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GROWTH, INEQUALITY, AND POVERTY IN VIET NAM, 1993-2008

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Abstract

Viet Nam is often considered an example of success in poverty reduction between 1993 and 1998, The percentage of the population that was poor declined considerably from 58.1 percent to 37.4 percent during the period. The poverty rate continued to fall to 19.5 percent in 2004 and to 14.5 percent in 2008. This study examines how poverty reduction has been associated with economic growth and inequality in Viet Nam. It finds that although poverty reduction speed was lower in the 2000s than in the1990s, economic growth was more pro-poor in 2000s than in 1990s. During 1993—1998, expenditure distribution deteriorated, and poverty reduction was mainly caused by economic growth. During 2004—2008, however, expenditure inequality decreased, thereby contributing to poverty reduction. During this period, poverty incidence decreased by 5 percentage points, of which expenditure growth and expenditure redistribution contributed 2.8 and 2.2 percentage points to poverty reduction, respectively.

1. Introduction

There is a broad consensus that economic growth is a prerequisite to sustainable poverty reduction. However, the extent to which economic growth can reduce poverty depends on income distribution. The 'trickle-down' theory does not hold in every country. In both theoretical and empirical studies, it is possible that negative growth can lead to poverty reduction, while positive economic growth is associated with poverty increase (Son, 2007). Unlike prediction by the Kuznets hypothesis, economic growth can be associated with inequality reduction.[1] Thus, a pro-poor growth strategy that includes both economic growth and equality distribution policies can be promoted to reduce poverty.

This study examines the relationship between economic growth, inequality, and poverty reduction in Viet Nam over the last two decades. It also examines the extent to which economic growth was pro-poor at the national and regional levels in Viet Nam during the period 1993—2008. The decomposition approach of Datt and Ravallion (1991), and Kolenikov and Shorrocks (2005) were used to analyse the effect of economic growth and inequality on poverty during the 1990s and the 2000s. The method of Kakwani (1980) was also employed to estimate the elasticity of poverty to economic growth and inequality, and the method of Kakwani and Pernia (2000) to calculate the degree of "pro-poorness" over time.

For several reasons, Viet Nam is an interesting case study. Firstly, Viet Nam is an example of a country where the trickle-down hypothesis is supposed to hold for the past years. Economic reforms initiated in the late 1980s significantly changed the economy of Viet Nam—from crisis in the 1980s to high growth with an average annual rate of per capita gross domestic product (GDP) of 6 percent during the 1990s and 2000s. Poverty has been reduced continuously. Between 1993 and 1998, poverty had been strikingly reduced, with the proportion of the poor decreasing from 58 percent to 37 percent. The poverty incidence continued to fall to 19 percent in 2004 and 14 percent in 2008. There is a difference in economic growth between the 1990s and the 2000s. Economic growth and poverty reduction speed were higher in the 1990s than in the 2000s. However, expenditure inequality increased during the 1990s but slightly decreased during the 2000s. Thus, it is not clear which period has an economic growth that is more favorable to the poor.

[1] According to the Kuznets hypothesis, inequality will be associated with economic growth in the early phases of development and inequality can be one source of economic growth. However, recent studies show that inequality can be harmful to economic growth (see Persson and Tabellini 1994; Alesina and Rodrik 1994; Deininger and Squire 1998; Levin and Bigsten 2000; Goudie and Ladd 1999).

Secondly, Viet Nam had shown a strong commitment to the "growth with equity" strategy in the 2000s by launching numerous poverty reduction programs since 2000.[2] If economic growth in the 2000s is found to be pro-poor, it might be an evidence of success in the *"*growth with equity*"* strategy.

Thirdly, although there is a large number of empirical studies on poverty in Viet Nam (e.g., World Bank, 2000; World Bank, 2003), there are only a few quantitative studies on the relationship among economic growth, inequality, and poverty reduction. Doan (2007) discusses the pro-poor economic growth, but emphasizes the role of government policies in reducing poverty in Viet Nam. Balisacan et al. (2003) use Viet Nam Living Standards Survey (VLSS) in 1993 and 1998 to describe the poverty reduction and the income growth of the poor in Viet Nam. Using regressions at the provincial level, Le (2008) finds a positive relationship between economic growth and poverty reduction, and a negative relationship between inequality and poverty reduction. Kang and Imai (2010) examined the gap in living standards between ethnic minorities and the majority of the people. This study also tried to measure the effect of income growth on poverty reduction using decomposition methods. However, there have been no studies on the effects of economic growth and inequality of sectors and regions on poverty of the whole country, and the measurement of the degree of "pro-poorness" of the economic growth in Viet Nam.

Fourthly, household surveys that are designed as Living Standards Measurement Study (LSMS) surveys have been conducted in Viet Nam since 1993. These surveys allow for a consistent study of poverty and inequality over time. This study relies on four household surveys including Viet Nam Living Standard Surveys (VLSS) in 1993 and 1998, and Viet Nam Household Living Standard Surveys (VHLSS) in 2004 and 2008.

Finally, findings from the studies can be useful for policy-makers and for researchers in Viet Nam in designing policies on economic growth and poverty reduction. If economic growth is not favorable for the poor, more measures on inequality reduction are needed. The findings also provide information on which sectors or regions the government should focus on promoting economic growth or redistribution to maximize the poverty reduction efforts for the whole country.

This paper is structured into five sections. The second section reviews the literature of economic growth, inequality, and poverty. The third section presents the methodology of

[2] For example, two important poverty reduction programs are the National Targeted Program for Poverty Reduction and the Support Program for Ethnic Minorities (Program 135), which were launched in 2000.

analyzing growth and poverty. The fourth section presents the empirical findings. Finally, the fifth section concludes and proposes several policy implications for poverty reduction.

2. Literature Review

To reduce poverty, economic growth has a prerequisite, the so-called trickle-down theory hypothesizes that the benefits of economic growth will automatically trickle-down to the poor through increased domestic activities and higher government expenditures, including transfers. There is no need for complementary efforts to facilitate poverty reduction. Numerous empirical studies justify a very strong relationship between economic growth and poverty reduction. Studies by Ahluwalia (1979), Fields (1980 and 1989), Demery and Squire (1995), Ravallion and Chen (1997), and Dollar and Kraay (2000), had shown that changes in the mean income consistently play the main role in securing changes in poverty. However, there is a question about what causes economic growth and why countries with similar rates of economic growth can have very different rates of poverty reduction.

Although economic growth is said to be the engine of poverty reduction, it works more effectively in some situations than in others. The key factor that affects the impact of growth on poverty is the pattern of income distribution. Intuitively, in an economy where inequality is persistently low, the poor will tend to obtain a higher share of the gains from economic growth than in an economy where inequality is higher. The effect of economic growth on poverty reduction is much higher in the case of low inequality (Ravallion 2004). In empirical studies, Ravallion (1997) and Timmer (1997) found evidence from cross-country distributional data showing that higher initial income inequality entailed a lower absolute elasticity of poverty to growth in average incomes. For example, a country with a Gini index of 0.25 can expect a growth elasticity of the headcount index of –3.3, while for a country with a Gini index of 0.6, the elasticity is –1.8 (Ravallion 1997). In addition, inequality can be a factor detrimental to economic growth, thereby impeding poverty reduction (Persson and Tabellini 1994; Alesina and Rodrik 1994; Deininger and Squire 1998; Levin and Bigsten 2000; Goudie and Ladd 1999).

Thus, economic growth is a necessary but not sufficient condition for poverty reduction. Bhagwati (1988) proposes a theory of immiserizing growth, in which the economic growth can bypass or even harm the poor. This model establishes some conditions that allow a possibility: growth can immiserize itself. The precise demonstration concerns an economy where increased productivity led to a sufficiently large deterioration in the terms of trade

whose adverse effects outweigh the primary gain from growth. Bhagwati (1988) showed the anti-poor impact of immiserizing growth by sketching a scenario in which the more affluent farmers adopt new seeds and raise grain production that results in lower prices. In contrast, the marginal farmers, who are not able to adopt the new technology, find their stagnant output yielding even less income, thereby falling into poverty. Looking at empirical studies, Son (2007) finds that several countries had positive economic growth but an increase in poverty.

In cases where economic growth does not drive poverty reduction, a strategy of pro-poor growth should be promoted. A policy of pro-poor growth not only focuses on economic growth, but also affects the pattern of income distribution so that the poor can benefit proportionally more than the rich from economic growth, which will reduce the welfare gap between the poor and the rich, and finally eliminate poverty (ADB 1999; Deininger and Squire 1998; Kakwani 2000; Perkins, et al. 2001).

Besides the inequality component, the sectoral and regional composition of growth can influence the impacts of economic growth on poverty. Economic growth in sectors or regions of the country where the poor are concentrated will have greater effects on poverty reduction than in other sectors or regions. For example, in developing countries where most of the poor live in rural areas and are involved in agriculture, high economic growth in agriculture will reduce poverty significantly, because it generates incomes for poor farmers, thereby increasing their demand for goods and services that can be easily produced by the poor. Fallon and Hon (1999), in a cross-country study, found that the more labor-intensive the growth pattern, the faster the decline in the incidence of poverty. Various country-specific and cross-country studies show that economic growth in the agricultural and tertiary sectors has a major effect on mitigating poverty, while economic growth in manufacturing sectors has a limited effect on poverty reduction (Thorbecke and Hong-Sang 1996; Timmer 1997; Bourguignon and Christian 1998; Ames, et al. 2001).

3. Methodology

3.1. Poverty and inequality measures

Popular measures of poverty are, based on Foster, Greer and Thorbecke (FGT), poverty indexes, which can be calculated using the following formula (Foster et al. 2004):

$$P_\alpha = \frac{1}{n}\sum_{i=1}^{q}\left[\frac{z - x_i}{z}\right]^\alpha , \qquad (1)$$

where x_i is the welfare indicator such as income or consumption per capita (consumption in this paper) of poor person *i*, *z* is the poverty line, n is the number of people in the sample population, q is the number of poor people, and α can be interpreted as a measure of inequality aversion. When $\alpha = 0$, the above equation reduces to *q/n*, which measures the proportion of the poor people. When $\alpha = 1$ and $\alpha = 2$, we have the poverty gap index and the squared poverty gap index, which measures the depth and the severity of poverty, respectively.

To measure the level of inequality, the Gini index is most widely used. Gini index can be obtained by subtracting twice the area under the Lorenz curve from 1. That is:

$$G = 1 - 2\int_0^1 L(p)dp , \qquad (2)$$

where $L(p)$ is the cumulative proportion of consumption received by the cumulative proportion of people *p* when people are sorted in ascending order of their consumption. The Gini index can be calculated from the individual consumption in the population as follows:

$$G = \frac{n+1}{n-1} - \frac{2}{n(n-1)\mu}\sum_{i=1}^{n}\rho_i x_i , \qquad (3)$$

where x_i is per capita consumption of the i^{th} person, and *n* is the total number of people in the population, ρ_i is the rank of individual *i* in the *x*-distribution, counting from the top so that the richest has the rank of 1.

The value of the Gini coefficient varies from 0 when everyone has the same consumption, to 1 when one person has everything. The closer a Gini coefficient is to 1, the more unequal the consumption distribution is. It should be noted that Gini has some drawbacks in measuring inequality. If the Lorenz curves of two distributions intersect, Gini cannot be used to rank the equality of the two distributions (Kakwani 1980 and 1993). The Gini index does not capture well the inequalities at the tail ends of the distribution, and it can be biased to the distribution in the more central parts of the distribution.

3.2. Static decomposition of poverty measures

The FGT poverty measures can be fully characterized in terms of the poverty line, the mean consumption, and the Lorenz curve representing the structure of relative consumption inequalities (Kakwani 1980 and 1993):

$$P_\alpha = P[\mu, z, L(p)], \qquad (4)$$

where μ and z are the mean consumption and the poverty line, respectively. $L(p)$ is the cumulative proportion of consumption received by the cumulative proportion of people p when consumption units are arranged in ascending order of their consumption. The Lorenz curve is defined as the relationship between the variables $L(p)$ and p. The value of $L(p)$ and p range from 0 to 1, and the value of $L(p)$ is always less than or equal to the value of p.

Kakwani (1993) provides a widely used method to decompose a change in a poverty measure into two components—one relating to a change in average consumption and the other to consumption inequality using only one-time period data. The level of poverty may change due to a change in the ratio of the mean consumption μ to the poverty line, or due to a change in relative inequality *L(p)*. The change in poverty measures is expressed as follows:

$$dP = \frac{\partial P}{\partial \mu} d\mu + \frac{\partial P}{\partial L} dL. \qquad (5)$$

The change in poverty measures can be decomposed into two components: (i) the change due to consumption growth when holding the distribution of consumption constant, and (ii) the change due to the effect of changes in the consumption distribution while keeping the total consumption of the society unchanged.

Growth component of poverty

The elasticity of the headcount ratio with respect to the mean consumption μ is given by Kakwani (1993) as:

$$\eta_H = \frac{\partial H}{\partial \mu} \frac{\mu}{H} = -\frac{z}{\mu H L''(H)} \qquad (6)$$

where $L''(H)$ is the second derivative of $L(p)$ with respect to p at the value H. The elasticity is interpreted as the percentage of the poor who cross the poverty line as a result of 1 percent growth in the mean consumption.

Estimation of η_H requires a functional form of *L(p)*. Ravallion (1992) suggests that the two best models for estimating poverty measures are the Kakwani (1980) model, and the generalized quadratic model of Villasenor and Arnold (1989). In this paper, we will use the Kakwani Lorenz function, which has the following form:

$$L(p) = p - \theta p^{\gamma} (1-p)^{\delta}. \qquad (7)$$

The second derivative is as follows:

$$L''(p) = 2\theta\gamma\delta p^{\gamma-1}(1-p)^{\delta-1} + \theta\gamma(1-\gamma)p^{\gamma-2}(1-p)^{\delta} + \theta\delta(1-\delta)p^{\gamma}(1-p)^{\delta-2} \quad (8)$$

For other FGT poverty indices, the elasticity with respect to μ is expressed as follows (Kakwani 1993):

$$\eta_{P_\alpha} = \frac{\partial P_\alpha}{\partial \mu}\frac{\mu}{P_\alpha} = -\frac{\alpha\left(P_{\alpha-1} - P_\alpha\right)}{P_\alpha}, \quad (9)$$

for $\alpha \neq 0$. This elasticity will always be negative because P_α is a monotonically decreasing function of α.

Inequality component of poverty

Kakwani (1993) obtains the formulas to calculate the elasticity of poverty with respect to inequality represented by the Gini index for alternative poverty measures as follows.[3] First, for the headcount index:

$$\varepsilon_H = -\frac{(\mu - z)}{z}\eta_H, \quad (10)$$

where η_H is the elasticity of poverty with respect to the mean consumption. It is worth noting that $\varepsilon_H > 0$ only if $\mu > z$, which implies that greater inequality leads to greater poverty on condition that the poverty line is less than the mean consumption of the distribution. In contrast, if $\mu < z$, an increase in inequality will result in a reduction in poverty.

Second, for the other poverty FGT indexes:

$$\varepsilon_{P_\alpha} = \eta_{P_\alpha} + \frac{\alpha\mu P_{\alpha-1}}{zP_\alpha}. \quad (11)$$

This elasticity can be interpreted as the percentage change in poverty indices due to a 1 percentage change in the Gini index.

3.3. Dynamic decomposition

Datt and Ravallion (1991) also developed a very popular method to decompose the change in poverty during a period into components associated with growth, redistribution, and a residual. The growth component of a change in the poverty measure from the date *t* to the date (*t* + *n*) is defined as the change in poverty due to a change in the mean consumption, from μ_t at the date t to μ_{t+n} at the date (*t* + *n*), while holding the Lorenz curve L constant at

[3] For algebraic manipulation, see Kakwani (1990)

some reference level L_r. This means that the consumption distribution remains unchanged. Meanwhile, the redistribution component is the change in poverty due to a change in the Lorenz curve, from L_t at the date t to L_{t+n} at the date (t + n), while keeping the mean consumption μ at the reference level μ_r. A change in poverty between dates t and (t + n) can be decomposed as follows:

$$P_{t+n} - P_t = P(z, \mu_{t+n}; L_{t+n}) - P(z, \mu_t; L_t) = \underset{\text{Growth Component}}{G(t, t+n; r)} + \underset{\text{Redistribution Component}}{D(t, t+n; r)} + \underset{\text{Residual Component}}{R(t, t+n; r)}, \quad (12)$$

in which the growth and redistribution components are given by the following:

$$G(t, t+n; r) = P(z, \mu_{t+n}, L_r) - P(z, \mu_t, L_r), \quad (13)$$

$$D(t, t+n; r) = P(z, \mu_r, L_{t+n}) - P(z, \mu_r, L_t). \quad (14)$$

In each case, the first two arguments in the parentheses refer to the initial and terminal dates of the decomposition period, and the last argument makes explicit the reference date r as to which the observed change in poverty is decomposed. The residual is interpreted as the difference between the growth (or redistribution) components evaluated at the terminal and initial Lorenz curves (or mean consumption), respectively.

Following Kakwani and Pernia (2000), we will use both the initial date and the terminal date as the reference points to calculate growth and redistribution components, and then take the averages of those component values as follows:

$$G(t, t+n) = \tfrac{1}{2}\left[P(z, \mu_{t+n}, L_t) - P(z, \mu_t, L_t) + P(z, \mu_{t+n}, L_{t+n}) - P(z, \mu_t, L_{t+n})\right], \quad (15)$$

$$D(t, t+n) = \tfrac{1}{2}\left[P(z, \mu_t, L_{t+n}) - P(z, \mu_t, L_t) + P(z, \mu_{t+n}, L_{t+n}) - P(z, \mu_{t+n}, L_t)\right]. \quad (16)$$

This choice of the reference will make the residual equal to zero because $R(t, t+n; t) = -R(t, t+n; t+n)$. Then equation (11) becomes

$$P_{t+n} - P_t = P(z, \mu_{t+n}; L_{t+n}) - P(z, \mu_t; L_t) = G(t, t+n) + D(t, t+n) \quad (17)$$

3.4. Growth and inequality within groups and total poverty

Static method

Suppose that the entire population is divided into *m* non-overlapping groups along ethnic, geographic, demographic, socioeconomic, or other lines. Then the FGT class of poverty measures P_α given in can be decomposed as follows:

$$P_\alpha = \sum_{i=1}^{m} \frac{n_i}{n} P_{\alpha i} = \sum_{i=1}^{m} f_i P_{\alpha i} \,, \tag{18}$$

where $P_{\alpha i}$ is the additive poverty measure of the *i-th* group, *n* and n_i are the total population size and the *i-th* group population size, respectively, and f_i is the population share of *i-th* group. It is possible to calculate the contribution $c_{\alpha i}$ of each group poverty to the total poverty (Kakwani 1993):

$$c_{\alpha i} = f_i \frac{P_{\alpha i}}{P_\alpha} \,. \tag{19}$$

Kakwani (1993) also obtained the elasticity of the total or national poverty with respect to the mean consumption of the *i-th* group as follows:

$$\eta^*_{P_{\alpha i}} = \left(f_i \frac{P_{\alpha i}}{P_\alpha} \right) \eta_{P_{\alpha i}} = c_{\alpha i} \eta_{P_{\alpha i}} \,, \tag{20}$$

where

$$\eta_{P_{\alpha i}} = \frac{\partial P_{\alpha i}}{\partial \mu_i} \frac{\mu_i}{P_{\alpha i}} \,, \tag{21}$$

is the elasticity of *i-th* group poverty measure in terms of the mean consumption of the *i-th* group. Equation (20) is useful to examine to know how the economic growth within various groups of the population affects national poverty while holding inequality constant within groups.

Similarly, the effect of change in the Gini index of the *i-th* group on total poverty can be measured by the following formula:

$$\varepsilon^*_{P_{\alpha i}} = \left(f_i \frac{P_{\alpha i}}{P_\alpha} \right) \varepsilon_{P_{\alpha i}} = c_{\alpha i} \varepsilon_{P_{\alpha i}} \,, \tag{22}$$

where $\varepsilon_{P_{\alpha i}}$ is the elasticity of poverty in the *i-th* group with respect to its inequality. $\varepsilon^*_{P_{\alpha i}}$ indicates, given the consumption growth, by what proportion total poverty in the population will change if the Gini index in the *i-th* group changes by 1 percent.

Dynamic method

The dynamic method is used to analyze the impacts of within-group growth and inequality on total poverty during a period. Let P_{it} denote an FGT measure for group *i* with the population share f_i at the date *t*, and there are *m* exclusive groups in the total population. The change in the poverty between the initial date *t* and the terminal date *(t + n)* can be simply decomposed as follows:

$$P_{t+n} - P_t = \sum_{i=1}^{m} (P_{i(t+n)} f_{i(t+n)} - P_{it} f_{it}) . \quad (23)$$

Then the percentage contribution of the *i-th* group to reduction in total poverty during the period from the date *t* to the date (*t* + *n*) is

$$\pi_i = \frac{P_{i(t+n)} f_{i(t+n)} - P_{it} f_{it}}{P_{t+n} - P_t} \times 100 . \quad (24)$$

If there is a decline in poverty in the *i-th* group, the sign of this index is negative. In contrast, if poverty in the *i-th* group increases, making a contribution to rising total poverty, then the sign of the index becomes positive.

The percentage contribution of growth to poverty reduction within the *i-th* group can be expressed as follows:

$$\theta_i = \frac{G_i(t, t+n)}{P_{i(t+n)} - P_{it}} . \quad (25)$$

Using equations (24) and (25), we can calculate the percentage contribution of the *i-th* group growth to the change in total poverty as follows:

$$\rho_{Gi} = \pi_i . \theta_i = \frac{P_{i(t+n)} f_{i(t+n)} - P_{it} f_{it}}{P_{t+n} - P_t} \times \frac{G_i(t, t+n)}{P_{i(t+n)} - P_{it}} \times 100 , \quad (26)$$

ρ_{Gi} can be interpreted as the percentage contribution of economic growth within the *i-th* group to the change in total poverty during the period. A greater value of ρ_{Gi} means a larger contribution of the *i-th* group growth to the change in poverty of the whole country.

Similarly, the impact of inequality components of the *i-th* group on the total poverty can be calculated as follows:

$$\rho_{Di} = \frac{P_{i(t+n)} f_{i(t+n)} - P_{it} f_{it}}{P_{t+n} - P_t} \times \frac{D_i(t, t+n)}{P_{i(t+n)} - P_{it}} \times 100 . \quad (27)$$

This index can be interpreted as percentage contributions of changes in inequality of the *i-th* group to the change in total poverty. The index can be negative or positive, depending on the signs of inequality component, and if there is poverty reduction in *the i-th* group during the period.

3.5. Pro-poor degree of growth

Kakwani and Pernia (2000) propose an index to measure the degree of pro-poor growth during a period. Suppose there is an increase in consumption per capita. If there is no change in consumption distribution, the incidence of poverty will decrease. In this case, the pro-poor index is equal to the ratio of the change in poverty under the assumption that there is no change in consumption distribution to the actual change in poverty. It can be expressed as follows: [4]

$$\phi = \frac{P_{t+n} - P_t}{G(t, t+n)} = 1 + \frac{D(t, t+n)}{G(t, t+n)}, \qquad (28)$$

where $G(t, t+n)$ and $D(t, t+n)$ are the changes in poverty due to the growth effect and the inequality effect, respectively. $(P_{t+n} - P_t)$ is the actual change in poverty.

The growth component *G* is always negative if there is an increase in the mean consumption μ. In the meantime, the redistribution component *D* can be either negative or positive. If the redistribution component is negative, the growth results in a new consumption distribution in favor of the poor, thereby reducing poverty unequivocally. The value of ϕ will be greater than 1, and such a growth is regarded as strongly pro-poor. In contrast, if the redistribution is positive, the change in consumption distribution is pro-rich. If the ϕ value lies between 0 and 1 ($0 < \phi < 1$), there is still reduction in poverty. The poor also benefit from growth, less proportionally than the rich.

Based on empirical results, Kakwani and Pernia (2000) arrived at the following value judgements regarding the pro-poor growth index ϕ:

$\phi < 0$	growth is anti-poor
$0 < \phi \leq 0.33$	growth is weakly pro-poor
$0.33 < \phi \leq 0.66$	growth is moderately pro-poor
$0.66 < \phi \leq 1.0$	growth is pro-poor

[4] Kakwani and Pernia (2000) used the proportional change to calculate the pro-poor growth index, but I found that the absolute value change is also suitable for the calculation of this index and does not change its meaning.

$\phi > 1.0$ growth is highly pro-poor

It should be noted that another definition of pro-poor growth is simply ‘growth with poverty reduction’ (Ravallion and Chen 2003; Ravallion 2004). Using this definition, Viet Nam’s growth is clearly pro-poor, since poverty is consistently reduced during 1993—2008.

4. Empirical Results

4.1 Poverty and inequality pattern during 1993—2008

The study relies on data from the Vietnam Living Standard Surveys (VLSS) in 1993 and 1998, and the Vietnam Household Living Standard Surveys (VHLSS) in 2004 and 2008. The four surveys were conducted by the General Statistics Office of Viet Nam with technical support from the World Bank (WB). The surveys had the following sample sizes: VLSS 1993, 4,800; VLSS 1998, 6,000; VHLSS 2004, 9,188; and VHLSS 2008, 9,189 households. The samples are representative of the national, rural and urban, and regional levels.[5] The surveys contain detailed information on household welfare, including expenditure consumption, which is used for poverty analysis.

In the analysis of poverty in developing countries and in most government statistics, the absolute poverty line is most widely used. In this paper, a household is defined as poor if its per capita consumption expenditure is below the expenditure poverty line. This poverty line is constructed by the General Statistics Office of Viet Nam and the World Bank. Basically, households on or above the overall poverty line have per capita expenditures that are sufficient to cover nutritional needs and basic non-food needs. The nominal expenditure poverty lines are VND1,160,000 for 1993, VND1,790,000 for 1998, VND2,077,000 for 2004, and VND 3,358,000 for 2008.

During 1993—1998, poverty decreased substantially from 58.1 percent to 47.4 percent. Poverty continued to decline remarkably to 19.5 percent in 2004 (Table 1). However, the speed of poverty reduction was slightly lower during 2004—2008. In 2008, the poverty rate was 14.5 percent. The poverty rate is very low in urban areas. Poverty in Viet Nam is now a predominantly rural problem.

Topographically, Viet Nam is a very diverse country, with eight well-defined agroecological zones. These range from the remote and poorly endowed zones of the northern mountains bordering China and the North and South Central Coast regions, through the Central Highlands, to the fertile and irrigated regions of the Red River Delta in the North and the Mekong Delta in the South. The extent of poverty declined in every region over the period 1993—1998 as well as during 2004—2008, regardless of the poverty index used, but some regions experienced a faster decline than others. In 2008, northwest was the poorest

[5] There are also VHLSSs in 2002 and 2006. We do not use the 2004 VHLSS since it is close to the 2008 VHLSS. The 2002 VHLSS has a large sample size of 30,000 households and based on our experiences, the quality of the 2002 VHLSS is not as good as the other VHLSSs. Thus, we do not use the 2002 VHLSS.

region, while southeast was the richest region. The share of population by regions, urbanity, and ethnicity is presented in Table A.1 in the Appendix.

Table 1: Poverty Rate, 1993—2008

	Poverty rate (H) (%)				Sectoral contribution to the total poverty rate			
	1993	1998	2004	2008	1993	1998	2004	2008
All Viet Nam	58.1	37.4	19.5	14.5	100	100	100	100
Urban/Rural								
Rural	66.4	45.5	25.0	18.7	91.5	94.5	95.3	93.7
Urban	24.9	9.2	3.6	3.3	8.5	5.5	4.7	6.3
Regions								
Red River Delta	61.2	29.3	12.1	8.1	21.3	17.9	13.6	12.3
North East	78.9	62.0	29.4	24.3	19.4	19.6	17.2	18.9
North West	81.0	73.4	58.6	45.7	3.7	5.6	8.9	10.2
North Central Coast	74.5	48.1	31.9	22.6	16.4	17.8	21.1	19.3
South Central Coast	47.2	34.5	19.0	13.7	7.7	7.8	8.3	8.0
Central Highlands	61.2	52.4	33.1	24.1	2.4	5.1	9.6	10.2
South East	40.0	12.2	5.4	3.5	11.0	4.9	4.4	4.1
Mekong River Delta	47.1	36.9	15.9	12.3	18.1	21.2	17.0	17.1
Ethnic Groups								
Kinh majority	53.9	31.1	13.5	9.0	80.5	71.5	60.7	53.8
Ethnic minorities	86.4	75.2	60.7	50.3	19.5	28.5	39.3	46.2

Sources: Authors' estimation from VLSS 1993, VLSS 1998, VHLSS 2004 and VHLSS 2008.

Table 2: Poverty Gap Index (P1), 1993—2008

	Poverty gap index				Sectoral contribution to the total poverty index			
	1993	1998	2004	2008	1993	1998	2004	2008
All Viet Nam	0.1847	0.0954	0.0472	0.0347	100	100	100	100
Urban/Rural								
Rural	0.2147	0.1179	0.0612	0.0459	93.1	95.9	96.2	95.7
Urban	0.0640	0.0174	0.0070	0.0054	6.9	4.1	3.8	4.3
Regions								
Red River Delta	0.1815	0.0624	0.0212	0.0141	19.9	15.0	9.8	8.9
North East	0.2707	0.1758	0.0701	0.0648	21.0	21.8	16.9	21.0
North West	0.2622	0.2218	0.1911	0.1367	3.8	6.6	11.9	12.8
North Central Coast	0.2468	0.1184	0.0809	0.0530	17.1	17.2	22.1	18.8
South Central Coast	0.1722	0.1017	0.0510	0.0335	8.8	9.0	9.2	8.1
Central Highlands	0.2363	0.1910	0.1065	0.0753	3.0	7.4	12.7	13.2
South East	0.1140	0.0299	0.0120	0.0077	9.8	4.7	4.1	3.7
Mekong River Delta	0.1382	0.0815	0.0299	0.0231	16.7	18.4	13.2	13.4
Ethnic Groups								
Kinh majority	0.1602	0.0713	0.0263	0.0169	75.4	64.1	48.6	42.2
Ethnic minorities	0.3472	0.2416	0.1919	0.1512	24.6	35.8	51.4	57.9

Sources: Authors' estimation from VLSS 1993, VLSS 1998, VHLSS 2004 and VHLSS 2008.

There are 54 ethnic groups in Viet Nam, of which the lowland ethnic Vietnamese, known as Kinh, are the dominant group and account for around 85 percent of the population. They are mostly located in upland areas, which are related to the problems of remoteness, inadequate infrastructure, and physical and social isolation. Poverty is much higher for ethnic minorities than for Kinh.

Table 2 presents the estimates of poverty gap index. The pattern of the poverty squared gap index is similar to that of the poverty gap index. Thus, poverty analysis using the squared gap index is presented in Appendix. Tables 1 and 2 also present the contribution of sub-groups to total poverty. Although ethnic minorities account for 15 percent of the population, they accounted for 46 percent of the poor people in 2008. Their contribution to the total poverty depth is even much higher, at 58 percent in 2008.

Table 3: Per capita expenditure, 1993—2008 (in Jan. 2008 price, VND '000)

	1993	1998	Change 1993-1998 (%)	2004	2008	Change 2004-2008 (%)
All Viet Nam	3,261	4,680	43.5	6,462	7,683	18.90
Urban/Rural						
Rural	2,754	3,669	33.2	4,895	6,191	26.49
Urban	5,299	8,178	54.3	10,968	11,588	5.65
Regions						
Red River Delta	3,159	4,871	54.2	6,784	8,406	23.91
North East	2,346	3,125	33.2	5,149	6,096	18.40
North West	2,293	2,654	15.7	3,591	4,803	33.77
North Central Coast	2,444	3,720	52.2	4,584	5,870	28.06
South Central Coast	3,526	4,484	27.2	5,977	7,309	22.30
Central Highlands	2,774	3,288	18.5	4,906	6,690	36.35
South East	4,468	7,889	76.6	10,505	10,963	4.36
Mekong River Delta	3,597	4,294	19.4	5,943	7,107	19.60
Ethnic Groups						
Kinh majority	3,453	5,026	45.6	6,930	8,250	19.04
Ethnic minorities	1,983	2,581	30.2	3,220	3,982	23.67

Sources: Authors' estimation from VLSS 1993, VLSS 1998, VHLSS 2004 and VHLSS 2008.

Table 3 shows that the average annual growth of per capita expenditure is 7.5 percent during 1993—1998 and 4.5 percent during 2004—2008. The rate of expenditure growth was different for various socioeconomic groups. Interestingly, the urban areas experienced a higher growth rate of expenditure than rural areas during 1993—1998, but during 2004—2008 the rural areas had substantially higher expenditure growth than the urban areas. Poor regions such as North West and Central Highlands also had a very high rate of expenditure growth during the 2000s. Ethnic minorities had a slightly higher rate than that of the Kinh.

The Gini index increased by around 6 percent during 1993—1998 (Table 4). On the other hand, since disadvantaged groups, such as rural and ethnic minority households, had a high growth rate of expenditure during the 2000s, there was an improvement in expenditure equality. The Gini index decreased by 3.8 percent during 2004—2008. It is apparent that the improvement in income distribution during 2004—2008 was due to a reduction in inequality between urban and rural areas as rural areas grew faster than urban areas (Table 3).

Table 4: Gini Index, 1993—2008

	1993	1998	Change 1993-1998 (%)	2004	2008	Change 2004-2008 (%)
All Viet Nam	0.330	0.350	5.97	0.370	0.356	-3.82
Urban/Rural						
Rural	0.279	0.270	-2.94	0.295	0.305	3.65
Urban	0.337	0.340	0.91	0.332	0.347	4.48
Regions						
Red River Delta	0.311	0.317	1.90	0.346	0.348	0.69
North East	0.245	0.264	7.79	0.342	0.337	-1.71
North West	0.225	0.223	-0.67	0.363	0.378	4.02
North Central Coast	0.247	0.287	16.24	0.307	0.310	0.94
South Central Coast	0.338	0.329	-2.68	0.343	0.315	-8.15
Central Highlands	0.324	0.311	-4.13	0.356	0.353	-0.85
South East	0.363	0.359	-1.20	0.347	0.363	4.54
Mekong River Delta	0.315	0.296	-5.96	0.317	0.311	-2.00
Ethnic Groups						
Kinh majority	0.325	0.343	5.41	0.354	0.340	-4.00
Ethnic minorities	0.253	0.240	-5.00	0.310	0.307	-1.17

Sources: Authors' estimation from VLSS 1993, VLSS 1998, VHLSS 2004, and VHLSS 2008.

4.2. Growth and inequality decomposition

Responses of poverty to economic growth and inequality are estimated by applying the Kakwani method of static decomposition. To compute the poverty elasticities for the poverty rate (or headcount ratio H), it is necessary to estimate the Lorenz curve. The procedure for this estimation is presented in the Appendix.

Table 5 shows that poverty becomes more responsive to mean expenditure over time. Higher values of elasticity imply that the poverty reduction is faster than the growth of expenditure, provided that the growth process does not lead to an increase in inequality. Poverty in regions that have higher expenditures per capita and low levels of poverty, such as South East and Red River Delta, is generally more sensitive to changes in mean expenditure. In other words, when the incidence and severity of poverty is low, a small increase in growth can lead to a relatively large decline in poverty. It also implies that for areas with small

elasticities such as North West and Central Highlands, and also ethnic minorities, not only growth but social safety nets and redistributive policies are vitally required.

Table 5: Elasticity of Poverty Rate (H0) to Mean Expenditure and Inequality

Groups	Elasticity to mean expenditure (%)				Elasticity to inequality (%)			
	1993	1998	2004	2008	1993	1998	2004	2008
All Viet Nam	-1.09	-1.16	-1.24	-1.38	0.15	0.63	1.42	1.78
Urban/Rural								
Rural	-1.23	-1.52	-1.61	-1.63	-0.05	0.32	1.01	1.37
Urban	-1.28	-1.68	-1.72	-1.82	1.06	2.85	4.54	4.47
Regions								
Red River Delta	-1.13	-1.47	-1.77	-1.85	0.12	0.89	2.22	2.78
North East	-1.11	-1.22	-1.25	-1.32	-0.21	0.04	0.88	1.08
North West	-1.13	-1.32	-1.00	-1.04	-0.22	-0.16	0.19	0.45
North Central Coast	-1.24	-1.46	-1.38	-1.53	-0.18	0.33	0.72	1.14
South Central Coast	-1.22	-1.30	-1.38	-1.58	0.28	0.62	1.36	1.86
Central Highlands	-0.94	-1.22	-1.11	-1.12	-0.02	0.10	0.70	1.11
South East	-1.00	-1.37	-1.49	-1.95	0.54	2.20	3.72	4.41
Mekong River Delta	-1.25	-1.49	-1.69	-1.76	0.31	0.62	1.65	1.97
Ethnic Groups								
Kinh majority	-1.13	-1.27	-1.56	-1.73	0.23	0.84	2.03	2.52
Ethnic minorities	-0.82	-1.18	-1.20	-1.24	-0.25	-0.18	0.08	0.23

Sources: Authors' estimation from VLSS 1993, VLSS 1998, VHLSS 2004, and VHLSS 2008.

Table 6: Elasticity of Poverty Gap Index (P1) to Mean Expenditure and Inequality

Groups	Elasticity to mean expenditure (%)				Elasticity to inequality (%)			
	1993	1998	2004	2008	1993	1998	2004	2008
All Viet Nam	-2.15	-2.92	-3.13	-3.17	1.42	3.13	5.73	6.37
Urban/Rural								
Rural	-2.09	-2.86	-3.09	-3.08	0.88	1.81	3.56	4.44
Urban	-2.90	-4.28	-4.11	-5.14	4.24	9.97	14.49	16.05
Regions								
Red River Delta	-2.37	-3.69	-4.74	-4.78	1.35	3.85	8.19	9.68
North East	-1.91	-2.53	-3.19	-2.75	0.46	1.11	3.97	4.05
North West	-2.09	-2.31	-2.06	-2.34	0.40	0.59	1.59	2.44
North Central Coast	-2.02	-3.06	-2.94	-3.27	0.55	1.92	3.06	4.19
South Central Coast	-1.74	-2.39	-2.73	-3.09	1.63	2.62	4.67	5.82
Central Highlands	-1.59	-1.74	-2.11	-2.20	0.96	1.23	2.96	4.18
South East	-2.51	-3.07	-3.46	-3.56	2.90	7.52	12.09	11.33
Mekong River Delta	-2.41	-3.53	-4.30	-4.33	1.86	2.89	6.16	6.95
Ethnic Groups								
Kinh majority	-2.36	-3.37	-4.15	-4.33	1.67	3.88	7.70	8.76
Ethnic minorities	-1.49	-2.11	-2.16	-2.33	0.25	0.54	1.22	1.62

Sources: Authors' estimation from VLSS 1993, VLSS 1998, VHLSS 2004, and VHLSS 2008.

The impact of expenditure growth on the severely poor is greater than its impact on the moderately poor (Table 6). The absolute value of the poverty elasticity to mean expenditure is higher for the additive poverty measures, which attach greater weight to the poorest. Tables 5 and 6 also present the poverty elasticity to inequality. Poverty becomes more sensitive to inequality over time, and the negative impact of inequality on the severely poor was larger than its impact on the moderately poor. In addition, the elasticity is higher for rich regions than for poor regions.

It should be noted that the poverty indexes are more elastic to expenditure inequality than to expenditure growth. This suggests the important role of reducing inequality in reducing poverty.

Tables 7 and 8 show the decomposition of poverty reduction during the 1990s and 2000s into expenditure growth and expenditure redistribution components. Expenditure growth is the main contributor to poverty reduction. Interestingly, the inequality component increased poverty in the 1990s but decreased poverty in the 2000s.

Table 7: Growth and Inequality Decomposition of Change in Poverty Rate (H0), 1993—1998 and 2004-2008

	1993-1998 (in percentage points)			2004-2008 (in percentage points)		
	Poverty reduction	Growth component	Inequality component	Poverty reduction	Growth component	Inequality component
All Viet Nam	-20.75	-23.15	2.40	-5.02	-2.79	-2.22
Urban/Rural						
Rural	-20.84	-19.93	-0.91	-6.29	-6.48	0.20
Urban	-15.76	-15.59	-0.17	-0.26	-0.92	0.66
Regions						
Red River Delta	-31.96	-30.59	-1.37	-4.01	-3.76	-0.25
North East	-16.81	-17.98	1.17	-5.09	-3.80	-1.29
North West	-7.63	-8.16	0.53	-12.88	-12.16	-0.72
North Central Coast	-26.45	-30.53	4.08	-9.28	-7.82	-1.46
South Central Coast	-12.74	-12.87	0.13	-5.29	-3.43	-1.85
Central Highlands	-8.83	-9.95	1.11	-9.02	-9.20	0.18
South East	-27.85	-27.26	-0.59	-1.84	-1.02	-0.82
Mekong River Delta	-10.19	-10.28	0.09	-3.55	-3.57	0.01
Ethnic Groups						
Kinh majority	-22.72	-24.80	2.09	-4.56	-2.42	-2.14
Ethnic minorities	-11.26	-12.21	0.95	-10.32	-8.20	-2.13

Sources: Authors' estimation from VLSS 1993, VLSS 1998, VHLSS 2004, and VHLSS 2008.

Inequality within rural and urban areas decreased rural and urban poverty, respectively, during the 1990s but increased poverty during the 2000s. It means that

inequality between regions as well as between urban and rural areas increased during the 1990s but decreased during the 2000s.

Table 8: Growth and Inequality Decomposition of Change in Poverty Gap Index (P1), 1993—1998 and 2004—2008

	1993-1998			2004-2008		
	Poverty reduction	**Growth component**	**Inequality component**	**Poverty reduction**	**Growth component**	**Inequality component**
All Viet Nam	-0.0893	-0.1039	0.0146	-0.0125	-0.0082	-0.0043
Urban/Rural						
Rural	-0.0967	-0.0918	-0.0049	-0.0153	-0.0205	0.0052
Urban	-0.0466	-0.0467	0.0001	-0.0016	-0.0015	-0.0001
Regions						
Red River Delta	-0.1191	-0.1248	0.0057	-0.0071	-0.0087	0.0016
North East	-0.0949	-0.1131	0.0182	-0.0053	-0.0120	0.0067
North West	-0.0404	-0.0424	0.0021	-0.0544	-0.0661	0.0117
North Central Coast	-0.1284	-0.1572	0.0289	-0.0279	-0.0277	-0.0002
South Central Coast	-0.0705	-0.0535	-0.0170	-0.0175	-0.0111	-0.0064
Central Highlands	-0.0453	-0.0339	-0.0115	-0.0312	-0.0397	0.0085
South East	-0.0840	-0.0899	0.0059	-0.0043	-0.0024	-0.0019
Mekong River Delta	-0.0567	-0.0386	-0.0181	-0.0068	-0.0079	0.0010
Ethnic Groups						
Kinh majority	-0.0890	-0.1003	0.0113	-0.0094	-0.0059	-0.0036
Ethnic minorities	-0.1056	-0.1024	-0.0032	-0.0407	-0.0402	-0.0005

Sources: Authors' estimation from VLSS 1993, VLSS 1998, VHLSS 2004, and VHLSS 2008.

It should be noted that the Gini index cannot be used to rank the quality of two expenditure distributions if they intersect. Thus, it is possible that the Gini index increases during a period, but the inequality component contribute to poverty reduction during the period, and vice versa.[6] For example, the Gini index increased in Red River Delta, North West, North Central Coast, and South East during 2004—2008 (Table 4), but the inequality component contributed to the reduction of the headcount index in these regions. At the same time, the Gini coefficient decreased in Central Highlands and Mekong River Delta, the but inequality components increased poverty in these regions.

[6] A transfer from a very poor people to a less poor people can increase the Gini index but reduce the poverty rate. Depending on the amount of transfer, the poverty gap index and the poverty squared index can decrease or increase. For example, suppose that in the period, the income distribution of 4 people is 4, 5, 6, and 15. The poverty line is 7. The mean income is 7.5. The Gini index is 0.37. The income poverty rate is 75 percent. The P1 and P2 indexes are 0.214 and 0.071, respectively.

In the second period, the income distribution is 1, 7, 7, and 15. The mean income is still equal to 7.5. The Gini index increases to 0.47, however, the income poverty rate decreases to 25%. The P1 and P2 indexes are 0.214 and 0.184, respectively. In this case, the growth component does not affect poverty indexes. However, the inequality component decreases P0, keeps the P1 index unchanged, and increases the P2 index.

4.3. Sectoral growth and inequality

Different rates of economic growth and inequality changes within socioeconomic groups lead to different contributions to the reduction in national poverty. Table 9 calculates the percentage contribution of growth and inequality by various socioeconomic groups to the reduction in national poverty. If the whole country itself is considered to contribute 100 percent to its reduction in poverty during 2004—2008, then the growth component contributes positively 55.6 percent, while the inequality contributes positively 44.5 percent to that reduction in poverty.

In the 2000s, the remarkable reduction in total poverty came mainly from economic growth within the rural areas, contributing 103 percent to the reduction in poverty incidence. This is because poverty in Viet Nam remains a predominantly rural problem. Thus, high growth in the rural areas will lead to a great decrease in national poverty.

Table 9: Subgroup Contribution to Change in Total (National) Poverty Rate, 1993—1998 and 2004—2008 (in %)

	1993-1998			2004-2008		
	Poverty reduction	**Growth component**	**Inequality component**	**Poverty reduction**	**Growth component**	**Inequality component**
All Viet Nam	100	111.59	-11.59	100	55.58	44.42
Urban/Rural						
Rural	85.98	82.24	3.74	99.86	102.88	-3.02
Urban	14.01	13.86	0.15	0.12	-0.43	0.55
Regions						
Red River Delta	27.50	26.32	1.18	17.30	16.22	1.08
North East	19.04	20.36	-1.33	12.30	9.18	3.12
North West	0.27	0.29	-0.02	4.93	4.66	0.28
North Central Coast	13.80	15.93	-2.13	26.30	22.16	4.14
South Central Coast	7.39	7.47	-0.07	9.34	6.06	3.28
Central Highlands	-2.42	-2.73	0.31	7.99	8.15	-0.16
South East	21.91	21.45	0.46	5.33	-2.96	8.29
Mekong River Delta	12.53	12.64	-0.11	16.54	16.63	-0.09
Ethnic Groups						
Kinh majority	96.78	105.67	-8.89	80.51	42.72	37.78
Ethnic minorities	3.22	3.49	-0.27	19.47	15.47	4.00

Sources: Authors' estimation from VLSS 1993, VLSS 1998, VHLSS 2004, and VHLSS 2008.

Among regions, expenditure growth in the Red River Delta made the greatest contribution to reducing the incidence of total poverty during 1993—1998, but North Central Coast had the highest contribution to poverty reduction during 2004—2008. Expenditure growth and inequality among ethnic minorities made very small contribution to poverty reduction during 1993—1998, but much larger contribution to poverty reduction during 2004—2008 compared with that of the Kinh majority.

Table 10: Subgroup Contribution to Change in Total (National) Poverty Gap Index (P1), 1993—1998 and 2004—2008 (in %)

	1993–1998			2004–2008		
	Poverty reduction	**Growth component**	**Inequality component**	**Poverty reduction**	**Growth component**	**Inequality component**
All Viet Nam	100	116.30	-16.30	100	65.60	34.40
Urban/Rural						
Rural	90.09	85.52	4.57	97.47	130.60	-33.13
Urban	9.90	9.92	-0.02	2.51	-2.35	4.86
Regions						
Red River Delta	25.17	26.38	-1.21	12.27	15.04	-2.77
North East	20.09	23.94	-3.85	5.61	12.69	-7.09
North West	0.70	0.74	-0.04	9.67	11.75	-2.08
North Central Coast	16.94	20.74	-3.81	31.09	30.86	0.22
South Central Coast	8.54	6.48	2.06	12.27	7.78	4.49
Central Highlands	-1.71	-1.28	-0.43	11.38	14.48	-3.10
South East	15.29	16.36	-1.08	5.04	-2.81	7.85
Mekong River Delta	15.00	10.21	4.79	12.72	14.78	-2.06
Ethnic Groups						
Kinh majority	87.43	98.57	-11.14	66.65	41.83	24.82
Ethnic minorities	12.57	12.19	0.38	33.32	32.91	0.41

Sources: Authors' estimation from VLSS 1993, VLSS 1998, VHLSS 2004, and VHLSS 2008.

To achieve the target of total poverty alleviation after 2008, socioeconomic policies should focus on regions that have high elasticities of total poverty with respect to growth and inequality. Table 11 presents elasticities that measure the responses of national poverty to economic growth and inequality changes within regions in 2008. It shows that total poverty is much more elastic to growth and inequality in the rural areas than in the urban areas. Maintaining a low level of inequality within the rural areas plays an important role in alleviating national poverty, especially on the severity of poverty.

By region, the incidence of national poverty is most elastic to the expenditure growth of North Central Coast and North East. Poverty is also highly elastic to inequality in North Central Coast, Red River Delta, and Mekong Delta.

For the ethnic minority group, increasing their expenditure average is more important than reducing their expenditure inequality if the final objective is to reduce the total poverty incidence of the country. However, for the Kinh group, inequality reduction is more important in reducing poverty.

Table 11: Elasticity of Total (National) Poverty to Mean Expenditure and Inequality of Subgroups in 2008 (in %)

	Poverty rate (H) (%)	**Poverty Gap Index (P1)**	**Squared Gap Index (P2)**

	Growth Component	Inequality Component	Growth Component	Inequality Component	Growth Component	Inequality Component
All Viet Nam	-1.38	1.78	-3.17	6.37	-3.58	9.18
Urban/Rural						
Rural	-1.57	1.33	-2.96	4.27	-3.40	6.45
Urban	-0.06	0.14	-0.21	0.64	-0.18	0.64
Regions						
Red River Delta	-0.13	0.20	-0.32	0.64	-0.36	0.89
North East	-0.21	0.17	-0.43	0.63	-0.74	1.39
North West	-0.15	0.06	-0.35	0.37	-0.42	0.60
North Central Coast	-0.34	0.25	-0.91	1.17	-0.67	1.17
South Central Coast	-0.17	0.20	-0.16	0.31	-0.30	0.69
Central Highlands	-0.17	0.17	-0.35	0.67	-0.43	1.04
South East	-0.08	0.18	-0.23	0.73	-0.14	0.55
Mekong River Delta	-0.19	0.22	-0.30	0.49	-0.53	1.05
Ethnic Groups						
Kinh majority	-0.70	1.02	-1.67	3.38	-1.69	4.10
Ethnic minorities	-0.74	0.14	-1.43	1.00	-1.90	1.93

Sources: Authors' estimation from VHLSS 2008

4.4. Pro-poor index

Table 12 estimates the pro-poor index within regions and groups. The pro-poor index is smaller than 1 during 1993—1998, but larger than 1 during 2004—2008. It means that the growth in Viet Nam is pro-poor, especially highly pro-poor during 2004—2008. For the whole country, the poor benefited proportionally much more than the rich during 2004—2008.

Interestingly, pro-poor index within urban areas and rural areas are larger than 1 during 1993—1998, but lower than 1 during 2004—2008. It means that within urban and rural areas, the poor benefited proportionally more than the non-poor during 1993—1998 but proportionally less than the non-poor during 2004—2008. But the fact that the pro-poor index for all of Viet Nam is better in 2004—2008 than in 1993—1998 simply means that the inequality between urban and rural areas had been reduced more substantially during the 2004—2008 period.

By region, the poor in South East and South Central Coast experienced the benefits from within-group economic growth proportionally much more than the rich during 2004—2008. Economic growth within the ethnic minority group was also highly pro-poor.

The pro-poor index for the poverty gap and squared gap measures tends to be lower than the pro-poor index of the poverty rate. It implies that the poorest benefited proportionally less than the poor who were closer to the poverty line.

Table 12: Pro-Poor Index for Economic Growth, 1993—1998 and 2004—2008

	1993-1998			2004-2008		
	Poverty rate (%)	**Poverty gap index**	**Squared gap index**	**Poverty rate (%)**	**Poverty gap index**	**Squared gap index**
All Viet Nam	0.90	0.86	0.85	1.80	1.52	1.36
Urban/Rural						
Rural	1.05	1.05	1.06	0.97	0.75	0.65
Urban	1.01	1.00	1.00	0.28	1.07	1.60
Regions						
Red River Delta	1.04	0.95	0.89	1.07	0.82	0.62
North East	0.93	0.84	0.86	1.34	0.44	0.10
North West	0.94	0.95	1.04	1.06	0.82	0.68
North Central Coast	0.87	0.82	0.81	1.19	1.01	0.87
South Central Coast	0.99	1.32	1.48	1.54	1.58	2.04
Central Highlands	0.89	1.34	2.19	0.98	0.79	0.66
South East	1.02	0.93	0.86	1.80	1.79	1.78
Mekong River Delta	0.99	1.47	1.69	0.99	0.86	0.88
Ethnic Groups						
Kinh majority	0.92	0.89	0.87	1.88	1.59	1.55
Ethnic minorities	0.92	1.03	1.12	1.26	1.01	0.85

Sources: Authors' estimation from VLSS 1993, VLSS 1998, VHLSS 2004, and VHLSS 2008.

5. Conclusions

During the 1990s and 2000s, poverty declined remarkably in Viet Nam. Poverty in Viet Nam is now a predominantly rural problem. Poverty is higher in the mountainous areas where large proportions of ethnic minorities people reside. Poverty in Viet Nam is found to be sensitive to economic growth. Poverty can decrease faster than the rate of economic growth provided that the process of economic growth does not lead to an increase in inequality. Poverty is more responsive to inequality than to economic growth. This implies that if there is an increase in inequality, the extremely poor people will be most seriously affected.

During 1993—1998, expenditure growth was the main cause of poverty reduction. Expenditure distribution deteriorated, thereby hampering the effect of growth on poverty reduction. However, during 2004—2008, both expenditure growth and expenditure inequality had contributed positively to poverty reduction. During this period, the poverty incidence was reduced by 5 percentage points, of which expenditure growth and expenditure redistribution contributed 2.8 and 2.2 percentage points to poverty reduction, respectively. Compared with the 1990s, a substantially larger number of poverty reduction programs were implemented during 2000s. The *"*growth with equity*"* strategy that Viet Nam chose to follow during the 1990s was successful. The pro-poor index is less than q for the period 1993—1998, but larger than 1 for the period 2004—2008. This indicates that economic growth tends to be more pro-

poor over time. The poor benefited proportionally more than the rich from economic growth during the 2000s.

In the coming years, the government should still follow a strategy of pro-poor growth to reduce poverty. Poverty is now more sensitive to inequality reduction than to expenditure growth. There is a requirement of more equitable growth for poorer regions and for ethnic minorities. Reducing regional and ethnic disparities can be an important factor to poverty reduction.

The fact that poverty in Viet Nam remains prevalent and persistent in the rural, mountainous, and remote areas suggests that pro-poor policies, including direct and indirect policies, should focus strongly on these areas. Direct policies are social safety nets for all areas, especially the poorer regions, while indirect policies can be in the form of generating more off-farm employment and raising agricultural productivity.

Within regions, the promotion of economic growth and the reduction of inequality should be focused in regions to which national poverty is highly responsive. To reduce total poverty, economic growth should be promoted within North Central Coast and North East (these regions are named according to the elasticity of the severity of total poverty to within-region growth from the highest to lowest value), while inequality within North Central Coast, Red River Delta and Mekong Delta should be decreased.

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Appendix: Estimation of Loren Function to Estimate Elasticity of the Poverty Rate

As presented, the elasticity of the headcount ratio with respect to the mean consumption μ is given by Kakwani (1993) as follows:

$$\eta_H = \frac{\partial H}{\partial \mu}\frac{\mu}{H} = -\frac{z}{\mu H L''(H)}, \quad \text{(A.1)}$$

where $L''(H)$ is the second derivative of $L(p)$ with respect to *p* at the value *H*. In this paper, the Kakwani Lorenz function will be used, which has the following form (Kakwani 1980):

$$L(p) = p - \theta p^{\gamma}(1-p)^{\delta}. \quad \text{(A.2)}$$

The second derivative is as follows:

$$L''(p) = 2\theta\gamma\delta p^{\gamma-1}(1-p)^{\delta-1} + \theta\gamma(1-\gamma)p^{\gamma-2}(1-p)^{\delta} + \theta\delta(1-\delta)p^{\gamma}(1-p)^{\delta-2}. \quad \text{(A.3)}$$

To compute η_H, we have to estimate the parameters θ, γ, δ of the function *L(p).* Equation (A.2) can be arranged as follows:

$$p - L(p) = \theta p^{\gamma}(1-p)^{\delta}. \quad \text{(A.4)}$$

Taking the logarithm of both sides of (A.4), we have:

$$\ln\left[p - L(p)\right] = \ln(\theta) + \gamma\ln(p) + \delta\ln(1-p). \quad \text{(A.5)}$$

Using household data from the VHLSSs, we can calculate *p* and *L(p)* for sampled accumulative households, and run OLS regression to estimate the parameters θ, γ, δ in equation (A.5).

Tables A.6 and A.7 present results from the regressions of (A.5) for different urban/rural, regions, Kinh/ethnic minorities for 1993, 1998, 2004, and 2008. It shows that the functional form fits the data very well.

Table A.1: Population Share by Groups (%)

Groups	1993	1998	2004	2008
All Viet Nam	100	100	100	100
Urban/Rural				
Rural	80.09	77.57	74.2	72.4
Urban	19.91	22.43	25.8	27.6
Regions				
Red River Delta	20.24	22.85	21.8	21.9

North East	14.30	11.81	11.4	11.3
North West	2.65	2.85	2.95	3.2
North Central Coast	12.77	13.84	12.88	12.3
South Central Coast	9.44	8.48	8.55	8.4
Central Highlands	2.32	3.67	5.65	6.1
South East	15.92	15.00	15.91	16.6
Mekong River Delta	22.37	21.50	20.86	20.1
Ethnic Groups				
Kinh majority	86.92	85.85	87.37	86.7
Ethnic minorities	13.08	14.15	12.63	13.3

Sources: Authors' estimation from VLSS 1993, VLSS 1998, VHLSS 2004 and VHLSS 2008.

Table A.2: Poverty Squared Gap Index (P2) during 1993–2008

	Poverty squared gap index				Sectoral contribution to the total poverty index			
	1993	**1998**	**2004**	**2008**	**1993**	**1998**	**2004**	**2008**
All Viet Nam	0.0787	0.0355	0.0170	0.0124	100	100	100	100
Urban/Rural								
Rural	0.0923	0.0443	0.0221	0.0167	93.9	96.8	96.8	97.1
Urban	0.0240	0.0051	0.0021	0.0013	6.1	3.2	3.2	2.9
Regions								
Red River Delta	0.0704	0.0206	0.0056	0.0040	18.1	13.3	7.2	7.1
North East	0.1196	0.0669	0.0237	0.0241	21.7	22.3	15.9	21.8
North West	0.1116	0.0873	0.0803	0.0568	3.8	7.0	14.0	14.8
North Central Coast	0.1051	0.0407	0.0292	0.0190	17.0	15.8	22.2	18.9
South Central Coast	0.0850	0.0450	0.0211	0.0113	10.2	10.7	10.6	7.7
Central Highlands	0.1374	0.0957	0.0451	0.0314	4.1	9.9	15.0	15.4
South East	0.0457	0.0115	0.0044	0.0027	9.3	4.9	4.1	3.7
Mekong River Delta	0.0558	0.0267	0.0090	0.0066	15.9	16.1	11.0	10.8
Ethnic Groups								
Kinh majority	0.0641	0.0239	0.0079	0.0048	70.8	57.8	40.4	33.4
Ethnic minorities	0.1755	0.1059	0.0801	0.0624	29.2	42.2	59.6	66.7

Sources: Authors' estimation from VLSS 1993, VLSS 1998, VHLSS 2004 and VHLSS 2008.

Table A.3: Elasticity of Poverty Squared Gap Index (P2) to Mean Expenditure and Inequality

Groups	Elasticity to mean expenditure (%)				Elasticity to inequality (%)			
	1993	**1998**	**2004**	**2008**	**1993**	**1998**	**2004**	**2008**
All Viet Nam	-2.69	-3.37	-3.56	-3.58	2.63	4.92	8.37	9.18
Urban/Rural								
Rural	-2.65	-3.32	-3.52	-3.50	1.81	3.12	5.45	6.64
Urban	-3.34	-4.83	-4.61	-6.14	6.44	13.60	19.46	21.95
Regions								
Red River Delta	-3.16	-4.06	-5.50	-5.00	2.53	5.68	11.40	12.53
North East	-2.53	-3.25	-3.92	-3.37	1.15	2.16	6.20	6.38
North West	-2.70	-3.08	-2.76	-2.82	1.09	1.37	2.91	4.07
North Central Coast	-2.70	-3.82	-3.54	-3.57	1.30	3.32	4.89	6.17

South Central Coast	-2.05	-2.52	-2.84	-3.93	2.92	4.17	6.76	8.98
Central Highlands	-1.44	-1.99	-2.72	-2.80	1.94	2.34	4.97	6.76
South East	-2.98	-3.20	-3.50	-3.66	4.70	10.34	15.68	14.81
Mekong River Delta	-2.95	-4.11	-4.68	-4.95	3.24	4.55	8.50	9.76
Ethnic Groups								
Kinh majority	-3.00	-3.96	-4.69	-5.05	3.00	5.92	10.70	12.27
Ethnic minorities	-1.96	-2.56	-2.79	-2.84	0.80	1.32	2.33	2.90

Sources: Authors' estimation from VLSS 1993, VLSS 1998, VHLSS 2004, and VHLSS 2008.

Table A.4: Growth and Inequality Decomposition of Change in Poverty Squared Gap Index (P2) during 1993–1998 and 2004–2008

	1993–1998			2004-2008		
	Poverty reduction	**Growth component**	**Inequality component**	**Poverty reduction**	**Growth component**	**Inequality component**
All Viet Nam	-0.0432	-0.0509	0.0077	-0.0045	-0.0033	-0.0012
Urban/Rural						
Rural	-0.0480	-0.0453	-0.0027	-0.0055	-0.0085	0.0030
Urban	-0.0189	-0.0189	0.0000	-0.0008	-0.0005	-0.0003
Regions						
Red River Delta	-0.0498	-0.0558	0.0061	-0.0016	-0.0026	0.0010
North East	-0.0527	-0.0614	0.0088	0.0005	-0.0052	0.0056
North West	-0.0243	-0.0233	-0.0010	-0.0236	-0.0346	0.0110
North Central Coast	-0.0644	-0.0797	0.0153	-0.0102	-0.0117	0.0015
South Central Coast	-0.0400	-0.0270	-0.0130	-0.0098	-0.0048	-0.0050
Central Highlands	-0.0417	-0.0191	-0.0227	-0.0137	-0.0208	0.0071
South East	-0.0342	-0.0398	0.0056	-0.0016	-0.0009	-0.0017
Mekong River Delta	-0.0292	-0.0173	-0.0119	-0.0023	-0.0026	0.0003
Ethnic Groups						
Kinh majority	-0.0402	-0.0460	0.0058	-0.0031	-0.0020	-0.0011
Ethnic minorities	-0.0696	-0.0622	-0.0074	-0.0176	-0.0207	0.0031

Sources: Authors' estimation from VLSS 1993, VLSS 1998, VHLSS 2004, and VHLSS 2008.

Table A.5: Subgroup Contribution to Change in Total (National) Poverty Squared Gap Index (P2) during 1993–1998 and 2004–2008 (in %)

	1993–1998			2004–2008		
	Poverty reduction	**Growth component**	**Inequality component**	**Poverty reduction**	**Growth component**	**Inequality component**
All Viet Nam	100	73.33	26.67	100	117.82	-17.82
Urban/Rural						
Rural	96.02	148.39	-52.37	91.58	86.46	5.12
Urban	3.96	-2.48	6.44	8.41	8.42	-0.02
Regions						
Red River Delta	7.71	12.54	-4.82	22.09	24.78	-2.69
North East	-0.33	3.47	-3.80	21.30	24.84	-3.54
North West	11.70	17.15	-5.45	1.09	1.04	0.05
North Central Coast	31.24	35.83	-4.59	18.04	22.33	-4.29
South Central Coast	18.73	9.17	9.55	9.75	6.59	3.17

	1993–1998			2004–2008		
	Poverty reduction	**Growth component**	**Inequality component**	**Poverty reduction**	**Growth component**	**Inequality component**
Central Highlands	13.96	21.20	-7.24	-0.75	-0.34	-0.41
South East	5.33	-3.00	8.33	12.87	14.97	-2.10
Mekong River Delta	11.70	13.23	-1.53	15.64	9.26	6.39
Ethnic Groups						
Kinh majority	59.88	38.63	21.25	81.54	93.21	-11.67
Ethnic minorities	40.08	47.14	-7.06	18.46	16.49	1.97

Sources: Authors' estimation from VLSS 1993, VLSS 1998, VHLSS 2004, and VHLSS 2008.

Table A.6: Estimation of Loren Function for Different Regions and Ethnic Groups, 1993 and 1998

Explanatory variables	Dependent variable is $\ln[p - L(p)]$												
	All Viet Nam	Rural	Urban	Red River Delta	North East	North West	North Central Coast	South Central Coast	Central Highlands	South East	Mekong River Delta	Kinh Majority	Ethnic Minorities
For 1993													
ln(1-p)	0.5671***	0.5326***	0.6128***	0.5733***	0.5004***	0.4841***	0.5052***	0.5738***	0.5069***	0.5952***	0.5744***	0.5745***	0.5068***
	[0.0009]	[0.0009]	[0.0020]	[0.0017]	[0.0014]	[0.0022]	[0.0015]	[0.0037]	[0.0028]	[0.0024]	[0.0019]	[0.0010]	[0.0020]
ln(p)	0.9691***	0.9483***	1.0454***	0.9862***	0.9323***	0.9270***	0.9357***	0.9643***	0.9320***	1.0045***	0.9858***	0.9839***	0.9329***
	[0.0010]	[0.0007]	[0.0048]	[0.0023]	[0.0008]	[0.0013]	[0.0010]	[0.0031]	[0.0014]	[0.0042]	[0.0027]	[0.0013]	[0.0007]
Constant	-0.4348***	-0.4877***	-0.3044***	-0.4183***	-0.5299***	-0.5456***	-0.5228***	-0.4201***	-0.5198***	-0.3632***	-0.4077***	-0.4139***	-0.5262***
	[0.0019]	[0.0015]	[0.0060]	[0.0038]	[0.0019]	[0.0029]	[0.0022]	[0.0074]	[0.0045]	[0.0065]	[0.0044]	[0.0022]	[0.0022]
Observations	4798	3839	959	1152	672	128	639	447	96	672	992	4233	565
R-squared	0.99	1.00	0.99	0.99	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	1.00
For 1998													
ln(1-p)	0.5597***	0.5117***	0.6101***	0.5563***	0.4783***	0.4594***	0.5433***	0.5468***	0.4932***	0.6032***	0.5474***	0.5694***	0.4681***
	[0.0009]	[0.0009]	[0.0016]	[0.0017]	[0.0013]	[0.0019]	[0.0023]	[0.0027]	[0.0020]	[0.0021]	[0.0020]	[0.0009]	[0.0013]
ln(p)	0.9906***	0.9616***	1.1145***	1.0015***	0.9459***	0.9387***	0.9817***	0.9763***	0.9517***	1.0668***	0.9934***	1.0140***	0.9445***
	[0.0010]	[0.0007]	[0.0049]	[0.0024]	[0.0008]	[0.0009]	[0.0024]	[0.0024]	[0.0008]	[0.0051]	[0.0025]	[0.0014]	[0.0004]
Constant	-0.3612***	-0.4366***	-0.2018***	-0.3580***	-0.4792***	-0.4992***	-0.3942***	-0.3847***	-0.4604***	-0.2352***	-0.3750***	-0.3323***	-0.4861***
	[0.0019]	[0.0014]	[0.0049]	[0.0037]	[0.0019]	[0.0023]	[0.0044]	[0.0052]	[0.0026]	[0.0062]	[0.0040]	[0.0022]	[0.0013]
Observations	5998	4269	1729	1335	571	128	708	628	368	1148	1112	5299	699
R-squared	0.99	1.00	0.99	0.99	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	1.00

Standard errors in brackets.

* Significant at 10%; ** Significant at 5%; *** Significant at 1%

Sources: Authors' estimation from VLSS 1993, VLSS 1998, VHLSS 2004, and VHLSS 2008.

Table A.7: Estimation of Loren Function for Different Regions and Ethnic Groups, 2004 and 2008

Explanatory variables	Dependent variable is $\ln[p - L(p)]$												
	All Viet Nam	Rural	Urban	Red River Delta	North East	North West	North Central Coast	South Central Coast	Central Highlands	South East	Mekong River Delta	Kinh Majority	Ethnic Minorities
For 2004													
ln(1-p)	0.5850***	0.6156***	0.6587***	0.5734***	0.5976***	0.5214***	0.6480***	0.5736***	0.6198***	0.6509***	0.5669***	0.5878***	0.5404***
	[0.0007]	[0.0003]	[0.0010]	[0.0019]	[0.0017]	[0.0036]	[0.0017]	[0.0016]	[0.0013]	[0.0014]	[0.0011]	[0.0008]	[0.0012]
ln(p)	0.9964***	0.9446***	0.9738***	1.0017***	1.0021***	0.9967***	0.9834***	0.9583***	0.9912***	0.9752***	0.9685***	1.0014***	0.9571***
	[0.0007]	[0.0003]	[0.0010]	[0.0019]	[0.0018]	[0.0033]	[0.0019]	[0.0019]	[0.0014]	[0.0014]	[0.0012]	[0.0008]	[0.0013]
Constant	-0.2818***	-0.5129***	-0.3319***	-0.3585***	-0.3403***	-0.3654***	-0.4113***	-0.3932***	-0.2863***	-0.2948***	-0.4725***	-0.3183***	-0.5271***
	[0.0014]	[0.0006]	[0.0020]	[0.0038]	[0.0035]	[0.0071]	[0.0035]	[0.0034]	[0.0026]	[0.0028]	[0.0022]	[0.0016]	[0.0025]
Observations	9187	6937	2249	1943	1316	428	1013	851	580	1187	1862	7846	1340
R-squared	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00
For 2008													
ln(1-p)	0.5639***	0.6116***	0.5947***	0.5596***	0.6266***	0.5169***	0.6462***	0.6203***	0.6554***	0.5715***	0.5733***	0.5619***	0.6108***
	[0.0005]	[0.0004]	[0.0008]	[0.0012]	[0.0009]	[0.0027]	[0.0020]	[0.0009]	[0.0015]	[0.0020]	[0.0007]	[0.0006]	[0.0013]
ln(p)	0.9729***	0.9489***	0.9821***	0.9886***	0.9856***	0.9872***	0.9798***	0.9578***	0.9840***	0.9883***	0.9604***	0.9798***	0.9700***
	[0.0005]	[0.0004]	[0.0008]	[0.0012]	[0.0010]	[0.0031]	[0.0024]	[0.0012]	[0.0017]	[0.0018]	[0.0008]	[0.0006]	[0.0015]
Constant	-0.3577***	-0.4781***	-0.3470***	-0.3767***	-0.3405***	-0.3361***	-0.4060***	-0.4307***	-0.2631***	-0.3236***	-0.4916***	-0.3997***	-0.4575***
	[0.0010]	[0.0008]	[0.0016]	[0.0024]	[0.0019]	[0.0058]	[0.0043]	[0.0021]	[0.0032]	[0.0037]	[0.0015]	[0.0011]	[0.0028]
Observations	9188	6836	2351	1943	1316	428	1013	851	581	1187	1862	7810	1377
R-squared	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Standard errors in brackets.

* Significant at 10%; ** Significant at 5%; *** Significant at 1%

Sources: Authors' estimation from VLSS 1993, VLSS 1998, VHLSS 2004, and VHLSS 2008.