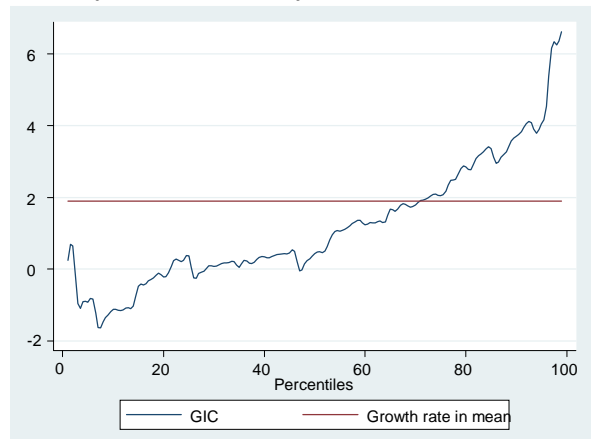

Minorities

Minority – Other ethnicity

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Figure2. Poverty Decomposition into Growth and Redistribution Components