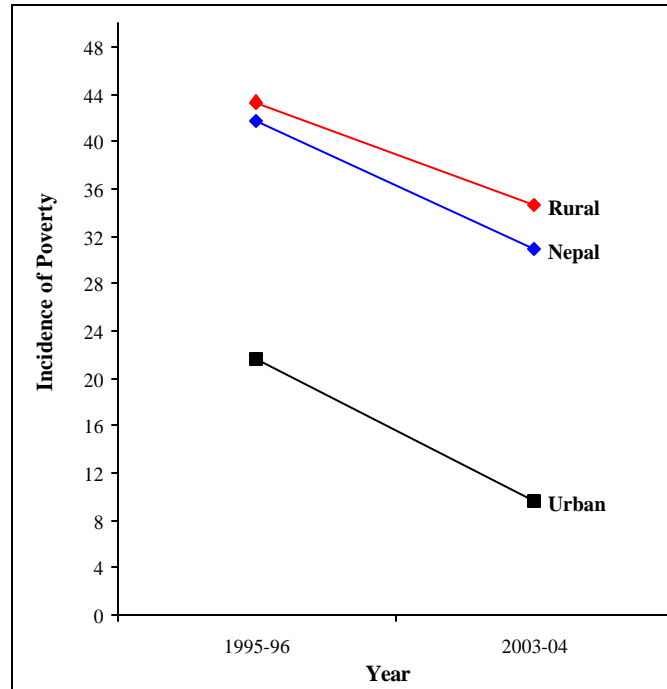


# POVERTY TRENDS IN NEPAL (1995-96 and 2003-04)



His Majesty's Government of Nepal  
**National Planning Commission Secretariat**  
**CENTRAL BUREAU OF STATISTICS**

September, 2005

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His Majesty's Government  
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**Dr. Shankar P. Sharma**  
Vice-Chairman

### Foreword

The overriding objective of the Poverty Reduction Strategy/Tenth Plan of Nepal is poverty alleviation and the Plan has given stronger emphasis for poverty monitoring. In this context, Nepal Living Standards Survey, 2003-04 (NLSS 2003-04) conducted by the Central Bureau of Statistics (CBS) has provided benchmark information on living standards of Nepalese people. Besides, two volumes containing statistical results of NLSS 2003-04, CBS has brought out a report on **Poverty Trends in Nepal (1995-96 and 2003-04)**.

The results in this report indicate that Nepal has achieved remarkable improvements in living standards, as evidenced from a dramatic decline in poverty incidence in the last decade. Wealth of information found in this poverty report will greatly support in the monitoring and evaluation of the Tenth Plan/PRSP, MDGs and other development projects. I sincerely hope that policy-makers, researchers and analysts utilize this for the maximum benefit in the country's overarching goal of poverty alleviation.

I appreciate the assistance provided by the World Bank and DFID to successfully accomplish the survey.

I also would like to thank the poverty assessment teams from the World Bank and CBS for this collaborative effort.

September 2005

Shankar P Sharma, Ph. D.  
Vice Chairman  
National Planning Commission  
Vice Chairman  
National Planning Commission

# Preface

Central Bureau of Statistics carried out Nepal Living Standards Survey 2003-04, a nation-wide multi-purpose household expenditure and income survey, as a follow up of the first survey conducted in 1995-96. The statistical reports containing the major findings of the survey were published in two volumes by the Bureau in December 2004.

This report presents NLSS-based poverty results estimated using the cost-of-basic needs (CBN) methodology and also the poverty trends in Nepal between 1995-96 and 2003-04. In order to maintain the comparability of the 2003-04 results with the 1995-96 estimates of poverty in the country, poverty lines were derived to adjust for regional differences in cost-of-living and inter-temporal inflation.

There are two chapters in the report. Included in the first chapter are poverty incidence, growth and inequality, poverty profile and multivariate analysis of poverty, sensitivity and robustness of poverty estimates and other evidences in support of poverty measurements. Second chapter describes the methodology used to derive regional and inter-temporal poverty lines, and presents the various region and time-specific poverty lines for food, non-food and overall consumption aggregates.

Results indicate that poverty incidence in the country declined appreciably, from 42 percent in 1995-96 to 31 percent in 2003-04 and various sensitivity analyses confirm the robustness of these trends. On the other hand, as a result of unequal growth in per capita consumption across different income groups and geographic regions, inequality increased substantially.

This work is the product of collaboration between the World Bank, DFID and Central Bureau of Statistics (CBS). I would like to sincerely thank the World Bank team led by Elena Glinskaya (Sr. Economist, SASPR). The World Bank team included Michael Lokshin (Sr. Economist, DEC), Dilip Parajuli (Consultant, SASPR, DFID-Nepal) and Mikhail Bontch Osmolovski (Consultant, SASPR). I wholeheartedly appreciate the CBS team that consisted of Uttam Narayan Malla (Deputy Director General), Krishna Prasad Shrestha (the then Deputy Director and head of household survey section), Rabi Prasad Kayastha, Present Deputy Director of the Survey Section and Statistical Officers Ram Hari Gaihre, Ishwori Prasad Bhandari, Anil Sharma, Guna Nidhi Sharma, Binod Manandhar, Kapil Prasad Timalsena and Computer Assistant Mohan Khajum Chongbang.

September, 2005

Tunga S. Bastola  
Director General  
Central Bureau of Statistics

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# CHAPTER I

## ***Poverty Trends in Nepal between 1995-96 and 2003-04***

### **1.1 Introduction**

This chapter presents results on the extent and profile of poverty in Nepal in 2003-04 as well as the changes that have occurred since 1995-96, when the last poverty profile was developed. The poverty line for Nepal has been derived on the basis of the 1995-96 Nepal Living Standards Survey (NLSS-I) using the cost-of-basic-needs (CBN) method. Changes in the cost of living have been taken into account using region-specific price indices developed on the basis of NLSS-I 1995-96 and NLSS-II 2003-04.

The World Bank Poverty Assessment report, “Nepal: Poverty at the Turn of the Twenty-First Century,” estimated the incidence of poverty in Nepal at 42 percent in 1995-96.<sup>1</sup> During the 8 years between 1995-96 and 2003-04 the Nepalese economy performed well, with real gross domestic product (GDP) growing at almost 5 percent per year (2.5 percent per capita per year). Annual agricultural growth accelerated to 3.7 percent in the second half of the 1990s (or about 1.5 percent per year in per-capita terms). Growth also accelerated in manufacturing (led by exports), in services, and especially in tourism. Remittances from abroad soared, and those sent through official channels totaled about 54 billion NRS in FY03, equivalent to 12.4 percent of GDP. This large inflow of remittances suggests that households’ disposable income and private consumption are growing faster than the GDP growth figures would suggest.

This chapter contains 7 sections and is organized as follows:

**Section 1.2** reports trends in the incidence, depth, and severity of consumption poverty between 1995-96 and 2003-04 in Nepal as a whole and across regions.

**Section 1.3** describes trends in consumption and inequality, presents growth incidence curves, and discusses the relationship between growth rates and poverty headcount.

---

<sup>1</sup> A number of adjustments have been made to the derivation of consumption aggregates and region-specific price indices since this poverty assessment was complete in 2000. These adjustments left the estimate of overall incidence of poverty in Nepal in 1995-96 unaffected, but did change the estimates of incidence of poverty at the regional level. Consequently, some of the results for 1995-96 reported in this paper (i.e., incidence of poverty at a regional level) are not directly comparable with the earlier results. These adjustments are discussed in (i) G. Prenzushi 20004 “Nepal NLSS I Consumption Aggregates Adjustments Made Since the Publication of the CBS Report and FY00 Poverty Assessment” and in (ii) Chapter 2 of this paper

**Section 1.4** presents a poverty profile and simulations of the effects of change in household characteristics on the probability of being in poverty based on a multivariate analysis of per capita consumption expenditure.

**Section 1.5** analyzes the sensitivity and robustness of poverty estimates .

**Section 1.6** provides other evidence of changes in standard of living (e.g., trends in actual quantities of foods consumed, income-based poverty headcounts, subjective poverty headcounts, trends in agricultural wages, etc.), and

**Section 1.7** offers tentative explanations for the structural reasons that led to observed changes in poverty between 1995-96 and 2003-04.

## 1.2 Incidence of Poverty in Nepal in 1995-96 and 2003-04

Data from 1995-96 and 2003-04 Nepal Living Standards Surveys (NLSS-I and II) carried out by the CBS are used to estimate trends in poverty incidence in Nepal during 8 years between these two surveys. Headcount rates suggest that poverty has dramatically declined in Nepal between 1995-96 and 2003-04 (Table 1.2.1). In 2003-04, 31 percent of population was poor in Nepal, compared to 42 percent in 1995-96. Thus, the incidence of poverty in Nepal declined by about 11 percentage points (or 26 percent) over the course of eight years, a decline of 3.7 percent per year. The incidence of poverty in urban areas more than halved (it declined from 22 to 10 percent, a change of 9.7 percent per year). While poverty in rural areas also declined appreciably, at one percentage point per year, its incidence remained higher than in urban areas.

**Table 1.2.1: Nepal 1995-96 and 2003-04, Poverty Measurement**

	Headcount rate (P0)			Poverty Gap (P1)			Squared Poverty Gap (P2)		
	1995-96	2003-04	<i>change In %</i>	1995-96	2003-04	<i>change in %</i>	1995-96	2003-04	<i>change in %</i>
<b>Nepal</b>	<b>41.76</b>	<b>30.85</b>	-26	<b>11.75</b>	<b>7.55</b>	-36	<b>4.67</b>	<b>2.7</b>	-42
st. err.	1.09	0.93		0.4	0.3		0.21	0.14	
<b>Urban</b>	<b>21.55</b>	<b>9.55</b>	-56	<b>6.54</b>	<b>2.18</b>	-67	<b>2.65</b>	<b>0.71</b>	-73
st. err.	2.87	1.13		1.02	0.32		0.51	0.13	
<b>Rural</b>	<b>43.27</b>	<b>34.62</b>	-20	<b>12.14</b>	<b>8.5</b>	-30	<b>4.83</b>	<b>3.05</b>	-37
st. err.	1.15	1.06		0.43	0.35		0.23	0.17	

The poverty gap (P1) estimates how far below the poverty line the poor are on average as a proportion of that line. The squared poverty gap (P2) takes into account not only the distance separating the poor from the poverty line, but also inequality among the poor, thereby giving more weight to the poorest people than the less poor. Trends in these measures mirror those observed with the headcount rates, but show an even faster decline (in percent terms). Both measures confirm that the incidence of urban poverty remained lower than that of rural poverty through-out the eight-year period; they also suggest that urban areas experienced greater reductions than rural areas in the depth and severity of poverty.

<p><b>Box 1.1 Definition of Geographic Regions in Nepal</b></p>
<p><b>Regions:</b> “Kathmandu” comprises urban areas in the districts of Kathmandu, Lalitpur and Bhaktapur (together known as Kathmandu Valley); “Other urban” comprises all other urban areas – municipalities (cities and towns) - outside of the Kathmandu Valley; “rural Western Hills” includes Hills and Mountains from the Western, Mid-Western, and Far-Western Development regions; “rural Eastern Hills” refers to Hills and Mountains from the Eastern and Central Development Regions; “rural Western Terai” includes Terai belt from the Western, Mid-Western, and Far-Western Development regions; “rural Terai” refers to Terai area from the Eastern and Central Development Regions.</p>
<p><b>Development regions:</b> There are five <i>east-to-west</i> development regions: Eastern, Central, Western, Mid-Western and Far-Western regions.</p>
<p><b>Belts:</b> There are three <i>north-to-south</i> ecological belts: Mountains in the north (altitude 4877 to 8848 meters), Hills in the middle (altitude 610 to 4876 meters), and Terai in the South (up to 609 meters). Mountains region accounts for 35 percent of total land area of the country, while Hills and Terai 42 percent and 23 percent respectively.</p>

The incidence of poverty in 2003-04 varied considerably across different parts of the country, ranging from a low of 3.3 percent in Kathmandu to 42.9 percent in rural Eastern Hill and 38.1 percent in rural Western Terai (Panel A, Table 1.2.2). Between 1995-96 and 2003-04, poverty declined in both urban areas under consideration: in Kathmandu by 23 percent, and in “other urban” areas by 59 percent. In rural areas, the fastest decline in poverty occurred in rural Eastern Terai (33 percent) and rural Western Hills (32 percent). The incidence of poverty declined in rural Western Terai by 17 percent. By contrast, poverty in rural Eastern Hills increased from 36 to 43 percent. These changes affected the poverty rankings of the regions, with Eastern Hill undergoing the most dramatic shift, from having the third lowest incidence of poverty in 1995-96 to having the highest incidence in 2003-04.

Table 1.2.2 also shows that poverty rates declined across all development regions. At 27 percent, the Central and Western regions continued to have a poverty incidence below the national average in 2003-04, while the Mid- and Far-Western regions continued to be above the average (45 and 41 percent, respectively). In terms of poverty incidence across the belts of Nepal, the Terai belt has the lowest poverty rate at 28 percent, compared with 33 percent in the Mountains and 35 percent in the Hills.

**Table 1.2.2: Nepal 1995-96 and 2003-04, Poverty Measurement by Geographic Regions**

	Poverty Headcount Rate			Distribution of the Poor			Distribution of Population		
	1995-96	2003-04	<i>change in %</i>	1995-96	2003-04	<i>change in %</i>	1995-96	2003-04	<i>change in %</i>
	(A)			(B)			(C)		
Urban	21.6	9.6	-56	3.6	4.7	30	6.9	15.0	117
Rural	43.3	34.6	-20	96.4	95.3	-1	93.1	85.0	-9
Total				100.0	100.0	-	100.0	100.0	-
<b>NLSS regions</b>									
Kathmandu	4.3	3.3	-23	0.3	0.6	118	2.6	5.4	110
Other urban	31.6	13.0	-59	3.3	4.1	23	4.4	9.7	121
R. W. Hill	55.0	37.4	-32	32.7	23.6	-28	24.8	19.4	-22
R. E. Hill	36.1	42.9	19	19.4	29.4	51	22.4	21.1	-6
R. W. Terai	46.1	38.1	-17	18.4	18.9	3	16.7	15.3	-8
R. E. Terai	37.2	24.9	-33	25.9	23.5	-9	29.1	29.1	0
Total				100.0	100.0	-	100.0	100.0	-
<b>Development regions</b>									
Eastern	38.9	29.3	-25	21.0	23.4	12	22.5	24.7	10
Central	32.5	27.1	-17	26.9	32.2	20	34.6	36.6	6
Western	38.6	27.1	-30	18.7	16.7	-11	20.3	18.9	-7
Mid-Western	59.9	44.8	-25	18.5	17.7	-4	12.9	12.2	-5
Far-Western	63.9	41.0	-36	14.8	9.9	-33	9.7	7.5	-23
Total				100.0	100.0	-	100.0	100.0	-
<b>Ecological belts</b>									
Mountain	57.0	32.6	-43	10.7	7.5	-30	7.9	7.1	-10
Hill	40.7	34.5	-15	41.9	47.1	13	43.0	42.1	-2
Terai	40.3	27.6	-32	47.4	45.4	-4	49.2	50.8	3
Nepal	41.8	30.8	-26	100.0	100.0	-	100.0	100.0	-

In terms of the distribution of the poor across urban and rural areas (Panel B, Table 1.2.2), although the poverty rate in urban areas declined almost 3 times faster than it did in rural areas, the concentration of the poor in urban areas actually increased from 4 to 5 percent of all poor. This higher concentration is due to a twofold increase in the urban population during the study period (Panel C, Table 1.2.2).

In 2003-04 the largest share (29 percent) of the total number of poor people in Nepal resided in rural Eastern Hill. This is an appreciable change from 1995-96, when rural Western Hill housed a third of all poor, the highest concentration in that year. Both a rapid reduction in rural Western Hill's headcount poverty rate and a significant reduction in the proportion of the population residing there contributed to the region's change in ranking.

In terms of the distribution of the poor across development regions, the Central region continues to house the greatest number of poor Nepalese, while having a poverty incidence below the national average. The Mid-Western and Far-Western regions have the highest levels of poverty, 45 and 41 percent, respectively, but, on the account of low population density, house only 18 and 10 percent of all poor, respectively. In terms of the distribution of the poor across the belts, the Hills and Terai have roughly similar proportions of poor people – 47 and 45 percent, respectively – with the Mountains accounting for 8 percent.

### **1.3 Growth and Inequality: Changes between 1995-96 and 2003-04**

Poverty measures provide a summary of the distribution of welfare, but a richer analysis of the data is possible while analyzing the entire distribution. In this section, we examine trends in NLSS-based real consumption, compare NLSS and National Accounts-based trends, and analyze trends in inequality. To gain further insights into the relationship between growth, poverty, and inequality we consider a range of growth-inequality and inter-intra regional decompositions.

#### **1.3.1 Trends in Real Expenditure**

As mentioned above, we use the implied poverty line deflators (ratios of regional poverty lines) to express the NLSS-II consumption aggregates in 1995-96 average Nepal prices. All subsequent references in this note to real per-capita expenditure (PCE) refer to nominal expenditures divided by these price indices.<sup>2</sup>

Table 1.3.1 presents trends in real PCE. A number of observations emerge:

- ? Real PCE increased by 43 percent between 1995-96 and 2003-04. Urban areas recorded a higher increase in real PCE, compared to rural areas (42 percent versus 27 percent).<sup>3</sup>
- ? The highest growth in real PCE (52 percent) is recorded in “other urban” areas followed by rural Western Terai (45 percent). Real average PCE increased by approximately 30 percent in Kathmandu, rural Western Hill, and rural Eastern Terai. Real average PCE increased only slightly – by 5 percent – in the rural Eastern Hill area. These regional trends in PCE closely mirror the trends in poverty headcount rates reported in Section 1.2.

---

<sup>2</sup> In some instances that we indicate specifically, we express monetary variables in 1995-96 rural Eastern Terai prices, for their comparability with the 2000 Nepal Poverty Assessment.

<sup>3</sup> An PCE increase in urban area of 42 percent, in rural areas of 27 percent, and an average increase of 43 percent seems counterintuitive. These are internally consistent patterns, however, and they are driven by a twofold increase in the proportion of urban population between 1995-96 and 2003-04.

- ? Real PCE increased for all quintiles, but much more so for the higher expenditure groups. Per capita consumption of the bottom three quintiles increased by less than 3 percent per year, while that of the population in the highest quintiles increased by 3.7 and 6.4 percent per year. While the growth in per capita consumption of the poorer population is more than “respectable,” the growth in consumption of the richer population is remarkably high. These patterns indicate a sharp increase in inequality.

**Table 1.3.1: Nepal 1995-96 and 2003-04, Distribution of Real (1995-96 Average Nepal Prices) Per-Capita Expenditure**

	Real Mean Per-Capita Expenditure (NRS per year)		Change (in percent)	
	1995-96	2003-2004	over 8 year period	annual
Kathmandu	20,130	26,832	33	3.66
Other urban	11,309	17,229	52	5.4
R. Western Hill	5,953	7,774	31	3.39
R. Eastern Hill	7,447	7,812	5	0.6
R. Western Terai	6,190	8,976	45	4.76
R. Eastern Terai	7,034	9,225	31	3.45
Urban	14,536	20,633	42	4.48
Rural	6,694	8,499	27	3.03
1 (Lowest quintile)	2,898	3,524	22	2.47
2	4,347	5,186	19	2.23
3	5,687	7,121	25	2.85
4	7,683	10,255	33	3.68
5 (Highest quintile)	15,477	25,387	64	6.38
Nepal	7,235	10,318	43	4.54

Note: Outliers, 0.5 percentile at each tail of the distribution, excluded.

How do the trends in the PCE measured in the NLSS series relate to the trends in GDP and private consumption measured in the National Accounts Statistics? Table 1.3.2 compares these statistics in both nominal and real terms.

Between 1995-96 and 2003-04, NLSS-based nominal PCE grew at nearly twice the rate of National Accounts-based per capita GDP and per capita private consumption. NLSS-based PCE increased in nominal terms by 110 percent between 1995-96 and 2003-04, while the National Accounts Statistics report a 65 percent increase in nominal per capita GDP and 66 percent in nominal per capita private consumption during the same period. To represent these growth changes in real terms, we apply the implicit poverty line deflator (1.48) to the NLSS-based estimates, and the GDP deflator (1.47) to the National Accounts-based statistics. While the trend in real terms is similar to the trend in nominal terms, a 42 percent increase in real PCE recorded in NLSS surveys is dramatically higher than the 12 percent increase in real per capita GDP (as well as real per-capita private consumption) indicated by National Accounts statistics.

**Table 1.3.2 Nepal 1995-96 and 2003-04, NLSS PCE versus National Accounts Per Capita GDP and Per Capita Private Consumption<sup>4</sup>**

	Average per-capita PCE (NRS per year)		Change (in percent)	
	1995-96	2003-2004	over 8 year period	annual
<b>Nominal (in current NRS)</b>				
<b>NLSS-based</b>	7,235	15,224	110.42	9.74
<b>National Accounts-based</b>				
Per capita GDP	12,123	20,030	65	6.5
Per-capita private consumption	9,326	15,521	66	6.6
<b>Real (in 1995-96 NRS)*</b>				
<b>NLSS-based</b>	7,235	10,318	42	4.54
<b>National Accounts-based</b>				
Per capita GDP	12,123	13,605	12	1.45
Per-capita private consumption	9,326	10,542	13	1.54

Source: For the National Accounts, CBS (2005); for the NLSS -based statistics, authors' calculations from the NLSS-I and II.

\* Applying the NLSS-based inflation index of 1.48 to the NLSS-based estimates and applying the GDP deflator of 1.47 to the National Accounts-based estimates.

Understanding how private consumption has been estimated in the National Accounts helps explain this apparent inconsistency. In particular, the 1995-96 National Accounts' estimate of private consumption was set at the level of households' consumption estimated from the 1995-96

<sup>4</sup> Note that National Accounts statistics have been provided by National Account Section of the CBS.

NLSS with a upward adjustment to account for (i) home-produced non-food goods such as self-produced clothing, amenities, furniture, utensils, etc. that were not covered in the NLSS, (ii) in-kind transfers from the government to households such as textbooks, medicine, etc. that are not captured in NLSS, and (iii) the private consumption of resident foreign households that are not covered by NLSS. There are no estimates of disposable income in Nepal and therefore, is not directly comparable with the survey-based estimates.

Comparing GDP growth rate with NLSS-based consumption growth rate is also problematic since GDP does not accurately approximate personal income and personal consumption in an economy with a large inflow of remittances from abroad.<sup>5</sup> FY03 remittance transfer through official channels alone totaled about NRS 54 billion, equivalent to 12.4 percent of GDP, compared to its share of less than 5 percent eight years ago. The gross national income (GNI) growth series does not fully capture the growth in private consumption associated with remittances either, because wages of workers who have been outside of the country for one year or longer are not counted as national income, but rather as national savings. There are no details of independently derived estimates of national savings in Nepal.

### **1.3.2 The Relationship between Growth in Per-capita Expenditure and Poverty**

Real PCE grew by an estimated 43 percent, while poverty declined by 26 percent, during the 8 years between the two NLSS surveys. This implies that total elasticity of poverty reduction with respect to growth has been negative 0.6, i.e., every percent in growth of PCE resulted in 0.6 percent reduction in the proportion of the poor. The corresponding estimate for the growth-poverty-reduction elasticity is 1.33 for urban areas (where a 42 percent growth in PCE was accompanied by a 56 percent reduction in poverty). In rural areas the estimate is 0.74 (a 27 percent growth in PCE accompanied by a 20 percent reduction in poverty).

These elasticities of poverty reduction with respect to growth are quite low by international standards. Specifically, Ravallion 2000<sup>6</sup> places cross-national estimates of poverty reduction with respect to growth at around negative 2, indicating that for every 1 percent increase in the mean income, on average, poverty is reduced by 2 percent.

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<sup>5</sup> Leaving out remittances did not impact estimates of private consumption in the 1995-96 National Accounts as much as it did the 2003-04 estimates because while a substantial amount of remittances were coming into the country during the early and mid 1990s, growth in remittances really picked up in the late 1990s.

<sup>6</sup> Ravallion, Martin (2000) "Growth, Inequality and Poverty: Looking beyond Averages."

### 1.3.3 Growth Incidence Curves

To further answer the question of how the gains from aggregate growth were distributed in relation to the initial PCE we calculate the growth-incidence curves (GICs) (see Ravallion and Chen, 2003).<sup>7</sup> Growth incidence curves are constructed by plotting the annualized rate of growth at percentiles of PCE distribution, allowing for further insight on the patterns of growth between the two surveys. Figure 1.2.1 presents GICs calculated for all of Nepal, as well as for urban and rural areas separately.

Real PCE increased for all deciles in both urban and rural areas, but this increase was skewed toward urban areas and higher expenditure groups. While urban growth was equally distributed across the lower and upper halves of the distribution, in rural areas growth was higher among high-income households. These patterns help account for the patterns of poverty decline (higher in urban areas and lower in rural areas) reported in Table 1.2.1.<sup>8</sup>

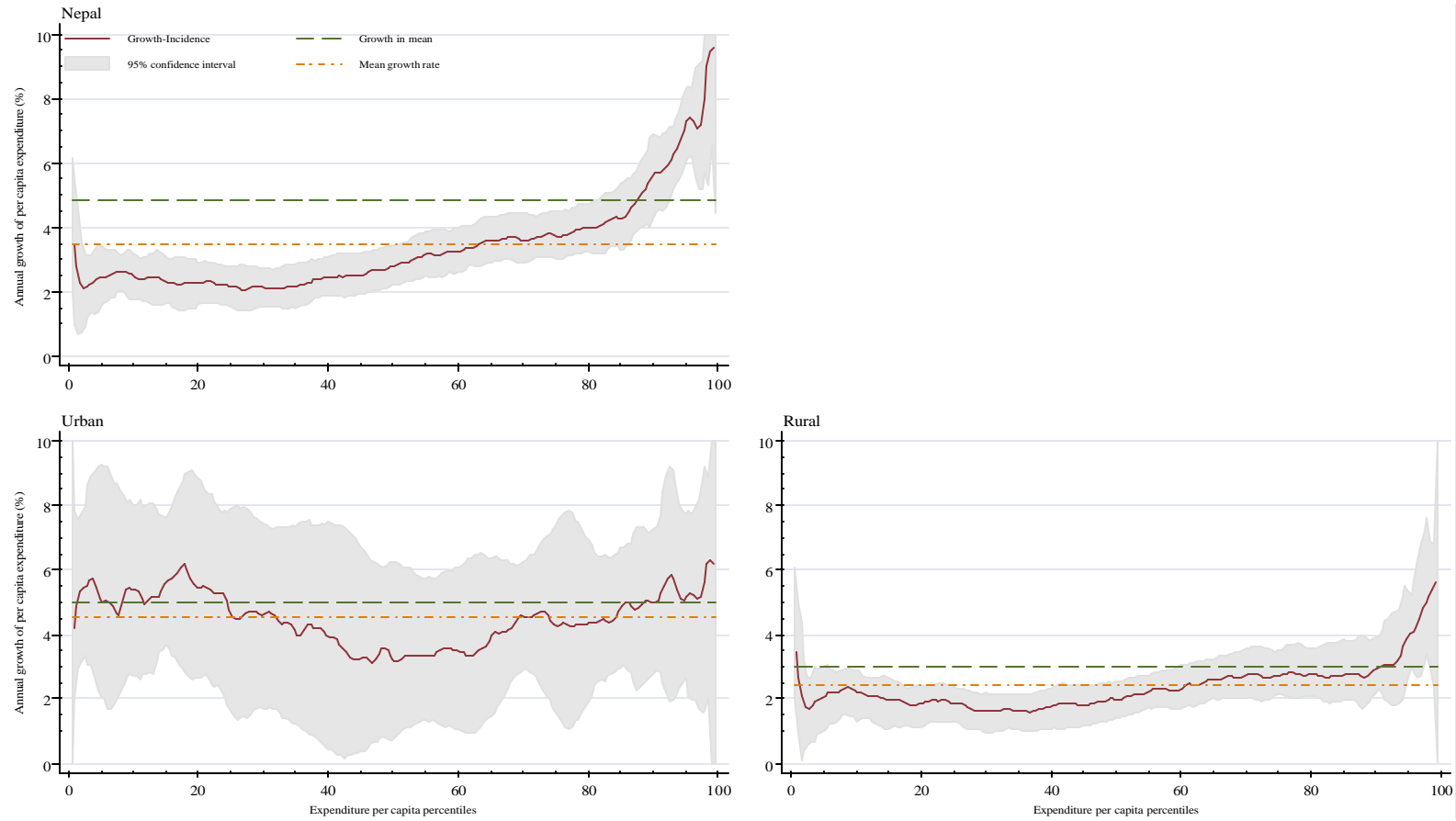
Similarly, GICs at the regional level help explain regional patterns of poverty decline. Presented in Annex 1, Figure A1.1, they show that growth in real per-capita expenditure of the lower percentiles in “other urban” areas and in rural Western Hill was considerably higher than that of the upper percentiles. In rural Eastern Hill growth was uniformly low, with the exception of the very top percentiles. The western part of rural Terai had uniform growth, except for the very top percentiles, which grew faster. In eastern rural Terai the entire upper part of the distribution grew faster than the lower part.

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<sup>7</sup> See Ravallion, Martin and Shaohua Chen (2003), “Measuring Pro-Poor Growth”, *Economics Letters*, Vol. 78(1): 93-99.

<sup>8</sup> Figure 2.1 indicates that growth at the upper percentiles of the distribution in Nepal overall is actually higher than either growth in urban or rural areas taken separately. This pattern is driven by an increase in the proportion of the population living in urban areas. It is straightforward to work out an arithmetic example of non-additive growth rates between two sectors, between two time periods, when a population shares in the sectors change.

**Figure 1.2.1: Growth Incidence Curves, All Nepal and Urban and Rural areas**



### 1.3.4 Inequality

As a result of the unequal growth among different income groups and regions, the expenditure distribution has changed. Patterns of growth in PCE at the percentiles of the distribution presented in Section 1.2 (Table 1.2.1 and Figure 1.2.1) already alluded to the fact that inequality in Nepal has been increasing. We present and discuss here two additional measures of inequality –the ratio of selected percentiles of the PCE distribution (p10, p25, p50, p75, p90) and Gini coefficients (Table 1.3.3). We also discuss changes in urban-to-rural inequality.

**Table 1.3.3: Nepal 1995-96 and 2003-04,  
Ratio of PCE at Selected Percentiles and Gini Coefficients**

	Bottom Half of the Distribution		Upper Half of the Distribution		Interquartile range	"Tails"	Gini
	p25/p10	p50/p25	p75/p50	p90/p50	p75/p25	p90/p10	
<b>Nepal</b>							
<b>1995-96</b>	1.38	1.41	1.47	2.23	2.06	4.33	34.2
<b>2003-04</b>	1.34	1.48	1.58	2.79	2.34	5.53	41.4
<b>Urban</b>							
<b>1995-96</b>	1.62	1.97	1.61	2.67	3.16	8.54	42.7
<b>2003-04</b>	1.53	1.76	1.77	3.01	3.12	8.13	43.6
<b>Rural</b>							
<b>1995-96</b>	1.36	1.39	1.43	2.05	1.99	3.88	30.8
<b>2003-04</b>	1.31	1.40	1.52	2.20	2.13	4.07	34.9

Note: Outliers, 0.5 percentile at each tail of the distribution, excluded.

This table provides additional insights into the nature and changes in inequality.

- ? Inequality has increased across the entire PCE distribution, except for the very low tail (the inequality between p25 and p10). Gini coefficients increased from 34.2 to 41.4.
- ? Inequality in the upper half of the distribution is higher than in the bottom half (p50/p25 is 1.48, while p75/p50 is 1.58).
- ? PCE inequality in urban areas is higher than it is in rural areas.
- ? In urban areas, the Gini coefficient changed little and inequality in the lower tail and in the interquartile range has declined (driven by large increases in p10 and p25 in this sector). Inequality in the upper half of the distribution has increased. In rural areas the Gini

coefficient increased, and inequality has increased in all except the very low part of the distribution.

To examine patterns of inequality between urban and rural areas we constructed ratios of selected percentiles for urban and rural PCE distributions. Results are presented in Table 1.3.4. The following patterns emerge.

- ? Inequality between urban and rural areas is higher in the upper as compared to the lower part of the PCE distribution.
- ? Inequality between urban and rural areas has increased, more so at the lower percentiles of the PCE distribution (but it is still lower than at the higher percentiles).

**Table 1.3.4: Nepal 1995-96 and 2003-04,  
PCE at Selected Percentiles in Urban Areas over the Same PCE Percentile in Rural Areas**

	<b>p10</b>	<b>p25</b>	<b>p50</b>	<b>p75</b>	<b>p90</b>
<b>1995-96</b>	1.19	1.42	2.01	2.26	2.62
<b>2003-04</b>	1.51	1.76	2.21	2.57	3.01
<b>Increase (in percent)</b>	26%	24%	10%	14%	15%

### 1.3.5 Poverty Decomposition: Growth and Inequality

Previous sections show that between 1995-96 and 2003-04 Nepal experienced rapid growth in PCE accompanied by increasing inequality. Given that, in measurement terms, poverty is determined by the shape of the PCE distribution and the point in this distribution at which a poverty line is drawn, it is customary to decompose the change in headcount poverty into “growth” and “redistribution” components.<sup>9</sup> The growth component is the difference between the two poverty indices, keeping the welfare distributions constant. The redistribution component is the change in poverty when the mean of the two distributions remains constant. (The third component in this decomposition, the residual component, shows the change in poverty as a result of the interaction of growth and inequality.) Table 1.3.5 presents the results of this decomposition for urban and rural areas and for the nation as a whole.

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<sup>9</sup> Datt, G. and M. Ravallion, (2002) “Growth and Redistribution Components of Changes in Poverty Measures: A Decomposition with Applications to Brazil and India in the 1980s.” *Journal of Development Economics*, Vol. 38(2): 275-95.

**Table 1.3.5 Nepal, Growth and Redistribution Decomposition of Poverty Changes between 1995-96 and 2003-04**

	1995-96	2003-04	Change in Incidence of Poverty (percentage points)		
			Actual Change	Growth	Redistribution
<b>Nepal</b>	41.76	30.85	-10.92	-24.13	13.22
<b>Urban</b>	21.55	9.55	-12.00	-11.90	-0.10
<b>Rural</b>	43.27	34.62	-8.65	-17.25	8.57

Note: Taking 2003-04 as a base, residual component is not reported

These results indicate that, had the distribution remained constant, poverty would have declined by 24.13 percentage points (instead of 10.92 percentage points) in Nepal overall. If the mean PCE had stayed unchanged, and only the change in the PCE distribution (which worsened the inequality) had occurred, the poverty rate in Nepal would have increased by 13.22 percentage points. Growth component dominated the redistribution component, thereby reducing poverty.

The patterns of PCE growth are very different across urban and rural areas (as already has been noted in Section 1.2, and in particular, in the analysis of GICs). In urban areas, where the growth at the lower percentiles of the PCE distribution was comparable with the growth in the upper percentiles, the impact of the change in the PCE distribution on poverty was negligible. In rural areas, where upper percentiles grew faster than lower percentiles and inequality increased, this led to the change in the shape of PCE distribution and slowed the decline in poverty.

### **1.3.6 Poverty Decomposition: Regional**

The population in the urban areas of Nepal has done relatively better than that in the rural areas, and it is reasonable to assume that better prospects in the urban areas have attracted rural residents. While a deep understanding of the effect of migration on poverty requires an examination of the characteristics of migrants, their decision to migrate, their economic activities before and after migration, and their decision to send remittances to relatives who remain in rural areas, there is a measurement tool that allows us to decompose the change in poverty over time into three components. These three components are the intra-regional effect, which measures the contribution of within-sector change in poverty to the overall change in national poverty; the regional population shift, which measures how much national poverty would have changed if population shifted across regions but poverty within regions remained unchanged; and a third

component that accounts for the interaction of the intra- and inter-regional effects.<sup>10</sup> Applying this method to NLSS-I and II data shows that about 80 percent of the reduction in poverty at the national level can be attributed to the intra-regional effect. This effect reduced poverty by 8.58 percentage points (accounting for almost 80 percent of the overall poverty decline), Table 1.3.6. The inter-regional population movement (or differential population growth rate across regions) accounts for 2.29 percentage points (or 21 percent) of the overall poverty reduction (i.e., in the absence of an increase in the proportion of population in areas with faster poverty decline, the decline in poverty would have been 2.29 percentage points lower). The covariance effect was small.

The largest regional contributions to overall poverty reduction (driven by the pace of poverty reduction and by the large share of the population residing there) occurred in rural Western Hill and rural Eastern Terai regions. An increase in poverty in rural Eastern Hill more than outweighed the poverty reduction in rural Western Terai in terms of its effect on the National poverty headcount level.

**Table 1.3.6 Nepal: 1995-96 and 2003-04,  
Regional Poverty Decomposition**

	<b>Absolute Change in Poverty Headcount</b>	<b>As a Percentage of the Total</b>
Change in poverty	-10.92	100
Total intra-regional effect	-8.58	78.62
Population shift effect	-2.29	21.00
Interaction effect	-0.04	0.38
<b>Intra-regional effects:</b>		
Kathmandu	-0.03	0.23
Other urban	-0.82	7.47
Rural Western Hill	-4.36	39.93
Rural Eastern Hill	1.52	-13.89
Rural Western Terai	-1.32	12.13
Rural Eastern Terai	-3.58	32.75
Total intra-regional effect	-8.58	78.62

<sup>10</sup> Ravallion, Martin, and Monika Huppi. 1991. "Measuring Changes in Poverty: A Methodological Case Study of Indonesia during an Adjustment Period." *World Bank Economic Review*. Vol. 5, no. 1, pp. 57-82.

## **1.4 Poverty Profile and Multivariate Analysis of Poverty**

Both NLSS-I and II contain extensive modules on various characteristics of households – demographic composition, housing situation, access to facilities, sector of employment of adult household members, education attainments, etc. The results of both surveys have been published, see “Nepal Living Standards Survey Report 1996” Volumes 1 and 2 for the NLSS-I results and “Nepal Living Standards Survey 2004” Volumes 1 and 2 for NLSS-II results as well as for comparison of trends in selected indicators between 1995-96 and 2003-04. This section uses these data together with information on poverty status of households to estimate poverty rates across households with different characteristics.

### **1.4.1 Poverty Profile**

A poverty profile describes who the poor are by indicating the probability of being poor according to various characteristics, such as the sector of employment and the level of education of the household head, the demographic composition of a household (i.e., household size, number of children, caste-ethnic status), and the amount of land a household possesses. This section provides a profile of the poor with respect to the above-mentioned characteristics.

#### ***Sector of employment of the household head***

Households headed by agricultural wage laborers are the poorest in Nepal. In 1995-96 the incidence of poverty among this group was almost 56 percent and it declined only slightly to 54 percent in 2003-04. As a share of the national population this group is small and in decline. Comprising 12 percent of the population and 16 percent of the poor in 1995-96, in 2003-04 this group made up 6 percent of the total population and 11 percent of all poor.

The second poorest group in Nepal is made up of those who live in households headed by self-employed in agriculture. Unlike agricultural wage households, this group experienced a substantial decline in poverty from 43 to 33 percent between 1995-96 and 2003-04. This is the most populated employment sector category with 67 percent of all poor in 2003-04 falling to this category.

Households whose heads' main occupation is in trade and services experienced a dramatic decline in poverty between 1995-96 and 2003-04, and had a relatively low incidence of poverty (11 and 14 percent, respectively) in 2003-04.

**Table 1.4.1: Nepal 1995-96 and 2003-04, Poverty Measurement  
by Employment Sector of the Household Head**

	Poverty Headcount Rate			Distribution of the Poor			Distribution of Population		
	1995-96	2003-04	<i>chang in %</i>	1995-96	2003-04	<i>chang in %</i>	1995-96	2003-04	<i>change in %</i>
	(A)			(B)			(C)		
<b>Self-employed in:</b>									
Agriculture	43.1	32.9	-24	60.7	66.9	10	58.8	62.7	7
Manufacturing	41.4	31.2	-25	3.4	4.5	32	3.4	4.4	29
Trade	32.2	11.1	-66	4.3	1.6	-62	5.6	4.5	-19
Services	25.3	14.4	-43	1	1.5	53	1.6	3.2	98
<b>Wage earner in:</b>									
Agriculture	55.9	53.8	-4	15.7	10.9	-31	11.7	6.2	-47
Professional	8.3	2.1	-74	0.4	0.2	-53	2.2	2.9	35
Other	39.7	28.8	-28	10.6	10	-6	11.1	10.7	-4
Unemployed	9.5	2.9	-69	0.1	0	-68	0.3	0.2	-23
Non-active	30.5	26.9	-12	3.9	4.4	14	5.3	5.1	-4
<b>Total</b>	<b>41.8</b>	<b>30.8</b>	<b>-26</b>	<b>100</b>	<b>100</b>	<b>-</b>	<b>100</b>	<b>100</b>	<b>-</b>

Households headed by professional wage earners and those headed by the unemployed comprise categories with the lowest poverty incidence (2.1 and 2.9 percent, respectively, in 2003-04). Similarly, households headed by those who are out of the labor force are less poor on average than those in all other employment categories, indicating that both the unemployed and the inactive can afford to stay in these states because they are more likely than the others to have other sources of income.

#### ***Education of the household head***

Differences in educational attainment of heads of households are reflected in dramatically different poverty rates (Table 1.4.2). Households with illiterate heads had a 42 percent poverty rate in 2003-04, which is the highest rate among all education groups. The poverty rate progressively declines as the level of education attainment by a household head increases. Having attended primary school brings down the probability of being in poverty to 28 percent; having attended secondary school brings it down to 23 percent; and having attended high secondary school brings it down to 8.4 percent in 2003-04.

**Table 1.4.2: Nepal 1995-96 and 2003-04, Poverty Measurement  
by Education Level of the Household Head**

	Poverty Headcount Rate			Distribution of the Poor			Distribution of Population		
	1995-96	2003-04	chang in %	1995-96	2003-04	chang in %	1995-96	2003-04	change in %
	(A)			(B)			(C)		
Illiterate	50.9	42	-18	72.9	70.9	-3	59.8	52.1	-13
5 or less years of schooling	35.7	28.2	-21	15.1	16.8	12	17.7	18.4	4
6-7 years	28.5	23.3	-18	6.7	8.1	21	9.8	10.7	9
8 -10 years	19.8	8.4	-58	4.5	3.9	-14	9.6	14.5	52
11+ years	11.4	1.6	-86	0.9	0.2	-75	3.2	4.3	35
<b>Total</b>	<b>41.8</b>	<b>30.8</b>	<b>-26</b>	<b>100</b>	<b>100</b>	<b>-</b>	<b>100</b>	<b>100</b>	<b>-</b>

The poverty incidence declined between 1995-96 and 2003-04 for all education groups, but the most dramatic decline was for households headed by someone with 8 to 10 years of schooling (high secondary level) or 11 or more years (higher education level). Importantly, education attainments increased in the general population and the proportion of the population living in households with illiterate heads declined from 60 percent in 1995-96 to 52 percent in 2003-04 (Panel C, Table 1.4.2).

### **Demographics**

There is little difference in the headcount poverty rate related to the age of the household head, a pattern constant across years. There are large differences, however, between male- and female-headed households. While in 1995-96 households headed by females represented 9 percent of the population and had a poverty rate of 42 percent (equal to the Nepal average), in 2003-04 the proportion of the population residing in female-headed households increased to 14 percent of the population and the poverty rate among these households declined to 24 percent (below the Nepal average), (Table 1.4.3). A tentative

<b>Box 1.4.1: Proportion of Households Receiving Remittances by the Household Heads' Age and Sex</b>		
	<b>1995-96</b>	<b>2003-04</b>
Male 25 year or younger	18.99	20.67
Male 26-45 years old	14.58	13.86
Male 46 years and older	22.52	32.17
Female-headed	55.43	65.42
Total	23.43	31.92

explanation for this pattern is that households headed by females tend to have a main breadwinner working elsewhere who supports the household by sending remittances (Box 1.4.2).

**Table 1.4.3: Nepal 1995-96 and 2003-04 Poverty Measurement  
by HH Head's Age and Sex**

	Poverty Headcount Rate			Distribution of the Poor			Distribution of Population		
	1995-96	2003-04	<i>chang in %</i>	1995-96	2003-04	<i>chang in %</i>	1995-96	2003-04	<i>change in %</i>
	(A)			(B)			(C)		
Male 25 year or younger	40.5	32.5	-20	5	3.5	-30	5.1	3.3	-35.4
Male 26-45 years old	43.8	32.5	-26	41.5	37.9	-9	39.6	35.9	-9.3
Male 46 years and older	40.2	31.6	-21	45	47.6	6	46.7	46.4	-0.8
Female-headed	41.6	23.8	-43	8.5	11.1	31	8.5	14.4	68.8
Total	41.8	30.8	-26	100	100	-	100	100	-

Both an increase in the number of small children and an increase in the number of household members are related to an increase in the poverty headcount rate (Table 1.4.4). The higher level of poverty headcount in larger households or households with more children is, at least in part, related to the fact that the definition of poverty line for Nepal does not incorporate economies of scale. However, the pattern of slower-than-average poverty reduction rate among households with 2 or more small children or 6 or more family members may attest to structural factors that prevent these households from escaping poverty.

The proportion of the population living in households with 7 or more members has declined from almost 50 to 40 percent (Panel C, Table 1.4.4). Given that these households have the highest incidence of poverty of all households both in 1995-96 and 2003-04, this development may have contributed to the overall poverty decline.

**Table 1.4.4: Nepal 1995-96 and 2003-04 Poverty Measurement  
by Demographic Composition**

	Poverty Headcount Rate			Distribution of the Poor			Distribution of Population		
	1995-96	2003-04	<i>chang in %</i>	1995-96	2003-04	<i>chang in %</i>	1995-96	2003-04	<i>change in %</i>
	(A)			(B)			(C)		
<b>Number of children 0-6 year old</b>									
0	23.5	13.7	-42	14.9	14.8	-1	26.5	33.3	25.7
1	39.9	29.3	-27	23.8	26.2	10	24.9	27.7	11.1
2	49.4	41.6	-16	32.6	31.6	-3	27.5	23.4	-14.9
3 or more	56.9	54	-5	28.8	27.4	-5	21.1	15.6	-26
Total				100	100	-	100	100	-
<b>Household size</b>									
1	7.7	7.2	-7	0.1	0.1	34	0.5	0.6	6.8
2	14.5	11	-24	0.8	1.1	35	2.3	3	30.7
3	22.9	11.7	-49	3	2.6	-15	5.6	6.9	23.5
4	28.1	19.3	-32	7.1	8.5	21	10.5	13.7	30.1
5	35.9	24.9	-31	13.5	14.5	8	15.7	18	14.7
6	43.8	33.5	-24	17.6	19.6	11	16.8	18	7.2
7 or more	49.7	41.4	-17	57.9	53.6	-7	48.6	39.9	-17.9
Total	41.8	30.8	-26	100	100	-	100	100	-

Poverty rates in 2003-04 were highest among Hill and Terai Dalits (46 percent) and Hill Janajatis (44 percent), Table 1.4.5. Both groups experienced a decline in poverty between 1995-96 and 2003-04 (by 21 and 10 percent, respectively). While the poverty rate among the Tharu (Terai Janajati) was comparable with that of these two groups in 1995-96, it declined to 35 percent in 2003-04 (a 34 percent decline). The poverty rate among the Muslim population declined only slightly, from 44 to 41 percent between 1995-96 and 2003-04. In terms of the distribution of the poor, the Hill Janajati represents a single group with the highest concentration of the poor in 2003-04.

Upper Caste (Hill-Terai) households had the third lowest incidence of poverty in 1995-96 (after Yadavs residing in Middle and Central Terai). After experiencing the most substantial

decline in poverty of all considered groups (by 46 percent) they became the group with the second lowest poverty rate in 2003-04. Overall, 3 caste and ethnic groups – Upper Caste, Yadavs, and Newars – have poverty rates below the average in 2003-04.

**Box 1.4.2: Comparison of Caste and Ethnicity between NLSS-I and II**

**The trends in poverty rates across caste-ethnic groups should be treated with caution.** Information on caste-ethnicity was collected differently in the NLSS I and NLSS II, with significant improvements in the second survey. The NLSS II used a longer and more detailed list of caste-ethnicity codes than the NLSS I, which used only 15 codes (14 group codes plus "other"). In order to make inferences about changes in welfare indicators across comparable caste-ethnic groups, the detailed grouping of NLSS-II has been collapsed in 8 categories comparable with NLSS-I. The caste-ethnic groups and corresponding codes are listed below. Because the proportion of population falling into each ethnic-caste group had changed significantly between 1995-96 and 2003-04 and these changes are unlikely to be explained by the differences in population growth, but rather by the differences in NLSS-I and NLSS-II.

<i>Grouping</i>	<i>Caste-Ethnic Groups</i>
1 Upper Caste (Hill-Terai)	Chhetri, Brahmin
2 Yadavs (Middle C. Terai)	Yadav
3 Dalits (Hill-Terai)	Kami, Sarki, Damai
4 Newar	Newar
5 Hill Janajati	Magar, Tamang, Rai, Gurung, Limbu
6 Tharu (Terai Janajati)	Tharu
7 Muslims	Muslims
8 Other	All other caste-ethnic groups

*Source: G. Pretnushi "Studying Caste and Ethnicity with the NLSS I and NLSS II Data"*

**Table 1.4.5: Nepal 1995-96 and 2003-04, Poverty Measurement  
by Caste and Ethnicity of the Household Head**

	Poverty Headcount Rate			Distribution of the Poor			Distribution of Population		
	1995-96	2003-04	<i>chang in %</i>	1995-96	2003-04	<i>chang in %</i>	1995-96	2003-04	<i>change in %</i>
	(A)			(B)			(C)		
Upper Caste (Hill-Terai)	34.1	18.4	-46	26.7	15.7	-41	32.7	26.3	-20
Yadavs (Middle C. Terai)	28.7	21.3	-26	2.9	1.9	-33	4.2	2.8	-34
Dalits (Hill- Terai)	57.8	45.5	-21	10.6	10.9	3	7.7	7.4	-4
Newar	19.3	14	-28	2.5	3.4	35	5.5	7.5	38
Hill Janajati	48.7	44	-10	19.7	27.8	41	16.9	19.5	16
Tharu (Terai Janajati)	53.4	35.4	-34	10.4	9.2	-12	8.2	8.1	-1
Muslims	43.7	41.3	-6	5.7	8.7	53	5.4	6.5	19
Other	46.1	31.3	-32	21.4	22.3	4	19.4	21.9	13
Total	41.8	30.8	-26	100	100	-	100	100	-

Note: The trends in poverty rates across caste-ethnic groups should be treated with caution, see Box 1.4.1 for details

### ***Land ownership***

Land ownership reduces the probability of being poor in rural areas, a pattern constant across years. Incidence of poverty among households who own 0.2 ha. or less of land (a quarter of all rural households) is almost 40 percent and is roughly similar to that of households who own 0.2 to 1 ha. (a half of all rural households). Poverty headcount rate had declined more for households with larger landholdings, as compared to the ones with the smaller ones. In addition, the proportion of households with smaller landholdings had increased over time, while the proportion of households with large (2 or more hectares of land) has declined substantially (from 16 to 11 percent of all rural households).

**Table 1.4.6: Nepal 1995-96 and 2003-04 Poverty Measurement,  
by Land Ownership (rural areas only)**

	Poverty Headcount Rate			Distribution of the Poor			Distribution of Population		
	1995-96	2003-04	<i>chang in %</i>	1995-96	2003-04	<i>chang in %</i>	1995-96	2003-04	<i>change in %</i>
		(A)			(B)			(C)	
Less than 0.2 ha. of land	47.7	39.3	-18	22.9	25.2	10	20.8	22.2	7
0.2 - 1 ha. of land	45.0	38.1	-15	43.7	51.2	17	42.0	46.5	11
1 - 2 ha. of land	38.8	27.3	-30	18.7	16.0	-15	20.9	20.3	-3
More than 2 ha. of land	38.9	23.8	-39	14.6	7.6	-48	16.3	11.0	-32
Total	41.8	30.8	-26	100	100	-	100	100	-

## 1.4.2 Multivariate Poverty Profile and Simulations

A poverty profile is a useful descriptive method, but it cannot be used to gauge the net association between a household's characteristics and the probability of a given household being in poverty. For this purpose, regression analysis that accounts for the correlation between background characteristics is most useful. For example, a person with low education living in a rural area is likely to have a low-paying casual-wage agricultural job. Regression analysis helps to purge out the multivariate correlation across these factors to find the net effect of each of them. The associations between background characteristics could be different in urban and rural areas, so we examine them for urban and rural areas separately. (For example, the economic return on educational investment might be higher in urban areas because of the larger number of productive opportunities to be found there.) Finally, it is also more efficient to analyze a linear relationship between a log of PCE and a set of household characteristics, rather than a relationship between a categorical outcome defined as "poor/non-poor" and a set of determinants.

The coefficients estimated from these regressions allow us to simulate the effect of a change in characteristics on the probability of being poor. For example, knowing the relationship between PCE and a household's size, education level or sector of employment of a household head, ownership of land, receipt of remittances, etc., one can simulate the impact of a change in any one of these background characteristics (e.g., the birth of a child, acquisition of land, attainment of higher education level, or finding a better job) on the probability of being in poverty. These simulations are presented and discussed below.<sup>11</sup>

<sup>11</sup> As noted above, the simulations are based on the regressions of log PCE on the set of characteristics. For every set of simulations (demographic events, education events, set of employment change, etc.) a range of observed values for a characteristic describing an event is assigned to all the households in the sample. Specifically, for simulating a demographic event, all households in the sample are assigned a zero number of small children and then all households are assigned 1 small child; for simulation of an education event, all households are assigned an illiterate head and then all households are assigned a

A newborn first child increases a household's risk of being in poverty by 60 percent in urban areas and by over 70 percent in rural areas. Note that these estimates are not the probability of being in poverty, but the change in the probability of being poor. For example, if a household already had a 10 percent chance of being poor the birth of their first child would increase the probability of their being in poverty by 60 percent to 16 percent. Families having two children increase their probability of being poor by almost 130 percent in both urban rural areas. (These results are quite intuitive, as the newborn child requires his share of household consumption, but brings no immediate income.)

**Table 1.4.7: Nepal 2003-04, Changes in the Probability of being in Poverty (percent)**

Event	Urban	Rural
<b>Demographic event, child born in the family:</b>		
Change from having no children 0-6 years old to having 1 child	+60%	+73%
Change from having no children 0-6 years old to having 2 children	+128%	+130%
<b>Change of a household head (i.e., followed from a divorce, migration, etc.):</b>		
Change from a head being a male to being a female	-48%	-19%
<b>Education event, change in household's head education:</b>		
Changes from illiterate to 5 or less years of schooling	-47%	-29%
Changes from illiterate to 5-7 years of schooling	-53%	-30%
Changes from illiterate to 8-10 years of schooling	-63%	-54%
Changes from illiterate to 11 or more years of schooling	-86%	-90%
<b>Sector of employment event, household head's sector of employment:</b>		
Changes from casual agricultural labor to self-employment in agriculture	-40%	-26%
Changes from casual agricultural labor to self-employment in manufacturing	-62%	-25%
Changes from casual agricultural labor to self-employment in trade	-45%	-57%
Change from casual agricultural labor to self-employment in services	-63%	-40%
Changes from casual agricultural labor to professional wage employment	-65%	-30%
Changes from casual agricultural labor to other wage employment	-11%	-29%
Changes from casual agricultural labor to being unemployed	-9%	-81%
Changes from casual agricultural labor to being inactive	-72%	-34%
<b>Land acquisition event:</b>		
change from having no land to having a small(<1ha) plot		-6%
change from having no land to having a medium(>=1&<2ha) plot		-22%
change from having no land to having a large(>=2ha) plot		-46%

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household head with primary education, etc. Separately for each event and for each set of values, the simulated probabilities are generated for each household by integrating over the estimated distribution and averaging the probabilities across the sample. For each event, the effect of the changes in the particular parameter is calculated as the difference in simulated probabilities. See El-laithy Heba, Michael Lokshin and Arup Banerji 2000 "Poverty And Economic Growth in Egypt, 1995-2000" for a further description of this methodology.

Note : These estimates show the *change* in probability of being poor following an event, and not the probability of *being in poverty* for a household with certain characteristics.

If a household's head changes from being a male to being a female (for example, by a husband departing to work elsewhere) the probability of being in poverty is reduced by 48 percent in urban areas and by 19 percent in rural areas. We reported earlier that female-headed households are more likely to receive remittances, and female headship might pick up some of the positive effect of the receipt of remittances on consumption.

Changing the education level of a household's head has a substantial impact on the probability of a household being poor. For example, if an illiterate household head attends primary school, the probability of this household being in poverty declines by 47 percent in urban and by 29 percent in rural areas. Similarly, acquiring additional education further reduces the chances of being in poverty. Almost all improvements in poverty incidence following improvements in education levels are higher in urban as compared to rural areas, possibly indicating a higher economic return to skills in urban areas due to the wider opportunities for gainful employment found there.

Changing the sector of employment for a household's head from casual agricultural laborer to self-employment or a variety of other jobs reduces the probability of a family being in poverty. Relative to having a household head being an agricultural wage laborer, being self-employed in agriculture reduces the chances of being in poverty by 26 percent in rural areas. Being self-employed in manufacturing or trade reduces these chances in rural areas by 25 and 57 percent, respectively, and in urban areas by 62 and 45 percent, respectively. Being unemployed or inactive also reduces the chances of being in poverty. This may seem counterintuitive. However, these two variables proxy for other household characteristics (e.g., higher initial asset holdings and higher savings) which allow people to stay out of work, but which are not included in the regression.

Land acquisition by a landless household improves a household's chances of escaping poverty by 6 percent in the case of accruing a plot of less than 1 hectare, and by 22 and 46 percent, respectively, in the case of acquiring plots of between 1 and 2 hectares and 2 hectares or more.

## **1.5 Sensitivity and Robustness of Poverty Estimates**

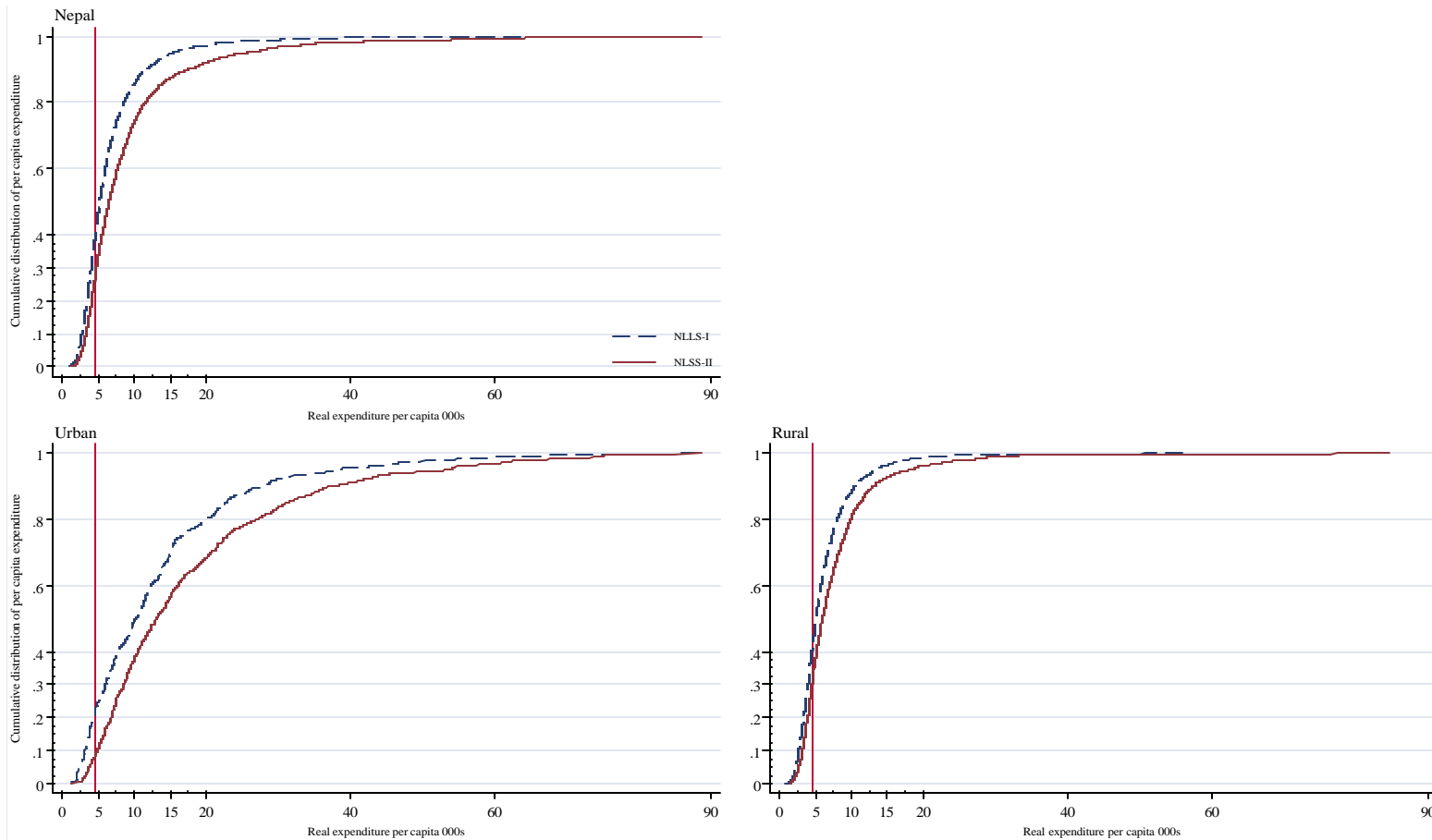
Clearly the poverty estimates presented in Sections 1.2 and 1.4 depend critically on the comparability of surveys on which poverty numbers are based, on the way the poverty line was defined and updated, and also on the choice of welfare measure. In this section we check the robustness of poverty trends with respect to several measures. First, we examine cumulative distribution functions for real PCE in 1995-96 and 2003-04 to infer whether the choice of poverty line affects the estimates of trend in headcount poverty. Second, we examine how the fact that the

8 Primary Sampling Units (PSUs) that were selected for the cross-sectional sample of NLSS-II, but could not be enumerated, might have affected estimates of poverty incidence. Finally, we explore alternative approaches to updating and defining poverty lines.

### **1.5.1 Poverty Incidence Curves**

A standard methodology for checking the robustness of poverty estimates is to examine cumulative distributions of real PCE. As mentioned earlier, we use implied poverty line deflators to express the NLSS-I and NLSS-II consumption aggregates in 1995-96 “average Nepal” prices. Plotted cumulative distributions for PCE at the national, urban, and rural levels (Figure 1.5.1) show that trends in poverty between 1995-96 and 2003-04 are robust in the choice of the poverty line over the range of virtually all other possible poverty lines. This is true for both the urban and rural sectors – the cumulative distributions for real PCE in 2003-04 are everywhere below and to the right of the cumulative distributions for 1995-96, indicating first-order stochastic dominance.

Figure 1.5.1 Cumulative Distributions of Annual Real PCE: National, Urban, and Rural



To provide an additional illustration of the robustness of the estimated incidence of poverty and poverty trends with respect to the choice of a poverty line, we increased and decreased the poverty line by 5, 10, and 20 percent. Having done so, we observed that poverty rates increased or decreased by a correspondingly higher percentage, indicating population clustering around the poverty line. While increasing the poverty line obviously raises the proportion of the population deemed poor in both years, it leaves the magnitude of the decline in headcount poverty virtually unchanged. Decreasing the poverty line indicates that a smaller proportion of the population would have been deemed poor and that poverty headcount rates would have declined at a faster rate. These estimates further confirm that the trend of a substantial decline in poverty in Nepal is robust with respect to a wide choice of poverty lines.

**Table 1.5.1: Nepal 1995-96 and 2003-04,  
Sensitivity of Headcount Poverty Rate with Respect to the Choice of Poverty Line**

Poverty Lines	1995-96		2003-04		Change between 1995-96 and 2003-04	
	Poverty Incidence (P0)	Change from the actual (%)	Poverty Incidence (P0)	Change from the actual (%)	Percentage points	Percent
Actual	41.8	0	30.8	0	-10.9	-26.14
+ 5%	45.0	7.82	34.2	10.77	-10.9	-24.12
+ 10%	48.9	16.99	37.0	19.89	-11.9	-24.3
+ 20%	56.1	34.3	42.3	36.97	-13.8	-24.67
- 5%	38.1	-8.8	27.1	-12.01	-10.9	-28.73
- 10%	33.6	-19.58	23.3	-24.44	-10.3	-30.6
- 20%	25.8	-38.15	17.0	-44.93	-8.8	-34.24

To examine the robustness of poverty estimates at the regional level, we plotted cumulative distributions of PCE for 6 NLSS regions. These distributions are presented in Figure A1.2, Annex 1. They further indicate that first-order stochastic dominance holds for estimates of poverty in Kathmandu and in other urban areas, as well as for estimates in both parts of Terai (Eastern and Western) and in Western Hill. For estimates in rural Eastern Hill, however, the cumulative PCE for 1995-96 and 2003-04 cross indicating that inferences about trends in poverty are ambiguous. Examination of a higher order stochastic dominance ( $P_1$  and  $P_2$ , see Figure A1.3, Annex 1) confirms the ambiguity of inferences about poverty trends in rural Eastern Hill.

### 1.5.2 “Missing PSUs”

The NLSS-I and II are fully comparable by design. Cross-sectional samples used in this analysis were selected using a two-stage design method based, respectively, on the 1991 and 2001 Census

frames. The comparability between these surveys is defined in terms of methodology, questionnaire content, interviewing procedures, etc. Both surveys use very similar consumption/expenditure modules to collect data on a wide range of food and non-food items.<sup>12</sup> The definition and construction of food and non-food consumption aggregates are identical in both surveys.

However, while only 1 PSU selected in the NLSS-I sample frame could not be reached, 13 rural PSUs selected by the NLSS-II sample frame were not enumerated. Twelve of these PSUs could not be reached due to Maoist activities, even after repeated attempts. Nine of these unreachable PSUs are located in the Far West development region. It should be noted that 8 of these 13 missing PSUs are from the cross-sectional data on which this poverty analysis is based.

Could the “missing PSUs” affect the estimates of poverty in the Far West development region and in Nepal as a whole? To gauge the effect of missing PSUs on poverty estimates we simulated what national and region-specific poverty rates would have been, given assumptions of poverty rates ranging from 0 to 100 percent in missing PSUs. Results show that while the level of poverty incidence in the Far Western region (and in rural Western Hill) is sensitive to that in the missing PSUs, there is little impact on the overall national poverty rate.<sup>13</sup> Specifically, if the poverty rate in the missing PSUs took the extreme value of 100 percent, it would place the poverty rate in rural Western Hill at 43 percent (instead of 37 percent), in the Far Western region at 50 percent (instead of 41 percent), and nationally at 33 percent (instead of 31 percent). Table 1.5.2 presents these simulation results. In all cases, estimates of the trends of decline in headcount poverty at the national level, as well as in the rural Western Hill and Far Western regions, remain robust.

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<sup>12</sup> The NLSS-II added new questions and modules (e.g., a new module on children away from home was introduced) and dropped others (e.g., an anthropometric module was dropped). NLSS-II also introduced additional questions in the consumption module (home produced non-food items), but they were not used in the construction of consumption aggregates for the purposes of comparison of changes in welfare. A description of the sampling procedure and a map of selected PSUs with their enumeration status is presented in “Nepal Living Standards Survey,” Volume 1, Central Bureau of Statistics, HMG, 2004.

<sup>13</sup> Statistical estimates of other indicators for the Rural Western Hill NLSS region and for the Far Western region may also be affected by the “missing PSUs”.

**Table 1.5.2: Nepal 1995-96 and 2003-04,  
Sensitivity of Headcount Poverty Rate with Respect to Poverty Rates in Missing PSUs**

Poverty headcount rate (percent)			
	Rural Western Hill NLSS Region	Far Western Development Region	Nepal
<b>Imputed in missing PSUs, 2003-04:</b>			
0%	33.9	34.8	30.1
50%	38.6	42.3	31.3
100%	43.3	49.8	32.5
64%*	39.9	44.4	31.6
<b>Without imputations:</b>			
2003-04	37.4	41.0	30.8
1995-96	55.0	63.9	41.8

\* The same as in the Far Western region in 1995-96

### 1.5.3 Alternative Approaches to Defining Poverty Lines<sup>14</sup>

#### *Relying on food price index alone*

The methodology used to derive poverty lines for 6 regions in 1995-96 and 2003-04 was to take the 1995-96 rural Eastern Terai poverty line, which included provision for a minimum bundle of goods comprising essential food and non-food items, and to adjust it using the regional and inter-temporal coefficients that account for differences in cost-of-living. Separate coefficients were developed for food and non-food parts of the poverty line. The coefficient for food prices was developed by costing out a bundle of goods in different locations and at different times. The coefficient for non-food items was proxied by the rental cost of housing combined with an inter-temporal urban CPI.

Rather than use separate food and non-food adjustment coefficients, one could take the food adjustment coefficient and apply it alone to the overall poverty line. The argument for taking this

<sup>14</sup> We do not examine here what the poverty line would have been, had we re-applied CBN methodology to the 2003-04 data. A major drawback of this approach is if living standards in a country improve over time, even poor households improve the composition of their consumption basket. As a result, reapplying the CBN methodology poverty lines therefore no longer reflect basic-needs bundles of constant value in real terms. Assessing trends in absolute poverty over time presumes that the same yardstick was used at all points in time, a condition that is violated by the application of the *same methodology* to the derivation of poverty line in 2003-04. See Ravallion Martin (1994) *Poverty Comparisons* Hardwood Academic Press, Switzerland, for a discussion of these issues.

approach is that the food coefficient is calculated on the basis of an actual bundle consumed by the poor, while the non-food coefficient relies on proxies. In fact Deaton (see Deaton 2004) took this approach and used only the differences in prices of food items (plus fuel and wood) to adjust for differences in cost of living across Indian states and over time. The drawback, of course, is that the prices of only a sub-set of the total consumption bundle (which is also declining over time as the proportion of food in the consumption bundle declines) are used to adjust the poverty line. Nevertheless, as a check for sensitivity of poverty estimates, we performed calculations based solely on the food price index.<sup>15 16</sup>

Table 1.5.3 shows that estimates in 1995-96 and in 2003-04 obtained by this method are very close to the preferred estimates of poverty incidence. Regional rankings stay the same, while estimates for 1995-96 and 2003-04 are on the high and low sides, respectively, of the preferred estimates for those years. Consequently, the estimates of decline in poverty rate are even higher than if one utilizes both food and non-food adjustment coefficients for the respective parts of the poverty line.

**Table 1.5.3: Nepal 1995-96 and 2003-04, Poverty Headcount Rate across Regions  
(based on food price adjustment indices alone)**

	<b>1995-96</b>	<b>2003-04</b>	<b>Change (percentage points)</b>	<b>Change (percent)</b>
Kathmandu	1.9	2.2	0.4	20
Other Urban	29.4	11.3	-18.1	-61
R. Western Hill	58.5	33.0	-25.5	-44
R. Eastern Hill	37.1	42.9	5.8	16
R. Western Terai	50.5	26.1	-24.4	-48
R. Eastern Terai	37.2	30.3	-6.9	-19
Nepal	43.4	29.5	-13.9	-32

<sup>15</sup> Another possibility would be to use the Rasta Bank CPI for the purpose of inter-temporal adjustment. Recall, however, that only urban CPI is available and, in case of food items, it is very close to the estimated survey-based coefficient. Because of this, we do not examine the sensitivity of poverty estimates with respect to the official CPI.

<sup>16</sup> Food price adjustment coefficients alone are applied to adjust for the regional and inter-temporal differences in prices. Consequently, poverty estimates for 1995-96 are also different from the preferred poverty estimates.

### *Estimates of “Food Poverty”*

One criticism of constructed consumption aggregates is that survey-based consumption estimates contain many “noisy” measures such as imputed rental income, imputed flow of services from durables, etc. Clearly, if these noisy measures bias estimates of consumption (or bias them more in one survey than in another), this will have implications for estimated poverty rates and trends. To address this criticism, we compute “food poverty” rates based on comparing food consumption with the food poverty line. Food consumption aggregates do not contain imputed values and are calculated directly by adding expenditures on purchased goods and self-evaluation of the cost of home-produced and received-in-kind food. International evidence shows that food consumption is measured more accurately than other types of consumption in household surveys.<sup>17</sup> Of course the drawback of this approach (and this is why it is not selected as the preferred estimate) is that different households make different choices with respect to their consumption patterns and there might be compelling reasons why households cut their food consumption in order to spend on something else. These households would be deemed poor by the definition of “food poverty” while not being truly poor as defined by cost-of-basic-needs (CBN).

**Table 1.5.4: Nepal 1995-96 and 2003-04, “Food Poverty” Headcount Rate across Regions**

	1995-96	2003-04	Change (percentage points)	Change (percent)
Kathmandu	11.5	16.7	5.3	46
Other urban	39.8	21.2	-18.6	-47
R. Western Hill	66.2	36.0	-30.3	-46
R. Eastern Hill	39.4	41.1	1.7	4
R. Western Terai	54.2	32.3	-21.9	-40
R. Eastern Terai	38.3	30.4	-7.9	-21
Nepal	47.5	32.4	-15.1	-32

Results with respect to incidence of “food poverty” are presented in Table 1.5.4. Estimates of food poverty are higher than estimates of CBN poverty in both years. The incidence of “food poverty” is higher than CBN poverty for all regions, but especially so in urban areas. For example, the incidence of poverty in Kathmandu in 2003-04 is 3 percent using the CBN method and 17 percent using the “food poverty” method. An additional difference between “food

<sup>17</sup> Lanjouw, Jean and Peter Lanjouw “How to Compare Apples and Oranges: Poverty Measurement Based on Different Definitions of Consumption” *Review of Income and Wealth* v47, n1 (March 2001): 25-42

poverty” and CBN estimates is that “food poverty” estimates show less progress in poverty reduction in urban than in rural areas. In rural areas, and in Nepal overall, however, “food poverty” estimates show a faster decline in poverty than do CBN estimates.

### *Estimates of dollar-a-day poverty*

CBN-based poverty lines are set with reference to typical living conditions prevailing within Nepal’s borders. For international comparability, we present poverty rates based on \$1/day poverty line. More precisely, it is the “International dollar” adjusted for purchasing power parity (PPP). In 1993 PPP prices, international poverty line comes to be \$1.08/day and is referred as “\$1/day” line<sup>18</sup>. Using PPP conversion factor for 1993, consumer price indices for the respective survey years and 1993, we calculate Nepalese Rupees equivalent of \$1.08 international poverty line for NLSS 1995-96 and 2003-04.

By this method, Nepalese population living below “\$1-a-day” was 33.5 percent in 1995-95 and decreased to 24.1 percent in 2003-04<sup>19</sup>. This decline of about 10 percentage points between the two surveys is internally consistent with the 11 percentage points decline (from 42 percent to 31 percent) using CBN-based national poverty lines.

When we double this international poverty line to “\$2- a-day”, the poverty incidence estimate was 77.6 percent in 1995-96 and 65.8 percent for 2003-04. The decline is again similar in magnitude to that of CBN-based results.

**Table 1.5.5: Ne pal 1995-96 and 2003-04, A-Dollar-Day Poverty Rates**

<b>International Poverty Line</b>	<b>1995-96</b>	<b>2003-04</b>	<b>Change (percentage points)</b>
<b>\$1-a-day</b>	33.5	24.1	-9.4
<b>\$2-a-day</b>	77.6	65.8	-11.6

## **1.6 Other Evidence of Changes in Living Standards**

While consumption is the preferred measure of household welfare, it is worthwhile to examine other non-expenditure-based measures of well-being. In this section we examine trends in the incidence of subjective poverty, quantities of foods consumed, income poverty, and agricultural wages. We also examine trends in poverty in the sub-sample of households that were surveyed in 1995-96 and again in 2003-04 ( a panel sample).

<sup>18</sup> See Ravallion and Chen (2000, 2001, 2004) for methodology and application.

<sup>19</sup> Adjustments made to consumption aggregates since Poverty Assessment 2000 have resulted in a generally higher estimates of per capita consumption at the household level for NLSS 1995-96 and consequently PPP-based poverty incidence are not directly comparable with earlier results.

## 1.6.1 Subjective Poverty Line

Another way to estimate poverty is to analyze self-reported information about the adequacy of consumption on the basis of answers to NLSS-collected minimum income questions (MIQs). Both the MIQ results and the constructed poverty rate can be used to judge the progress in living standards. NLSS-I and NLSS-II collected information according to the schedule presented in Table 1.6.1.

Results reveal an improvement in perception of all aspects of standards of living. While almost 50 percent of households responded that food consumption was inadequate in 1995-96, the number reporting this in 2003-04 decreased to 30 percent. With regard to housing, the reduction is even larger. There are also improvements in the perception of adequacy of health care and children's schooling. Respondents were most dissatisfied with their family's income, although this proportion is also decreasing.<sup>20</sup>

**Table 1.6.1: Nepal 1995-96 and 2003-04, Self-reported Assessment of Consumption Adequacy**

“I would like to ask your opinion of your family’s standard of living”	“It was less than adequate for your family needs?”*	
	1995-96	2003-04
Concerning your family’s <b>food</b> consumption over the past one month, which of the following is true ?	49	30
Concerning your family’s <b>housing</b> consumption over the past one month, which of the following is true ?	64	40
Concerning your family’s <b>clothing</b> consumption over the past one month, which of the following is true ?	57	36
Concerning the <b>health care</b> your family’s gets, which of the following is true ?**	59	28
Concerning your <b>children’s schooling</b> , which of the following is true ?**	48	23
Concerning your family’s <b>total income</b> over the past one month, which of the following is true ?	71	66
Do you consider that you, or your family eats too little to live a health and active life ? (percentage of respondents answering “yes”)	90	87

\* Response options offered to respondents were: “It was less than adequate for your family needs”; “It was just adequate for your family needs”; “It was more than adequate for your family needs”; and, “Not applicable”.

\*\* Since “not applicable” was a possible answer, “less than adequate” responses to this question were naturally fewer than the others.

<sup>20</sup> We are not sure how to interpret the response in the last row of Table 1.6.1 which seems to contradict the response in the first row of the same table.

“Adequacy” is defined by what the respondent considered to be the minimum consumption needs of their family.

In addition to reporting survey responses, we estimated a subjective poverty line and the incidence of poverty based on this line, which in turn was based on the perceived adequacy of food consumption. Following Pradhan and Ravallion (2000)<sup>21</sup>, we regressed the responses to the food adequacy question on total consumption expenditure and the demographic and regional variables. This method corresponds in spirit to a widely used practice in constructing poverty lines in which the poverty line is the level of total expenditure or income at which food spending is sufficient to assure that food consumption is deemed nutritionally adequate for good health and normal activity levels by some objective criteria.<sup>22</sup> Table 1.6.2 presents the results of these estimations for 1995-96 and 2003-04.

With regard to incidence and trends, subjective poverty estimates in Nepal overall are very similar to those estimated by the CBN method. With respect to regional trends, however, there are some perceptible differences. As with the CBN estimates, poverty decline is recorded in other urban areas, and rural Western Hill. By contrast, in Kathmandu, rural Eastern Hill and in the Terai belt the CBN and subjective poverty estimates diverge. The CBN method shows an increase in poverty in rural Eastern Hill, while the subjective poverty estimates show an appreciable decline in this geographic area. In both the western and eastern regions of the Terai belt subjective poverty estimates show an increase, while the CBN method shows a decline.

**Table 1.6.2: Nepal 1995-96 and 2003-04, Subjective Poverty**

	Poverty Incidence (P0)	
	1995-96	2003-2004
Kathmandu	0.7	2.7
Other urban	30.5	10.1
Rural Western Hill	71.1	24.4
Rural Eastern Hill	66.7	24.5
Rural Western Terai	22.6	30.6
Rural Eastern Terai	31.5	32.2
Nepal	43.6	24.6

Estimates of subjective poverty estimates for 1995-96 are from Ravallion and Pradhan 2000. Other calculations are of the authors’.

<sup>21</sup> We follow the methodology developed by Pradhan and Ravallion (2000). Using qualitative assessment of perceived consumption adequacy available from the NLSS-I survey, these authors derived subjective poverty line for 1995-96. Based on this subjective poverty line, the estimated headcount rate turned out to be 43 percent, see Menno Pradhan and Martin Ravallion “Measuring Poverty Using Qualitative Perceptions of Consumption Adequacy” *Review of Economics and Statistics* v82, n3 (August 2000): 462-71.

<sup>22</sup> See Ravallion 1998 “Poverty Lines in Theory and Practice,” LSMS working paper no. 133, Washington DC.

## 1.6.2 Trends in Quantities of Foods Consumed

Improvements in the composition of the food bundle consumed would provide independent evidence of improvements in the standard of living. Analysis of the average quantities of different food items consumed reveals that per capita consumption of virtually all major food groups (with the notable exceptions of maize, wheat flour and eggs) increased substantially between 1995-96 and 2003-04 (Table 1.6.3). For instance, per capita consumption of fine rice increased by almost 50 percent, milk by 19 percent, fish by almost 50 percent, mutton and buffalo by 13 percent, while the consumption of chicken doubled.

Per capita consumption of wheat flour declined, perhaps compensated for by the increase in consumption of fine rice. Per capita consumption of maize dropped considerably as well, but this was partly compensated for by an increase in consumption of maize flour. (Both maize and wheat flour are inferior products to both fine and coarse rice, with unit prices of the latter being substantially higher than the former; see the companion technical paper for the unit prices.)

**Table 1.6.3: Nepal 1995-96 and 2003-04, Consumption of Selected Foods**  
(grams, per person, per month)

	1995-96	2003-04	Change in percent
Fine rice	1,852	2,697	46
Coarse rice	6,239	6,157	-1
Maize	2,045	911	-55
Maize flour	822	1073	31
Wheat flour	2,235	1,920	-14
Masoor	250	267	7
Eggs	63	63	0
Milk	2,065	2,455	19
Potatoes	1,096	1,431	31
Fish	62	92	47
Mutton	99	112	13
Buffalo	90	101	13
Chicken	51	102	102
Tea	29	29	1

**Figure 1.6.1: Nepal 1995-96 and 2003-04, Consumption of Selected Foods by Deciles of PCE**

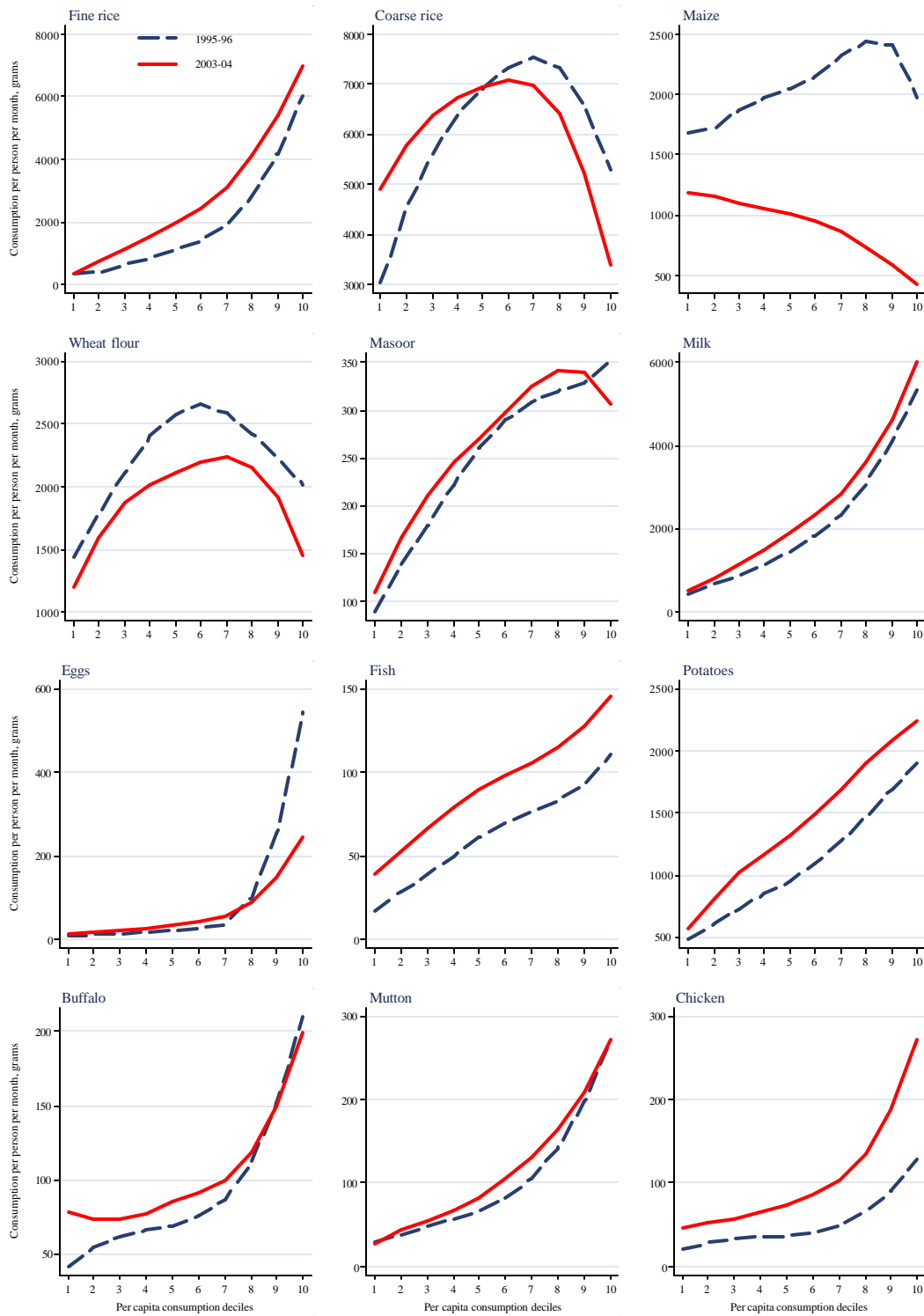


Figure 1.6.1 depicts per capita consumption of selected foods by deciles of PCE distribution in 1995-96 and 2003-04. It shows that the trends reported above are not confined to high-income groups. In fact, percentage increases in the consumption of fine rice, as well as in all groups of vegetable and animal proteins and fats, were higher among low-income households than among high-income households. (See Annex 1, Table A1.2 for the actual amounts of foods consumed by low-income households.)

### 1.6.3 Evidence from a Panel Sample

The poverty estimates discussed above are based on NLSS-I and a cross-sectional component of NLSS-II. These two samples are representative of the population of Nepal in 1995-96 and 2003-04, respectively. In addition, NLSS-II attempted to collect data from about 1,200 NLSS-I-surveyed households. Nine hundred and sixty-two of them were located, comprising a panel component of NLSS-I and NLSS-II.

We examined this panel component to gain further insight into the dynamics of poverty between 1995-96 and 2003-04. Table 1.6.4 presents a transition matrix with respect to poverty status for the households in the panel sample.

**Table 1.6.4 Nepal 1994-95 and 2003-04, Transition Matrix in and out of Poverty  
(Panel sample)**

		2003-04								
		Non-poor			Poor			All		
		All	Urban	Rural	All	Urban	Rural	All	Urban	Rural
1995-96	<b>Non-poor</b>	47.6	13.6	61.2	60.4	7.4	67.9	46.8	14.1	60.9
	<b>Poor</b>	20.4	18.5	38.8	19.7	12.4	32.2	20.7	18.5	39.1
	<b>Total</b>	68.0	32.0	100.0	80.1	19.9	100	67.5	32.5	100

The CBN poverty rate for the panel sample in 1995-96 was estimated at 38.8 percent, while for 2003-04 it was estimated at 32.0 percent. These estimates are quite close to the estimates obtained from the main cross-sectional samples, confirming the trend of substantial poverty decline in Nepal. (Note that the 2003-04 panel sample doesn't represent the 2003-04 population of Nepal, while the 2003-04 cross-sectional sample does. Therefore, 2003-04 poverty estimates obtained from the cross-sectional sample are the preferred ones.) In urban areas, the poverty rate in 1995-96 was 32.2 percent. It dropped to 19.9 percent in 2003-04. These estimates are considerably higher than the 21.55 and 9.55 percent poverty rates estimated from the cross-sectional NLSS-I

and II. This most likely indicates that the panel failed to follow the most-wealthy households in urban areas. This is a standard problem in panels, especially when the time between the surveys is as long as 8 years, as was the case here.

In the rural panel, the poverty rate in 1995-96 was 39.1 percent. It dropped to 32.5 percent in 2003-04. These estimates are close to the estimates obtained from the cross-section sample.

Estimates from the panel in both urban and rural areas confirm the trends of a substantial drop in poverty. While these trends show that many households moved out of poverty, they also attest to the downward variability in expenditures and a household's non-negligible chances of falling into poverty.

#### **1.6.4 Trends in Agricultural Wages**

International evidence suggests that real agricultural wages tend to be highly correlated with poverty headcount ratios, and areas with low agricultural wages tend to have higher poverty headcounts.<sup>23</sup> In addition, Deaton and Dreze (2002) suggest interpreting real wage as a poverty indicator in its own right. If the labor market is competitive, the real wage measures the "reservation wage," i.e., the lowest wage at which laborers are prepared to work. This could be interpreted as an indication of the degree of deprivation (the more desperate people are, the lower the reservation wage), independent of the statistical association between real wages and the headcount ratio.

Wages earned by agricultural laborers represent an important indicator of welfare in rural Nepal as well. Table 1.6.5 presents 3 types of agricultural wage statistics. First, it presents nominal daily wages in 1995-96 and 2003-04; second, it presents real daily wages obtained by applying implicit poverty deflators to real wages; and third, it presents daily wages expressed as kilograms of rice. By all three measures daily wages of agricultural laborers increased. In Eastern Terai, wages increased the least of all regions, possibly reflecting the relative abundance of agricultural labor in that region.<sup>24</sup> Surprisingly, wages of agricultural laborers in Eastern Hill increased quite fast, but without the commensurate reduction in the incidence of poverty in the region.

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<sup>23</sup> Deaton and Dreze (2002) present evidence that real agricultural wages are highly (0.79) correlated with rural headcount ratios across Indian states. See Deaton A. and Dreze J. "Poverty and Inequality in India: A re-examination". *Economic and Political Weekly*. September 7, 2002.

<sup>24</sup> In Nepal, agricultural wage labor is most prevalent in the Terai belt, especially in rural Eastern Terai. In fact, over 65 percent of those who are engaged in agricultural labor as their main occupation reside in Eastern Terai alone, see "Nepal Living Standards Survey 2003/04 Statistical Report", Volume 2, Central Bureau of Statistics, National Planning Commission Secretariat, HMG, December 2004.

**Table 1.6.5: Nepal 1995-96 and 2003-04 Agricultural Wages by Geographic Region (Rural Areas)**

	Nominal Agricultural Daily Wage (NRS)			Real Agricultural Daily Wage (NRS)			Real Agricultural Daily Wage (kg of rice)		
	1995-96	2003-04	<i>chang in %</i>	1995-96	2003-04	<i>chang in %</i>	1995-96	2003-04	<i>change in %</i>
	(A)			(B)			(C)		
Western Hill	49	90	84	49	54	10	3	4	33
Eastern Hill	37	86	132	37	54	46	2	4	100
Western Terai	50	89	78	50	63	26	4	6	50
Eastern Terai	43	61	42	43	54	26	3	4	33

## 1.6.5 Trends in Income Poverty

Both NLSS-I and II contain extensive modules on total earnings from different income sources – wage employment, non-agricultural enterprises, agricultural enterprises, remittances, and other income. For each individual in the household (aged 10 years and older in NLSS-I, and aged 5 years and older in NLSS-II), information on time worked, sector of employment (occupation and industry), and amount earned from each economic activity is collected. This enabled the construction of comparable per-capita income and consumption measures, which in turn can be used to estimate the incidence of poverty (Table 1.6.6.)

Estimates of income-based poverty are obtained by comparing year and region-specific poverty lines with nominal aggregate per-capita income (instead of aggregate per-capita expenditures as in the CBN method). These estimates are very closely aligned with estimates of poverty based on consumption expenditures.<sup>25</sup> For example, for 1995-96, poverty estimates based on income are about 5 percentage points higher than those based on per capita consumption (47 percent versus 42 percent); for 2003-04 the difference is 4 percentage points (31 percent versus 35 percent). Estimates of poverty decline (11 percentage points in the case of consumption poverty, and 12 percentage points in the case of income poverty) are also quite close.

<sup>25</sup> Note that several components (imputed rent from the owner occupied housing and value of home produced non-crop consumption) enter both measures. However, this fact alone cannot account for these similar patterns. The common components represent only 15(18) percent in income and expenditure respectively. (For the households in the lowest and second lowest PCE quintiles, the common component represents 11(14) and 13(14) percent, respectively). Correlation between income and expenditure for the whole sample is 0.72; excluding the common components from the income and consumption reduces the correlation to 0.58.

As with consumption-based poverty estimates, income-based poverty estimates show that rural poverty is considerably higher than urban poverty both in 1995-96 and 2003-04. Regional patterns are also broadly similar. Other urban areas and rural Western Hill had a greater-than-average decline in income-based poverty similar to that of consumption-based poverty. Contrary to the trend of increasing consumption-based poverty in rural Eastern Hill, income-based poverty estimates show a decline.

**Table 1.6.6: Nepal 1995-96 and 2003-04,  
Income-based Poverty Estimates**

	1995-96	2003-2004	Change (percentage points)	Change (percent)
Urban	26.2	12.5	-13.7	-52
Rural	48.8	38.8	-10.0	-20
Kathmandu	6.8	4.7	-2.1	-31
Other urban	37.4	16.8	-20.6	-55
Rural Western Hill	62.0	43.6	-18.5	-30
Rural Eastern Hill	54.1	45.7	-8.4	-16
Rural Western Terai	41.8	33.8	-8.0	-19
Rural Eastern Terai	37.4	33.3	-4.1	-11
Nepal	47.2	34.9	-12.4	-26

## **1.7 Tentative Explanations for the Observed Increase in Per Capita Income and Expenditure and Decline in Poverty**

Average real per-capita household expenditures in Nepal grew at the rate of 4.5 percent per year between 1995-96 and 2003-04. This represents a remarkable achievement by international standards. While patterns of growth were not pro-poor per se and inequality has increased, because of the magnitude of this growth incidence of poverty declined by 11 percentage points (or 26 percent over 8 years) which also represents a remarkable achievement. Evidence from elsewhere shows that in addition to consumption and income gains, there also were improvements in human development indicators in Nepal.<sup>26</sup> Given Nepal's ongoing and Maoist insurgency, which deters investments and other economic activities, impedes the delivery of services, and costs human lives, these results represent a surprising picture of resilience of the Nepalese people against the backdrop of failing state institutions. What structural economic changes can explain these achievements ?

<sup>26</sup> See "Nepal Living Standards Survey 2003-04", CBS, HMGN.

To a significant degree, an increase in remittances propped up the consumption of households in Nepal. Figures compiled by the Department of Labor and Employment Promotion (DoLEP) show that over 1 million workers were working abroad in 2004. While India remains a popular destination for migrant workers, an increasing number of Nepalese now go to the Gulf and East Asian countries where they tend to earn considerably more than at home or in India.

Also, following both improvements in productivity and a tightening of the labor market, agricultural wages have gone up. Increases in demand (possibly due to increases in remittance income), coupled with improved connectivity and better access to markets, stimulated entrepreneurial activities and allowed for non-agricultural (e.g., trade, entrepreneurial, etc.) wages and incomes to increase. Further, increased urbanization (from 7 percent of the population in 1995-96 to 15 percent in 2003-04) moved workers from low-productivity jobs in rural areas to higher-productivity ones in urban areas. Also, the decline in fertility that started in the 1980s paid off in terms of considerably lowering of the dependency ratio in Nepal by the end of the century. Evidence below further illustrates these points.

#### *Increase in remittances income*

The proportion of households receiving remittances increased from 23 percent in 1995-96 to 32 percent in 2003-04 (Table 1.7.1). The average amount of remittances increased in real terms (i.e., in 1995-96 rupees) from NRS 674 per person per year in 1995-96 to NRS 1,723 per person per year in 2003-04, an over 150 percent increase over 8 years. These trends are present across all strata of the population, although richer households are more likely to receive remittances and the remittances they receive are substantially larger in absolute terms.

**Table 1.7.1: Nepal 1995-96 and 2003-04, Remittances Received by Households**

	Households Receiving Remittances			Amount of Remittances (1995-96 NRS per person per year)			Amount of Remittances among Recipients (1995-96 NRS per person per year)		
	1995-96	2003-04	<i>change in %</i>	1995-96	2003-04	<i>change in %</i>	1995-96	2003-04	<i>change in %</i>
Poorest	19	29	58	188	414	120	1,010	1,404	39
Second	22	25	13	311	729	135	1,392	2,886	107
Third	24	34	40	413	1,359	229	1,721	4,045	135
Fourth	25	36	45	687	1,668	143	2,752	4,611	68
Richest	26	34	29	1,496	3,749	151	5,666	11,159	97
Total	23	32	36	674	1,723	156	2,863	5,388	88

Note that because the incidence of headcount poverty was 42 in 1995-96, the increase in incomes of the households in the second PCE quintile would have the most impact on the incidence of poverty. The real amount of per capita remittances for this group of households has increased in absolute terms from NRS 1,392 to NRS 2,886 (among recipients), which is equivalent to an increase from 30 percent of the requisite poverty line to almost 60 percent of that line.<sup>27</sup>

Regional patterns of remittances help to explain the regional patterns of poverty trends. Even though the proportion of the households receiving remittances increased in all regions of Nepal (Table 1.7.2), the actual amount of remittances has declined in the rural Eastern Hill region, while it increased in all other regions. Rural Eastern Hill region is the only region in Nepal where poverty increased between 1995-96 and 2003-04. An analysis is currently being undertaken to examine these trends in migration and remittances in more detail and to investigate the relationship between remittances and poverty.

**Table 1.7.2: Nepal 1995-96 and 2003-04, Regional Patterns of Remittances**

	Households Receiving Remittances			Amount of Remittances among Recipients (1995-96 NRS per person per year)		
	1995-96	2003-2004	<i>change in %</i>	1995-96	2003-2004	<i>change in %</i>
Kathmandu	19	14	-26.0	6,269	13,230	111
Other urban	20	32	57.8	2,701	7,754	187
Rural Western Hill	31	41	32.0	2,832	4,297	52
Rural Eastern Hill	14	26	94.8	3,943	3,818	-3
Rural Western Terai	23	33	42.6	1,773	5,540	212
Rural Eastern Terai	26	33	26.0	2,668	5,812	118
Nepal	23	32	36.2	2,863	5,388	88

***Increase in non-agricultural incomes***

Average real per-capita income increased by 41 percent between 1995-96 and 2003-04. Most of the increase is due to the increase in 3 types of income – non-agricultural wages, income from non-agricultural enterprises and remittances income (Table 1.7.3). While income from farm activities still represents by far the most important source of income in Nepal overall (39 percent of income in 2003-04, on average), both its contribution to the overall income and the real amount

<sup>27</sup> The poverty line per person per year in 1995-96 rupees is 5,089.

of income from this source have declined between 1995-96 and 2003-04. Incomes from agricultural wages also have declined (brought about by the decreasing share of the population working in this sector).

**Table 1.7.3: Nepal 1995-96 and 2003-04,  
Sources of Households' Income**

	Mean Income (NRS per year per person)			As a Percent of the Total Income		
	1995-96	2003-04	<i>change (in%)</i>	1995-96	2003-04	<i>change (in%)</i>
<b>All Nepal</b>						
Farm income	3,123	2,986	-4	47	39	-17
Agricultural wage income	672	547	-19	14	10	-25
Non-agricultural wage income	1,016	1,883	85	14	17	25
Income from non-agricultural enterprises	859	1,491	74	9	11	23
Property income	55	111	103	0	0	35
Remittances income	544	1,402	157	6	10	77
Housing	758	1,284	69	10	10	-1
Other income	167	438	163	2	3	75
Total income	7,193	10,141	41	100	100	-
<b>First and Second PCE quintiles</b>						
Farm income	1,976	1,923	-3	47	43	-9
Agricultural wage income	808	774	-4	19	17	-11
Non-agricultural wage income	588	895	52	14	17	24
Income from enterprises	294	361	23	6	7	19
Property income	3	2	-27	0	0	-40
Remittances income	237	521	120	5	8	51
Housing	280	276	-1	8	7	-18
Other income	49	90	84	1	1	56
Total income	4,236	4,843	14	100	100	-

Note: Outliers, 0.5 percentile at each tail of the distribution, excluded

\* Calculated as an average of households' income shares

While incomes of the households in the 2 lowest quintiles increased more slowly compared with average incomes (by 14 percent over 8 years), the patterns of income growth mirror quite closely the overall patterns (Table 1.7.3). Farm incomes and agricultural wage incomes of low-income households have declined, while incomes from non-agricultural activities (both wage and entrepreneurial incomes) as well as remittances income have increased. Increase in incomes from non-agricultural wage and entrepreneurial activities are due to both a shift from agricultural to non-agricultural activities and the increasing rewards in these two sectors.

In terms of the regional patterns of trends in income from non-agricultural activities, there is some correspondence between them and the regional patterns of poverty dynamics. In particular, while the proportion of households with non-agricultural incomes has increased throughout the country, it actually slightly declined in rural Eastern Hill (Table 1.7.4). By contrast, however, the share of households with income from non-agricultural entrepreneurial activities have increased in rural Eastern Hill more than in other regions of Nepal. Since non-agricultural wage income is considerably more important for the low-income households compared to non-agricultural entrepreneurial income (the former represents 17 percent, while the latter represents 7 percent of the average income of households in the 2 lowest PCE quintiles), it is quite plausible that the lack of availability of non-agricultural wage employment in rural Eastern Terai dampened poverty reduction prospects there.

**Table 1.7.4: Nepal 1995-96 and 2003-04 Income from Non-agricultural Sources**

	Share of Households with Income from Non-agricultural Wage Sector			Share of Households with Income from Non-agricultural Enterprise Sector		
	1995-96	2003-04	<i>change (in %)</i>	1995-96	2003-04	<i>change (in %)</i>
Kathmandu	67	70	5	39	43	8
Other urban	48	50	4	36	41	13
Rural Western Hill	36	38	3	18	18	2
Rural Eastern Hill	41	37	-9	16	25	61
Rural Western Terai	32	43	36	17	19	13
Rural Eastern Terai	30	37	23	27	26	-4
Nepal	36	41	14	21	26	21

### ***Increase in agricultural wages***

Section 1.6, Table 1.6.5 shows evidence of an increase in agricultural wages in rural Nepal. One hypothesis is that the increase in agricultural wages is a consequence of a tightening of local labor markets because of the wider availability of opportunities in India and elsewhere abroad. While at the households' level, incomes from agricultural wages have declined, the decline has been brought about by the drop in the proportion of the population engaged in this sector (Section 1.4, Table 1.4.1). Since agricultural laborers are among the poorest occupational category (Section 1.4, Table 1.4.1), the increase in agricultural wages has helped to reduce poverty among this group.

### ***Urbanization***

As shown in Table 1.3.6 in Section 1.3, about 20 percent of the total decline in poverty between 1995-96 and 2003-04 can be explained by the shift of population from poorer to richer localities. The greatest population shift occurred by way of the decline in the proportion of rural and, consequently, an increase in the proportion of urban population. Overall, the proportion of the population residing in urban areas more than doubled from 7 percent in 1995-96 to 15 percent in 2003-04. Urbanization in Nepal results from both migration to the established urban areas and the conversion of previously rural to urban areas. Eastern and Central Terai and Western Hill have been experiencing the fastest rates of urbanization. Opportunities for productive work are considerably higher in urban areas and upon moving, workers were able to take up these opportunities, thereby achieving a subsequent increase in their incomes.

### ***Decline in the proportion of large households and in dependency ratio***

As shown in Section 1.4, Table 1.4.4 households with 7 or more members have the highest incidence of poverty of all demographic groups (50 percent in 1995-96 and 41 in 2003-04). Moreover, this group is very populous comprising 49 percent of all individuals and 58 percent of all poor in 1995-96. Over the course of 8 years, however, the proportion of individuals residing in these households decreased from 49 to 40 percent (a 18 percent decline) thereby reducing the overall incidence of poverty in Nepal.

The dependency rate measures the number of household members of non-working age (children and elderly) that have to be supported by the household's working members. Clearly, if the dependency rate declines (as a result of a household having fewer children, for example), working members will have to support fewer dependants and per-capita consumption will increase. This, in turn, may reduce the incidence of poverty.

We define two measures similar to an inverse of the dependency ratio: first, the number of adults (16 to 64 years old) as a proportion of household size, and second, the number of adult men who

worked 20 hours a week or more as a proportion of household size.<sup>28</sup> An increase in either of these measures indicates that there are fewer dependents per worker or per potential worker. Table 1.7.5 presents these two statistics for the regions of Nepal.

**Table 1.7.5: Nepal 1995-96 and 2003-04, Inverse Dependency Ratio**

	Share of Working Age Adults (16-64) (in percent)			Share of Male Workers, Aged 16-64 (in percent)		
	1995-96	2003-04	<i>change</i> (in %)	1995-96	2003-04	<i>change</i> (in %)
Kathmandu	66	69	4	24	27	15
Other urban	55	63	14	20	24	18
Rural Western Hill	52	53	2	17	19	10
Rural Eastern Hill	55	53	-4	24	23	-5
Rural Western Terai	52	55	7	21	20	-5
Rural Eastern Terai	56	55	-3	21	21	-2
<b>Nepal</b>	54	56	2	21	22	3

Evidence suggests that there has been a substantial decline in the dependency rate based on both inverse measures in urban areas. On average, the proportion of adults in a household increased from 54 to 56 percent and the proportion of adult male workers increased from 21 to 22 percent. “Other urban” NLSS region had experienced the most dramatic decline in the incidence of poverty and it is where the number of working males per household increased the most (the share of working age adults have increased from 55 to 63 percent and the share of male workers from 20 to 24 percent). Similarly, across rural areas, poverty decline in rural Western Hill was quite substantial, which is mirrored in the increase in the proportion of working men there (by 11 percent, on average). By contrast, poverty increased in rural Eastern Hill, where the proportion of working men declined.

<sup>28</sup> We chose prime age male workers and not all workers in a household because an increase in female labor force participation or in child labor may be an indicator of a distress condition for a family. In contrast, an increase in the proportion of male workers is an indicator of a potential improvement in household’s income per person, and may indicate either improvements in the local labor market or a decline in the number of dependants.

## CHAPTER II

### *The Methodology used to Derive Poverty Lines (1995-96 and 2003-04)*

The main objective of this chapter is to document the main steps and procedures followed by the poverty assessment team to construct poverty lines for the 2003-04 Nepal Living Standards Survey (NLSS II) data sets. In constructing these poverty lines, it is important to highlight upfront that our overriding concern was to maintain comparability with the methodology employed in the 2000 World Bank report “Nepal: Poverty at the Turn of the Twenty-First Century”, that utilized data from the 1995-96 NLSS (NLSS I). Thus, we have taken the 1995-96 poverty line developed by the CBN method and derived indices (in case of the NLSS I we re-derived these indices) to adjust it for regional differences in cost-of-living. We also derived region-specific inter-temporal indices. We then used these indices to estimate the cost of poverty lines in 6 regions in 2 time periods. We did not revisit the calculation of the poverty line itself. The main advantage of not revisiting the calculation of poverty line is to keep the “yardstick” intact, and to preserve the continuity and comparability of the 2003-04 results with the earlier estimates of poverty in Nepal.

This chapter contains four sections which are organized as follows.

**Section 2.1** provides a brief, intuitive, and non-technical overview for the non-specialist reader to the methodology followed to derive the poverty lines.

**Section 2.2** provides a more detailed account of the specific steps that were followed, and

**Section 2.3** presents the various poverty lines for each region-of-interest, which were then used to estimate poverty incidence in the country in 1995-96 and 2003-04.

### **2.1 An Overview of the Methodology**

Taking as a starting point the 1995-96 rural Eastern Terai poverty line (denoted  $P_{11}$ ) derived by the earlier 2000 Poverty Assessment team (henceforth 2000 PA: see Box 2.1 for a summary of how this line was derived), our objective was to construct comparable poverty lines for each of the six main regions-of-interest,<sup>29</sup> and for both survey periods 1995-96 and 2003-04. In other

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<sup>29</sup> The regions were (1) Kathmandu; (2) other urban areas; (3) Rural West Hills and Mountains (i.e. Western, Mid-west, and Far-west Development Regions); (4) Rural Eastern and Central Hills and

words, our goal was to derive 12 poverty lines ( $P_i$ :  $i=1, 2, 3, 4, 5, 6$  and  $t = 1, 2$ ) for each region/time-period, each of which represented exactly the same standard-of-living or welfare, and differed in rupee terms only to the extent necessary to make allowances for differences in cost-of-living over time and across regions.

Recall that the poverty line for any given region (in this case, the rural Eastern Terai region) includes provision for a minimum bundle of goods comprising essential food and non-food items. The issue of updating  $P_{11}$  across time and space therefore essentially boils-down to deriving appropriate price indices for these food and non-food components (i.e. that take into account intertemporal and spatial prices differences) and then applying them to the corresponding parts of the poverty line to derive the  $P_{ij}$  for each of the respective 12 domains of interest.

**Box 2.1: Deriving the 1995-96 Rural Eastern Terai Poverty Line: A Brief Synopsis**

The poverty line for 1995-96 NLSS was derived using the Cost-of-Basic-Needs (CBN) method. In short, the method entailed 5 main steps:

- ✂ First, a nutrition norm of per capita 2,124 kcal per day was determined based on the minimum caloric requirements for different age and gender groups and the composition of an “average” Nepali household.
- ✂ Second, 37 food items for which units and prices were available were selected and their quantities consumed by the households in the second to fifth decile of per-capita consumption distribution were determined. Expenditure on these 37 goods represented, on average, 85 percent of all food expenditures of households, so it was assumed that these foods provided 85 percent of all requisite caloric requirements. The average actual caloric content of this food bundle was found to be 1,736 kcal. To ensure that the food basket yielded the requisite calories, all quantities were scaled up uniformly by the ratio of 1,805/1,736 (1,805 is 85 percent of 2,124 kcal).
- ✂ Third, the cost of this bundle was determined using mean unit values for these goods in rural Eastern Terai region. Unit values were calculated as “plutocratic” averages across the entire population of rural Eastern Terai. This basket turned out to cost Rs. 2,647 per person per annum.
- ✂ Fourth, assuming that all other foods have the same price per calorie, the food basket that would provide 100 percent caloric requirement would cost 15 percent more or Rs 3,114.1 per person per annum.
- ✂ Fifth, the final step was to determine the share of non-food consumption of the households whose food consumption was around the requisite food poverty line (i.e. the upper poverty line in the terminology of Ravallion 2000). Adding the average amount for non-food items (Rs. 1,540.5), the final poverty line was calculated as Rs 4,654.6 per person per annum in rural Eastern Terai prices.

*See Lanjouw, Prenzushi and Zaidi (1999) “Poverty in Nepal Today” for more details*

The above overall process was carried out by following three main steps:

**Step 1:** Derive the spatial and inter-temporal food price indices to ascertain the corresponding food poverty line components of each of the 12 main domains of interest.

Mountains; (5) Rural western Terai (i.e. the Western, Mid-west, and Far-west Development Regions); and (6) Rural Eastern and Central Terai.

**Step 2:** Derive the spatial and inter-temporal non-food price indices for the corresponding non-food poverty line components of each of the 12 main domains of interest.

**Step 3:** Aggregate the food and non-food poverty line components to obtain the respective  $P_{ij}$  i.e. the 12 overall poverty lines of interest.

Having thus determined the overall total poverty lines in prices of the six regions-of-interest in 1995-96 and 2003-04, we then compared them with nominal consumption aggregates derived from the survey data to categorize the population into poor and non-poor group.

## 2.2 Deriving the Poverty Lines: A more Detailed Exposition<sup>30</sup>

Following the brief outline above of the steps followed to construct the 12 poverty lines of interest; this section provides a more thorough account of the procedures followed in deriving the poverty lines. While steps 1 and 2 outlined above could in-principle have been combined by deriving a composite price index for the food and non-food bundles taken together,<sup>31</sup> we instead derived these two sets of price indices separately, and then applied these to the food and non-food components of the poverty line respectively to eventually arrive at the overall poverty lines for the 12 domains. The exact steps followed in carrying out these procedures are elaborated below.

### 2.2.1 Deriving the Food Price Indices

In deriving price indices to update poverty lines, literature on this topic suggests an estimation strategy that (i) utilizes prices faced by the poor, and (ii) uses quantities consumed (or budget shares) that are aligned with the consumption patterns of the poor. In particular, several authors (recently Deaton and Tarozzi) suggest deriving both quantities and unit values of consumed foods

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<sup>30</sup> An alternative approach for deriving the poverty lines for 2003-04 would be to use the *same methodology* as in 1995-96 to compute poverty lines in 2003-04. However, this approach is not well-suited for inter-temporal comparisons: a major drawback is that if living standards in a country improve over time, even poor households improve the composition of their consumption basket. As a result, reapplying the CBN methodology poverty lines therefore no longer reflect basic-needs bundles of constant value in real terms. Assessing trends in absolute poverty over time presumes that the same yardstick was used at all points in time, a condition that is violated by the application of the *same methodology* to the derivation of poverty line in 2003-04. See Ravallion Martin (1994) *Poverty Comparisons* Harwood Academic Press, Switzerland, for a discussion of these issues.

<sup>31</sup> Indeed, this was the procedure followed in the earlier Poverty Assessment; however, since we departed from this earlier practice, the poverty lines derived in this paper for the five other regions (i.e. other than the rural Eastern Terai) are in-fact slightly different from those used for the earlier Poverty Assessment.

from the household survey(s) data to form baskets of consumer goods in different locations (time periods), which in turn are then used to derive the food price indices.<sup>32</sup>

We calculated food prices indices in the 12 domains of interest using a Laspeyres index—i.e. as the relative costs of the 1995-96 fixed food basket in two time periods and across the 6 main regions of interest. We chose Laspeyres index for two main reasons: (i) to maintain comparability with earlier analysis (i.e. in the 2000 PA), and (ii) this index (which is constructed in such a way that weights attached to each food item are the same for all regions and time periods) satisfies base-independency and transitivity properties, in other words the relative prices across regions and time periods do not depend on the choice of the base-region, or the sequence in which spatial and inter-temporal indices are combined.<sup>33</sup>

To construct the Laspeyres index, the quantities of 37 food items for a fixed food basket were chosen using the 1995-96 national average quantities consumed by the population in the 2<sup>nd</sup> to 5<sup>th</sup> deciles of nominal per capita consumption.<sup>34</sup> The region and time period-specific prices of each

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<sup>32</sup> See Deaton and Tarozzi “Prices and Poverty in India” in *The Great Indian Poverty Debate*, A. Deaton and Valerie Kozel eds.. This paper also provide guidance on methodology for calculating unit values and quantities and on the merits of selecting particular price indices -- Laspeyres, Paasche, Tornquist, Fisher, etc.

<sup>33</sup> The Laspeyres index also has its disadvantages vis-à-vis such superlative indices as Tornquist and Fisher, the main disadvantage being that it is not derived from a demand system or an expenditure function. Unfortunately, however, superlative indices are not transitive and in case of multilateral (i.e., across space and time) comparisons the result depend on the order by which regional and intertemporal indices are combined. For instance, when calculating the relative price difference between Kathmandu in 1995-96 and rural East Hill (REH) in 2003-04 one would want the result to be the independent of whether one first applies regional price index to convert 1995-96 Kathmandu prices to 1995-96 REH prices and then intertemporal index to convert 1995-96 REH prices to 2003-04 REH prices, versus when one first applies intertemporal price index to convert 1995-96 Kathmandu prices to 2003-04 Kathmandu prices, and then regional price index to convert 2003-04 Kathmandu prices to the 2003-04 REH prices. If one adopts Tornquist or Fisher indexes, these procedures give different results, depending on the order followed. This lack of transitivity of superlative indices could also be understood in terms of *base-dependency* or the dependency of the relative prices on the choice of a base region. In this case, if one were to use superlative indices, the relative prices would've depended on the choice of a base region, be it Kathmandu, Rural East Hills or the other region.

<sup>34</sup> The quantities were calculated as “democratic” rather than “plutocratic” means; the difference between the two is that the latter uses aggregate consumers’ expenditure on each commodity divided by the aggregate consumers’ expenditure on all commodities which is an average of the individual households ratios weighted by the total expenditure. As a result, “plutocratic” average gives bigger weight to households which consume more of a particular product (usually richer households). Democratic method is preferred for calculating price indexes faced by the poor, as it places equal weights on consumption of each household, irrespective of the quantity consumed. See Deaton and Tarozzi 2000 “Prices and Poverty in India” for a more detailed discussion of these two methods.

food item were calculated as the average “democratic” unit values taken over the entire population of that region in 1995-96 and in 2003-04.<sup>35</sup> To obtain total quantities, quantities of purchased, home-produced and received-in-kind food were added up for each household and food item. Technical details regarding treatment of purchased, home-produced and received-in-kind items, as well as issues pertaining to conversion of non-metric units, are discussed in Annex 2.

Computed quantities and prices were checked for the presence of outliers, which were subsequently removed from the analysis. In addition, a household-level unit value was considered to be an outlier if it was either less than 0.1 times or greater than 10 times the median unit value of a particular food item. The cost of each basket was computed as the sum of expenditures on each food from the food basket, using the region and time period-specific prices. Results are presented in Table 2.3.1.

**Table 2.2.1: Nepal 1995-96 and 2003-04,  
Regional Food Price Indices**

	Cost of a Reference Food Basket (in current local prices)		Implied Food Poverty Line adjustment coefficient		Implied region-specific food inflation rate
	1995-96	2003-04	1995-96	2003-04	
	(1)	(2)	(3)	(4)	(5)
Kathmandu	3,361	5,550	1.29	2.14	165.1
Other urban	2,950	4,062	1.14	1.56	137.7
Rural Western Hill	3,178	4,634	1.22	1.79	145.8
Rural Eastern Hill	3,289	4,385	1.27	1.69	133.3
Rural Western Terai	2,458	3,557	0.95	1.37	144.7
Rural Eastern Terai	2,596	3,570	1.00	1.38	137.5
All-Nepal	2,908	4,101	1.12	1.58	141.0

\* Column 5 is calculated as column 4 divided by column 3, multiplied by 100

As a cross-check, we compared inter-temporal change in prices calculated from the survey data with the official CPIs. According to the Rastra Bank, the urban CPI for “food and beverages” in 2003-04 was 148.8 compared to 100 in 1995-96 (i.e. 1995-96 is the base year for the urban CPI). The NLSS-based estimated all-Nepal food price index is 141.0, or quite comparable to the official CPI estimate (that it is slightly on the lower side could be explained by the fact that the NLSS-based estimates are heavily drawn from the rural areas, and are based on foods generally consumed by the poor).

<sup>35</sup> It would’ve been preferable to take prices faced by the “poor” and calculate unit values only over the population in the 2-5 deciles. But since these calculations had to be done at the regional level, the sample sizes were too small.

## 2.2.2 Deriving the Non-Food Price Indices

In case of non food price indices, we estimated relative costs of renting a typical housing unit to account for regional differences in prices, but used the urban CPI collected by the Rastra Bank to approximate the inter-temporal change in non-food prices. We believe that while differences in rental values are reasonable proxies for regional differences in price level, inter-temporal changes in rental prices are a poor approximation for the changes in non food prices.<sup>36</sup> This is because the inter-temporal trajectory of prices of non-food items (mostly services and tradable goods) is also influenced by changes in world prices (most notably, the prices of fuel) and changes in the demand and supply of these goods and services; changes in the price of rental housing is a poor proxy for such price changes.<sup>37</sup> We therefore used a combination of a single inter-temporal non-food all urban Nepal CPI provided by the Rastra Bank and regional housing price indices calculated on the basis of NLSS 2003-04 survey.<sup>38</sup> Details pertaining to how this procedure was implemented are provided below.

Similar to calculation of non-food price indices by the 2000 PA team for the 1995-96 survey, we calculated the cost of renting a reference house (an average house in terms of facilities affecting rent) in 6 regions in 2003-04. The cost function was estimated using a hedonic housing regression model to predict the rental values for those households in the sample that had not paid rents (the similar model was estimated to infer housing consumption in the construction of consumption aggregates). We then calculated regional non-food price indices both in 1995-96 and in 2003-04 relative to the year-specific Rural Eastern Terai prices (Table 2.2.2, columns 2 and 5).

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<sup>36</sup> Bangladesh Poverty Assessment (2002) used a similar approach of combining a survey-based index and an official CPI into an overall price index. Since regional non-food CPIs were available for Bangladesh, these indices were used to approximate both regional and inter-temporal differences of the non-food items.

<sup>37</sup> On examination of the data, we found that survey-based estimates of change in the housing prices showed a considerably smaller increase than the increase in prices of several non-food items that were also collected in the survey. For example, in rural Eastern Terai the NLSS-based rental housing prices had actually declined, even in nominal terms. By contrast, the increase in prices of kerosene and chappals (footwear) show increases comparable with the increase in the urban non-food CPI.

<sup>38</sup> Alternatively, we could have applied the average inter-temporal price index to the regional price indices in 1995-96. This method, however, would've imposed the regional differences prevailing in 1995-96 onto the 2003-04 regional indexes. We believe our method which actually estimates the regional price difference in 2003-04 is a superior one.

**Table 2.2.2: Nepal 1995-96 and 2003-04,  
Regional Non-Food Price Indices**

Region	1995-96			2003-04			2003-04 index relative to 1995-96 all-Nepal *	2003-04 index relative to 1995-96 R-E Terai (implied non-food poverty line adjustment coefficient)**	Implied region-specific non-food inflation rate***
	Cost of renting reference house	Regional Price Index		Cost of renting reference house	Regional Price Index				
		relative to R-E Terai	relative to all-Nepal		relative to R-E Terai	relative to all-Nepal			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Kathmandu	3,620	1.72	1.65	4,441	2.47	1.59	2.57	2.67	156
Other urban	2,619	1.24	1.20	3,055	1.70	1.09	1.77	1.84	148
Rural Western Hill	2,177	1.03	0.99	3,369	1.87	1.20	1.95	2.02	196
Rural Eastern Hill	2,448	1.16	1.12	2,826	1.57	1.01	1.64	1.70	146
Rural Western Terai	1,676	0.79	0.77	3,186	1.77	1.14	1.84	1.91	241
Rural Eastern Terai	2,109	1.00	0.96	1,799	1.00	0.64	1.04	1.08	108
All-Nepal	2,191	1.04	1.00	2,796	1.55	1.00	1.62	1.68	162

Columns (2) and (8) present implied non-food poverty line adjustment coefficients for 1995-96 and 2003-04 respectively

\* Column (7) equals to column (6) multiplied by the urban non-food CPI =1.618

\*\* column (8) equals to column (7) multiplied by 1.04 – the 1995-96 price adjustment coefficient for all-Nepal relative to rural Eastern Terai

\*\*\* column (9) equals to column (8) divided by column (2) and multiplied by 100

The non-food regional price indices for all regions in 2003-04 were then developed relative to 1995-96 Rural Eastern Terai by adjusting for changes over time in the cost-of-living. Our preferred inter-temporal non-food index was the official non-food CPI which equals to 161.8 for urban Nepal. Since Rural CPI data are not collected in Nepal, we had to use the urban CPI instead to approximate the change in non-food prices in the countryside. Taking the official non-food CPI as a measure of the change in non-food prices in Nepal, on average, and using 1995-96 and 2003-

04 regional differences in costs of rental housing as regional non-food price indices in respective time periods, we then calculated the region-specific inter-temporal change in non-food prices, and then further the changes in non-food prices relative to 1995-96 rural Eastern Terai.<sup>39</sup> Specifically, first, we calculated change in prices in all regions in 2003-04 relative to 1995-96 Nepal average. Second, knowing the ratio of rural Eastern Terai prices in 1995-96 to the average Nepal prices in 1995-96, we re-calculated all requisite price indices relative to the 1995-96 rural Eastern Terai (which were needed to adjust the poverty line).<sup>40</sup> Table 2.2.2 presents all resulting coefficients.

### 2.2.3 Aggregating the Food and Non-food Poverty Line Components

Once regional and inter-temporal food and non-food indices (Table 2.2.1 columns 3 and 4, and Table 2.2.2 columns 2 and 8, respectively) had been calculated, we applied these to the corresponding parts of the 1995-96 Rural Eastern Terai poverty line (i.e.  $P_{11}$ ) in order to derive the other poverty lines (i.e.  $P_{it}$ ). However, before this last step could be carried out, we made one more adjustment in the case of the 2003-04 poverty lines to take into account the change in demographic composition of the population between 1995-96 and 2003-04 (see Box 2.2).

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<sup>39</sup> Note that it is important to maintain that the average Nepal non-food prices increased by 61.8 percent; it would be questionable to assume that the rural Eastern Terai non-food prices had increased by that much and then infer changes in prices between the 6 regions in 2003-04 and rural Eastern Terai in 1995-96 on the basis of this coefficient and 2003-04 regional differentials. More discussion about combining regional and inter-temporal indexes is presented in Hill, Robert J. 2004 “*Constructing Price Indexes Across Space and Time: The case of the European Union*”, The American Economic Review, Vol. 94, Number 5.

<sup>40</sup> The following example will further clarify the procedure implemented. Let us say one wants to express prices in Kathmandu in 2003-04 relative to prices in rural Eastern Terai in 1995-96, provided that the average inflation between 1995-96 and 2003-04 was 1.618. One needs to multiply 1.59 (which is an index of relative prices in Kathmandu in 2003-04 relative to all-Nepal average in that year, column 6, Table 3.2) by 1.618 (average inflation index) which will give a change in price in Kathmandu in 2003-04 relative to 1995-96 average Nepal prices (column 7, Table 2.3.2). The next step is to divide this number by 0.96 (the index of relative prices in rural Eastern Terai in 1995-96 relative to all-Nepal average prices in that year) to obtain the requisite relative price index (column 8, Table 2.3.2). One can see then that prices in Kathmandu in 2003-04 were 2.67 times higher than prices in rural East Terai in 1995-96.

In case of the 1995-96 survey we used the food (Rs. 3,114.1) and non-food (Rs. 1,540.5) poverty lines calculated by the 2000 PA for Rural Eastern Terai and adjusted these for other regions using the derived food and non-food price indices. In case of the 2003-04 survey, we used the synthetic food and non-food lines (see Box 2.2 for a description) to derive the corresponding poverty lines for all the regions. These procedures yielded us the nominal costs of poverty lines in the 6 locations and in 2 time periods (i.e. 12 domains of interest overall).

### Box 2.2: Adjusting for Changes over Time in Nepal's Demographic Composition

The 1995-96 poverty line was anchored in the caloric requirement of the "average" Nepali household in 1995-96. However, the demographic composition of the average Nepali household changed between 1995-96 and 2003-04; the requisite number of calories must have changed accordingly (see Table 2.2.3). To account for this change in the calculation of the 2003-04 poverty line, we created a "synthetic" poverty line on the basis of 1995-96 NLSS that provided the requisite number of calories for this "new average" household. This synthetic poverty line to be used with the 2003-04 data turned out to be Rs. 4,768 (Rs. 3,143.7 food and Rs. 1,624.3 non-food) in 1995-96 rural Eastern Terai prices, or 2.4 percent higher than the 1995-96 poverty line

Demographic group	Caloric requirement (per person per day)*	Household Composition		Total caloric requirement	
		1995-96	2003-04	1995-96	2003-04
0-12 months	n/a	0.15	0.13	n/a	n/a
1-3 years	1200	0.45	0.41	543	495
4-6 years	1500	0.57	0.45	859	670
7-9 years	1800	0.49	0.42	877	764
10-12 years	2100	0.48	0.44	1,005	916
Boys: 13-15 years	2500	0.20	0.19	489	470
Girls: 13-15 years	2200	0.19	0.19	424	407
Boys: 16-18 years	3000	0.18	0.16	544	488
Girls: 16-18 years	2200	0.19	0.18	429	398
Men 19 yr. old and above	2800	1.31	1.23	3,659	3,454
Women 19 yr. old and above	2200	1.47	1.48	3,237	3,248
Household size		5.68	5.27		
Recommended Per Capita Calorie Consumption				2,124	2,144

Source: Gopalan, C., Rama Sastri, B.V., and Balasubramanian (1976) "Nutritive Value of Indian Foods", National Institute of Nutrition of the Indian Council of Medical Research, Hyderabad

## 2.3 Region and Time-Specific Poverty Lines and Overall Price Index

The resultant poverty lines are presented in Table 2.3.1. Subsequently, consumption of various goods and services (food, housing, stream of services from durables, etc.) in the last 12 months was added up for every household to arrive at total household expenditure.<sup>41</sup> Per capita expenditure (PCE) was then defined by dividing the total consumption by the household size.<sup>42</sup>

These consumption aggregates were then compared with the derived nominal poverty lines (Table 2.3.1: columns 3 and 6) to infer whether a household should be deemed poor or non-poor.

**Table 2.3.1: Nepal 1995-96 and 2003-04,  
Poverty Lines in Current Prices per Person per Year**

	1995-96			2003-04		
	Food	Non-Food	Total	Food	Non-food	Total
	(1)	(2)	(3)	(4)	(5)	(6)
Kathmandu	4,032.5	2,643.4	6,675.9	6,722.0	4,334.8	11,056.8
Other urban	3,539.2	1,912.6	5,451.8	4,919.2	2,981.9	7,901.1
Rural Western Hill	3,813.0	1,590.0	5,403.0	5,613.0	3,288.5	8,901.5
Rural Eastern Hill	3,946.1	1,787.9	5,734.0	5,311.2	2,758.5	8,069.6
Rural Western Terai	2,949.5	1,223.9	4,173.4	4,308.4	3,110.0	7,418.4
Rural Eastern Terai	3,114.1	1,540.5	4,654.6	4,323.2	1,755.6	6,078.8
All-Nepal	3,488.9	1,599.8	5,088.7	4,966.4	2,729.4	7,695.7

Note: columns 1, 2 and 3 are based in the 1995-96 poverty line; columns 4, 5, and 6 are based on 1995-96 synthetic poverty line – i.e., are adjusted for the change in the demographic composition of an “average” household (see Box 2.2 for details).

<sup>41</sup> Aggregation methodology is based on guidelines in Deaton and Zaidi (2002): World Bank Living Standards Survey Working Paper #135 “*Guidelines for Constructing Consumption Aggregates for Welfare Analysis*”

<sup>42</sup> A detailed description of the construction of consumption aggregates is presented in “Nepal Living Standards Survey” Volume 2, Central Bureau of Statistics, HMG, 2004.

It is also useful to determine the overall price indices to enable us to compare monetary variables across space and time. The overall regional and intertemporal price indices are determined as implicit poverty line deflators and calculated by dividing the total poverty line (food plus non-food) in current prices by the reference poverty line. Results are presented in Table 2.3.2. Note that while the 1995-96 synthetic poverty line is the appropriate base to establish the poverty line in 2003-04, the actual 1995-96 poverty line (i.e., the one unadjusted for the change in demographic composition, and reflecting only the change in prices of reference goods) is the appropriate base to establish the overall price index. Thus overall price indices presented in Table 2.3.2 could not be directly inferred from Table 2.3.1. We calculate indexes both relative to the Rural Eastern Terai 1995-96 (columns 1 and 2) and relative to the 1995-96 “Nepal average” (columns 3 and 4).

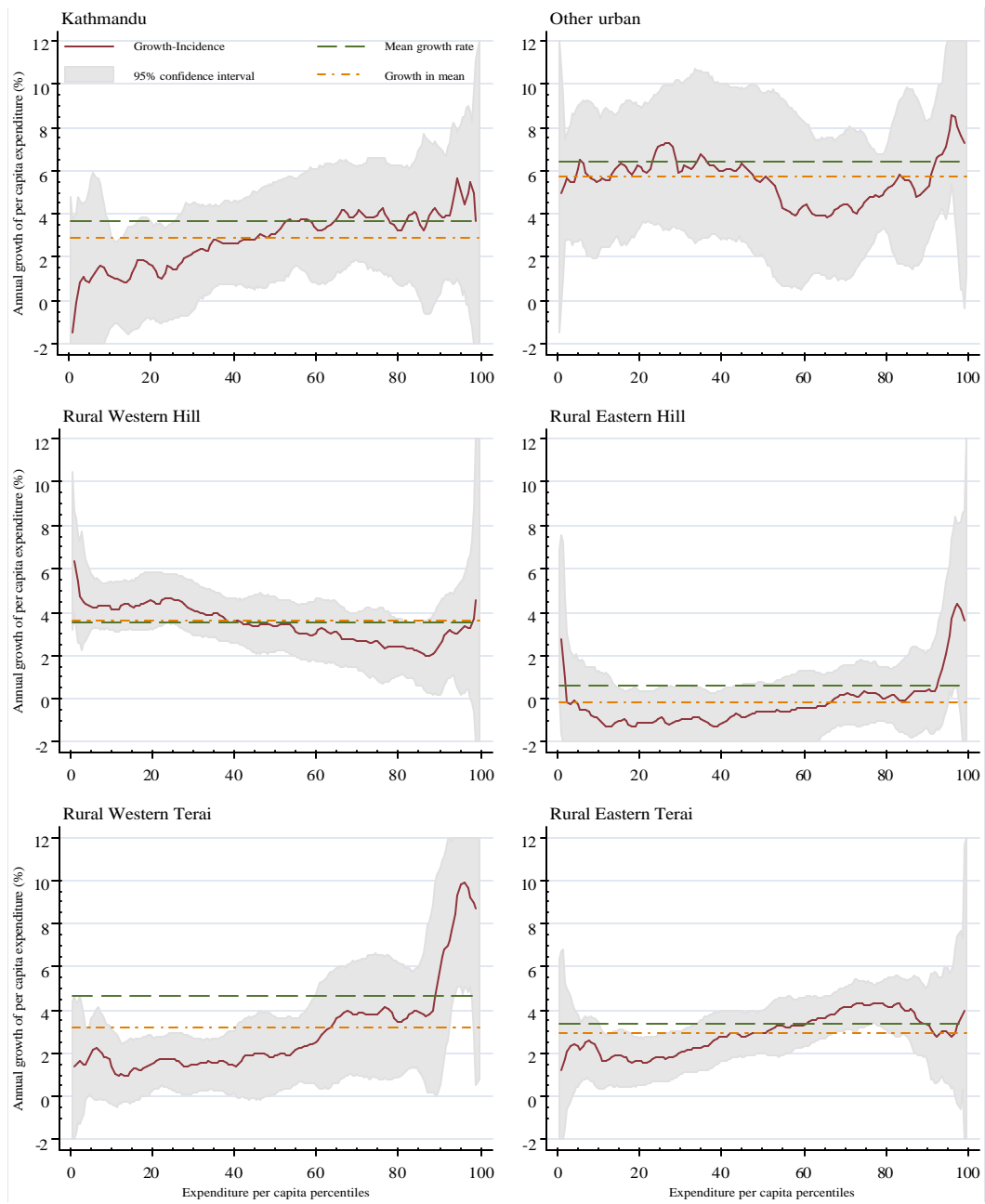
**Table 2.3.2: Nepal 1995-96 and 2003-04: Overall Price Indices**  
(Relative to 1995-96 Rural Eastern Terai and Relative to 1995-96 all-Nepal Average)

	Relative to 1995-96 rural Eastern Terai		Relative to 1995-96 all-Nepal average	
	1995-96	2003-04*	1995-96	2003-04*
	(1)	(2)	(3)	(4)
Kathmandu	143	231	131	212
Other urban	117	165	107	151
Rural Western Hill	116	186	106	171
Rural Eastern Hill	123	169	113	155
Rural Western Terai	90	155	82	142
Rural Eastern Terai	100	128	91	117
All-Nepal	109	161	100	148

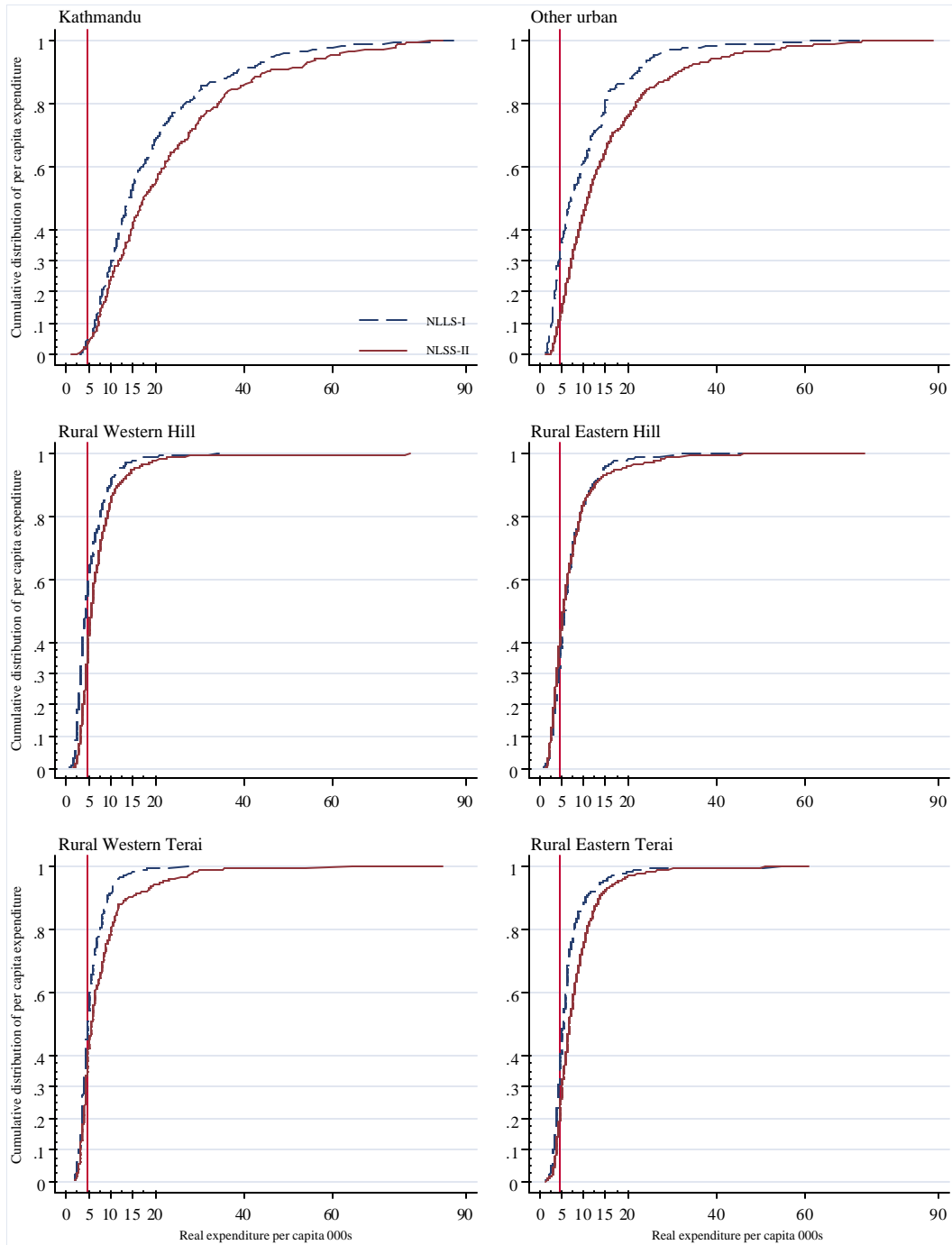
\* These calculations are based on the 1995-96 poverty line

# ANNEX I

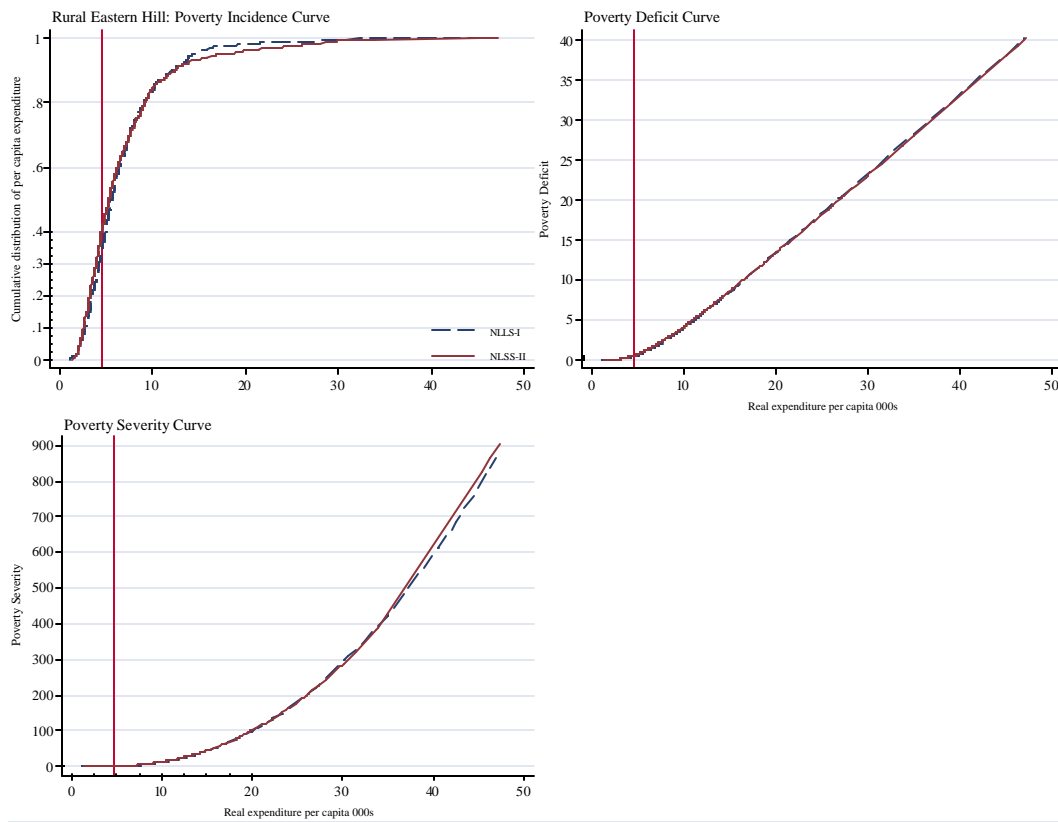
Figure A1.1: Growth Incidence Curves for Six NLSS Regions of Nepal



**Figure A1.2: Cumulative Distributions of Annual Real PCE for Six NLSS Regions of Nepal**



**Figure A1.3: Rural Eastern Terai, Poverty Incidence, Poverty Deficit and Poverty Severity Curves**



**Table A1.1: Nepal 1995-96 and 2003-04, Consumption of Selected Foods  
(grams, per person, per month)**

Food Item Number	Food Item	20-40 PCE		All	
		1995	2003	1995	2003
11	Fine rice	642	1,148	1,852	2,697
12	Coarse rice	5,716	6,499	6,239	6,157
13	Beaten,rice	65	138	209	321
14	Maize	1,863	1,085	2,045	911
15	Maize flour	944	1,476	822	1,073
16	Wheat flour	2,073	1,953	2,235	1,920
17	Millet	1,303	732	1,245	631
21	Black Pulse	50	68	103	127
22	Masoor	179	212	250	267
23	Rahar	25	22	56	71
24	Gram	18	16	41	44
31	Eggs	12	21	63	63
32	Milk	888	1,152	2,065	2,455
34	Baby/powder milk	0	0	1	2
35	Curd	25	46	47	81
41	Ghee	39	35	67	69
42	Vegetable oil	6	22	13	24
43	Mustard oil	193	190	315	273
51	Potatoes	724	1,054	1,096	1,431
52	Onions	123	178	246	299
53	Cauliflowers	90	155	179	268
54	Tomatoes	62	101	130	204
61	Bananas	102	145	186	292
62	Citrus fruits	69	97	141	167
63	Mangoes	181	211	307	365
64	Apples	22	21	29	56
65	Pineapple	2	4	8	11
66	Papaya	59	58	82	107
71	Fish	39	66	62	92
72	Mutton	48	56	99	112
73	Buffalo	64	72	90	101
74	Chicken	33	56	51	102
81	Salt	413	413	478	431
91	Sugar	85	124	217	287
92	Gur	17	20	53	24
93	Sweets	3	6	38	16
101	Tea	7	11	29	29

## ANNEX II

**Table A2.1: Nepal, Food Basket Composition of Poverty Line, NLSS1 and NLSS2**

S.N.	Food Item	Grams per day	
		NLSS-I	NLSS-II
1	Fine rice	26.15	26.40
2	Coarse rice	217.3	219.35
3	Beaten rice	3.472	3.50
4	Maize	58.55	59.10
5	Maize flour	40.07	40.45
6	Wheat flour	91.77	92.64
7	Millet	35.57	35.91
8	Black Pulse	1.903	1.92
9	Masoor	8.172	8.25
10	Rahar	1.02	1.03
11	Gram	0.72	0.73
12	Eggs	0.487	0.49
13	Milk	30.77	31.06
14	Baby milk	0.01	0.01
15	Curd	1.212	1.22
16	Ghee	1.174	1.19
17	Vegetable Oil	0.221	0.22
18	Mustard	7.35	7.42
19	Potatoes	28.88	29.15
20	Onions	5.842	5.90
21	Cauliflower	4.063	4.10
22	Tomatoes	2.41	2.43
23	Bananas	3.704	3.74
24	Citrus fruit	0.846	0.85
25	Mangoes	4.989	5.04
26	Apples	0.374	0.38
27	Pineapple	0.096	0.10
28	Papaya	1.697	1.71
29	Fish	1.717	1.73
30	Mutton	1.64	1.66
31	Buffalo	1.789	1.81
32	Chicken	1.083	1.09
33	Salt	13.31	13.44
34	Sugar	3.547	3.58
35	Gur	0.773	0.78
36	Sweets	1.911	1.93
37	Tea	0.253	0.26

Note: Food composition of the NLSS-II poverty basket is obtained by adjusting the NLSS-I basket for the change in the demographic composition of an average Nepali household.

## Poverty Food Basket and Calculation of Food Quantities and Unit Prices

For each of the 37 food items, the amount of grams purchased annually and produced at home was calculated as the sum of grams purchased and grams produced at home, as reported by the household. The household unit value for each food item was computed as the ratio of the annual value of purchased and home produced food produce to the annual amount of grams consumed.

### *Food quantities*

The conversion of the non metric and volume units of consumed foods into the metric units (grams and liters) was done applying the following rules: 1 *Maund* = 37,324 grams; 1 *Muri* = 72,000 grams. Since these indigenous units are the measures of volume (as opposite to measures of mass) and different food items have different densities (e.g., rice and milk), we incorporated the relevant conversions of volume units, see Table A2.2. Conversion of other volume units was more straightforward, and implemented as following: 1 *Kuruwa* = 1.2 *Manna*; 1 *Pathi* = 8 *Manna*; 1 Litre = 1.76 *Manna*. For conversion of items expressed in units or dozens into grams see Table A2.3.

**Table A2.2: Nepal, Food Quantity Conversion Factors from “Manna” to Grams**

Food item	Food Code	Grams in 1 “manna”
Fine rice	11	452
Coarse rice	12	452
Beaten rice	13	276
Maize	14	395
Maize flour	15	281
Wheat flour	16	281
Millet	17	454
Black Pulse	21	444
Masoor	22	432
Rahar	23	443
Gram	24	458
Milk	32	568
Curd	35	514
Ghee	41	494
Vegetable oil	42	538
Mustard oil	43	538
Potatoes	51	375
Salt	81	500

Source: Agriculture Marketing Information Bulletin (Special Issue - 2004)

**Table A2.3: Nepal, Food Quantity Conversion from Units to Grams**

<b>Unit</b>	<b>Gram</b>
Eggs	60
Bananas	127
Pineapples and papayas	500
Citrus and Apples	175
Mangoes	400

Source: Central Bureau of Statistics estimates

### *Food prices*

The region and time period-specific prices of each food item were calculated as the average “democratic” unit values taken over the entire population of that region in 1995-96 and in 2003-04. To obtain total quantities, quantities of purchased, home-produced and received-in-kind food were added up for each household and food item. Computed quantities and prices were checked visually for the presence of outliers, which were subsequently removed from the analysis. In addition, a household-level unit value was considered to be an outlier if it was either less than 0.1 times or greater than 10 times the median unit value of a particular food item.

Prices of foods representing the significant shares of the household’s expenditure are presented in Table A2.4. Table A2.5 present changes in unit prices.

**Table A2.4: Nepal 1995-96 and 2003-04**  
**NLSS-I and NLSS-II-based Food Unit Prices and Quantities Consumed**

	Mean Unit Prices (Nominal NRS per kg)											
	NLSS-I						NLSS-II					
	KTM	OU	RWH	REH	RWT	RET	KTM	OU	RWH	REH	RWT	RET
Coarse rice	16	14	16	17	11	12	27	17	21	21	14	15
Wheat flour	11	10	12	12	8	9	18	15	18	16	13	13
Maize	11	8	8	9	6	7	20	12	12	12	10	10
Milk	15	14	13	13	11	11	22	21	22	19	18	19
Maize flour	13	9	10	11	7	8	19	14	16	15	12	12
Potatoes	12	10	9	9	7	8	11	11	12	11	9	9
Fine rice	18	16	17	17	13	14	25	22	24	23	18	17
Salt	6	5	7	7	4	4	9	9	10	10	7	6
Mangoes	19	11	10	13	11	9	31	22	23	21	18	14
Masoor	30	30	26	30	23	27	42	39	39	39	34	37
Mustard oil	72	68	71	75	64	67	98	98	108	99	97	99
Onions	12	10	12	13	8	8	19	17	18	19	14	15
Cauliflowers	15	9	12	13	7	7	18	13	16	15	11	10
Bananas	10	9	10	8	8	6	14	12	18	11	15	10

\* Gram per person per month;

Note: KTM- Katmandu; OU- “Other urban areas”; RWH – “Rural Western Hill”; REH – “Rural Eastern Hill”; RWT – “Rural Western Terai”; RET - “Rural Eastern Terai”

**Table A2.5: Nepal, Changes between 1995-96 and 2003-04 in NLSS-I and NLSS-II-based Food Unit Prices and Quantities Consumed**

	Change in Average Expenditure Share (%)	Change in Average Quantity Consumed (%)	Change in Nominal Unit Price (%)						All Nepal
			KTM	OU	RWH	REH	RWT	RET	
Coarse rice	-9%	4%	69	23	34	25	29	22	29
Wheat flour	-26%	-15%	67	56	51	33	61	48	47
Maize	-43%	-36%	90	50	49	37	54	54	53
Milk	15%	28%	42	49	61	48	61	66	58
Maize flour	39%	56%	42	47	54	42	55	47	49
Potatoes	28%	41%	-7	2	45	13	27	11	20
Fine rice	64%	85%	39	38	40	35	36	24	34
Salt	-7%	7%	47	77	39	49	92	50	51
Mangoes	-2%	9%	62	91	127	58	63	53	77
Masoor	-6%	5%	37	30	50	33	49	39	41
Mustard oil	-6%	6%	36	44	52	33	52	48	45
Onions	14%	29%	53	68	55	45	69	74	58
Cauliflowers	41%	59%	23	38	36	13	49	45	32
Bananas	34%	52%	43	38	85	37	78	61	61