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Maharjan, Keshav Lall and Joshi, Niraj Prakash
Graduate School for International Development and Cooperation, Hiroshima University

July 2007

Online at http://mpra.ub.uni-muenchen.de/35384/
MPRA Paper No. 35384, posted 13. December 2011 / 08:57

A Poverty Analysis in Baitadi District, Rural Far Western Hills of Nepal: An Inequality Decomposition Analysis

Keshav L. MAHARJAN
Professor, Graduate School of International Development and Cooperation
Hiroshima University, Hiroshima, Japan 739-8529
mkeshav@hiroshima-u.ac.jp

Niraj P. JOSHI
Graduate Student, Graduate School of International Development and Cooperation
Hiroshima University, Hiroshima, Japan 739-8529
nirajpjoshi@hiroshima-u.ac.jp

Abstract

Occupational caste is deprived in terms of education, and landholding. Due to this laboring and agriculture (specially small animals like goats and poultry) remain the prominent source of income for them. Average income from salaried job is the highest followed by remittance and that from laboring is the lowest. This led to the high concentration of Occupational caste under third and fourth income quartile (poorer). A share of income from agriculture in total income is the highest and the share from laboring is the lowest. Relative concentration coefficient (RCC-c_i or g_i) shows salaried job has both the highest income disequalizing effect (c_i = 1.56 or g_i = 1.49) as well as the highest factor inequality weight (w_ic_i) followed by agriculture. In case of Melauli, however, salaried job followed by remittance has the highest income disequalizing effect. Negative values of Relative Concentration Coefficient and factor inequality weight for laboring indicate that income from it has the income equalizing effect. Thus, agricultural promotion in rural areas based on labor demand increasing policies with proper market arrangement for the agricultural produce will be helpful to reduce the income inequality. In addition, regulation regarding working hour and minimal wage rate should be strictly enforced for the welfare of those involved in laboring, which is also the poorest.

Introduction

Poverty remains deep and widespread in developing countries, and even rampant in some cases. Due to this high prevalence of poverty and the pronounced deprivation in developing countries, issues of poverty and inequality are in the forefront of the global agenda (Chuhan, 2006). Nepal being no exception is getting huge amount of foreign aid to meet the goal of poverty alleviation since the start of its planned development effort in 1956 in the name of infrastructure development. Since Fifth five year development plan (1975), poverty reduction programs are getting top priorities and are absorbing the significant amount of foreign aid as a percentage of Gross National Product (Regmi, 1997). However, the achievements are far below the expected. Even poverty increased at an annual rate of more than three percent that resulted into the number of absolute poor almost doubled in the year between 1977 and 1996 (SAAPE, 2003). Thus, the country remains one of the poorest countries in the world, i.e., 9th poorest country in the world and the poorest outside Africa in term of per capita national income (Heleniak, 2002).

Several analyses on poverty made since 1977 confirm that an income-based poverty is widespread in the country (Prennushi, 1999). Poverty in the country exists in a wide variation depending on the rural-urban divide, geography, gender and caste/ethnic groups (UNDP, 2005). This makes poverty a complex, and diverse, which should be understood thoroughly to achieve the goal of poverty reduction (Chhetry, 2001). Also poverty incidence, gap and severity analysis of the country suggest that poverty is more rampant, deeper and severe in rural areas and much worse in the Mid Western and Far Western hills/mountains (CBS, 2005a). Thus, the rural poverty remains the core issue of poverty in Nepal.

The recent study on poverty of the country, however, revealed the considerable decline in poverty from 42% in the year 1995/96 to 30.8% in the year 2003/04. But at the same time the increasing disparities between the people has also revealed, which is reflected by the increase in value of gini coefficient for the aggregate consumption level from 0.34 in 1995/96 to 0.41 in 2003/04 (CBS, 2005a). As any successful poverty reduction program should result on favorable increase in income as well as favorable changes in income inequality, this unfavorable change in

inequality, therefore, raises question on the success of poverty reduction programs of the country (Nisssanke and Thorbecke, 2005).

Such increasing disparity has serious ramification to maintain a sustainable economic growth as well as create threats to social stability. The widespread increase in inequality has been detrimental to the objective of poverty reduction. A large rise in inequality stifles growth and thus, poverty at any given growth rate of GDP falls less rapidly in more unequal distribution than in a more equitable one (Cornia, 2004). Therefore, a better understanding of root causes of income disparity became the most important issue to tackle with the rural poverty (Zhou and Wan, 2003). This led to increasing interest on the sources of income inequality in the developing world. Thus, several empirical studies using various techniques were reported that gave the clear insight on the contribution of different source of income to total income inequality (Adam and He, 1995). Besides, the decomposition of inequality provides insightful information useful for policy makers in designing and implementing inequality reducing policies vis-à-vis poverty reduction. Dynamics of the poverty with the change in income sources can also be reflected through the decomposition of income inequality (Wan, 2001).

This study, therefore, tries to analyze poverty based on different socio-economic variables. In addition, this study seeks to pinpoint the source of inequality through decomposition of inequality indices in poverty ridden rural Far Western Hills of Nepal. Thus, this study may have some implications for further research to deal with the serious issue of rural poverty and income disparity in the country.

Methodology

Study site

Baitadi district from the rural Far Western Hills is selected for the study. This is rugged and remote district surrounded by the Darchula in the north, Dadheldhura in the south, Bajhang and Doti in east, and Uttar Pradesh-India in the West. Although only around 18% land is cultivialble due to the rugged terrain, about 80% of household is adopting agriculture as the main occupation. Service holders rank second and remittance from people working in India also do have vital role in the economy of the district (PDDP, 1999). Being far away from the capital and other major cities of the country it has not received due share of attention in the development process and governance until very recently (Maharjan, 2003). This limits the availability of modern amenities like motorable road, education, health care service, credit service, safe drinking water, electricity, and telecommunication to vast majority of its population. With this, the district falls under the category of the poorest districts having Human Development Index value of less than 0.4 (UNDP, 2004).

Two Village Development Committees (VDCs) namely Patan and Melauli were selected for the study. Patan represents the ordinary subsistence VDC in national context having connection with motorable road. In contrast to this Melaui is relatively remote not having connection to the motorable road and is accessible only through foot and mule trail that hinders the development opportunities for the locales with absence of reliable market for essential inputs as well as output.

Data collection

Based on the general survey of the all household on both VDCs (Maharjan, 2003) the households were stratified based on caste/ethnicity giving due consideration to their asset holding, specially landholding. More or less similar proportions of samples were selected randomly from each stratum. Total of 116 households, 60 households from Patan and 56 households from Melauli were surveyed in the year 2001 using semi-structured questionnaire to collect household level data for analysis. Questionnaires were designed to collect information on various socio-economic aspects focused more on income level and various sources of income.

Data Analysis

The concept of relative poverty is taken into consideration for poverty analysis in the study. This concept views income disparities as an indicator of poverty regardless of set poverty line. The concept poverty considers the state of the income distribution of all the sample population whether they are below or above the poverty line. Whereas, the absolute poverty totally ignores

the state of the income distribution above the poverty line and the poor receive all the weight for analysis (Thorbecke, 2004). Besides when we adopt the concept of relative poverty, inequality is also relevant to the measurement of poverty *per se* (Bourguignon 2004). Here, households are divided into four categories-quartiles based on the average per capita annual income.

Accurate measurements of income generally have to encounter series of problems, thus, lacks a single appropriate notion of income for poverty analysis. Therefore, fairly comprehensive concept of income is used in this study, which include income received in cash as well as in kind (Adam and He, 1995). Total income is divided into five main sources of income namely, agriculture, salaried job, business, laboring and remittance. Agriculture includes poultry, animal husbandry and milking, and crop farming. Agriculture being subsistence in nature most of the inputs are self-supplied. Labor needs are met by the mutual sharing of household members between households, seeds and manures are most often self supplied. Therefore, no money value was imputed for these items in order to prevent the double counting. Thus, income from agriculture includes gross income obtained in cash as well as in kind, i.e., both main crops and crop by-products, which are translated into monetary value using average price received by the farmers. Income from salaried job includes income obtained from the jobs like government and non-government services, teaching, army, and police. These all are the regular source of income. Business income includes the net income from shops, mills, cottage industries, and contracting. Income from daily wage laboring and occupational work likes blacksmithing, masonry, carpentry, tailoring and goldsmithing were categorized under labor income. Most of the migrant works in India are involved in menial jobs, such as, laboring, watchman, bearer, cook/helper in restaurant and household work. Very few are also involved in clerical work. Therefore, remittance income mainly represents the income earned outside the country regardless of their nature of job.

Source of income inequality: Decomposition of inequality indices

Several inequality measures have been proposed in the literature such as Thiel's index, coefficient of variation, Gini coefficient/Lorenz curve and Atkinson index among others. Therefore, selection of inequality measure remains vital question for any decomposition exercises. Such measures to be applicable for decomposition of income inequality must fulfill some desirable properties, namely; Dalton transfer principle, Anonymity principle, Relative income principle, Population principle, and Decomposability (Adams and He, 1995).

Among these several measures of inequality that meet the above five principles, Adam and He (1995) recommended the coefficient of variation and Gini coefficient as the best inequality measures for income inequality decomposition analysis. Inapplicability of other measures in the case when sources of income are overlapping, which is common for the study, where most of the survey households receive income from several different sources, justifies the use of these two inequality measures for decomposition analysis. In addition, Wan (2001) based on intensive literature review proposed Gini coefficient to be the best measure for inequality decomposition.

I. Decomposition analysis based on coefficient of variation

The source decomposition based on the coefficient of variation is adopted from one developed by Adams and He (1995) based on Shorrocks (1982) who translated use of variance into use of coefficient of variation. This was done mainly due to inability of variance to meet the relative income principle. Therefore, this measure is used by large number of researcher for income inequality decomposition analysis (Shorrocks, 1982).

At the first step, relative concentration coefficient of i^{th} source of income (c_i) should be calculated using equation 1. Value of relative concentration coefficient (c_i) determines whether the i^{th} source of income is inequality increasing or decreasing. An income source can be defined as inequality increasing or decreasing based on whether additional increment in i^{th} source of income, which are distributed in the same manner as the original units, lead to an increase or decrease in overall income inequality. If the value of c_i is greater than unity, the source of income is inequality increasing and if it is less than unity, the source of income is inequality decreasing (Adams and He, 1995). Similarly, i^{th} source of income provides a disequalizing effect if $c_i > 0$ and an equalizing effect if $c_i < 0$ (Litchfield, 1999).

$$c_i = \rho_{i,y^*} (\sigma_i / \mu_i) / (\sigma / \mu) \qquad \text{---------- (1)}$$

Where, c_i is the relative concentration coefficient of i^{th} source in overall inequality; $\rho_{i,y}$ is the correlation coefficient between the i^{th} source and total income, σ_i and σ are standard deviation of i^{th} source and total income, and μ_i, *and* μ are the mean income from the i^{th} source and total income, respectively.

In the second step, proportionate share of income from i^{th} source to total income (w_i) should be calculated (equation 2)

$$w_i = \mu_i / \mu \quad \text{---------- (2)}$$

Here, intuitively $\sum w_i = 1$.

Now, $w_i c_i$ gives the proportion of total inequality contributed by i^{th} income source (equation 3). Here, higher the value of $w_i c_i$, higher will be the contribution of i^{th} income source to income inequality.

$$w_i c_i = (\mu_i / \mu) * \rho_{i,y} (\sigma_i / \mu_i) / (\sigma / \mu) = \rho_{i,y} (\sigma_i / \sigma) \quad \text{---------- (3)}$$

Here, summation of $w_i c_i$ will be equal to unity.

II. Decomposition analysis based on Gini coefficient

Gini coefficient is the second measure that satisfies the earlier four principles but fails to satisfy the decomposability principle (Cowell 1975 as cited in Wan, 2001). However, Kakwani (1977) showed the possibility to decompose the Gini Coefficient by income source. Shorrocks (1982) also worked out for decomposition of inequality using Gini coefficient. Later on based on equation proposed by Kakwani (1977), Wan (2001), and Adam and He (1995) applied the Gini coefficient to decompose income inequality arisen from source of income. Moreover, Gini coefficient is considered as the most popular and the oldest inequality measure.

In this case also, similar to the decomposition analysis based to coefficient of variation, relative concentration coefficient of i^{th} source of income (g_i) is calculated following equation 4, as the first step. It can be interpreted same as the value of c_i in equation 1.

$$g_i = R_i G_i / G \quad \text{---------- (4)}$$

Here, *Gi* and *G* is the Gini coefficient of i^{th} income source and total income, respectively. R_i is the correlation ratio, which is expressed as follows (equation 5)

$$R_i = cov(y_i, r) / cov(y_i, r_i) = \rho_{i,r} / \rho_{i,ri} \quad \text{---------- (5)}$$

Where, *cov* (y_i, r) is covariance between income from i^{th} source and rank of total income, i.e., $\rho_{i\,r} * \sigma_i * \sigma_r$; $\rho_{i\,r}$ *is* correlation coefficient between income from i^{th} source and rank of total income, and σ_i and σ_r are the standard deviation of income from i^{th} source and rank of total income, respectively. Similarly, *cov* (y_i, r_i) is covariance between income from i^{th} source and rank of i^{th} income source, i.e., $\rho_{i,ri} * \sigma_i * \sigma_{ri}$; $\rho_{i,ri}$ is correlation coefficient between i^{th} income source and rank of i^{th} income source, and σ_i and σ_{ri} are the standard deviation of income from i^{th} source and rank of i^{th} income source, respectively.

Proportionate share of i^{th} income source to total income (w_i) should be calculated in the second step, and the product of g_i and w_i ($w_i g_i$) gives the proportion of inequality contributed by i^{th} income source to the total inequality.

$$\sum w_i g_i = \sum (\mu_i / \mu) * (R_i G_i / G) = 1 \quad \text{---------- (6)}$$

Result and discussions

Socioeconomic characteristics

Female-headed household is higher in relatively remote rural areas of the country. It is higher in case of Melauli comprising 19.6% of total household compared to 11.7% in Patan (Table 1). The proportion in overall (15.5%) is higher compared to the regional figure of 7.4% as in the case of Far western development region and 10.9% in case of Hill (CBS, 2002). The district located adjacent to India and easy access to the Indian labor market as well as very limited employment opportunity in the village at the same time are attracting people of these areas in

Indian labor market resulting into higher incidence of female headed household taking care of farm and family. More than 70% of migrants of these two VDCs are migrated to India. Most of them are engaged in menial work with the very few engaged in clerical work (Maharjan, 2003).

Chhetri is the most dominating caste group in both VDCs comprising 60.4% of the total households. Bahun household (41.7%) follows Chhetri immediately in Patan and proportion of Occupational caste household is only 8.3%. However, in Melauli the proportion of Bahun and Occupational caste households are equal, i.e., 14.3% each. Situation of illiteracy is poor in Melauli where, more than 40% of household heads are illiterate in contrast to only 13.3% in Patan. In case of school education (attended secondary education) and college education, the proportion is higher in Patan. Overall, the highest proportion (33.6%) of household heads is having school education, followed by illiterate, literate-household head that attended some informal education and primary education, school education and college education, respectively.

Agriculture is the most dominating occupation in the district. Almost 60% household heads are engaged in agriculture. The proportion is relatively lower in Melauli. The higher concentration of small landholding households (37.5%) with insufficient food production in Melauli resulted into higher proportion (19.7%) of household head involved in daily laboring to meet the basic needs of the household. This is also a reason for relatively lower proportion of household head engaged in agriculture. Involvement of individual in salaried job is related with the attainment of secondary and college education. Therefore, higher proportion of household heads in Patan (30%) are involved in salaried job compared to Melauli (14.3%).

Table 1. Socio economic characteristics of households

Variables	Patan	Melauli	Total
Household head			
Male	53 (88.3)	45 (80.4)	98 (84.5)
Female	7 (11.7)	11 (19.6)	18 (15.5)
Caste/ethnicity			
Bahun	25 (41.7)	8 (14.3)	33 (28.4)
Chhetri	30 (50.0)	40 (71.4)	70 (60.4)
Occupational caste	5 (8.3)	8 (14.3)	13 (11.2)
Education of household head			
Illiterate	8 (13.3)	23 (41.1)	31 (26.7)
Literate	13 (21.7)	17 (30.4)	30 (25.9)
School education	28 (46.7)	11 (19.6)	39 (33.6)
College education	11 (18.3)	5 (8.9)	16 (13.8)
Occupation of household head			
Agriculture	37 (61.7)	32 (57.1)	69 (59.5)
Salaried job	18 (30.0)	8 (14.3)	26 (22.4)
Business	2 (3.3)	5 (8.9)	7 (6.0)
Laboring	3 (5.0)	11 (19.7)	14 (12.1)
Family size category -Adult equivalent*			
Small (1-5 Members)	20 (33.3)	23 (41.1)	43 (37.1)
Medium (>5-10 Members)	31 (51.7)	27 (48.2)	58 (50.0)
Large (>10 Members)	9 (15.0)	6 (10.7)	15 (12.9)
Average Family size	6.3	5.7	6.0
Landholding			
Small (Less than 0.5ha)	12 (20.0)	21 (37.5)	33 (28.5)
Medium (0.5-2ha)	47 (78.3)	34 (60.7)	81 (69.8)
Large (>2ha)	1 (1.7)	1 (1.8)	2 (1.7)
Average land holding (ha.)	0.87	0.73	0.8
Overall	60 (100)	56 (100)	116 (100)

Source: Field Survey, 2001

Note: Figures in parentheses indicate percentage *Adult equivalent is aggregate measure of family size that standardize consumption unit within the household taking account age and sex of household members

Fifty percent of household comes under the medium family sized household having more than 5 to 10 members followed by small (37.1%) and large (12.9%) family sized household. Average family size is higher in Patan compared to Melauli, with the overall average of 6.0 adult equivalent. In case of landholding also, household with medium size holding constitutes around

70% of the household, the highest proportion. Only around 2% of households fall under the large holding category having more than 2ha and rest, around 28% fall under small holding category with holding less than 0.5ha. A proportion of small holding household in Melauli is almost double compared to that of Patan (Table 1).

Source of income

Agriculture is accommodating the highest proportion of economically active population. It constitutes 70% of total economically active population. Involvement of almost 92% of economically active female in agriculture reflects the feminine nature of agriculture in rural Nepal (Table 2). Whereas, involvement of male in salaried job, business, laboring and migration (remittance) is high compared to female. Higher proportion of Bahun and Chhetri are engaged in agricultural activity, salaried job and business. The proportion is low in case of Occupational caste due to low level of asset holding mainly land and education. Therefore, laboring and remittance are the sectors where involvement of Occupational caste is high. Distribution of occupation based on family size category does not differ remarkably, except for the remittance from which around 12%, of economically active population from large family size category is deriving income.

Table 2. Relationship of occupation with various socioeconomic variables

Variables	Occupation					Total	Emp rate*
	Agriculture	Salaried job	Business	Laboring	Remittance		
Gender							
Male	99 (48.8)	48 (23.6)	16 (7.9)	17 (8.4)	23 (11.3)	203 (100)	75.2
Female	183 (91.5)	11 (5.5)	1 (0.5)	2 (1.0)	3 (1.5)	200 (100)	80.0
Ethnicity							
Bahun	80 (69.6)	23 (20.0)	6 (5.2)	3 (2.6)	3 (2.6)	115 (100)	69.7
Chhetri	177 (72.0)	35 (14.2)	10 (4.1)	7 (2.8)	17 (6.9)	246 (100)	82.0
Occupational caste	25 (59.5)	1 (2.4)	1 (2.4)	9 (21.4)	6 (14.3)	42 (100)	76.4
Family size category							
Small	70 (70.0)	15 (15.0)	5 (5.0)	5 (5.0)	5 (5.0)	100 (100)	75.8
Medium	160 (70.8)	34 (15.1)	8 (3.5)	12 (5.3)	12 (5.3)	226 (100)	79.6
Large	52 (67.5)	10 (13.0)	4 (5.2)	2 (2.6)	9 (11.7)	77 (100)	74.0
Education category							
Illiterate	151 (91.0)	-	2 (1.2)	9 (5.4)	4 (2.4)	166 (100)	94.9
Literate	59 (76.6)	1 (1.3)	4 (5.2)	10 (13.0)	3 (3.9)	77 (100)	100.0
School education	42 (58.3)	20 (27.8)	5 (6.9)	-	5 (6.9)	72 (100)	60.0
College education	30 (34.1)	38 (43.2)	6 (6.8)	-	14 (15.9)	88 (100)	59.5
Landholding category							
Small	69 (69.0)	10 (10.0)	6 (6.0)	9 (9.0)	6 (6.0)	100 (100)	82.6
Medium	207 (69.9)	48 (16.2)	11 (3.7)	10 (3.4)	20 (6.8)	296 (100)	76.7
Large	6 (85.7)	1 (14.3)	-	-	-	7 (100)	53.8
Total	282 (70.0)	59 (14.6)	17 (4.2)	19 (4.7)	26 (6.5)	403 (100)	77.5

Source: Field Survey, 2001

Note: Figures in parentheses indicate percentage. *Emp rate is an employment rate (economically active population/economically active age group, i.e., age between 15-64)

As much as 91% illiterate economically active populations are engaged in agriculture. The figure goes on decreasing as it moves from illiterate, literate, school education and college education, respectively. Only 34.1% of individual attained college education is engaged in agriculture. Most of them, 43.2%, are involved in salaried job and 15.9% in deriving income from remittance. Regarding landholding category, the highest proportion of individual of large landholding category is involved in agriculture followed by salaried job. Among small holders salaried job, laboring, and business and remittance, respectively follow agriculture.

Pattern of involvement in agriculture and business is almost similar in Patan and Melauli (Separate tables both VDCs can be requested from authors). However, proportion of individuals involved in salaried job is significantly higher in Patan due to its relative access to infrastructure like school, transportation, and communication, which also facilitates them to choose salaried job as income source. On the other hand, proportion of individual migrated to remit money back home and laboring is higher in Melauli. The most accessible destination for these migrants is urban areas in India, to involve themselves in menial job, such as, guardsmen, bearers, cooks,

and servant besides laboring, with very few exception of them being involved in clerical work, such as, accountant. Overall employment rate is 77.5%. The employment rate is slightly higher in Patan, which is mainly due to relatively higher availability of employment opportunity, specially higher demand for labor and easy access to infrastructure like transportation and communication that ease the access to salaried job.

The employment rate is higher for female individuals. It is mainly due to the higher proportion of female individuals involved in agriculture. However, agriculture in these areas is subsistence in nature with the very low degree of commercialization, which also means that agriculture is highly seasonal in nature. Thus, nearly all the individuals said to be involved in agriculture are the sufferer of underemployment. In addition, control over on the income from agriculture is most often restricted to male individual of household. Therefore, higher employment rate of female does not mean their higher economic strength.

Employment rate is lower in the case of Bahun compared to Chhetri and Occupational caste. This is mainly due to the reluctance to involve themselves in low-grade work like laboring, both within and outside the village due to their higher caste hierarchy in community as well as caste barrier such are they are restricted to go for like poultry farming and swine raising. In addition, higher education attainment among the Bahun individuals even resulted into their reduced interest on crop farming, livestock raising and laboring, rather engaged themselves on searching for salaried job. A higher asset holding make it feasible for them, mostly educated youth to sustain even without involving themselves on income generating activities like agriculture and laboring. The similar type of negative association between attainment of higher education and involvement in agriculture and laboring has also been reported in Joshi and Maharjan (2007), and Adhikari (2000).

No remarkable difference in employment rate between the different family size category individual is reported. In case of education category of individuals, employment rate is highest for literate and illiterate household. Similarly, it is the highest among the small landholding category.

Income from different sources

Salaried job is providing the highest average income followed by remittance, business, agriculture and laboring, respectively (Table 3). Average income from salaried job, business, and laboring do not vary remarkably between two locations. However, average income from agriculture in Patan is twice as high as that in Melauli. The higher production surplus attributed by the higher yield in Patan is helping to derive higher income from agriculture in Patan. Mainly availability of surface water irrigation accompanied by the relatively higher use of chemical fertilizer and pesticide resulted into higher crop yield in Patan (Maharjan, 2003). In the other hand, average income received, as remittance in Melauli is twice as high as that of Patan.

Table 3. Average income from different sources

	Source of income	Agriculture	Salaried job	Business	Laboring	Remittance	Total
Melauli	Average income	7627	37133	21833	9829	45181	14315
	Standard deviation	12121	23149	7934	5418	31126	44493
	Frequency	128	18	6	14	15	181
	Min	618	12000	12000	4000	1800	4523
	Max	60000	81600	48000	24000	180000	277200
Patan	Average income	14840	36956	18909	9600	23000	19412
	Standard deviation	37703	34095	15657	3374	12245	50961
	Frequency	154	41	11	5	11	222
	Min	4060	10000	6000	5000	4800	4060
	Max	220760	144000	114000	21000	57600	260760
Overall	Average income	11566	37010	19941	9768	33240	17123
	Standard deviation	30117	29519	29196	5828	38827	49434
	Frequency	282	59	17	19	28	403
	Min	618	10000	6000	4000	1800	4060
	Max	220760	144000	114000	24000	180000	277200

Source: Field Survey, 2001

In the study sites, it lacks a well-defined working hour, as well as enforcement of minimum wage rate for individual involved both in agriculture as agricultural labor and/or daily wage

labor. In most of the cases, these laborers are paid in kinds. All these arrangements of labor market in rural areas are most often viewed as the exploitation of the laboring class (Chandra, 2006; Sheddon and Adhikari, 2003; and Saul and Rai, 1998). This is the reason why average income earned from laboring is the lowest. Access to other income generating activities for individuals from such class are often hindered by the low level of asset holding, mainly, education, landholding, and capital (Maharjan, 2003). Besides these labors are also characterized by the low labor productivity (IF, 2003). Therefore, households with the laboring as the main source of income constitute the higher proportion of poor (Table 4) and food insecure households (Joshi and Maharjan, 2007; Khattri-Chhetri and Maharjan, 2006; and IF, 2003). These facts necessitate the reform in labor market together with its strict enforcement in order to achieve national goal of poverty reduction (IF, 2003).

Distribution of socioeconomic variables of households by income quartiles

The distribution of household by socioeconomic characteristics shows that the highest proportion of female-headed household almost 39% falling under the fourth quartile (Table 4). Similarly, the highest proportion of households with illiterate household head, household head engaged in laboring, and small landholding falls under the fourth quartile of household, i.e., the poorest household. Almost 77% of Occupational caste household falls under third and fourth quartile with the average per capita income less than the poverty line established by CBS (2005b). Distributions of socioeconomic variables of households by income quartile for both VDCs show more or less similar pattern. (Separate tables of both VDCs can be requested from authors.)

Table 4. Distribution of households by various socioeconomic characteristics and income quartile

Variables	First Quartile (Richest)	Second Quartile	Third Quartile	Fourth Quartile (Poorest)	Total
Gender					
Male	27 (27.6)	25 (25.5)	24 (24.5)	22 (22.4)	98 (100)
Female	2 (11.1)	4 (22.2)	5 (27.8)	7 (38.9)	18 (100)
Caste/ethnicity					
Bahun	9 (27.3)	8 (24.2)	7 (21.2)	9 (27.3)	33 (100)
Chhetri	18 (25.7)	20 (28.6)	15 (21.4)	17 (24.3)	70 (100)
Occupational caste	2 (15.4)	1 (7.7)	7 (53.8)	3 (23.1)	13 (100)
Family size category					
Small	14 (32.6)	11 (25.6)	9 (20.9)	9 (20.9)	43 (100)
Medium	13 (22.4)	17 (29.3)	11 (19.0)	17 (29.3)	58 (100)
Large	2 (13.3)	1 (6.7)	9 (60.0)	3 (20.0)	15 (100)
Education category					
Illiterate	4 (12.9)	4 (12.9)	10 (32.3)	13 (41.9)	31 (100)
Literate	4 (13.3)	10 (33.4)	7 (23.3)	9 (30.0)	30 (100)
School	14 (35.9)	10 (25.6)	9 (23.1)	6 (15.4)	39 (100)
College	7 (43.8)	5 (31.2)	3 (18.8)	1 (6.2)	16 (100)
Occupation of household head					
Agriculture	11 (16.0)	16 (23.2)	19 (27.5)	23 (33.3)	69 (100)
Salaried job	15 (57.7)	8 (30.8)	3 (11.5)	-	26 (100)
Business	3 (42.9)	3 (42.9)	1 (14.2)	-	7 (100)
Laboring	-	2 (14.4)	6 (42.8)	6 (42.8)	14 (100)
Land holding category					
Small	8 (24.2)	7 (21.2)	8 (24.2)	10 (30.4)	33 (100)
Medium	21 (25.9)	20 (24.7)	21 (25.9)	19 (23.5)	81 (100)
Large	-	2 (100)	-	-	2 (100)

Source: Field Survey, 2001
Note in figures in parentheses indicate percentage

Share of income from different sources

Calculation of per capita total income from different sources for a given household shows that the share of agricultural income goes on increasing from first quartile (richest) to the fourth quartile (poorest). The pattern is similar for both locations (Table 5). However, the share of agriculture for first quartile in Melauli is significantly low, i.e., 21.5% compared to 51.6% in

Patan. The significantly high share of remittance in case of Melauli, i.e., 30.6% compared to 1.7% in Patan, for the household under the first quartile resulted into such a low share of agricultural income.

Share of income from salaried job, on the other hand, goes on declining from the household under first income quartile to the household under fourth income quartile on both locations. Share of business income shows some mixed results. In case of Melauli, the share is the highest for the household under second income quartile but in case of Patan, the share is the highest for household under third income quartile. Overall, share of income from business as well as remittance is the highest for household under second income quartile (Table 5).

Table 5. Share of the different income sources by income quartile

Income quartile		Source of income					Total
		Agriculture	Salaried job	Business	Laboring	Remittance	
Melauli	First (Richest)	3319 (21.5)	6349 (41.2)	1032 (6.7)	-	4732 (30.6)	15432 (100)
	Second	3575 (46.6)	1006 (13.1)	940 (12.2)	651 (8.5)	1503 (19.6)	7675 (100)
	Third	3230 (74.9)	369 (8.6)	-	684 (15.9)	30 (0.7)	4313 (100)
	Fourth (Poorest)	1550 (85.3)	-	-	267 (14.7)	-	1817 (100)
	Overall	2919 (39.9)	1931 (26.4)	475 (6.5)	418 (5.7)	1566 (21.4)	7309 (100)
Patan	First (Richest)	10351 (51.6)	8834 (44.0)	552 (2.7)	-	333 (1.7)	20070 (100)
	Second	6702 (54.1)	4248 (34.3)	229 (1.9)	-	1200 (9.7)	12379 (100)
	Third	3524 (54.2)	1479 (22.8)	422 (6.5)	333 (5.1)	738 (11.4)	6496 (100)
	Fourth (Poorest)	2083 (81.8)	200 (7.8)	107 (4.2)	130 (5.1)	27 (1.1)	2547 (100)
	Overall	5665 (54.6)	3690 (35.6)	328 (3.2)	116 (1.1)	574 (5.5)	10373 (100)
Overall	First (Richest)	8102 (44.4)	7983 (43.7)	784 (4.3)	-	1379 (7.6)	18249 (100)
	Second	4057 (40.3)	2604 (25.9)	584 (5.8)	388 (3.9)	2424 (24.1)	10057 (100)
	Third	3603 (67.8)	776 (14.6)	224 (4.2)	306 (5.8)	403 (7.6)	5313 (100)
	Fourth (Poorest)	1595 (81.4)	-	38 (1.9)	319 (16.3)	7 (0.4)	1959 (100)
	Overall	4339 (48.8)	2841 (31.9)	399 (4.5)	262 (2.9)	1053 (11.9)	8894 (100)

Source: Field Survey, 2001
Note in figures in parentheses indicate percentage

If we consider the poverty line for Rural Western Hill (Nepali Rupees 8901) set by CBS (2005b), to calculate absolute poverty, around 60% of total households are under poverty line. The incidence of poverty is almost 50% in Patan and 72% in Melauli. This signifies that poverty is more prominent in relatively remote rural areas.

Relationship between income source and total income

Correlation between the different sources of income to the total shows that salaried job and remittance in case of Melauli, and agriculture and salaried job in case of Patan are important sources of income contributing significantly to total income. In overall also these three sources of income are positively and significantly correlated with total income. Income from laboring has a mutually exclusive relationship with other sources of income. Once an individual is engaged in laboring that also have the lowest average income, he/she is not able to derive income from other sources like salaried job, business and agriculture. In contrast to this, individual involved in agriculture or salaried job or business can also derive income simultaneously from other sources as well. This led to the negative association of labor income with total income. Income from business has a positive contribution on total income but statistically it is non significant.

Table 6. Correlation coefficient between total income and income sources

Income sources	Melauli		Patan		Overall	
	Correlation coefficient	P-value	Correlation coefficient	P-value	Correlation coefficient	P-value
Agriculture	0.23	0.8	0.7	0.00**	0.58	0.00**
Salaried job	0.68	0.00**	0.63	0.00**	0.66	0.00**
Business	0.66	0.12	0.18	0.15	0.19	0.14
Laboring	-0.18	0.17	-0.12	0.92	-0.14	0.11
Remittance	0.81	0.00**	0.03	0.78	0.42	0.00**

Source: Field Survey, 2001

Income inequality decomposition analysis

Inequality measured in terms of gini coefficient is lower in Patan with the value 0.38 compared to Melauli having the value 0.45. This means, within the rural areas income inequality is higher in a relatively remote area. In overall, gini coefficient value of 0.41 is reported. This value is higher compared to the gini coefficient calculated for the rural Nepal as a whole, which is 0.35 (CBS, 2005b).

The results of income inequality decomposition based on both coefficient of variation and gini coefficient gave the similar pattern of result. In Melauli, both of these measures show that salaried job, remittance and business has relative concentration coefficient value greater than 1, i.e., 1.86, 1.72 and 1.28, respectively based on coefficient of variation, and 1.67, 1.63 and 1.32, respectively based on gini coefficient (Table 7). This reflects the income disequalizing effect of these income sources, i.e., distribution of income from the source in the same manner as the original units lead to an increase in overall income inequality. In case of Patan, only salaried job is found to have income disequalizing effect. Negative sign of the value in case of laboring for both locations reflects the income equalizing effect of labor income, i.e., income from other sources remain same distribution of labor income in the same manner as the original units lead to an decrease in overall income inequality. In overall, salaried job and remittance both has relative concentration coefficient value greater than 1that reveals its income disequalizing effect. While laboring, agriculture and business, respectively has the highest income equalizing effect. Therefore, it signifies that labor-intensive agriculture promotion activities could be the better option to deal with the problem of rural poverty. At the same time marketing management of the agricultural input and output is crucial together with the strict enforcement or regulation regarding minimum daily wage and well defined working hours.

Table 7. Relative concentration coefficients of different income sources in overall income inequality

Source of income		Agriculture	Salaried job	Business	Laboring	Remittance
Melauili	From coefficient of variation (c_i)	0.19	1.86	1.28	-0.39	1.72
	From gini coefficient (g_i)	0.34	1.67	1.32	-0.21	1.63
Patan	From coefficient of variation (c_i)	0.89	1.39	0.40	-0.22	0.15
	From gini coefficient (g_i)	0.88	1.36	0.58	-0.07	0.29
Overall	From coefficient of variation (c_i)	0.76	1.56	0.74	-0.49	1.02
	From gini coefficient (g_i)	0.75	1.49	0.94	-0.35	1.08

Source: Field Survey, 2001

Weights of different income source in total income inequality obtained from both coefficient of variation and gini coefficient show the similar pattern. A contribution of salaried job to the total income inequality is the highest. It is around 0.5 in both Melauli and Patan, which signifies that contribution of income from salaried job in total income inequality is 50% (Table 8). Besides remittance is also contributing significantly to the total income inequality in Melauli having the contribution of around 36%. Agriculture and business is contributing in more or less same proportion to total income inequality, which is around 10%. In Patan, however, contribution of agriculture to total income inequality follows the highest contribution by salaried job. The contribution of agriculture in total income inequality is around 48%. Here, contribution of income from business and remittance to total income inequality is more or less same, i.e., around 1% based on the coefficient of variation and 2% based on gini coefficient. Laboring, on other hand, for both locations is found to have negative contribution to total income inequality though the value is meager. Overall, income from salaried job, agriculture and remittance is contributing around 49%, 36% and 12% respectively to the total income inequality.

Table 8. Weights of different income sources in overall income inequality

	Source of income	Agriculture	Salaried job	Business	Laboring	Remittance	Total
Melauli	Factor inequality based on coefficient of variation (w_ic_i)	0.08	0.49	0.08	-0.02	0.37	1.0
	Factor inequality based on Gini coefficient (w_ig_i)	0.14	0.44	0.08	-0.01	0.35	1.0
Patan	Factor inequality based on coefficient of variation (w_ic_i)	0.489	0.493	0.013	-0.003	0.008	1.0
	Factor inequality based on Gini coefficient (w_ig_i)	0.48	0.481	0.02	-0.001	0.02	1.0
Overall	Factor inequality based on coefficient of variation (w_ic_i)	0.37	0.50	0.03	-0.01	0.11	1.0
	Factor inequality based on Gini coefficient (w_ig_i)	0.36	0.48	0.04	-0.01	0.13	1.0

Source: Field Survey, 2001

Conclusion

The study revealed that the very limited availability of economic opportunities in the locality and easy access to the Indian labor market by the locale resulted into the higher incidence of female-headed household taking care of farm and families. Chhetri is the most dominating caste group comprising more than half of the residents followed by Bahun and Occupational caste. Illiteracy rate is significantly high in Melauli. With the better attainment of education in Patan, the involvement of household in salaried job is also higher. In contrast to this, involvement in laboring is high in Melauli due to the significantly low educational attainment. In both cases, proportion of household's involvement in agriculture is the highest. However, due to higher concentration of small holding households together with subsistence nature of agriculture in Melauli, they are not able to derive sufficient income from agriculture. Lack of basic infrastructure like communication and transportation is hindering the commercialization of agriculture in Melauli.

Involvement of economically active population in agriculture is also the highest, which also means the share of agriculture to the employment rate is the highest. However, agriculture in the study area is predominantly seasonal in nature, especially in Melauli that resulted in the problem of underemployment thereby low average income. The situation coupled with the higher involvement of female and illiterate individual in agriculture resulted into the higher concentration of female and illiterate headed household in the fourth income quartile. Higher proportion of Occupational caste also falls under the fourth income quartile mainly due their involvement in laboring that derive the lowest average income. Proportion of Bahun and Chhetri involved in salaried job as well as remit money from foreign employment is higher that also derive the highest average income. Higher attainment of education facilitates these castes groups to involve in such activities. This resulted into the low proportion of households from these castes to fall under fourth income quartile. Share of agricultural income to total income is higher which is mainly due to the significantly high proportion of individual as well as household head involved in agriculture. A remarkably high share of agricultural income to total income in Patan shows the prospects of agriculture in the areas due to the easy access to market through easy accessibility to transport and communication. In Melauli, however, contribution of money remitted by migrant worker is higher. Network of locale is helping to ease the access to such foreign labor market, especially India.

Income from salaried job and remittance, which is also significantly correlated with total income, has the income disequalizing effect in Melauli. This is mainly due to the restricted access to such income activities, which is also deriving the highest average income. This has also resulted into the higher weight of salaried income and remittance in overall income inequality in Melauli. In Patan, agriculture and salaried job having significant correlation with the total income, also has higher weight in total income inequality. Overall, salaried job has the highest weight in total income inequality followed by agricultural income and income obtained as remittance. On the other hand, with the negative correlation with the total income, labor income has income equalizing effect.

Very few individuals/households are involved in higher income generating activities like salaried job, remittance-engaging themselves in relatively higher income generating activities, business and commercialized agriculture. This is mainly due to the strict restriction to individual who are deprived in term of important socio economic assets like land, education and capital for investment together with gender biasness in such income generating activities. Thus, income from these sources is having negative impact on overall income distribution. At the same time it is also not possible to improve access to such income generating activities to huge mass within the short span of time. Thus, it requires the long term planning to deal with the accessibility of rural population to relatively higher income generating opportunities. However, as the short-term strategy, agricultural promotion, on which 70% of labor force are dependent, in rural areas based on labor demand increasing strategy with proper market arrangement for the agricultural produce will be helpful to reduce the income inequality vis a vis fight poverty. In addition, regulation regarding working hour and minimal wage rate should be strictly implemented for the welfare of those involved in laboring, which is also the poorest.

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