1-6-2010

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Working Paper
Department of Economics
University of New Mexico

(This version: July 2009)
(Earlier version: July 2007)

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The paper was written when the first author was a graduate student and later visiting assistant professor at the Department of Economics, University of New Mexico. We received valuable information and suggestions from Gabriel Demombynes and Qinghua Zhao, both from the World Bank, in different stages of this research. Nepal Study Center at UNM provided necessary data.

Abstract:

Poverty alleviation has become one of the main development agendas of the twenty first century worldwide. But, the identification targeting of poor has been facing fundamental problems due to the lack of required information. Using the micro-level estimation technique we estimate household expenditure for the census households using 1995/96 and 2003/04 household surveys, and estimate different measures of poverty and inequality using the estimated expenditure for those two years at the country level as well as at the regional, districts and village levels, and for the different caste/ethnic households. The public good aspects of this research is that these measures can be used as a guide for formulating decentralization and fiscal policies for decentralized communities across Nepal. Despite the indication that the aggregate level of poverty went down by 10 percentage points during the past eight years (1995/96 – 2003/04), our findings indicate that the reduction is not uniform in the first place, and the level of poverty actually went up in the significant part of the country. The increased poverty accompanied by the accelerating inequality throughout the country has compounded the divide between the haves and the have-nots and provided a suitable atmosphere for the conflict. As the foremost contributors of rising inequality are enterprise income and remittance, and agriculture income, high school and college level education help to reduce it, there are some clear policy implications of our findings that focusing on agricultural sector, high school and college education along with fiscal policy-mix (tax-transfer) could address the rising inequality and poverty.

Keywords: Nepal, Violent Conflict, Poverty Mapping, Inequality.

MICRO-LEVEL ESTIMATION AND DECOMPOSITION OF POVERTY AND INEQUALITY IN NEPAL

1. Introduction

Poverty alleviation has become one of the global development agendas of the twenty-first century.[1] It basically requires identification of the poor and targeting programs. For policy and planning purpose, the estimation of the poverty rate at the national level is the most prevalent practice in developing countries. However, the aggregate estimate of poverty at the national or regional level generally covers up important details and does not provide a good account of the distribution of the poor across local geographical units that could affect targeting the poor and implementing poverty alleviation programs. Micro-level poverty estimates help to find out who the poor are and where they are living.

Another concern with the poverty reduction is the lack of resources in developing countries that hinders implementing the development programs to alleviate poverty. Estimates of poverty, inequality and household income/expenditure within the same geographical unit may provide a useful guide about the distributional issues, needs and priorities of the local communities, and information regarding whether the mobilization of the local resources is feasible to finance the programs locally. Mobilization of resources at the local level also helps to promote and strengthen the decentralization that reduces the dependency of local governments on the central one, and dependency of the central government on foreign loans and grants. Local people may feel more responsible

[1] Eradicating extreme poverty and hunger by 2015 is the first Millennium Development Goal of the United Nations that was set in 2000 (UN 2006).

if they are to utilize their own resources rather than receiving funds from outside. Such a sense of association of people may help to raise awareness and lower corruption as well, which is considered a major issue in most of the developing countries as corruption engenders poverty (Transparency International 2006).

Given the scopes of micro-level estimation of poverty and inequality, this paper has two objectives: to estimate the poverty and inequality at the village level, and to decompose the inequality based on the sources and the determinants of household income/expenditure to provide policy prescriptions. Basically, we estimate village level poverty and inequality for the years 1995/96 and 2003/04, and compare the results between those two years. We use Nepal Living Standard Surveys 1995/96 and 2003/04 (NLSS-I and NLSS-II) as primary data sources. By design, those surveys, however, are not representative at the village level. In the case of census data, the issue of sample size and selection biases would disappear but census data generally lack welfare measures of the households. Therefore, we use the two-step micro-level estimation technique (Elbers, Lanjouw and Lanjouw 2003) that provides a framework to link the census data with the survey and estimate welfare measures at the village level.

Though small in size, there is a wide variation in geography, culture, ethnicity and economic opportunities across Nepal. The country is divided into 75 districts and each district is further divided into several Village Development Committees (VDCs). The official poverty and inequality estimates using the household surveys for Nepal (CBS 2005) do not go beyond the traditional rural-urban, mountain-hills-*terai*, and east-central-west-midwest-farwest settings that cannot be used to analyze the distributional issues at the village level across the country. This research contributes towards filling such gap.

Consistent with the official report (CBS 2005), our results show that aggregate poverty in Nepal declined from 41.7% to 31.5% between 1995/96 and 2003/04. This is a good outcome given that Nepal is facing a decade-long Maoist insurgency and economic slow-down. When we analyze the situation with disaggregated data, the results are not uniform. Our results show that during the eight-year period, 16 out of 75 districts, and about 22% of VDCs (out of 3880 for which we have census information) across the country experienced increased poverty.[2] In the case of inequality, aggregate Gini coefficient went up from 0.382 to 0.427 during the same period (the Atkinson index went up from 0.366 to 0.412). But micro-level estimates show that it went down in 9 districts and in 34% of VDCs, indicating that inferences drawn from aggregate estimates will not be that accurate for designing the public policies in the decentralized communities.

For the past several years, the caste/ethnic issue has been at the forefront of the development agenda in Nepal. Most of the analyses are based on the inter-caste/ethnicity. But the analysis of poverty status of different caste/ethnic groups and the income or expenditure inequality within a given caste/ethnic group is not available for designing appropriate policies. The estimation of poverty and inequality at the micro-level and within different caste/ethnic groups is the main contribution of this paper. Such inequality and poverty mapping at the district and village levels provides background information for designing economic policies suitable for decentralized communities. Also, the

[2] There is a total of more than 4,000 VDCs across the country. Due to the on going high intensity conflict in Nepal since 1996, some of the VDCs are not included in the census, and some VDCs do not have enough observations to be included in the estimation.

estimates of poverty and inequality within different caste/ethnic group may be used as a guide while formulating social and economic policies.

2. Statistical Method

The basic methodology of micro-level estimation (Elbers *et al* 2003) is a technique that links survey with census information and resembles the small-area statistics of Ghosh and Rao (1994). In recent years, the technique has been used in Ecuador, Brazil, South Africa, Panama, Madagascar and Nicaragua (Alderman *et al* 2002, Elbers *et al* 2003) for mapping poverty. This section summarizes the basic idea of the micro-level estimates.[3]

Assume that per-capita household expenditure, y_{ch}, depends on a vector of observable characteristics, X_{ch}, of the household that are present in both survey and census data sets. Then the linear approximation of the conditional distribution of y_{ch} is given by:

$$\ln y_h = E(\ln y_h \mid X_h) + u_h = X'_{ch}\beta + u_{ch} \qquad [2.1]$$

where *c* refers to the sample cluster (level of aggregation of survey and census data) and *u* is a vector of disturbances, $u \sim \Im(0, \sum)$. By nature, the survey data is just a sample of a total population, therefore, the residual of [2.1] must contain the location variance to allow for a within cluster correlation (spatial autocorrelation) in disturbances as $u_{ch} = \eta_c + \varepsilon_{ch}$, where η is the cluster component and ε is household components. They are independent of each other and uncorrelated with X_{ch}. Generalized least squares (GLS) or Weighted Least Squares (WLS) estimation of [2.1] using household survey data

[3] For details, see Elbers *et al* (2003).

provides the estimates of the complex error structures, $\hat{u}_{ch}$, that can be decomposed as $\hat{u}_{ch} = \hat{\eta}_c + e_{ch}$. The residual term e_{ch} can be used to estimate the following heteroscedatic model:

$$\ln(e_{ch}^2/(A - e_{ch}) = Z'_{ch}\alpha + r_{ch} \qquad [2.2]$$

where Z_{ch} refers to the vector of household characteristics assumed to be driving the heteroscedasticity, and *A* is the upper bound of e_{ch}^2. We will refer to [2.1] as the 'Beta' model and [2.2] as the 'Alpha' model (as in Zhao 2004) for estimation purposes.

2.1. Steps in Micro-Level Estimation[4]

The process of linking household survey with census data to estimate micro-level welfare indicators requires two steps. The first step includes the following (Zhao 2004):

Step I

i) estimate the Beta model [2.1] using survey data that provides model parameters estimates, including the beta vector, an associated variance-covariance matrix, and parameters describing the distribution of the disturbances.

ii) calculate the location effect $\hat{\eta}_c$,

iii) calculate the variance estimator $\text{var}(\hat{\sigma}_n^2)$,

iv) estimate the Alpha model [2.2],

v) estimate the GLS model to generate a variance-covariance matrix,

vi) generate a vector of normally distributed random variable, and

[4] Zhao (2004) and Elbers *et al* (2003) provide details of the estimation process.

vii) read the census data that follows the simulation.

Step II

In the second step, we estimate the following model and generate household level welfare measures using bootstrap simulation

$$\ln \tilde{y}_{ch} = X'_{ch}\tilde{\beta} + \tilde{\eta}_c + \tilde{\varepsilon}_{ch} \qquad [2.3]$$

where $\tilde{\beta} \sim N(\hat{\beta}, \hat{\Sigma}_\beta)$, $\tilde{\eta}_c$ and $\tilde{\varepsilon}_{ch}$ are random variables (could be normally distributed or t-distributed).[5] This specification allows spatial autocorrelation for the households in the given community and for heteroscedasticity in the household component of the disturbances. After simulating for $\ln \tilde{y}_{ch}$, we compute several poverty and inequality measures that are discussed below.

2.2. FGT Class of Poverty Indices

In poverty analysis, how any measure of poverty relates sub-group poverty to total poverty is an important issue, also called additive property. This is because in poverty analysis, all else being equal, one would expect to know a subgroup's contribution to total poverty and that a decrease in poverty level of one subgroup should lead to a reduction in over all poverty (Foster, Greer and Thorbecke 1984). Sen (1976) proposes two axioms that any poverty measure must fulfill:

i) Monotonicity Axiom: A reduction in income of a person below the poverty line must increase the poverty measure, and

[5] The variance structure of these errors is given in Elbers *et al.* (2003).

ii) Transfer Axiom: A pure transfer of income from a person below the poverty line to anyone who is richer must increase the poverty measure, *ceteris paribus*.

Foster, Greer and Thorbecke (1984) demonstrate that the following poverty measure (also called FGT poverty measure) allows a quantitative as well as qualitative assessment of the effect of change in subgroup poverty on total poverty.

$$FGT(\alpha) = \frac{1}{N} \sum_{h \in H_v} m_h (1 - \frac{y_h}{z})^{\alpha} \text{ for } y_h < z \qquad [2.4]$$

where $z > 0$ is a predetermined poverty line defined in per capita expenditure terms, $\alpha \geq 0$ is the poverty sensitivity parameter, H_v is the number of households, m_h is the household size in the case of census (household weight in the case of large survey), and $N = \sum m_h$ is the number of individuals in village *v*. We compute a FGT measure of poverty that (i) is additively decomposable with population-share weights, (ii) satisfies the basic properties proposed by Sen (1976), and (iii) is justified by a relative deprivation concept of poverty. The *FGT(0)* index is called the head count index that represents the proportion of a population that is in poverty, and the index *FGT(1)* is called the poverty gap that indicates an average shortfall of income from the poverty line, also known as the depth of poverty.

1.2.3. Inequality Measures

Several distributional measures that satisfy the *principle of transfer* are in use for empirical analysis of inequality. The transfer principle, originally proposed by Dalton (1920) states that social welfare will be increased (inequality will be decreased) by any arbitrary transfer of *t* from a richer to a poorer person, provided that the transfer does not

change the relative positions of the rich and the poor. Dalton indicates that a more equitable distribution of income is more desirable than a more unequal distribution. Social welfare functions are usually preferred to more equal distributions to less equal ones (Deaton 2000). In that sense, measuring inequality itself is an important part of welfare analysis. Some of the standard measures of inequality that are consistent with the principle of transfer and social welfare function are the Atkinson Inequality Index, the Generalized Entropy Index, and the Gini Coefficient (Deaton 2000,). We calculate these three classes of inequality measures as described below.

1.2.3.1. Atkinson Inequality Index

The Atkinson Inequality Index represents the cumulative deviation of the actual expenditure (income) distribution from the equally distributed equivalent expenditure (income) (Fields 1979), and is given by the following expression:

$$A(\alpha)=\begin{cases} 1-\dfrac{\left(\int_0^1 y(p)^{(1-\alpha)}dp\right)^{\frac{1}{1-\alpha}}}{\mu}, \alpha \neq 1 \\ 1-\dfrac{\exp\left(\int_0^1 \ln(y(p))dp\right)}{\mu}, \alpha = 1 \end{cases} \qquad [2.5]$$

where α is the Atkinson parameter of relative inequality aversion, and μ is the mean expenditure. There would be no perceived inequality if $\alpha = 0$ as the marginal social utility is constant at this value of α; a situation where an increase in income of poor people by a certain amount has the same social welfare impact as an equal increase in income of the non-poor people. To avoid such neutrality, we use $\alpha > 0$ which indicates that an increase in poor people's income is more desirable than that of the non-poor. This index is often criticized on the grounds that the inequality aversion parameter depends on the value judgment of the researchers (Fields 1979).

1.2.3.2. Generalized Entropy Index

The Generalized Entropy (GE) Index is an alternative to the Atkinson Inequality Index. This index has the property that it can be interpreted as a measure of the distance between the distribution of the expenditure (income) and the distribution in which every economic unit spends (receives) the mean expenditure (income) μ (Cowell and Victoria-Feser 1996). The GE Index is given by the following expression:

$$GE(\theta) = \begin{cases} \frac{1}{\theta(\theta-1)}\left(\int_0^1 \left(\frac{y(p)}{\mu}\right)^{\theta} dp - 1\right), \text{ if } \theta \neq 0, 1 \end{cases} \quad [2.6]$$

where $\theta \in (-\infty, +\infty)$ represents the weights given to the distance between the incomes at different parts of the distribution. For empirical purposes, θ = [0, 1, 2], where θ = 0 indicates more weight to the lower tail of the distribution, and $GE(0) = \int_0^1 \ln(\frac{\mu}{y(p)})dp$, which is the mean logarithmic deviation (average deviation between the log of the mean income and the log of incomes. The GE index for θ = 1 applies equal weights across the distribution and $GE(1) = \int_0^1 \frac{y(p)}{\mu} \ln(\frac{\mu}{y(p)})dp$, which is also called the Theil index of inequality. If everyone has the same (mean) income, then *GE(1)* = 0, and if one person has all the income, then *GE(1)* = ln(*N)*. The integral $\int_0^p y(q)dq$ sums to the expenditure (income) of the bottom *p* proportion of the population. When θ = 2, the GE measure gives relatively more weight to the upper tail gaps, and it is equivalent to the half of the squared coefficient of variation.

1.2.3.3. Gini Coefficient

The Gini coefficient is the most widely used measure of relative inequality due to its relation with the Lorenz curve. The social welfare function associated with the Gini coefficient assigns a weight to an individual's income based on the relative position of individuals in the distribution. In this case, the income of the poor is weighted more heavily that of the non-poor ones.[6] Let y_h denote the per capita consumption expenditure of household *h* in the given village. Then the Gini index for the village is given by (Deaton 2000):

$$GINI = \frac{1}{\mu N(N-1)} \sum_{i>j} \sum_{j} | y_i - y_j | \qquad [2.7]$$

where μ is the average expenditure, *N* is sample size, $| y_i - y_j |$ is the absolute deviation of expenditure between a pair of households. An alternative, but related formulation of the Gini index is given by (Deaton 2000, p.139):

$$GINI = \frac{N+1}{N-1} - \frac{2}{N(N-1)\mu} \sum_{i=1}^{N} \rho_i y_i \qquad [2.7a]$$

where ρ_i is the rank of individual *i* in the y-distribution, counting from top so that the richest has the rank 1. For computational purposes, we use [2.7a].

[6] Such a weighting scheme involves value judgments as in the case of Atkinson index. Therefore, despite the known sampling distribution of the Gini coefficient, it is not a dispute free measure of inequality measure (Thistle 1990).

1.2.4. Inequality Decomposition

The inequality itself may or may not have much importance while designing the public policies. Common belief is that a moderate degree of inequality may be desirable for economic growth, and trying to even-out inequality may provide disincentive effects to work and invest thereby causing slower growth. Feldstein (1998) argues that if we accept the Pareto principle that a change is good if it makes someone better off without making anyone else worse off, as a basis of economic analysis then inequality should not be considered a problem. Another line of argument (Alesina and Angeletos 2005, Bowles and Gintis 2002) is that whether inequality is a problem depends on the social belief about what determines income. In a society where people believe that individual effort determines income or wealth, inequality does not appear to be a problem. But in Nepalese society where people believe that corruption, connection, birth, or luck determines income or wealth (Bista 1991), inequality appears to be a social problem. Empirical evidence shows that inequality contributes significantly towards conflicts and violence (Fajnzylber, Lederman and Loayza 2002, Kelly 2000, Wang et al. 1993). The village level expenditure inequality has significant effects on the violent conflict in Nepal. Using a general equilibrium model as well as an empirical test, Persson and Tabellini (1994) show that inequality is harmful for growth.

The following sub-section presents methodology for decomposing inequality by factor components as well as income sources. Such decomposition provides the contribution of different factors or sources to total inequality that can be used to design a public policy so that inequality can be reduced if it goes beyond an acceptable range.

1.2.4.1. Factor Components

Knowledge about the determinants of inequality can be used to design appropriate policies if inequality goes beyond a desirable limit. The desirable limit may not be a fixed number and it may depend on the perception of citizens towards what determines income, wealth and employment as discussed in the previous sub-section. Inequality decomposition by factor components is proposed by Fields (2002) using regression based analysis that was proposed earlier by Shorrocks (1984). The determinants of household expenditure are termed as factor components in this case. Shorrocks (1984) also provides the axiomatic decomposition of inequality by income sources. The following paragraphs summarize the method for the decomposition of expenditure inequality proposed by Fields (2002).

Assume that $\ln y = X'\beta + u$ is the expenditure function where y is the household expenditure, X is the vector of determinants of household expenditure, and u is the normally distributed error term with zero mean and constant variance. The expenditure share of j^{th} factor is given by

$$s_j = \text{cov}(\beta_j X_j, \ln y) / \sigma^2(\ln y) = \frac{\beta_j \times \sigma(X_j) \times \rho(X_j, \ln y)}{\sigma(\ln y)} \qquad [2.8]$$

where σ is the standard deviation and ρ is the correlation coefficient. This decomposition is independent of the inequality measures as we get the same percentage effect for the j^{th} factor for a broad class of inequality measures applied to the log of household expenditure (Fields 2002).

There is a serious concern that the Nepalese inequality index has gone up from 0.34 to 0.42 between 1995/96 and 2003/04 (CBS 2005). Our goal, therefore, is not only to estimate the factor weights but also estimate the factor contribution to the change in

the inequality during the 1995/96 and 2003/04 so that these results can be used for designing economic policies that address the distributional issues. The contribution of the j^{th} factor to the change in inequality between period *t* and period (*t+1*) for an arbitrary inequality measure *I(.)* is given by (Fields 2002):

$$\pi_j(I(.)) = [s_{j,t+1} \times I(.)_{t+1} - s_{j,t} \times I(.)_t] / [I(.)_{t+1} - I(.)_t] \qquad [2.9]$$

where $\sum_j \pi_j(I(.)) = 1$, so that the sum of the factor contribution to the change in inequality is 100%. Here the contribution of the j^{th} factor depends on the measures of inequality used for analysis.

2.2.4.2. Income Sources

An alternative way to look into the sources of inequality that can be used to analyze the distributional impact of economic policies is to calculate the marginal contribution of various income sources to the given inequality measure. Following Pyatt, Chen and Fei (1980), Lerman and Yitzhaki (1985), and Stark, Taylor and Yitzhaki (1986) we write the Gini coefficient (*G*) as a function of the covariance between household income, *y*, and its cumulative distribution, *F(y)*, as

$$G = \frac{2Cov[y_i, F(y_i)]}{\bar{y}} = \frac{2\sum_{k=1}^{K} Cov[y_k, F(y_i)]}{\bar{y}} = \sum_{k=1}^{K} R_k G_k S_k \qquad [2.10]$$

where $y_i = \sum_{k=1}^{K} y_{ik}$ is the income that household *i* gets from *K* different sources, $\bar{y}$ is the mean income, R_k is the correlation coefficient between y_k and y_i, also called the Gini correlation, G_k is the Gini index corresponding to income component *k*, and S_k is the share of component *k* in total income. One important advantage of the given decomposition by income source is its use in examining the marginal effect of an income

source on overall inequality that is given by $\partial G / \partial e = S_k(R_k G_k - G)$, where *e* is the small percentage change in income from source *k*. The marginal effect of income source *k* relative to overall *G* is given by the source's inequality contribution as a percentage of the overall Gini minus the source's share of total income, i.e.,

$$\frac{\partial G / \partial e}{G} = \frac{S_k G_k R_k}{G} - S_k \qquad [2.11]$$

When the inequality goes beyond a certain acceptable limit,[7] the government can design an appropriate fiscal (tax-transfers) policy to address the issue by utilizing such results.

2.3. The Data

The data for this analysis are drawn from various sources. The major sources are the Nepal Living Standard Survey 1995/96 (NLSS-I), Nepal Living Standard Survey 2002/03 (NLSS-II), and the Nepal Population Census (2001). The NLSS-I and NLSS-II are the Nepal version of the World Bank's Living Standard Measurement Survey (LSMS), which consists of nationally representative household survey responses to questions covering different aspects of household welfare. The survey is the outcome of

[7] There is no fixed or given size that indicates an acceptable limit of inequality in a given country. It is a matter of empirical investigation and may well depend on the general notion about what determines income and how opportunities are distributed for the general public in a given society. If human capital or acquired skills do not determine economic opportunities or income but the birth, connection or luck do, then the threat level of inequality may be lower than in the case where human capital plays key role in determining opportunities and income.

a joint project of the Central Bureau of Statistics (Nepal) and the World Bank. In the NLSS-I, the full data set consists of a national sample of 3373 households (rural and urban). The households were selected from 274 sampling units around the country, called *wards,* based on a Probability Proportional to Size (PPS) sampling plan. In NLSS-II, the sample size is 3912 households from 334 sampling units around the country. In both surveys, a two-stage stratified sampling procedure was used. The household survey responses include a detailed account of income and expenditures at the household level, along with extensive socio-economic and demographic characteristics of the household.

The third source of the data is the Nepal Population Census 2001 conducted by Nepal's Central Bureau of Statistics (CBS). For the first time CBS administrated two types of forms, complete enumeration and sample enumeration, simultaneously, to collect census information. The sample enumeration was intended to collect comprehensive information that is generally not included in the complete enumeration due to resource constraints.[8] For the sample enumeration, systematic sampling was used that included one-in-eight housing units in each enumeration area, meaning that the sample size for sample enumeration is about 12.5% of the complete enumeration that comprises 520,624 households throughout Nepal.

[8] The sample enumeration basically collected the information related to housing, utilities, land ownership, education, employment, occupation, economic activities, etc. along with the usual demographic information.

Nepal is divided into 75 administrative districts and each district is further divided into several village development committees (VDC).[9] Altogether, there are over 4000 VDCs (or simply 'villages'). This research focuses on estimating the poverty and the inequality at the lower administrative divisions (villages) in Nepal. Sample surveys like NLSS-I and NLSS-II that contain detailed information about household income or expenditures can be used to calculate distributional measures, but such survey information is not representative at the village level due to the small sample. On the other hand, sample enumeration in the census that covers a significant number of households around the country does not collect detailed accounts of household income and expenditures. Without the detailed accounts of household income and expenditures, the computation of inequality and poverty at the village level is not possible. To overcome this data deficiency, we utilize both household surveys and sample enumeration of the census using the recently developed micro-level estimation technique (Elbers, Lanjouw and Lanjouw 2003), which was developed from the small area statistics (Ghosh and Rao 1994).

2.4. Empirical Estimates of Poverty Indicators

2.4.1. Comparing Basic Statistics in Surveys and Census Data

The starting point of micro-level estimation is preparing a set of the common variables that are defined and measured in the same way in both household surveys and the population census. The survey data is collected in 1996 and the census data is

[9] For our purpose, we treat all types of municipalities like VDCs, and call them villages for simplicity.

collected in 2001, so that there is a five-year gap between the two data sets. Table 2.1 presents the summary statistics of the variables used in the analysis from the household surveys and the census data. The table shows that descriptive statistics across the data sets are fairly comparable after allowing for the natural change in some of the variables like literacy rates, and economic activities. For example, the literacy rate of the household head was 38.1% in 1996, 48.7% in 2001, and 52% in 2004.

Table 2.1: Variable Definitions and Basic Statistics

Variable	Definition	NLSS 1995/96		NLSS 2003/04		Census 2001	
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
AGEHEAD	Age of HH Head	44.698	14.403	45.488	14.226	43.350	14.364
BAHUNCHHETRI	1 if upper caste (Bahun or Chhetri), else 0	0.341	0.474	0.299	0.458	0.337	0.473
LITERACY	1 if HH head can write, else 0	0.381	0.478	0.520	0.500	0.487	0.500
CENTRAL	1 if region is central, else 0	0.391	0.488	0.383	0.486	0.331	0.470
DAKASA	1 if lower caste (Damai, Kami, or Sarki), else 0	0.077	0.267	0.078	0.268	0.069	0.253
EASTERN	1 if region is eastern, else 0	0.213	0.409	0.230	0.421	0.217	0.412
EDUCATION	HH head's years of schooling	3.732	4.175	3.257	4.393	3.468	5.101
FARMER	1 if HH head is farmer, else 0	0.509	0.485	0.432	0.323	0.476	0.499
FULEWOOD	1 if household uses fuelwood for energy, else 0	0.629	0.483	0.647	0.478	0.645	0.478
FWESTERN	1 if region is far-western, else 0	0.104	0.306	0.071	0.256	0.096	0.295
HHAGE	Average age of all household members	25.703	10.599	27.092	11.781	26.505	11.959
HHEDU	Household average year's of schooling	3.802	4.139	4.606	4.002	4.618	3.885
HHFARMER	% of household members employed in agriculture	0.516	0.310	0.323	0.196	0.241	0.272
HHMONTHWORK	Household's average months of employment	7.997	2.969	8.359	1.922	5.275	3.229
HHSIZE	Average household size	5.590	2.768	5.504	2.639	4.962	2.453
HHLETERACY	% of all household member who can write	0.396	0.337	0.518	0.344	0.463	0.333
HINDU	1 if household religion is Hindu, else 0	0.828	0.377	0.816	0.388	0.821	0.383
ELECTRICITY	1 if household uses electricity, else 0	0.259	0.438	0.446	0.497	0.423	0.494
MALE	1 if household head is male, else 0	0.865	0.342	0.807	0.395	0.841	0.365
MARRIED	1 if household head is married, else 0	0.850	0.357	0.855	0.352	0.904	0.294
MOUNTAIN	1 if Mountain region, else 0	0.121	0.326	0.098	0.298	0.095	0.293
NEWARI	1 if mother tongue is Newari, else 0	0.042	0.200	0.067	0.250	0.055	0.227
OWNHOUSE	1 if household owns a house, else 0	0.876	0.329	0.887	0.316	0.780	0.414
OWNLAND	1 if the household owns land, else 0	0.760	0.427	0.726	0.446	0.654	0.476
PERMANENTHOUSE	1 if the household owns a house with	0.172	0.378	0.239	0.426	0.411	0.492

	brick/concrete, else 0						
RURAL	1 if rural area, else 0	0.788	0.409	0.623	0.485	0.588	0.492
SEMIPERMANENT	1 if household owns a house with semi-permanent structure, else 0	0.719	0.450	0.414	0.165	0.274	0.446
TAMAGURALI	1 if Tamang, Magar, Gurung, Rai, or Limbu, else 0	0.161	0.368	0.204	0.403	0.187	0.390
TERAI	1 if Terai region, else 0	0.363	0.481	0.417	0.493	0.467	0.499
TERAICASTE	1 if Low caste from Terai, else 0	0.085	0.279	0.079	0.269	0.080	0.271
TOILETFLUSH	1 if the household owns flush toilet, else 0	0.161	0.368	0.291	0.454	0.238	0.426
TV	1 if the household owns a TV, else 0	0.137	0.344	0.118	0.322	0.224	0.417
WATERPIPED	1 if the household uses piped water, else 0	0.424	0.494	0.498	0.500	0.531	0.499
WATERWELL	1 if the household uses well-water, else 0	0.377	0.485	0.368	0.482	0.367	0.482
WESTERN	1 if western region, else 0	0.185	0.388	0.199	0.400	0.215	0.411

Sources:

1. Nepal Living Standard Survey 1995/96, Central Bureau of Statistics, Nepal.
2. Nepal Living Standard Survey 2003/04, Central Bureau of Statistics, Nepal.
3. Population Census 2001, Central Bureau of Statistics, Nepal.

Table 2.2 displays the official estimates (CBS 2005) of the aggregate welfare indicators using the Nepal Living Standard Surveys (NLSS-I & NLSS-II). It also provides the same welfare indicators obtained from the micro-level estimation technique.[10] As we can see in Table 2.2, the official estimates of the nominal per capita expenditures, head count ratios, poverty gaps, and Gini indices estimated from NLSS-I and NLSS-II, and the micro-level estimates that we get by combining survey data with the census are very close to each other. Such comparable aggregate estimates provide reasonable justification for using micro-level estimation technique to get the village level estimates of those welfare indicators.

Table 2.2: Comparison of Basic Welfare Indicators from NLSS-I & II, and Micro-level Estimation

Welfare Indicators	1995/96		2003/04	
	NLSS-I	Micro-Level Estimates	NLSS-II	Micro-Level Estimates
Per Capita HH Expenditure (Rs)	6802	6828	15848	15836
		(181)		(437)
Head Count (%)[1]	41.76	41.70	30.85	31.5
		(0.018)		(0.014)
Poverty Gap (%)[2]	11.75	13.30	7.55	8.80
		(0.009)		(0.006)
Gini Coefficient	0.367	0.385	0.41	0.427
		(0.01)		(0.011)

Notes:

The figures in parentheses are the standard errors of the imputed values.
[1] Percentage of households below the poverty line.
[2] Poverty Gap measures the amount of income relative to the poverty line that has to be transferred to the poor families to bring their incomes up to the poverty threshold. It is sometimes called the depth of the poverty (how severe is the poverty problem).

[10] The first-stage GLS estimates (equation [2.1]) and the estimates for the heteroscedastic model (equation [2.2]) that are required in order to get the bootstrap simulation for the micro-level estimates are presented in Appendix B (Table B1 and Table B2).

2.4.2. Poverty among Caste/Ethnic Groups

One of the main social issues in Nepal is the probable social discrimination based on caste/ethnicity. In Table 2.3, we present household per capita expenditures and poverty estimates at the regional, rural-urban level as well as among different caste/ethnic groups in Nepal. At the aggregate level, the head-count ratio has gone down across the board. The reduction is significant in all regions except in the case of the eastern region. The poverty gap also follows the same trend. Those drops are significant in most of the cases. In the case of caste/ethnic groups, one notable point is that among the Tamang, Magar, Gurung, Rai and Limbu (*TAMAGURALI*, also called *janajaties*) who comprise about 19% of the total population living primarily in the hilly areas, the drop in poverty and the poverty gap is insignificant. The poverty rate as well as the poverty gap among all the caste/ethnic groups (62% of total population) is above the national average except in Bahun-Chhetri (34% of total population with 20.6% poverty rate in 2003/04) and Newar (7.5% of total population with 11.7% poverty rate in 2003/04). Among the higher caste/ethnic groups, the poverty rate is lower than the national average of 31.5%. The poverty rate among the lower castes/ethnic groups such as Damai, Kami, Sarki, Muslims (43.1%) is not only higher than the current national average (31.5%) but also higher than the national average in 1995/96 (41.7%), indicating that there is a high economic disparity between the upper and lower castes/ethnic groups in Nepal.

Table 2.3: Regional, Rural-Urban, Caste/Ethnic Per-Capita HH Expenditures, Head Count Ratios, and Poverty Gaps in Nepal

		Per Cap HH Expenditure			Head Count Ratio			Poverty Gap		
	Region/Ethnicity	1995/96	2003/04	% Change	1995/96	2003/04	% Change	1995/96	2003/04	% Change
		6749	13861	105**	0.365	0.361	-1.10	0.102	0.103	0.98
Regions	EASTERN	(3)	(3)	(2.40)	(4)	(2)	(0.12)	(4)	(2)	(0.08)
		8232	19247	134***	0.339	0.283	-16.52***	0.102	0.080	-21.57*
	CENTRAL	(1)	(1)	(13.20)	(5)	(4)	(2.12)	(4)	(4)	(1.89)
		7029	16502	135***	0.371	0.249	-32.88***	0.112	0.065	-41.96***
	WESTERN	(2)	(2)	(13.01)	(3)	(5)	(3.52)	(3)	(5)	(3.18)
		4402	11898	170***	0.647	0.396	-38.79***	0.236	0.112	-52.54***
	MIDWEST	(5)	(5)	(15.17)	(1)	(1)	(6.02)	(1)	(1)	(5.32)
		4502	12670	181***	0.630	0.355	-43.65***	0.233	0.100	-57.08***
	FARWEST	(4)	(4)	(10.31)	(2)	(3)	(5.48)	(2)	(3)	(4.87)
		6315	13552	115***	0.398	0.281	-29.40***	0.120	0.073	-39.17***
Ecological	MOUNTAIN	(2)	(3)	(11.25)	(2)	(2)	(3.05)	(2)	(3)	(3.08)
Belts		8003	17950	124***	0.332	0.277	-16.57**	0.099	0.076	-23.23**
	HILLS	(1)	(1)	(17.40)	(3)	(3)	(2.11)	(3)	(2)	(2.23)
		5827	14150	143***	0.496	0.353	-28.83***	0.166	0.102	-38.55***
	TERAI	(3)	(2)	(18.14)	(1)	(1)	(4.92)	(1)	(1)	(4.44)
		5868	12894	120***	0.461	0.349	-24.30***	0.148	0.098	-33.78***
Rural-	RURAL	(2)	(2)	(20.59)	(1)	(1)	(4.34)	(1)	(1)	(4.29)
Urban		12795	33911	165***	0.138	0.103	-25.36*	0.041	0.029	-29.27*
	URBAN	(1)	(1)	(13.55)	(2)	(2)	(1.91)	(2)	(2)	(1.79)
		8014	19111	138***	0.324	0.206	-36.42***	0.097	0.052	-46.39***
Caste/	BAHUNCHHETRI	(2)	(2)	(17.36)	(6)	(6)	(5.13)	(6)	(6)	(5.03)
Ethnicity		6757	13127	94***	0.374	0.368	-1.60	0.109	0.104	-4.59
	TAMAGURALI	(3)	(4)	(13.77)	(5)	(4)	(0.21)	(5)	(4)	(0.41)
		4976	11391	129***	0.569	0.431	-24.25***	0.200	0.127	-36.50***
	DAKASA	(7)	(7)	(14.57)	(1)	(1)	(3.73)	(1)	(2)	(3.70)
		5109	11918	133***	0.553	0.404	-26.94***	0.192	0.117	-39.06***
	TERAICASTE	(6)	(6)	(14.39)	(2)	(3)	(3.76)	(2)	(3)	(3.86)
		11850	31727	168***	0.156	0.117	-25.00**	0.042	0.030	-28.57*
	NEWAR	(1)	(1)	(9.75)	(7)	(7)	(2.08)	(7)	(7)	(1.79)
		5294	12304	132***	0.550	0.430	-21.82***	0.188	0.131	-30.32***
	MUSLIM	(5)	(5)	(9.66)	(3)	(2)	(3.30)	(3)	(1)	(3.02)
	OTHER	5765	13821	140***	0.500	0.360	-28.00**	0.163	0.103	-36.81***

		(4)	(3)	(8.08)	(4)	(5)	(4.76)	(4)	(5)	(4.06)
Total	NEPAL	6828	15836	132*** (19.04)	0.417	0.315	-24.46*** (4.47)	0.133	0.088	-33.83*** (4.16)

2.4.3. Regional Poverty

Table 2.4 shows the head-count ratio and the poverty gap in 15 different regions across Nepal. The regional disaggregation of poverty shows that the poverty has not gone down everywhere as reported in the official documents (CBS 2005). Furthermore, the reduction is not significant in several regions, indicating that aggregate poverty estimates do not provide enough information for lower level geographical targeting. In the Eastern Mountain (*MEAST*), Eastern Hill (*HEAST*), and the Central Hill (*HCENTRAL*) regions, both the head-count ratio and the poverty-gap have gone up, and that increase is significant in the Eastern Hill region. Though the rates are lower, the changes are insignificant in the case of the Central Mountain (*MCENTRAL*), Western Mountain (*MWEST*), and the Eastern Terai (*TEAST*) regions. What we find is that the poverty rate and the poverty gap either went up or did not change significantly in the Eastern region (Mountain, Hills and Terai), most of the Central region (Mountain and Hills) and the Western mountain region. Those six regions (out of 15) comprise over 41% of total population in the country suggesting that the official estimate of the aggregate poverty measures does not provide sufficient detail of the distribution across the regions.

Table 2.4: Per Capita Household Expenditure, Headcount Ratio, and Poverty Gap in 15 Regions, 1995/96 and 2003/04

	Per Cap HH Expenditure			Head Count Ratio			Poverty Gap		
DIST	1995/96	2003/04	% Change	1995/96	2003/04	% Change	1995/96	2003/04	%Change
	6748	12008	77.9***	0.31	0.335	8.1	0.089	0.079	12.66
MEAST	(329)	(507)	(8.70)	(0.035)	(0.030)	(0.54)	(0.010)	(0.012)	(0.64)
	7731	15219	96.9***	0.262	0.234	-10.7	0.06	0.067	-10.45
MCENTRAL	(416)	(673)	(9.46)	(0.031)	(0.025)	(0.70)	(0.008)	(0.011)	(0.51)
	7229	15579	115.5***	0.3	0.229	-23.7	0.062	0.083	-25.30
MWEST	(521)	(860)	(8.30)	(0.043)	(0.030)	(1.35)	(0.011)	(0.016)	(1.08)
	4298	11349	164.1***	0.65	0.385	-40.8***	0.105	0.224	-53.13***
MMWEST	(244)	(624)	(10.52)	(0.041)	(0.041)	(4.57)	(0.015)	(0.024)	(4.20)
	4839	13610	181.3***	0.564	0.249	-55.9***	0.062	0.191	-67.54**
MFWEST	(344)	(752)	(10.61)	(0.050)	(0.033)	(5.26)	(0.010)	(0.028)	(4.34)
	6801	11368	67.2***	0.321	0.405	26.2**	0.115	0.083	38.55**
HEAST	(304)	(402)	(9.06)	(0.033)	(0.025)	(2.03)	(0.010)	(0.012)	(2.05)
	10797	25649	137.6***	0.196	0.199	1.5	0.054	0.052	3.85
HCENTRAL	(543)	(1320)	(10.41)	(0.020)	(0.012)	(0.13)	(0.004)	(0.007)	(0.25)
	7625	16961	122.4***	0.315	0.229	-27.3**	0.059	0.089	-33.71**
HWEST	(370)	(683)	(12.02)	(0.031)	(0.019)	(2.37)	(0.006)	(0.012)	(2.24)
	4509	11124	146.7***	0.621	0.407	-34.5***	0.114	0.214	-46.73***
HMWEST	(240)	(447)	(13.04)	(0.037)	(0.032)	(4.37)	(0.012)	(0.022)	(3.99)
	4983	12331	147.5***	0.547	0.325	-40.6***	0.088	0.184	-52.17***
HFWEST	(352)	(745)	(8.92)	(0.050)	(0.038)	(3.53)	(0.013)	(0.026)	(3.30)
	6759	14726	117.9***	0.395	0.341	-13.7	0.098	0.115	-14.78
TEAST	(281)	(624)	(11.64)	(0.027)	(0.021)	(1.58)	(0.009)	(0.012)	(1.13)
	5932	13913	134.5***	0.479	0.367	-23.4***	0.107	0.151	-29.14**
TCENTRAL	(234)	(540)	(13.56)	(0.032)	(0.021)	(2.93)	(0.009)	(0.016)	(2.40)
	6089	15652	157.1***	0.463	0.282	-39.1***	0.075	0.151	-50.33***
TWEST	(357)	(787)	(11.07)	(0.034)	(0.026)	(4.23)	(0.009)	(0.017)	(3.95)
	4287	12980	202.8***	0.677	0.389	-42.5***	0.112	0.261	-57.09***
TMWEST	(243)	(2470)	(3.50)	(0.0320	(0.033)	(6.27)	(0.013)	(0.024)	(5.46)
	3988	12581	215.5***	0.721	0.421	-41.6***	0.125	0.289	-56.75***
TFWEST	(246)	(1089)	(7.70)	(0.032)	(0.044)	(5.51)	(0.019)	(0.026)	(5.09)

Note: ***, ** and * indicate significant at 1%, 5% and 10% respectively. Standard errors are in the parentheses. The t-values are in parentheses in the % change columns.

2.4.4. District-Level Poverty

Beyond the regional level we also estimate several welfare measures at the district level. Table 2.5 shows the poverty profile of Nepal's 75 districts. The district level disaggregation of poverty provides a detailed account of the poverty dynamics between 1995/96 and 2003/04. The head count ratio went up in 16 out of 75 districts, whereas the poverty reduction in 13 districts was statistically insignificant. In total, the poverty rate either went up or did not change significantly in 29 districts (out of 75). The poverty gap went up in 19 districts, and that increment was significant in 15 districts. In most of the cases, both the head-count ratio and the poverty-gap went up in the districts located in the eastern and central parts of Nepal. Map 2.1 provides the district level poverty rates in 1995/96, Map 2.2 provides the same for 2003/04, and Map 2.3 provides the change in district level poverty between 1995/96 and 2003/04.

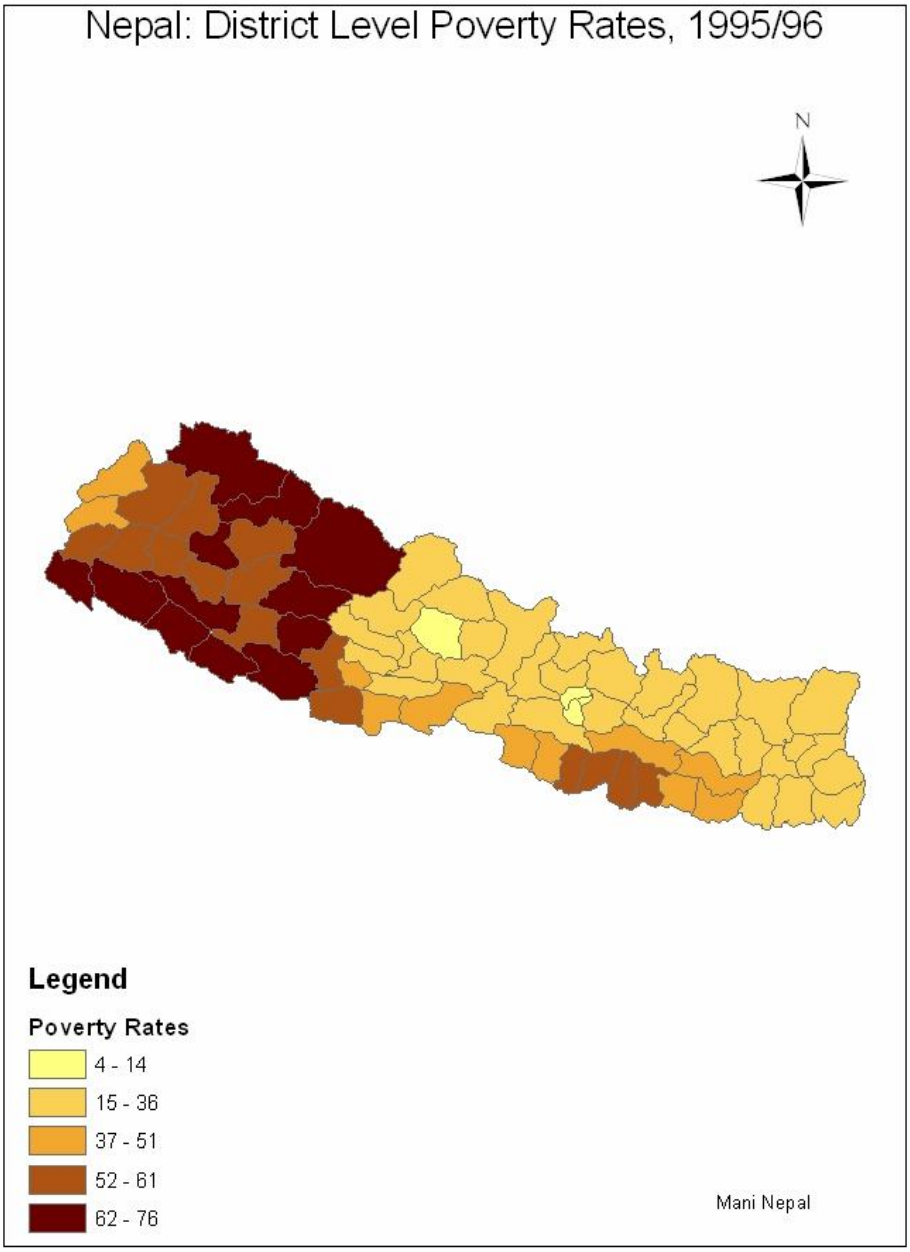
Table 2.5: District level Per Capita Household Expenditure, Head Count Ratio and Poverty Gap, 1995/96 and 2003/04

	Expenditure		Head Count Ratio					Poverty Gap				
DISTRICTS	1995/96	2003/04	1995/96	Rank	2003/04	Rank	Difference	1995/96	Rank	2003/04	Rank	Difference
KATHMANDU	15419	39827	0.043	1	0.037	1	-0.006	0.009	1	0.009	1	0
BHAKTAPUR	13447	36404	0.062	2	0.051	2	-0.011	0.014	2	0.013	2	-0.071***
LALITPUR	14268	37336	0.076	3	0.07	3	-0.006	0.018	3	0.019	3	0.056***
KASKI	12055	30714	0.139	4	0.102	4	-0.037*	0.037	4	0.026	4	-0.297***
MANANG	7807	15941	0.229	5	0.196	6	-0.033	0.056	5	0.049	6	-0.125***
KAVRE	8708	18626	0.239	6	0.257	18	0.018	0.062	6	0.069	20	0.113***
ILAM	7950	13606	0.252	7	0.327	37	0.075*	0.063	7	0.09	37	0.429***
DOLAKHA	7933	15999	0.255	8	0.218	10	-0.037	0.064	8	0.055	8	-0.141***
CHITAWAN	8823	19489	0.255	9	0.216	9	-0.039	0.069	12	0.056	10	-0.188***
NUWAKOT	7929	14360	0.26	10	0.292	28	0.032	0.067	10	0.079	28	0.179***
SINDHUPALCHOK	7665	15053	0.261	11	0.229	11	-0.032	0.067	9	0.057	11	-0.149***
SOLUKHUMBU	7081	12132	0.277	12	0.322	34	0.045	0.067	11	0.084	30	0.254***
TERHATHUM	7179	11601	0.282	13	0.379	51	0.097**	0.071	13	0.105	49	0.479***
SYANGJA	7628	16421	0.285	14	0.208	7	-0.077**	0.077	16	0.052	7	-0.325***
MYAGDI	7362	14527	0.296	15	0.235	12	-0.061	0.081	18	0.061	12	-0.247***
OKHALDHUNGA	6930	10894	0.298	16	0.399	56	0.101**	0.075	14	0.111	54	0.480***
TAPLEJUNG	6834	11962	0.303	17	0.344	42	0.041	0.076	15	0.093	40	0.017
RASUWA	7177	13467	0.306	18	0.311	31	0.005	0.081	19	0.086	34	0.062***
DHADING	6989	12420	0.307	19	0.32	33	0.013	0.08	17	0.085	32	0.063***
JHAPA	7507	16108	0.311	20	0.278	23	-0.033	0.083	21	0.076	27	-0.084***
PARBAT	7118	14980	0.315	21	0.214	8	-0.101**	0.087	24	0.055	9	-0.368***
LAMJUNG	7202	15390	0.316	22	0.241	13	-0.075*	0.088	25	0.063	13	-0.284***
BHOJPUR	6520	10635	0.322	23	0.418	63	0.096**	0.081	20	0.118	62	0.457***
DHANKUTA	6992	12483	0.324	24	0.372	44	0.048	0.084	23	0.103	45	0.226***
KHOTANG	6515	10191	0.326	25	0.454	73	0.128***	0.083	22	0.131	72	0.578***
MAKWANPUR	7652	15753	0.333	26	0.337	40	0.004	0.093	28	0.094	41	0.011
PANCHTHAR	6327	10277	0.341	27	0.434	69	0.093**	0.089	27	0.123	66	0.382***
BAGLUNG	6882	14517	0.341	28	0.251	16	-0.090**	0.097	30	0.066	15	-0.320***
MUSTANG	6895	15609	0.342	29	0.249	14	-0.093*	0.1	32	0.068	19	-0.320***
SANKHUWASABHA	6400	11907	0.343	30	0.337	41	-0.006	0.089	26	0.09	38	0.011
MORANG	7421	16598	0.348	31	0.301	30	-0.047	0.098	31	0.086	35	-0.122***
RAMECHHAP	6412	11268	0.354	32	0.378	48	0.024	0.094	29	0.104	47	0.106***
TANAHU	6991	15497	0.354	33	0.259	20	-0.095**	0.102	35	0.069	21	-0.324***

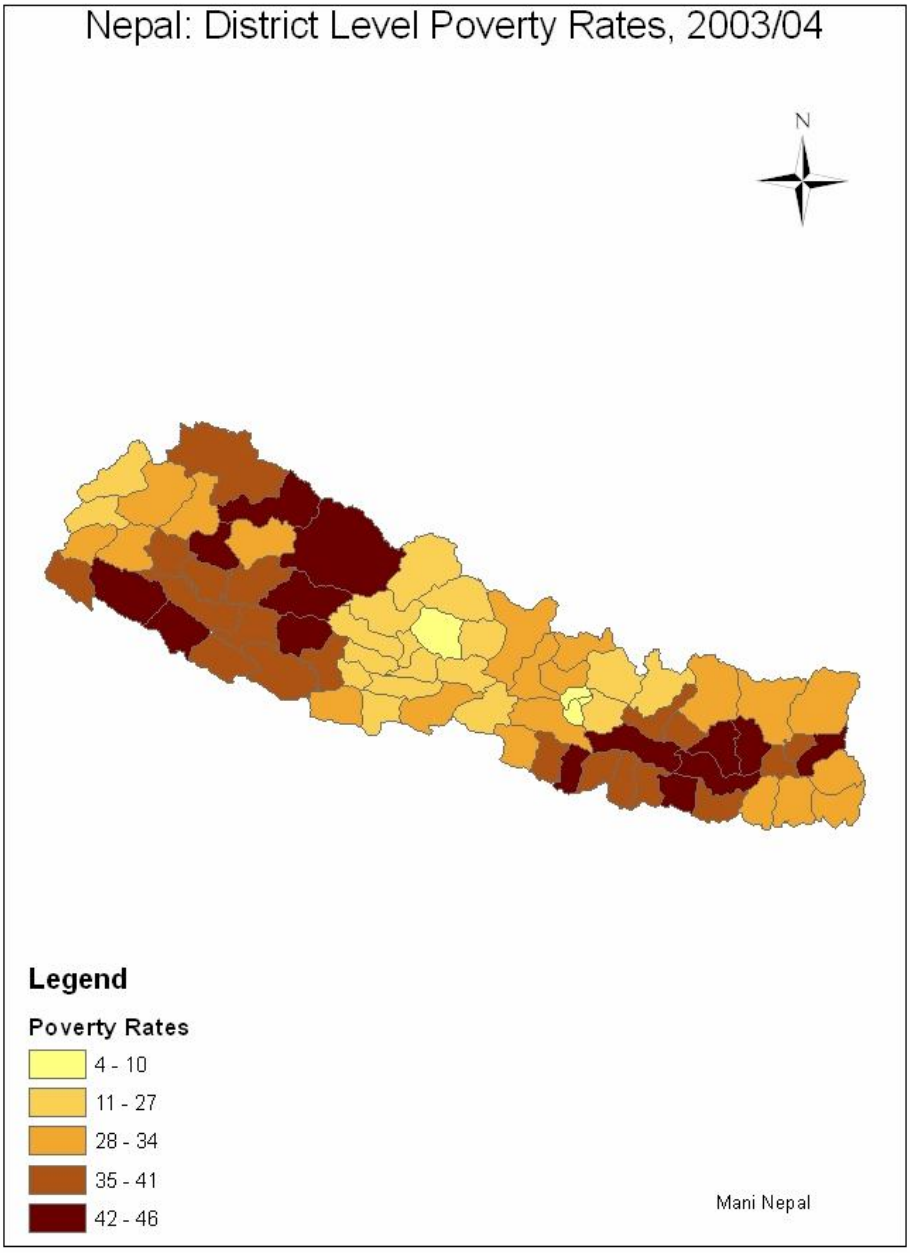
GULMI	6561	13982	0.36	34	0.25	15	-0.110***	0.102	34	0.064	14	-0.373***
PALPA	7040	15702	0.36	35	0.257	19	-0.103***	0.105	36	0.066	16	-0.371***
GORKHA	6486	13713	0.361	36	0.279	25	-0.082*	0.1	33	0.073	25	-0.270***
SUNSARI	7348	16273	0.364	37	0.322	35	-0.042	0.107	37	0.094	42	-0.121***
UDAYAPUR	6129	11038	0.399	38	0.438	70	0.039	0.112	38	0.128	69	0.143***
ARGHAKHANCHI	6163	13617	0.404	39	0.259	21	-0.145***	0.12	39	0.067	17	-0.442***
PARSA	7055	17155	0.409	40	0.298	29	-0.111***	0.124	40	0.083	29	-0.331***
RUPANDEHI	6791	17968	0.42	41	0.251	17	-0.169***	0.136	41	0.067	18	-0.507***
NAWALPARASI	5945	14989	0.454	42	0.278	24	-0.176***	0.143	44	0.074	26	-0.483***
SAPTARI	5753	12590	0.468	43	0.395	55	-0.073*	0.139	43	0.116	59	-0.165***
SINDHULI	5477	10387	0.468	44	0.448	71	-0.02	0.138	42	0.13	71	-0.058***
DARCHULA	5466	15611	0.477	45	0.176	5	-0.301***	0.151	45	0.041	5	-0.728***
BARA	5594	12789	0.481	46	0.386	53	-0.095**	0.152	46	0.113	56	-0.257***
BAITADI	5361	13386	0.492	47	0.27	22	-0.222***	0.159	48	0.069	22	-0.566***
SIRAHA	5305	11095	0.506	48	0.428	67	-0.078*	0.153	47	0.127	67	-0.170***
DHANUSA	5621	13844	0.516	49	0.383	52	-0.133***	0.165	50	0.112	55	-0.321***
SARLAHI	5320	12402	0.518	50	0.403	58	-0.115***	0.164	49	0.12	63	-0.268***
DADELDHURA	5096	12628	0.536	51	0.312	32	-0.224***	0.182	53	0.085	33	-0.533***
KAPILBASTU	5199	13180	0.538	52	0.327	38	-0.211***	0.183	54	0.089	36	-0.514***
MAHOTTARI	5151	11936	0.54	53	0.406	60	-0.134***	0.175	51	0.121	64	-0.309***
RAUTAHAT	5042	11948	0.552	54	0.425	66	-0.127***	0.181	52	0.128	70	-0.293***
DOTI	4917	12370	0.558	55	0.336	39	-0.222***	0.192	55	0.092	39	-0.521***
SALYAN	4922	12401	0.582	56	0.362	43	-0.220***	0.195	56	0.099	43	-0.492***
JAJARKOT	4528	10807	0.596	57	0.378	49	-0.218***	0.198	58	0.102	44	-0.485***
JUMLA	4743	13081	0.596	58	0.325	36	-0.271***	0.197	57	0.084	31	-0.574***
BAJHANG	4537	12647	0.604	59	0.285	27	-0.319***	0.209	61	0.072	24	-0.656***
ACHHAM	4527	11050	0.606	60	0.378	50	-0.228***	0.207	59	0.104	48	-0.498***
PYUTHAN	4636	11365	0.607	61	0.399	57	-0.208***	0.211	63	0.113	57	-0.464***
DAILEKH	4510	10658	0.609	62	0.407	61	-0.202***	0.207	60	0.114	58	-0.449***
BAJURA	4532	12689	0.611	63	0.284	26	-0.327***	0.211	62	0.071	23	-0.664***
BANKE	4755	14243	0.627	64	0.372	45	-0.255***	0.24	69	0.11	53	-0.542***
SURKHET	4617	12799	0.637	65	0.386	54	-0.251***	0.23	67	0.108	50	-0.530***
RUKUM	4287	10364	0.639	66	0.416	62	-0.223***	0.219	65	0.117	61	-0.466***
ROLPA	4294	9835	0.641	67	0.458	74	-0.183***	0.222	66	0.131	73	-0.410***
DOLPA	4250	10452	0.644	68	0.428	68	-0.216***	0.217	64	0.121	65	-0.442***
KANCHANPUR	4418	14168	0.663	69	0.377	47	-0.286***	0.256	71	0.109	52	-0.574***

HUMLA	4084	10472	0.674	70	0.403	59	-0.271***	0.232	68	0.109	51	-0.530***
DANG	4208	12115	0.684	71	0.375	46	-0.309***	0.259	72	0.103	46	-0.602***
MUGU	3989	10329	0.696	72	0.424	65	-0.272***	0.248	70	0.116	60	-0.532***
BARDIYA	3971	11917	0.712	73	0.423	64	-0.289***	0.281	74	0.127	68	-0.548***
KALIKOT	3877	10189	0.718	74	0.459	75	-0.259***	0.266	73	0.139	75	-0.477***
KAILALI	3724	11440	0.756	75	0.448	72	-0.308***	0.308	75	0.134	74	-0.565***

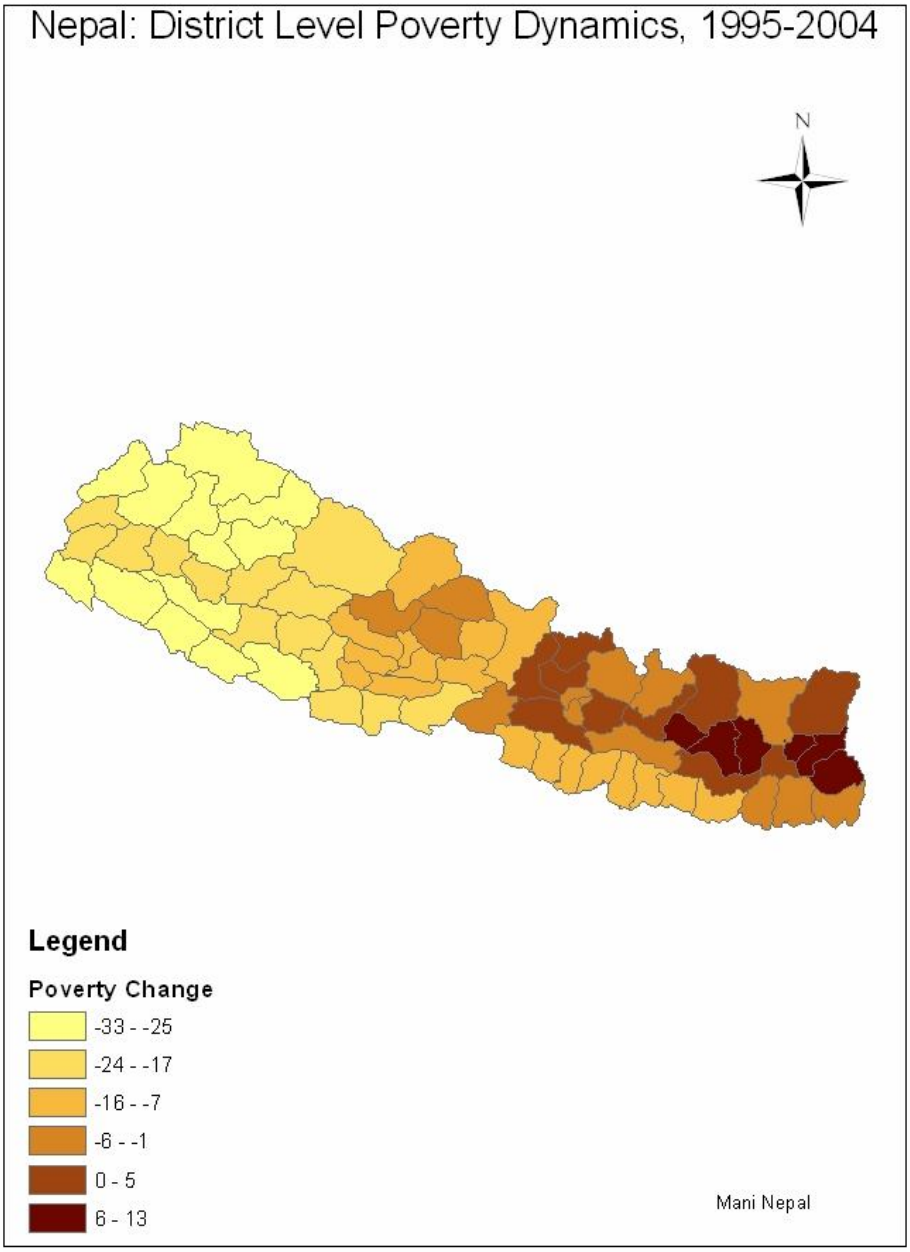
Map 2.1: District Level of Poverty Rates, 1995/96



Map 2.2: District Level Poverty Rates, 2003/04



Map 2.3: Change in District Level Poverty Rates, 1995/96- 2003/04



2.4.5. Village-Level Poverty

We also compute the village-level head-count ratio and poverty-gap for all villages across Nepal. Fig. 2.1 displays the change in the village level head-count ratio, and Fig. 2.2 displays the change in the poverty-gap between 1995/96 and 2003/04.[11] The head count ratio increased in 22% (out of 3880) of the villages, and the poverty gap has increased in 23.6% of the villages. The village level trend is similar to the district level trend in that villages in the eastern and central part of the country experienced a worsening poverty situation. This trend can be seen in Map 2.4, Map 2.5 and Map 2.6 presented below.

Poverty analysis using the national average statistics indicate the welfare improvement among poor people between 1995/95 and 2003/04, but the disaggregate analysis using micro-level estimation shows that the achievement towards reducing poverty rate is a mixed bag during that period. The puzzling aspect of this outcome is that the Eastern and Central parts of the country, which otherwise are considered as relatively better-off regions than the mid-west and far-west regions, experienced worsening poverty.[12]

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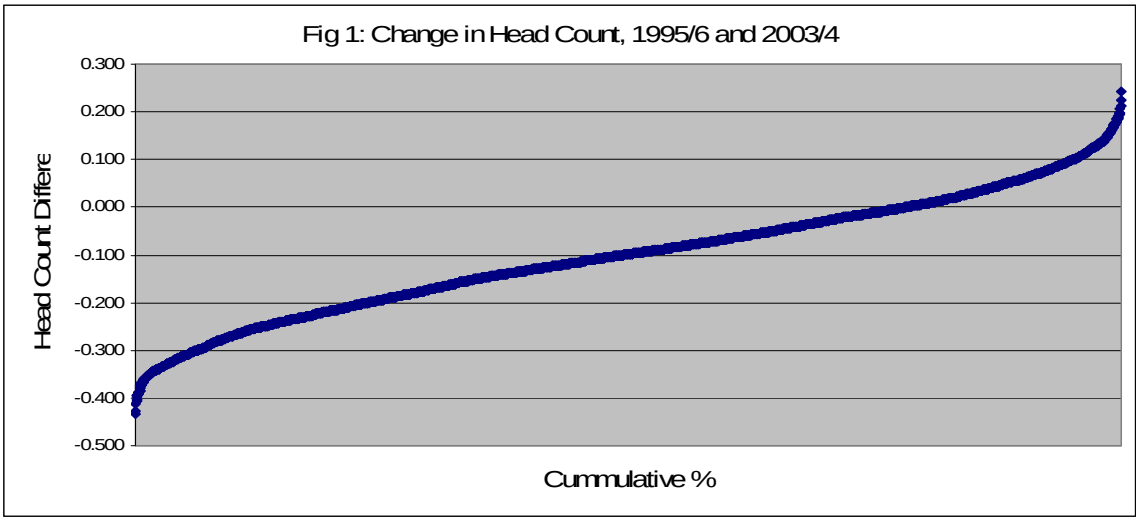
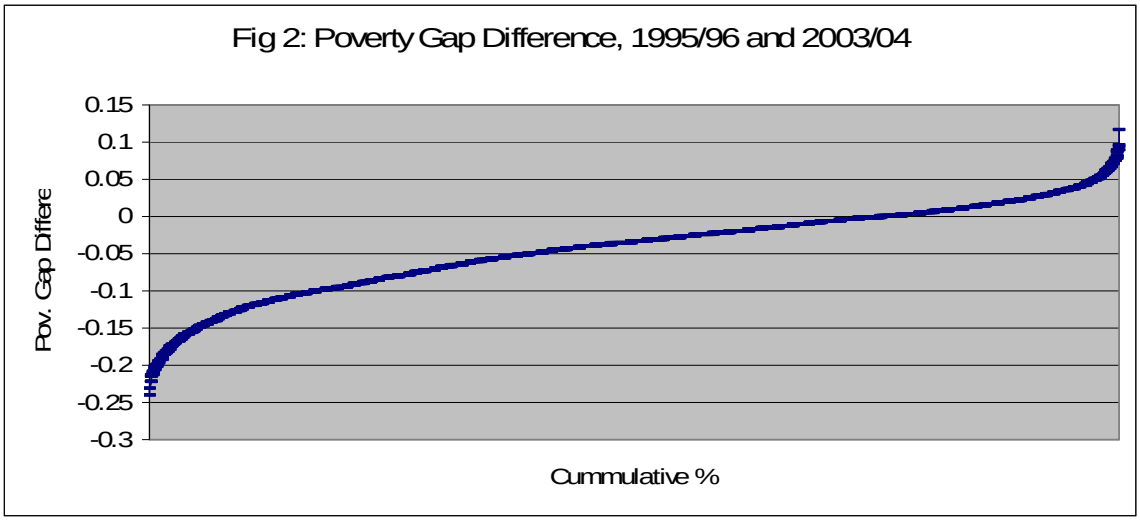
[11] The village level poverty indicators are presented in Appendix C.

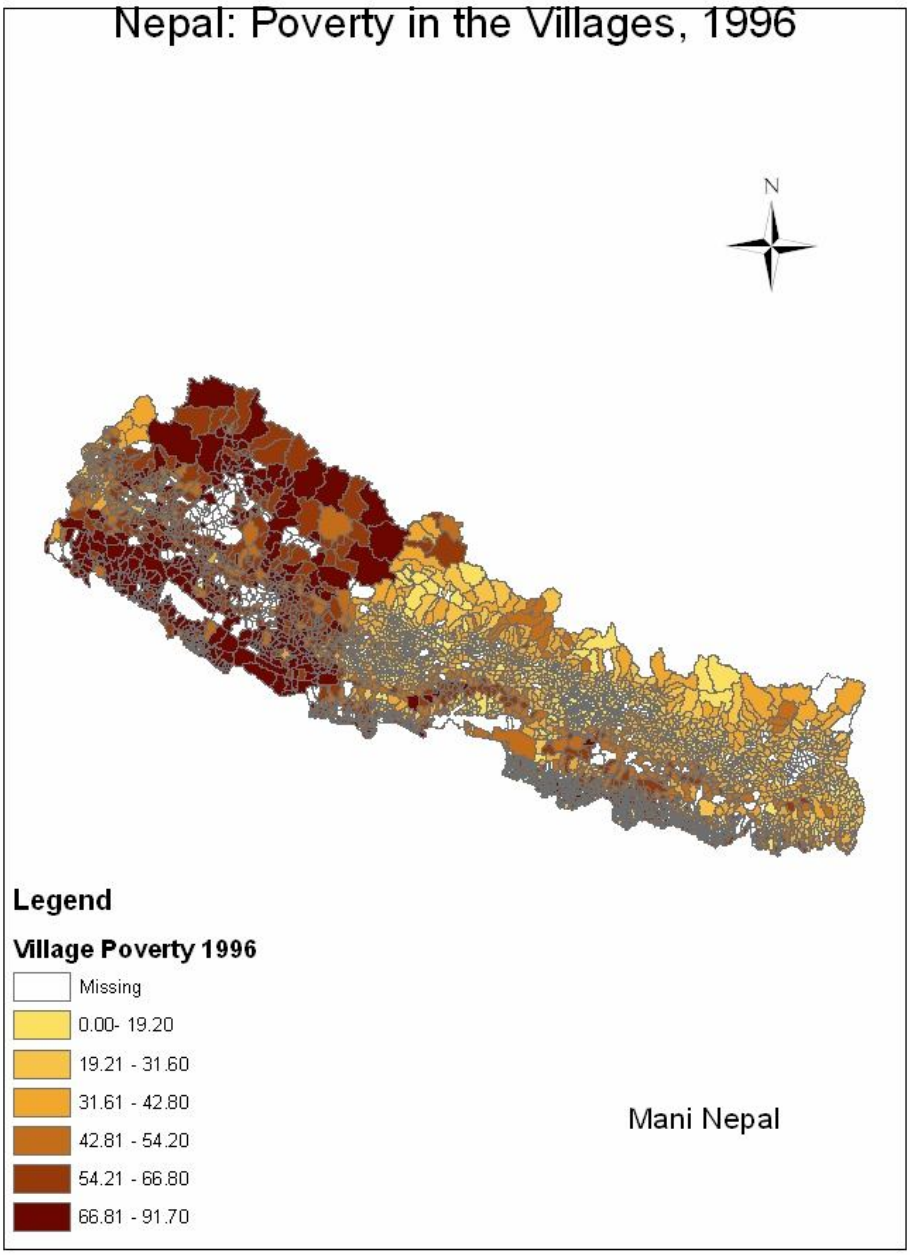
[12] Our hypothesis is that the Maoist People's War (MPW) drove adult household members out of their home. Some were forced to join the rebel army (voluntarily or otherwise), and others voted with their own feet by moving either to urban centers or to foreign countries in search of a secure life. It may be the case that in a labor surplus subsistence agrarian society like Nepal, the reduction of the labor force may not reduce output, but the per capita output/expenditure may go up instead (an application of the



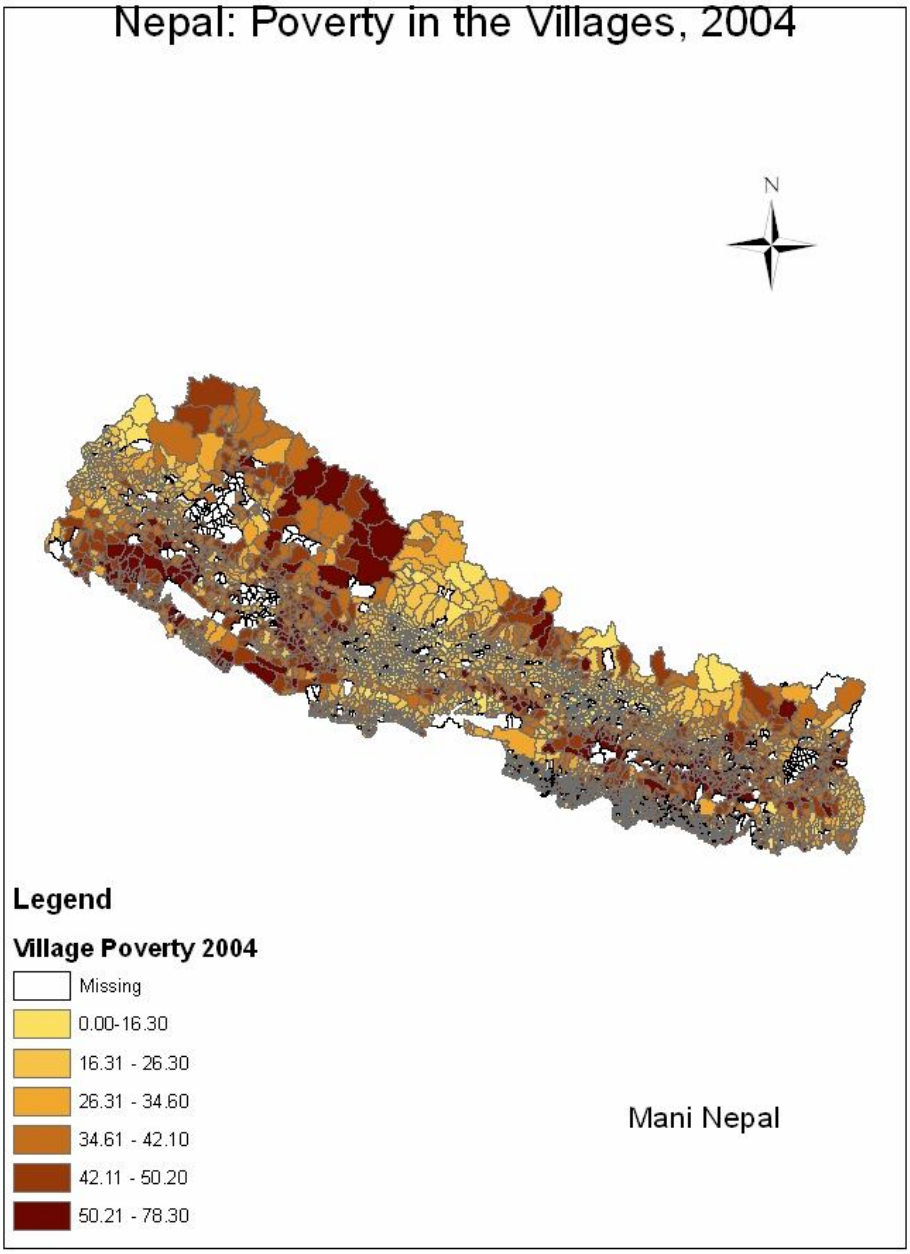


principle of diminishing marginal productivity). Also some of households receive remittances sent by household members who left the village that help to increase household expenditures. We suspect that it may be one of the reason why the western part of the country that was hit hard by the insurgency, and also has been considered as the least developed region, experienced a higher rate of reduction of poverty in comparison to the eastern and the central regions.

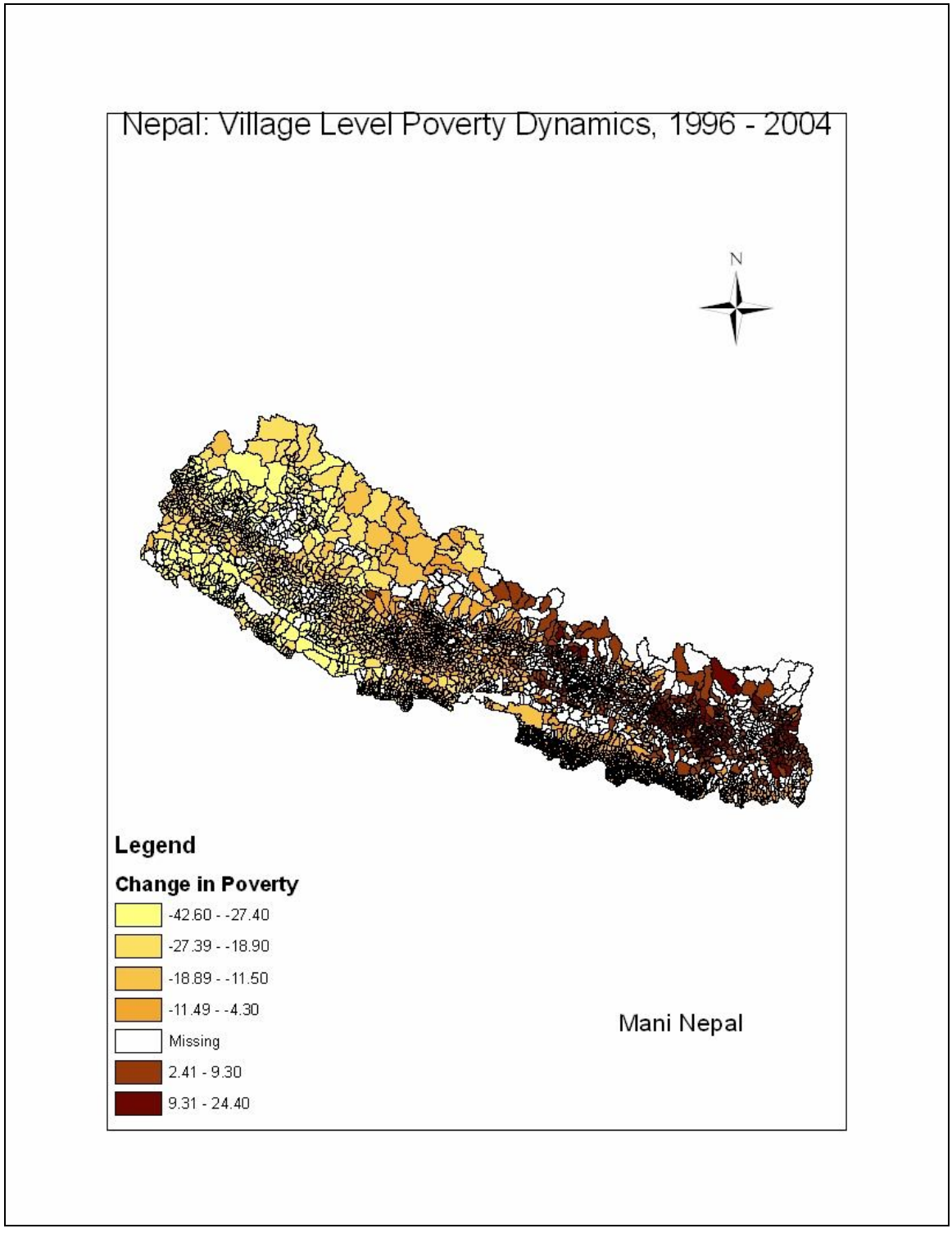
Map 2.4: Village Level Poverty, 1996



Map 2.5: Village Level Poverty, 2004



Map 2.5: Village Level Change in Poverty, 1996-2004



2.5. Empirical Estimates of Inequality Indicators

A study conducted by Nepal Central Bureau of Statistics (CBS 2005) shows that inequality worsened in Nepal between 1995/96 and 2003/04. This section presents the estimates of inequality across different regions, districts, and villages of Nepal including the inequality between different caste/ethnic groups.

2.5.1. Inequality among Caste/Ethnic Groups

Table 2.6 shows the estimated expenditure inequality in Nepal during the years 1995/96 and 2003/04. The inequality measured by the Gini index increased at the national level, regional level, rural-urban, and among different caste/ethnic groups. The increase in the Gini index is significant in four regions (except in the Eastern region). In terms of ecological regions, the Hills and Terai regions experienced significant increases in the inequality index which is also true in the case of urban areas. For caste/ethnic groups, the Gini index went up significantly in the case of Bahun-Chhetri, Newar, Tamang, Magar, Gurung, Rai and Limbu. In the case of Newar, the ethnic group with the highest per capita household expenditure (and income) in the country, the inequality went up the most, indicating that inequality increases with the increase in the household income.

The relative position or the inequality ranking of the five regions, three ecological belts, and rural-urban areas has not changed between 1995/96 and 2003/04. In the case of caste/ethnic groups, there is only one change in the ranking: the Newar and Bahun-Chhetri groups switched their respective ranks (from the 6^{th} to the 7^{th} position and vice-versa). The relative inequality position of other caste/ethnic groups did not change.

Table 2.6: Regional, Rural-Urban, and Caste/Ethnic Inequality, 1995/96 and 2003/04

		1995/96	Rank	2003/04	Rank	Diff	t-value
5-Regions	MIDWEST	0.323	1	0.353	1	0.03***	3.75
	FARWEST	0.33	2	0.357	2	0.027*	1.69
	WESTERN	0.364	4	0.396	3	0.032***	2.67
	EASTERN	0.34	3	0.397	4	0.057	1.10
	CENTRAL	0.404	5	0.469	5	0.065***	4.06
Eco-Belts	MOUNTAIN	0.333	1	0.334	1	0.001	0.07
	TERAI	0.367	2	0.406	2	0.039***	3.55
	HILLS	0.391	3	0.447	3	0.056***	5.60
Rural-Urban	RURAL	0.343	1	0.358	1	0.015*	1.87
	URBAN	0.371	2	0.447	2	0.076***	5.43
Caste/Ethnic Groups	DAKASA	0.337	1	0.354	1	0.017*	1.89
	TERAICASTE	0.342	2	0.359	2	0.017	1.55
	TAMAGURALI	0.349	3	0.382	3	0.033***	2.75
	MUSLIM	0.354	4	0.395	4	0.041*	1.86
	OTHER	0.361	5	0.401	5	0.04	1.48
	NEWAR	0.373	6	0.449	7	0.076***	4.00
	BAHUNCHETRI	0.386	7	0.422	6	0.036***	2.77
Total	NEPAL	0.385		0.427		0.042***	3.82

2.5.2. Regional Inequality

The regional inequality among 15 regions is presented in Table 2.7. The inequality declined in the Far-West mountain region (MFWEST), but the reduction is insignificant. The Central hill region (HCENTRAL) experienced the highest increase in the inequality, more than the national average. The inequality is below the national average in all other regions. This is basically due to the fact that when inequality is computed at disaggregated levels, it generally goes down as compared to the national average.

Table 2.7: Regional Inequality, 1995/96 and 2003/04

	1995/96	Rank	2003/04	Rank	Diff	t-value
MMWEST	0.292	1	0.319	4	0.027	1.57
MEAST	0.298	2	0.312	2	0.014	1.16
HMWEST	0.307	3	0.323	5	0.016	1.19
MFWEST	0.310	4	0.309	1	-0.001	-0.05
HEAST	0.311	5	0.335	6	0.024	1.99**
HFWEST	0.315	6	0.317	3	0.002	0.11
MWEST	0.322	7	0.353	8	0.031	1.51
MCENTRAL	0.326	8	0.350	7	0.024	1.46
TFWEST	0.337	9	0.400	12	0.063	1.85*
TMWEST	0.341	10	0.385	9	0.044	0.99
TCENTRAL	0.358	11	0.408	13	0.050	2.81***
HWEST	0.359	12	0.393	10	0.034	1.85*
TEAST	0.361	13	0.414	14	0.053	2.67***
TWEST	0.362	14	0.396	11	0.034	1.92*
HCENTRAL	0.386	15	0.474	15	0.088	4.14***

2.5.3. District-Level inequality

Table 2.8 displays the district level Gini index in 1995/96 and 2003/04, their Gini ranks, and the difference in Gini indices between years. The inequality in the mountain and hilly regions is relatively smaller than for the *Terai* region. The inequality went up significantly in 32 districts (out of 75). There are some instances where inequality went

down, but those changes were insignificant. Comparing Table 2.8 with Table 2.5, we can see that the districts with lower degree of inequality have higher head-count ratios and higher poverty gap (the rank correlation between head-count and Gini index is -0.29 for 1995/96, and -0.38 for 2003/04) indicating a trade-offs between poverty and inequality.

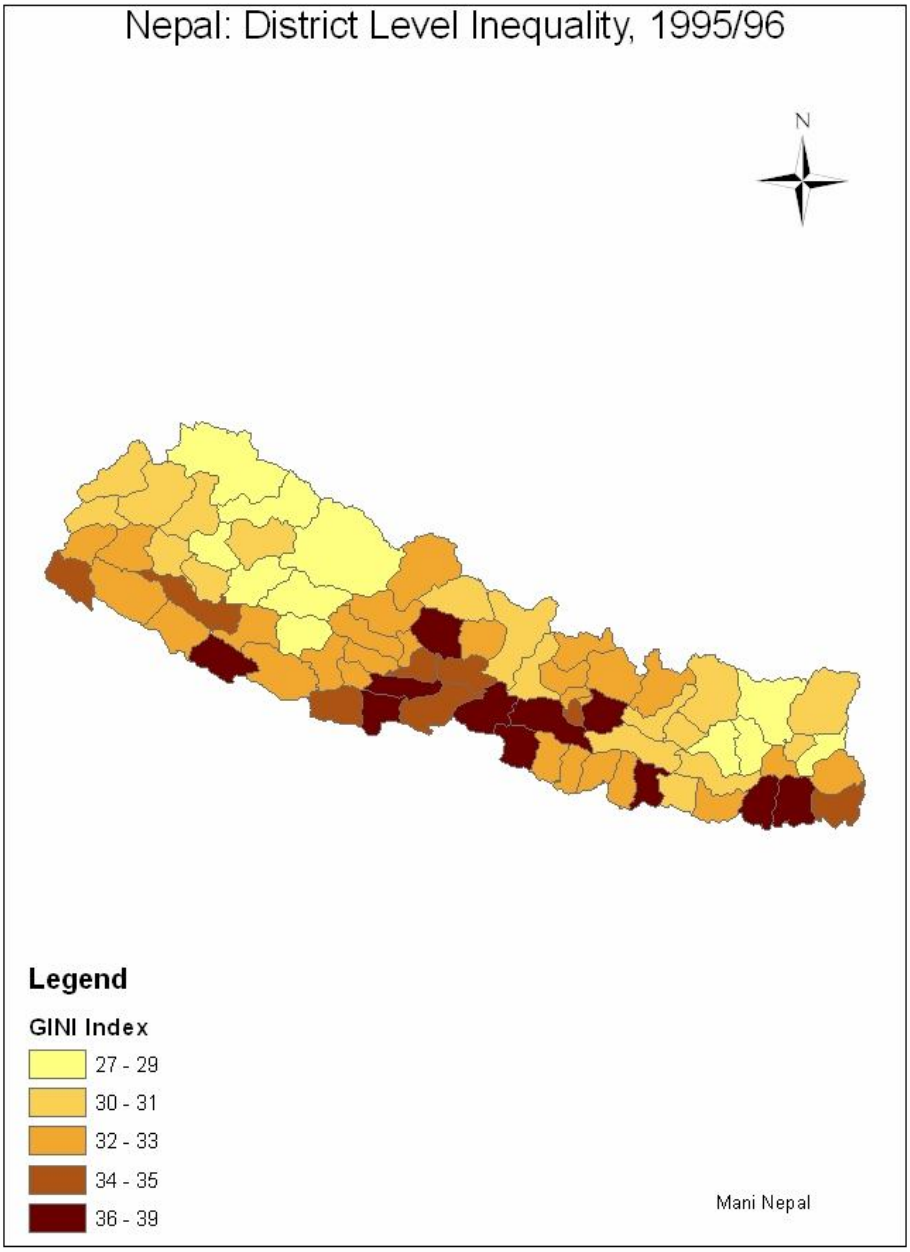
Table 2.8: The Comparison of the District Level Inequality in Nepal, 1996 and 2003

	1996		2003			
DIST	GINI	Rank	GINI	Rank	Diff	t-value
KALIKOT	0.265	1	0.288	5	0.023	1.45
HUMLA	0.272	2	0.283	2	0.011	0.97
DOLPA	0.275	3	0.301	12	0.026	1.53
MUGU	0.280	4	0.289	6	0.009	0.48
JAJARKOT	0.283	6	0.282	1	-0.001	-0.05
RUKUM	0.283	5	0.287	4	0.004	0.11
PANCHTHAR	0.287	7	0.295	7	0.008	0.36
ROLPA	0.288	9	0.285	3	-0.003	-0.18
BHOJPUR	0.288	8	0.305	14	0.017	1.34
KHOTANG	0.292	10	0.305	15	0.013	1.02
SANKHUWASABHA	0.293	11	0.308	18	0.015	1.01
DAILEKH	0.296	13	0.297	9	0.001	0.07
SOLUKHUMBU	0.296	12	0.306	16	0.010	0.88
ACHHAM	0.297	14	0.295	8	-0.002	-0.12
TAPLEJUNG	0.299	15	0.316	21	0.017	0.88
BAJHANG	0.300	17	0.298	10	-0.002	-0.13
SINDHULI	0.300	16	0.313	19	0.013	0.30
BAJURA	0.302	20	0.300	11	-0.002	-0.13
OKHALDHUNGA	0.302	18	0.304	13	0.002	0.06
MANANG	0.302	19	0.333	32	0.031***	2.92
RAMECHHAP	0.303	21	0.307	17	0.004	0.26
TERHATHUM	0.308	22	0.326	28	0.018	1.02
JUMLA	0.309	23	0.349	40	0.040**	2.02
SIRAHA	0.310	24	0.339	34	0.029	0.73
DARCHULA	0.312	26	0.316	22	0.004	0.18
UDAYAPUR	0.312	25	0.341	37	0.029	0.53
DHADING	0.313	27	0.316	23	0.003	0.17
BAITADI	0.314	29	0.319	25	0.005	0.29
GORKHA	0.314	28	0.336	33	0.022	1.24
PYUTHAN	0.317	30	0.327	30	0.010	0.61
DOTI	0.319	31	0.327	31	0.008	0.31
ARGHAKHANCHI	0.321	33	0.313	20	-0.008	-0.38
SINDHUPALCHOK	0.321	32	0.340	35	0.019	0.96
DADELDHURA	0.322	37	0.317	24	-0.005	-0.20
GULMI	0.322	35	0.322	26	0.000	0.00
KAILALI	0.322	36	0.371	51	0.049**	2.45
RAUTAHAT	0.322	34	0.376	55	0.054***	2.94

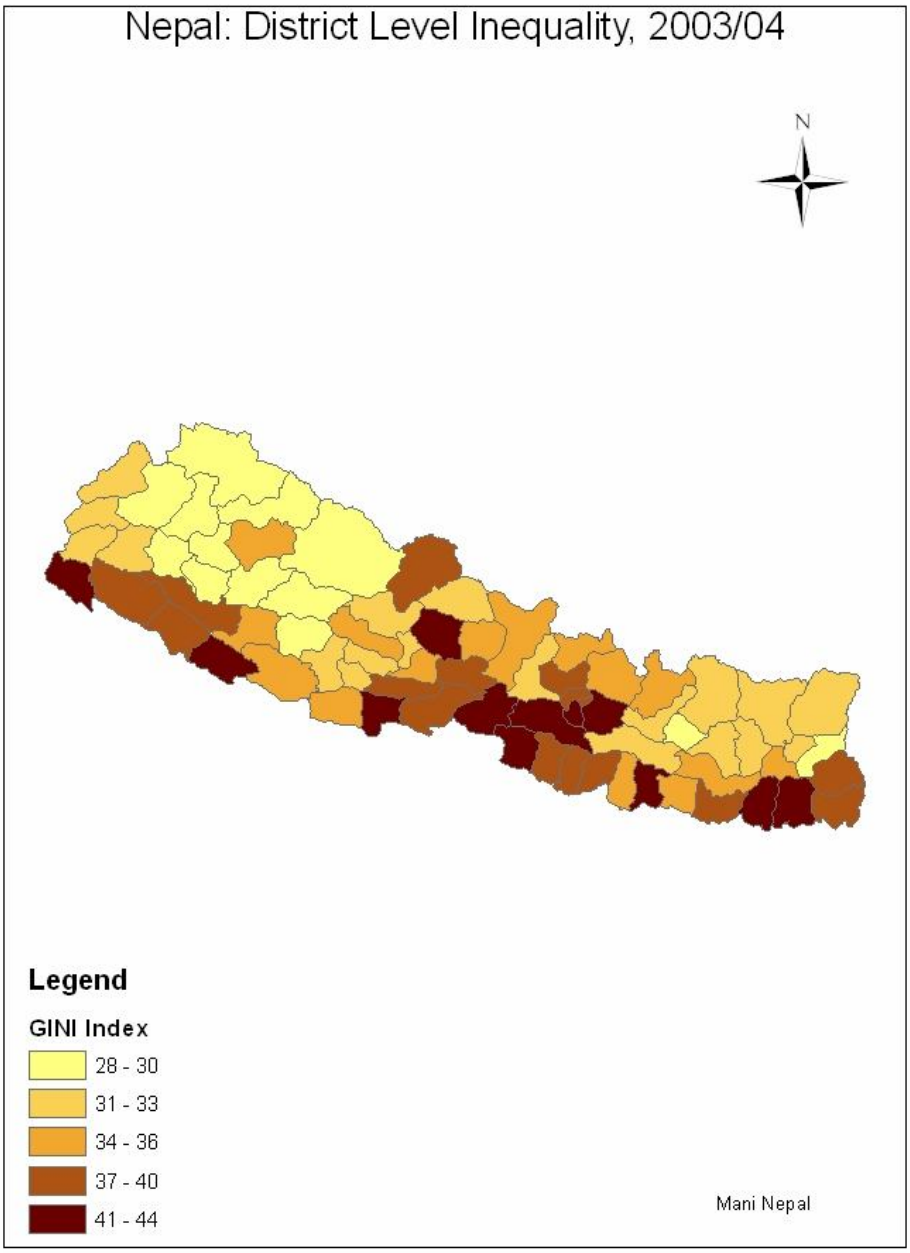
KATHMANDU	0.323	38	0.382	58	0.059***	3.31
SALYAN	0.324	40	0.345	38	0.021	1.35
MAHOTTARI	0.324	39	0.362	44	0.038*	1.65
RASUWA	0.325	43	0.350	41	0.025	0.57
BARDIYA	0.325	44	0.373	52	0.048**	2.42
SARLAHI	0.325	41	0.379	56	0.054*	1.87
BHAKTAPUR	0.325	42	0.396	62	0.071***	3.94
PARBAT	0.327	46	0.322	27	-0.005	-0.30
DHANKUTA	0.327	45	0.362	45	0.035**	2.13
MYAGDI	0.328	47	0.326	29	-0.002	-0.14
DANG	0.328	48	0.345	39	0.017	0.82
BARA	0.329	49	0.380	57	0.051***	2.77
MUSTANG	0.330	51	0.367	48	0.037***	2.60
SAPTARI	0.330	50	0.385	61	0.055***	3.35
BAGLUNG	0.331	54	0.340	36	0.009	0.60
DOLAKHA	0.331	53	0.363	46	0.032***	2.25
ILAM	0.331	52	0.368	50	0.037***	2.60
LAMJUNG	0.333	55	0.356	43	0.023	0.90
NUWAKOT	0.334	56	0.367	49	0.033**	2.32
KAPILBASTU	0.336	57	0.353	42	0.017	1.00
SYANGJA	0.337	58	0.363	47	0.026	0.89
NAWALPARASI	0.341	60	0.374	53	0.033*	1.72
SURKHET	0.341	61	0.384	60	0.043***	2.72
LALITPUR	0.341	59	0.415	64	0.074***	3.59
TANAHU	0.347	62	0.375	54	0.028**	2.19
JHAPA	0.348	63	0.404	63	0.056*	1.94
KANCHANPUR	0.350	64	0.425	69	0.075**	2.04
DHANUSA	0.355	65	0.416	65	0.061***	5.07
PALPA	0.356	67	0.383	59	0.027***	2.24
KAVRE	0.356	66	0.442	74	0.086***	4.30
KASKI	0.363	68	0.438	73	0.075***	3.53
BANKE	0.366	69	0.417	66	0.051***	2.77
CHITAWAN	0.368	70	0.422	67	0.054***	3.03
MORANG	0.370	71	0.433	70	0.063***	3.84
MAKWANPUR	0.371	72	0.437	72	0.066**	2.34
SUNSARI	0.376	73	0.436	71	0.06***	3.12
RUPANDEHI	0.382	74	0.424	68	0.042**	2.04
PARSA	0.390	75	0.444	75	0.054**	2.18

The district level inequalities in 1995/96 and 2003/04 are also shown in Map 2.7 and Map 2.8. The relative change in the district level inequality is shown in Map 2.8.

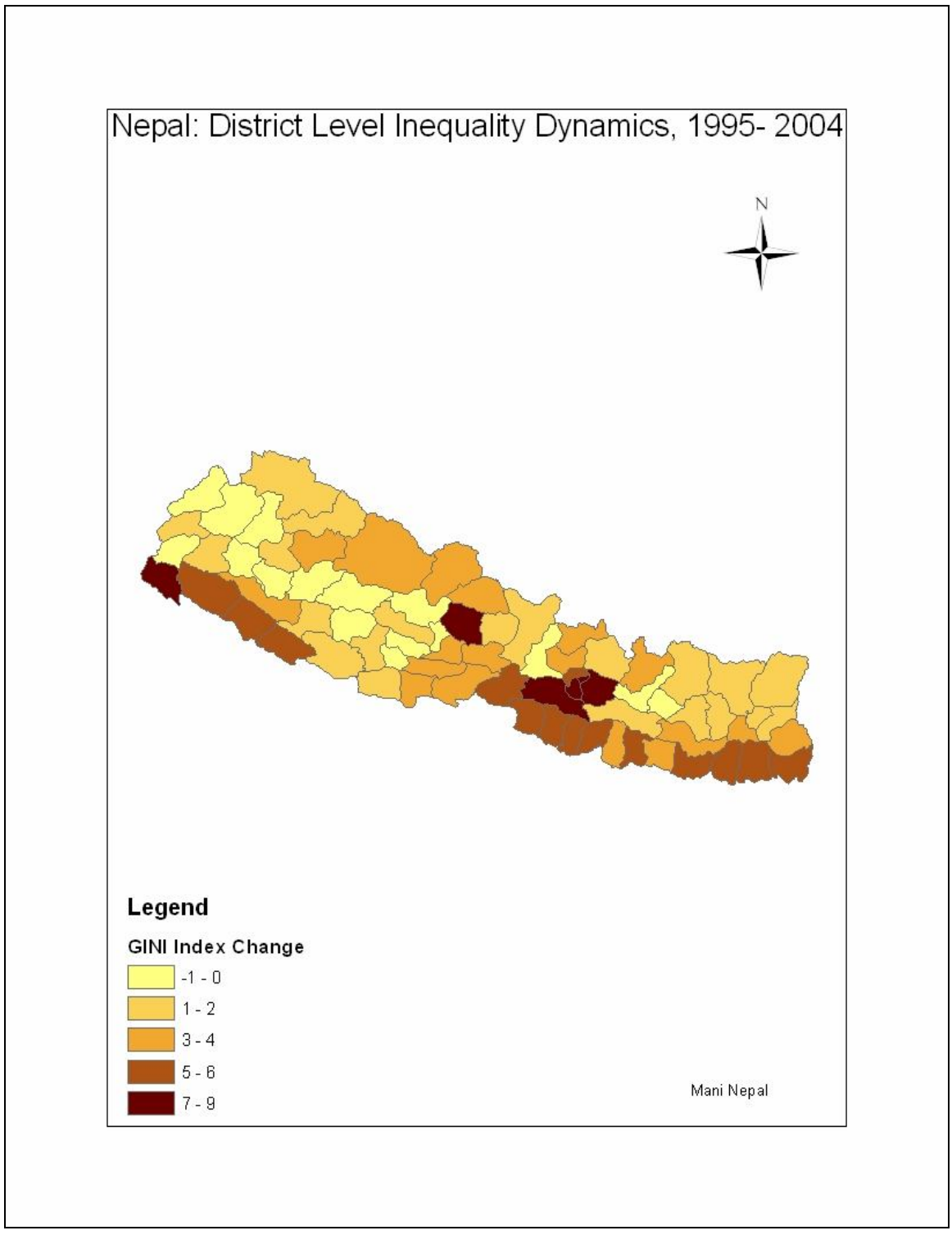
Map 2.7: District Level Expenditure Inequality Rates, 1995/96



Map 2.8: District Level Expenditure Inequality, 2003/04

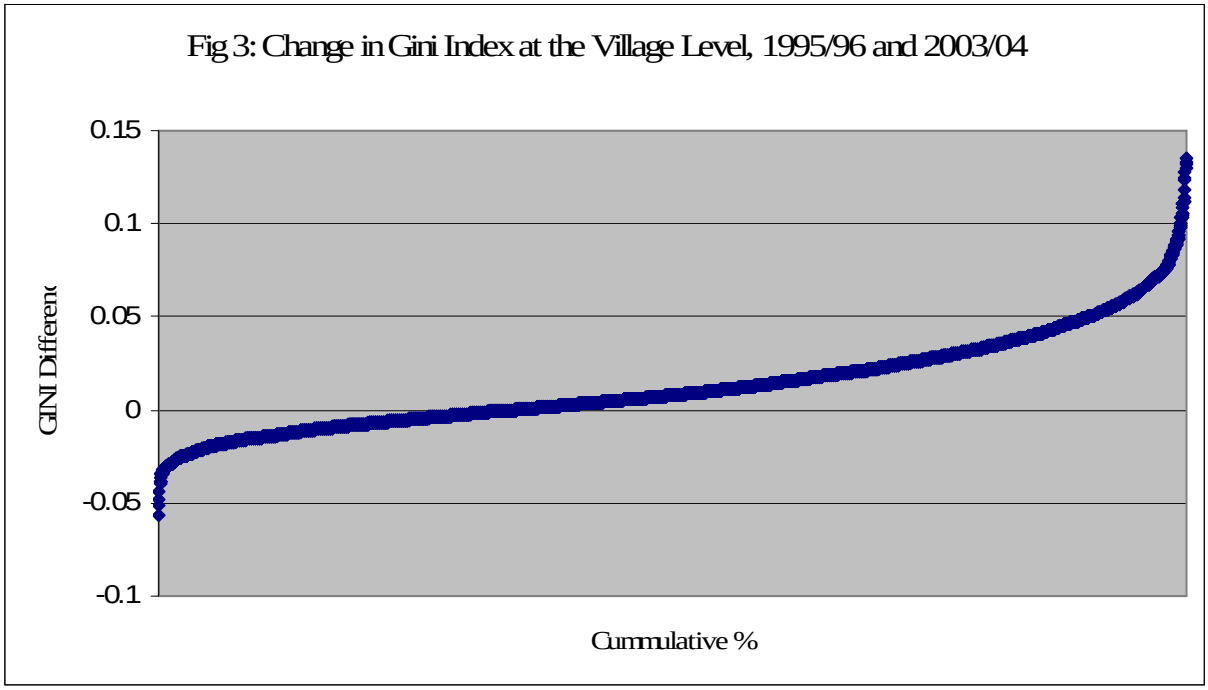


Map 2.9: Change in District Level Expenditure Inequality, 1995/96- 2003/04

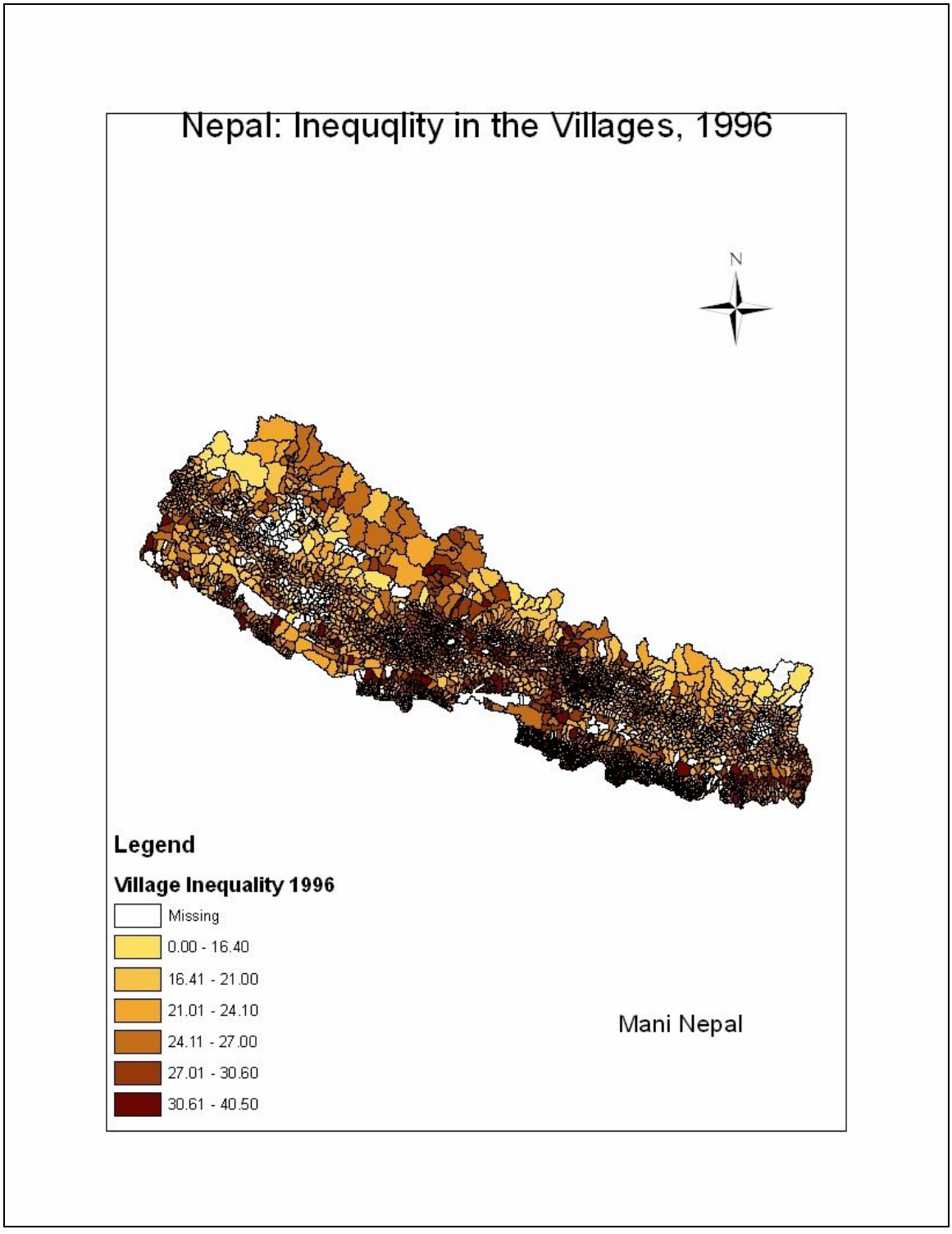


2.5.4. Village-Level inequality

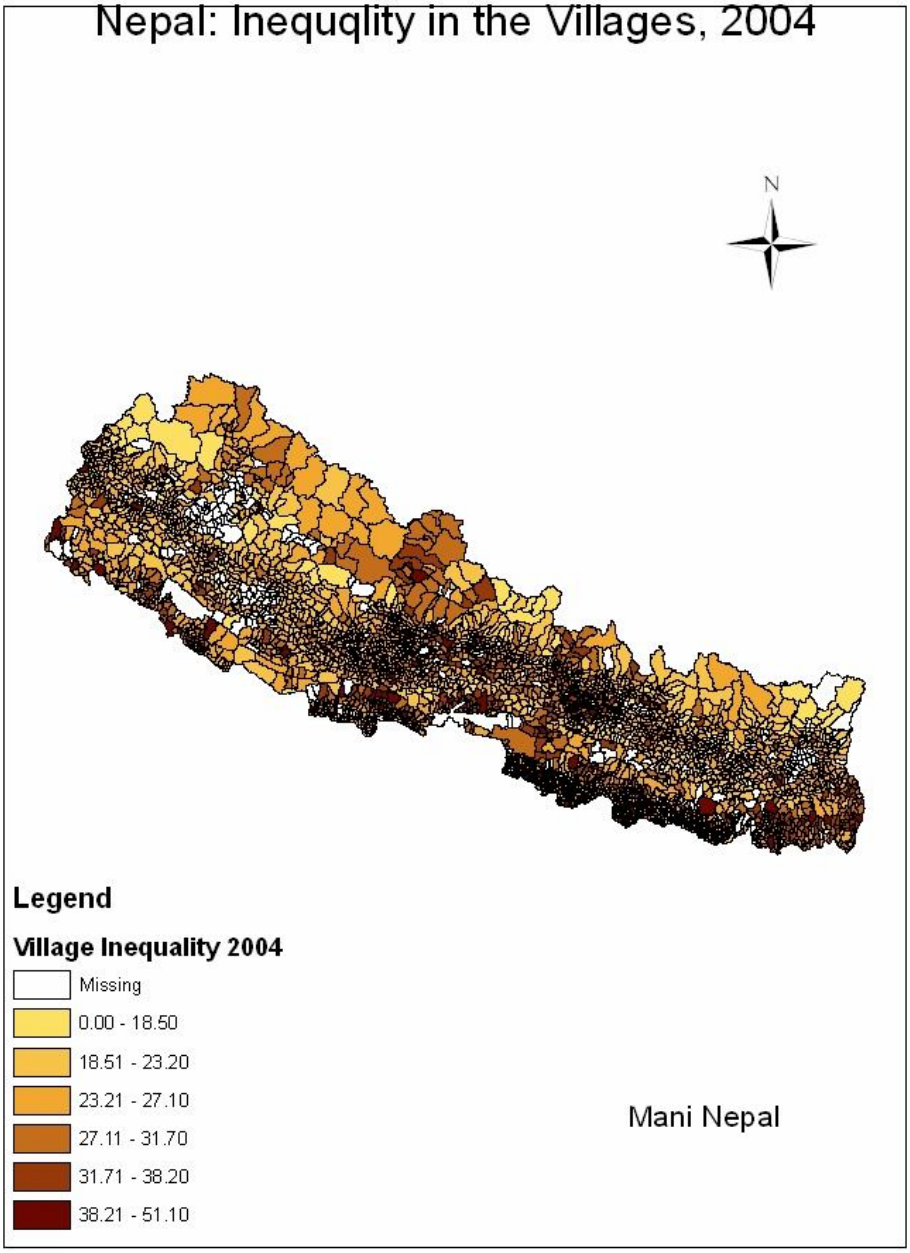
Fig. 3 shows the change in village level inequality from 1995/96 to 2003/04. This figure shows that the inequality went up in the majority of the villages. The geographical distribution of inequality between 1995/96 and 2003/04 are shown in Map 2.7 and Map 2.8, and the relative change in the village level inequality is shown in Map 2.9.



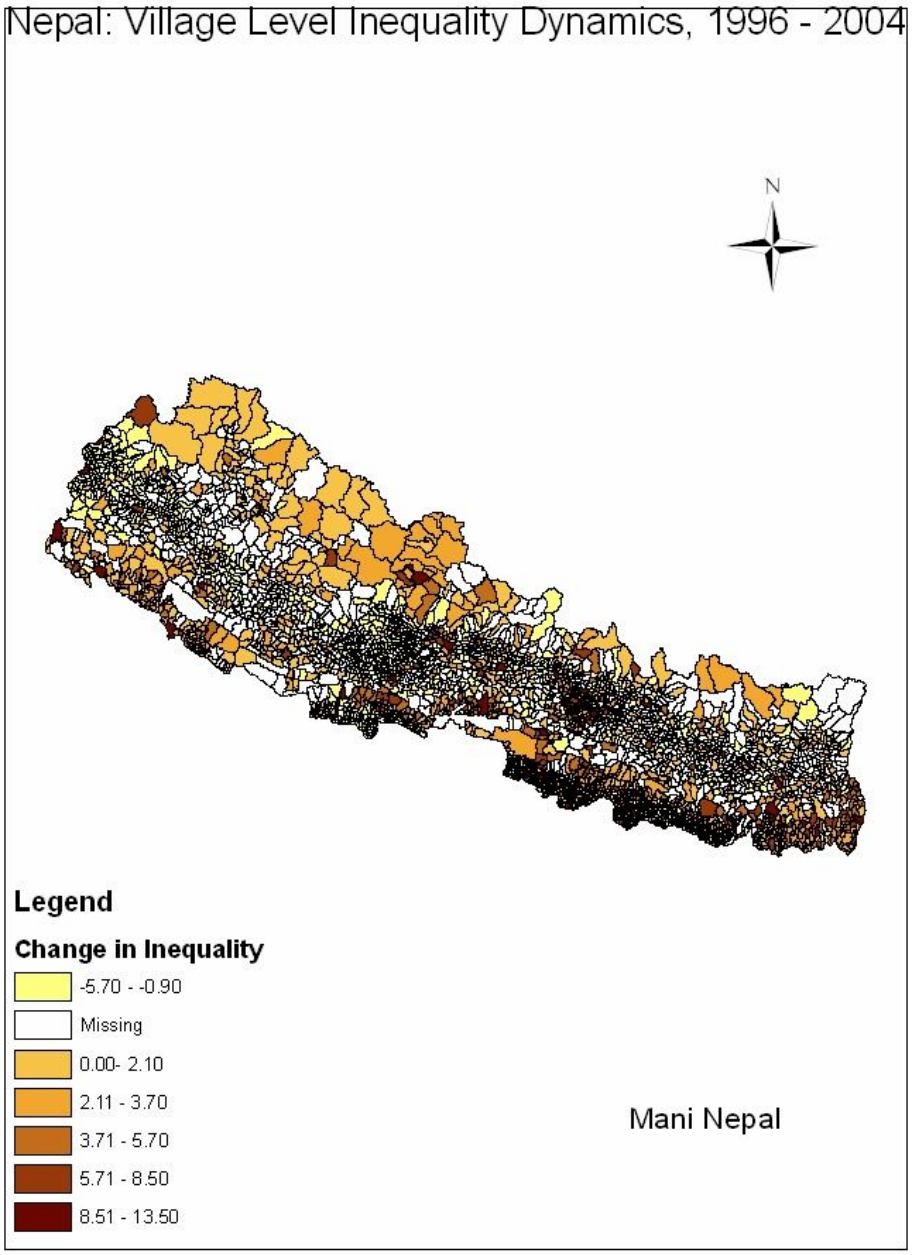
Map 2.10: Village Level Inequality, 1996



Map 2.11: Village Level Inequality, 2004



Map 2.12: Village Level Change in Inequality, 1996- 2004



2.6. Inequality Decomposition

2.6.1. Decomposition by Factor Components

This section presents the decomposition of inequality by expenditure categories and income sources. First we present the results of the inequality decomposition by expenditure sources. As a first step, we estimate an expenditure function where log-expenditure is assumed to be a linear function of household demographics (average age of the household , percentage of males in the household, and household size), schooling (high school, college and higher education), housing structure, information sources (TV), location of the household (regions: eastern, western, mid-western and far-western; ecological belt: mountain and hills), sanitation facilities (piped water, flush-toilet), utilities (electricity, gas), and caste/ethnicity of the household. The regression results are presented in Table 2.9. We see that in both years, most of the explanatory variables are statistically significant at conventional levels and they jointly explain about 64% of the variations of the log-expenditures.

The expenditure equation can be used to answer two types of questions: i) Of these explanatory variables, how much does each contribute to the levels of inequality in 1995/96 and 2003/04, and ii) how much of the increase in expenditure inequality is due to each of the exogenous factors. The answers to these questions are reported in Table 2.10 where the first two columns named 'Factor Weights' answer the first question for 1995/96 and 2003/04, and the third column under the heading 'Factor Contribution in Inequality Change' provides the answer to the second question. In both years, availability of television (TV), electricity, gas, flush-toilet and permanent housing structure are the

most important variables, other than the residuals, with significant factor weights for the expenditure inequality.

Table 2.9: Expenditure Equation Results, 1996 and 2003 (Dep. Variable: Log of HH Exp.)

Var. Group	Variables	1995/96	2003/04
		-0.001	0.002**
DEMOGRAPHIC	HHAGE	(0.001)	(0.001)
		0.100***	0.118***
	HHSIZE	(0.004)	(0.004)
		0.162***	0.069***
	MALE	(0.027)	(0.024)
		0.149***	0.126***
EDUCATION	HIGHSCHOOL	(0.021)	(0.019)
		0.324***	0.279***
	COLLEGE	(0.053)	(0.060)
		0.435***	0.507***
	HIGHEREDU	(0.074)	(0.061)
		0.202***	0.251***
HOUSING	PERMANENTHOUSE	(0.029)	(0.027)
		0.317***	0.636***
INFORMATION	TV	(0.039)	(0.040)
		0.089***	0.023
REGIONS	EASTERN	(0.024)	(0.023)
		-0.037	0.102***
	WESTERN	(0.025)	(0.025)
		-0.291***	-0.043
	MWESTERN	(0.030)	(0.027)
		-0.263***	-0.055
	FWESTERN	(0.035)	(0.032)
		0.106***	0.133***
ECOLOGICAL BELTS	MOUNTAIN	(0.034)	(0.0310
		0.090***	0.050**
	HILLS	(0.027)	(0.025)
		0.054**	0.060***
SANITATION	WATERPIPED	(0.024)	(0.021)
		0.247***	0.268***
	TOILETFLUSH	(0.039)	(0.030)
		0.232***	0.246***
UTILITIES	ELECTRICITY	(0.029)	(0.0220
		0.198***	0.236***
	GAS	(0.038)	(0.035)
CASTE	BAHUNCHHETRI	0.115***	0.189***

		(0.027)	(0.028)
		0.086***	-0.034
	TAMAGURALI	(0.032)	(0.029)
		-0.043	-0.037
	DAKASA	(0.036)	(0.036)
		0.095***	0.037
	TERAICASTE	(0.032)	(0.032)
		0.105***	0.240***
	NEWAR	(0.039)	(0.042)
		-0.060	-0.075*
	MUSLIM	(0.043)	(0.043)
		9.279***	9.730***
CONSTANT	CONSTANT	(0.046)	(0.045)
R^2		0.636	0.642
F		193.7***	217.6***
N		3346	3912

Robust standard errors in the parentheses; ***, ** and * indicate significance at 1%, 5% and 10% level.

As these facilities are generally absent from the rural areas, our results indicate that the inequality would be higher in the urban areas (Table 2.6 verifies this result). Other variables with sizable shares in the inequality are household size, and schooling. The regional variables and caste/ethnicity have very low shares in the expenditure inequality.

The factor contribution to the inequality change is given in columns 3 and 4 of Table 2.10. The caste/ethnicity is the single largest source (35.4%) of the increase in expenditure inequality where the two dominant caste/ethnic groups (Newar 17.5% and Bahun-Chhetri 12.8%) are accounting for over 30% of the increase in the expenditure inequality. The urban-biased facilities such as electricity, gas and flush-toilet account for over 63% of the increase in the expenditure inequality between 1995/96 and 2003/04. Unlike Fields (2002) who finds that schooling was the largest contributor (56%) in the inequality increase in the US between 1979 and 1999, we find that the contribution of school education in the increase in expenditure inequality is negative in Nepal.

Table 2.10: The Contribution of Each Factor to Expenditure Inequality and to the Change in Inequality, 1995/96-2003/04.

Var. Group	Variables	Factor Weights 1996	Factor Weights 2003	Factor Contribution in Inequality Change	Group's Contribution
DEMOGRAPHIC					
	HHAGE	0.001	-0.001	-0.018	
	HHSIZE	0.121	0.103	-0.057	
	MALE	0.011	0.004	-0.059	
SCHOOLING					-0.014
	HIGHSCHOOL	0.022	0.013	-0.073	
	COLLEGE	0.020	0.008	-0.105	
	HIGHEREDU	0.016	0.031	0.164	
HOUSING	PERMANENT	0.041	0.063	0.266	
INFORMATION	TV	0.160	0.140	-0.045	
REGION					-0.268
	EASTERN	-0.002	-0.002	0.005	
	WESTERN	0.000	0.002	0.022	
	MWESTERN	0.020	0.002	-0.164	
	FWESTERN	0.015	0.001	-0.131	
ECO BELTS					-0.084
	MOUNTAIN	-0.005	-0.005	-0.003	
	HILLS	0.014	0.005	-0.081	
SANITATION	WATERPIPED	0.011	0.009	-0.011	
	TOILETFLUSH	0.062	0.084	0.287	
UTILITIES	ELECTRICITY	0.069	0.074	0.122	
	GAS	0.048	0.066	0.234	
CASTE/ETHNICITY					0.354
	BAHUNCHHETRI	0.002	0.014	0.128	
	TAMAGURALI	-0.001	0.002	0.036	
	DAKASA	0.002	0.002	-0.005	
	TERAICAST	-0.002	-0.001	0.016	
	NEWAR	0.011	0.027	0.175	
	MUSLIM	0.001	0.001	0.004	
RESIDUAL	RESIDUAL	0.365	0.358	0.295	
GINI		0.385	0.427		

Disaggregating the school education data into below high-school, high-school, college and higher level education shows that high school and college level education tend to reduce the expenditure inequality while higher education tends to increase it. This indicates that putting more focus on high-school and college level education may be a good way to deal with increasing expenditure inequality. Another notable result is that as

a group,[13] the variable region (regional dummies) makes a negative (-26.8%) contribution to the inequality change where the mid-west and far-west regions accounted for the most negative contributions.[14]

2.6.2. Decomposition by Income Sources

In order to perform inequality decomposition by income sources, we identify different sources of household income. In the survey, total income is subdivided into agriculture, livestock, home production, wage, rental, enterprise, proprietor, remittance, house rent, and other incomes (Table 2.11). There is a significant change in the composition of income between 1995/96 and 2003/04. In 1995/96, the shares of wage income, agriculture income and enterprise income were 34.13%, 21.75% and 13.16% respectively. Within the eight-year period, the composition of household income has changed significantly. In 2003/04, the contribution of these three sources became 24.84%, 14.97% and 20.90% respectively. Another notable change in the composition of household income in Nepal is coming from remittances. In 1995/96, the share of remittance income was 6.95%, and it increases to 12.14% by 2003/04.

[13] The contribution of variables within a group can be added up if a group is composed of more than one indicator variables (several dummies). Here we have four such groups (schooling, regions, ecological belt, and caste/ethnicity). Other variables that are put in groups are not indicator variables with several dummies so that their values cannot be added up to obtain the group's contribution.

[14] These two regions have been experiencing the highest intensity conflicts for a decade since 1996.

Table 2.11: Inequality Decomposition by Income Sources, 1995/96 and 2003/04

	Income Share (%)		Relative Inequality		Inequality Correlation		Inequality Share (%)		Marginal Effect (%)	
Income Source	1996	2003	1996	2003	1996	2003	1996	2003	1996	2003
AGRICULTURE	21.75	14.97	0.720	0.649	0.597	0.340	15.76	06.30	-5.99	-8.68
LIVESTOCK	02.58	02.57	1.278	1.284	0.281	0.190	01.56	01.20	-1.02	-1.37
HOMEPROD	02.86	03.31	0.758	0.721	0.251	0.291	00.91	01.32	-1.94	-1.99
WAGE	34.13	24.84	0.765	0.752	0.688	0.605	30.26	21.55	-3.86	-3.29
RENTAL	00.88	01.24	1.739	1.093	0.401	0.561	01.04	01.45	0.15	0.21
ENTERPRIZE	13.16	20.90	1.485	0.925	0.822	0.800	27.07	29.48	13.91	8.58
PROPRITER	02.72	02.00	0.994	0.990	0.899	0.893	04.10	03.38	1.38	1.37
REMITTANCE	06.95	12.14	0.949	0.901	0.573	0.641	06.37	13.39	-0.59	1.25
HOUSERENT	12.37	13.16	0.782	0.795	0.650	0.788	10.59	15.73	-1.77	2.57
OTHER	02.59	04.86	0.957	0.940	0.558	0.711	02.33	06.20	-0.26	1.34

Table 2.11 also shows the inequality share and marginal effects of different income sources on total inequality in 1995/96 and 2003/04. In 1995/96, the first three major income sources with the larger share of inequality were wage income (30.3%), enterprise income (27.1%) and agriculture income (15.8%). By 2003/04, the trend had changed significantly, and the first three income sources with the larger share of inequality are enterprise (29.5%), wage (21.6%) and house rent (15.7%) incomes. A notable change in 2003/04 is that the inequality share of agricultural income went down from 15.8% to 6.3%, while the inequality share of remittance income went up from 6.4% to 13.4%. The enterprise income not only has the largest inequality share but also has the largest marginal effect (8.6%) on total inequality. The marginal effects of agricultural, livestock, wage and home production incomes on total inequality are negative in both years whereas the marginal effect of remittance and house rent income on total inequality turned from negative (1995/96) to positive (2003/04).

Our results show that the recent trend of increased income inequality between 1995/96 and 2003/04 is probably due to the increasing share of enterprise income (13.2% to 20.9%) and remittance income (6.9% to 12.1%), and decreasing share of agricultural income (21.7% to 15.0%) and wage income (34.13% to 24.8%). Compared to the relative income shares, the enterprise income not only has a higher share of inequality but also has the higher marginal contribution to total inequality. The agricultural income has the opposite trend, a larger but diminishing share in total income, a small share in total inequality and yet larger negative marginal effect on total inequality, indicating that income from agriculture helps to reduce the inequality.

VI. Conclusion

Poverty alleviation has become one of the main development agendas of the twenty first century worldwide. But, the identification of poor has been facing fundamental problems due to the lack of required information. Poverty estimates obtained from the household surveys lack their representativeness at the community level as those surveys are not representative up to the community level. Additionally, the aggregate estimate of poverty and inequality covers up the details and do not provide a good account of the distribution of the poor across local geographical units. On the other hand, micro-level accounts of poverty and inequality for that matter provide useful guide for effective targeting and better planning at the local level. Using recently developed micro-level estimation technique we combine survey data with the census and estimate expenditure for the households enumerated in the census for 1995/96 and 2003/04. We also estimate different measures of poverty and inequality using the estimated expenditure for those two years. We provide the different distributional and poverty measures for the entire country as well as at the regional, districts and village levels, and we also estimate these measures for the different caste/ethnic households. The public good aspects of this research is that these measures can be used as a guide for formulating decentralization and fiscal policies for decentralized communities across Nepal.

Despite the indication that the aggregate level of poverty went down by 10 percentage points during the past eight years (1995/96 – 2003/04), our findings indicate that the reduction is not uniform in the first place, and the level of poverty actually went up in the significant part of the country that comprises over 40% of the total population. The increased poverty among the significant portion of the population accompanied with

the accelerating inequality throughout the country has compounded the divide between the haves and the have-nots and provided a suitable atmosphere for the conflict. As the foremost contributors of rising inequality are enterprise income and remittance, and agriculture income, high school and college level education help to reduce it, there are some clear policy implications of our findings that focusing on agricultural sector, high school and college education along with fiscal policy-mix (tax-transfer) could address the rising inequality and poverty.

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