

Regional Inequality in the Size Distribution of Income in Nepal

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INTRODUCTION

In spite of more than three decades of development efforts supported by massive inflow of international aid, Nepal still remains one of the poorest and least developed countries in terms of almost all indicators of economic and social welfare (World Bank 1991). There are very few visible signs of the structural transformation of the economy. There is little else apart from agriculture to sustain the growing population. However the agricultural sector upon which about 90 percent of population depend for their livelihood, has remained largely subsistence and fairly stagnant in terms of productivity growth for a considerable period of time. The relative stagnation of the industrial sector and a rapidly growing population has contributed to accelerate the pressure on land resources. An increasingly large proportion of population are facing economic and social deprivation and the situation appears to be getting worse.

With an extremely low level of per capita income (US\$ 170 in 1990) and its negligible growth (0.5% between 1965-1990), more than 50 percent of the population are estimated to live below the absolute poverty line¹. Since more than 90 percent of the absolute poor are estimated to be concentrated in rural areas (World Bank 1991), poverty in Nepal is

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1. Using the minimum daily calorie requirement of 2,250 as national average, the National Planning Commission (NPC) estimated in 1984/85, a poverty line income of NR 1,971 (US\$ 110) per person per year in 1984/85 price. It is estimated that some 42.5% of the population fall below this line.

Using the Basic Need Income (BNI) determined by the NPC on the basis of daily calorie requirement, the MPBH Survey (1989) showed greater incidence of poverty in rural area (43% of the population fall below the BNI level) than in urban area. The incidence of rural poverty is found to be the highest in the hill (53%) compared to the Tarai (MPHBS, 1989). The poverty line for Nepal estimated by

predominantly a rural phenomenon and is intimately related to the limited access to productive assets principally the agricultural land, and debilitating institutional bottlenecks such as those reflected by highly skewed distribution of land holding, very small size of holding, and semi-feudalistic tenancy conditions. While the problem of poverty in Nepal stems from very weak economic and resource base, the unequal distribution of household income both within and across regions resulting from past development efforts has further aggravated the magnitude of poverty.

Development planners and policy makers in Nepal were not aware of the income distribution pattern until the publication of National planning Commission's report (1983) which showed high degree of inequality of family income (Gini Coefficient 0.60 in rural areas and 0.55 in urban area). While this finding implies that past development efforts have not taken care of the distribution issue, very little is known quantitatively regarding the dynamics of the pattern of regional disparity in the distribution of income and factors associated with it.

The proper analysis of the degree of inequality in the distribution of income and factors underlying it is perhaps an important first step before devising successful policy strategies for ensuring better distribution of income without hampering economic growth. An attempt has therefore been made in this paper to measure the extent of income inequality at the regional level and where possible to identify the socio-economic factors affecting the spatial variation in the distribution of income using the Household Budget Survey data provided by Nepal Rastra Bank.

In the next section, the conceptual framework and methodology dealing with the measurement of inequality and factors associated with spatial variation in the distribution of income is presented. The empirical results on the degree of income inequality at the regional level and socio-economic factors underlying it are discussed in the third section. The final section summarises the major conclusions.

CONCEPTUAL FRAMEWORK AND METHODOLOGY

Income Recipient Unit

Individual income recipient unit is more useful than family/household unit in reflecting the

NPC is based directly on the specified food calorie requirement only which makes many simplifying assumptions in indirectly measuring the income/expenditure required for other basic needs. Such simplifying assumptions, gloss over the large regional differences in the consumption basket of the poor and ignore the variety of ways through which poor cope with poverty. Some World Bank analysts have noted that it would not be unreasonable to define poverty line per capita at even US\$ 200.

differences in contribution to production process out of which income originates.² It is often argued that income distribution assumes full meaning when viewed from consumption side and in this respect it may be argued that family is generally the unit which consumes (Farbaman 1975). If it is admitted that the decision to contribute to production process may also largely come under the control of family, then the theoretical logic for the appropriateness of using household as income recipient unit is persuasive.

There are also good reasons to believe that neither household income nor per capita income is appropriate for comparing real welfare between households because the former ignores the size and composition of household while the latter does not consider the economies of scale within household³. An alternative income recipient unit that takes both household size and economies of scale into account is a **household equivalent scale** which has been suggested as useful unit of measurement for comparing real welfare between households. However, the accurate calculation of household equivalent unit requires empirical investigation of consumption behavior of households of different sizes. This has not been done in this study because of the lack of empirical information.

Measuring Income Inequality

As there are a large number of aspect to the question of inequality the task of defining the appropriate single measure of income inequality is seldom an easy one. Some measures highlight one particular aspect of inequality, others highlights other aspects. There exists no single measure of income inequality which satisfy all the objective criteria that have been suggested in the literature (Champernowne 1974). Dalton has laid down the following two principles for satisfactory measurement of income equality

- a) Inequality index should remain unchanged relative to proportional increase in income (Principle of Population).
- b) A small transfer of income from one individual to a poorer (richer) individual should always decrease (increase) the value of inequality index (Principle of Transfer).

The extent of inequality in the distribution of income can be ascertained either through Lorenz Curve or through various inequality indices such as Gini Coefficient, Coefficient of Variation, Standard Deviation of log income, Variance of logarithms, Theil index, Aitkinson measure, Pareto index etc. When Lorenz Curve for two distributions do not intersect, all inequality measures rank the income distribution uniformly. However, if Lorenz

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2. It is, of course, perfectly conceivable that income could be more equally distributed among individual than among families (Kravis 1960, 1973).
 3. Economies of scale within household can not be denied. for example, cooking for 6 persons is relatively cheaper than cooking for one person.

Curves do intersect, different inequality indices may show income distribution differently. It is therefore essential to use a package of inequality indices. Since different inequality indices are more sensitive to changes in different part of the size distribution of income, the choice of inequality indices also depends on the aspect of inequality in which one is interested. If, for example, relative inequality (inequality in the lower range of income) is important, one would choose the standard deviation of logs. If absolute inequality (inequality over entire range) is the issue, Gini Coefficient is more appropriate. Finally, if relative inequality in the high and medium range is more important, Theil's index is more appropriate.

Altogether, five inequality indices (namely Gini Coefficient, Coefficient of Variation, Standard Deviation of logarithms of income, Variance of natural logarithm, and Theil Index) have been chosen to measure the degree of inequality in the distribution of income. Since these inequality measures attach different weights to different parts of income distribution⁴, a brief note on the properties of these measures is presented below for a better understanding of the implications of the result derived from these measures.

Gini Coefficient

Gini Coefficient is based on a graphical concept of Lorenz Curve and is defined as one minus twice the area under Lorenz Curve. It can also be computed as follows :

$$G = 1 - \frac{1}{N} - \frac{2}{N^2 Y} (Y_1 + 2Y_2 + \dots + NY_N)$$

Where N is the number of households receiving income and Y is the percentage of income received by number of households. It is the most popular index whose estimates are available for wide range of countries and time period. As a measure of inequality, it is most sensitive to change around the mode of the distribution, that is it attaches more weight to transfer affecting middle income group and not much weight to change in extreme income classes.

Standard Deviation of Logarithms of Income (SD)

A measure of inequality that gives more importance to income transfer at the lower income level is the Standard Deviation of Logarithm of Incomes which can be computed as

4. These weights are the implicit values that each measure embodies for a desirable distribution of income.

$$SD = \left[\sum_{i=1}^n (\log Y_i - \log \bar{Y})^2 \right]^{1/2} / n$$

Where Y_i is the average income of the income group, \bar{Y} is mean income of the entire distribution and n is the number of income groups. It incorporates both skewness and dispersion and is independent of mean and thus of level of income. This measure has relevance if inequalities at the lower income levels are important.

Variance of Natural Logarithm (V)

This measure has the property that it attaches greater weight to income transfer that takes place at the lower tail of the distribution when log are used. It is given by the expression:

$$V = \sum_{i=1}^n (\ln Y_i - \ln \bar{Y})^2 / n$$

Where Y_i is the income of i^{th} income class, \bar{Y} is mean income of the distribution and n is the number of income groups.

As an index of inequality this suffers from the problem that it does not satisfy the principle of transfer for certain sort of transfers. However, it has been used quite widely for studies of inequality in developing countries and has the property of decomposing inequality (Field 1980).

Coefficient of Variation

The Coefficient of Variation - defined as standard deviation divided by the mean income - is more sensitive to income transfer for all income levels and is independent of mean income level, that is, the impact of redistribution from one group to another would be the same regardless of the level of income. It is based on the assumption that income is normally distributed.

Theil Index

This index is more useful if high and medium range is more important. Theil Index can be expressed as follows:

$$T = \log N - \sum_{i=1}^n Y_i \log (1/Y_i)$$

Where Y_i is the income share of the i^{th} Income group and N is the number of income group. When $T=0$ we get complete equality and when $T = \log N$ we get complete inequality. Because of its aggregation properties, this measure is particularly useful in that it permits decomposition of total inequality into its components (between group inequality and within group inequality).

Factors Underlying Spatial Variations in Income Inequality

Various theories that have been developed to explain the causes or determinants of income inequality can be divided into two schools of thought: theoretical statistical school and socioeconomic school (Kakwani 1980). The former group represented by Gibrat (1931) Champernowne (1953) and Aitchison (1953) attempt to explain the reasons for skewness in terms of probability theory (stochastic process) treating the skewness of income as the by-product of natural forces (ability and chances) which are independent of socio-economic factors. On the other hand, socio-economic school as represented by Mincer (1958), Becker (1962), and Chiswick (1971) attempt to explain income inequality by means of socio-economic and institutional factors such as stage of economic development, the degree of industrialization and urbanization, resource endowment, educational attainment, and demographic status.

A number of empirical research have attempted to explain the determinants of income inequality by means of social-economic and institutional factors. Using the step wise regression analysis, Adelman and Morris (1973) found that dualism potential and natural resources are positively related to inequality, whereas middle level occupation and human resource (age, education etc.) are negatively related. From the cross-sectional study of 9 countries Chiswick (1971) postulated a model based on human capital approach and found that human capital level and inequality in educational attainment are positively related to income inequality. Empirical evidence from cross sectional study of 62 countries further revealed that rate of expansion of education opportunities, decline of population pressure and occupational structure are all inversely related to income inequality (Ahluwalia 1974). A cross sectional study of 208 metropolitan areas in the United States revealed that middle level occupation, and median year schooling are inversely related to inequality, and population density is positively related to inequality.

5. One serious criticism of this stochastic model is that it provides only a partial explanation of income generation process and sheds no light on economics of distribution (Kakwani 1980).

In recent years, as interest in size distribution of income has slowly gathered momentum, an increasing number of theories and models have been developed for explaining the spatial variation in income inequality. The explanatory variables customarily used in most empirical studies reflect a combination of the spirit of both Kuznet (1955) hypothesis of inverse relationship between income inequality and level of development, and the views of Kravis (1960) that inequality should be additionally explained by factors such as barriers to opportunities (discrimination), occupational status and other socio-economic and political factors.

Considering the prevailing theoretical knowledge and usual procedure used in many empirical work, a multiple regression model involving only those explanatory variables which are deemed important and which are available has been formulated to explain the variation in income inequality in 18 urban areas in Nepal.

Assuming the linear relationship between the variables, the empirical model used for explaining the spatial variation in income inequality in urban areas is specified as follows;

$$Y = B_0 + B_1 ANE + B_2 PPE + B_3 HPE + B_4 WS + B_5 OC + B_6 AG + B_7 DH_1 + B_8 DE_2 + B_9 DW_3 + U^1$$

Y = Income inequality as measured by Gini Coefficient of household income in urban areas

ANE = Average number of earners per household

PPE = Percentage of people passing primary school

HPE = percentage of people passing high school or above level of education

WS = Average monthly income from wage and salaries

AG = Average age of household head

OC = Percentage of labour force employed in middle level occupation (such as clerical worker, sale workers, service workers).

Apart from the above explanatory variables, the following dummy (qualitative) variables have also been included to capture the regional variation in income inequality:

DH₁ = 1 if hill region, otherwise 0

DE₂ = 1 if Eastern Development Region ; otherwise 0

DW₃ = 1 if Western Region, otherwise 0

U¹ = Disturbance term

The Data

The data for the present study is based primarily on the Household Budget Survey (HBS) conducted by Nepal Rastra Bank (NRB) in two different time periods. The first survey conducted during 1973-75 was confined to 18 urban centres only, and the results are available separately for these various centres. The Multi-purpose Household Budget Survey (MPHBS) conducted by NRB during 1984-85 provides data on income distribution in both rural and urban Nepal by ecological belts on an aggregate basis. While the MPHBS is often believed to be well designed and well conducted, it suffers from the inability to capture fully the information for the exceptionally rich and the exceptionally poor (World Bank 1991). Hence the actual degree of income inequality is believed to be more skewed than that obtained from this survey data.

EMPIRICAL RESULTS

In this section, the regional variations in the degree of income inequality in eighteen urban areas of Nepal and socio-economic factors affecting the spatial variations in income inequalities in these urban areas are first examined using the data reported in HBS conducted during 1973-74. The disparities in income distribution in both rural and urban Nepal by geographical regions (Hill / Tarai) are then measured and analysed using the more recent MPHBS conducted during 1983-85. An attempt has also been made, where possible, to examine the changing pattern of income distribution at the regional level overtime.

Regional Variations In Income Inequality in Urban Areas

The regional variations in the degree of inequality in the distribution of household income in different urban areas of Nepal can be judged from the estimates of inequality indices reported in Table I. Some important inferences that can be drawn from the close examination of this table are highlighted below.

The results indicate that most urban areas belonging to the Central Development Region followed by those belonging to Eastern Development Region show greater degree of income inequality as compared to those located in the Western and Far Western Development Region. Second, at the geographical level, the degree of income inequality has generally been found to be relatively higher in those urban areas that are located in the Tarai plains than those in the Hills region of the country. Third, at the national level, the highest degree of income inequality can be observed in Birgunj followed by Janakpur, Bhadrapur, Biratnagar and Kathmandu whereas the degree of income inequality is amongst the lowest in Bhairahawa followed by Mahendranagar and Dang.

It should be noted that most inequality indicators reported in Table 1 have shown the uniform ranking of the distribution indicating that Lorenz curves of the distribution of income in most urban areas do not intersect each other. In some cases where Lorenz curves intersect each other, different inequality indicators show different ranking of the distribution depending on the relative weight being attached by each indices on different ranges of the distribution as stated earlier.

One important finding that emerges from the above result is that in general urban areas that are expanding faster with high degree of industrial and development activities have relatively higher degree of income inequality. This is certainly true of urban places like Biratnagar, Kathmandu, Birgunj and Janakpur. This implies that developmental activities taking place in urban sector are associated with increased inequality. This finding is, however, in line with the Kuznets -Oshima hypothesis that as the country passes through stages of economic development, inequality is low in undevelopment, increases in under-developed, reaches a peak in semi- developed, and then declines. Evidence from many developing countries also support this inverted U- shape relationship between income inequality and economic development. While the observed high degree of income inequality in some urban areas perhaps reflects the sign of industrial development taking place, it poses a major challenge to development planners and policy makers in dealing with the issue of urban poverty. Shaping such development policies, however, requires proper understanding of the factors influencing the variation in inequality.

Factors Affecting the Spatial Variations in Inequalities in Urban Areas

Several socio- economic and political factors are responsible for explaining spatial variations in income inequality as indicated in the previous section. In spite of the lack of data an attempt has been made in this section to examine the effects of some important (and available) socio- economic variables on the variation in income inequality using the multiple regression model specified earlier.

The Model Estimation and Results

The multiple regression model involving nine explanatory variables and Gini Coefficient as dependent variable were at first estimated by OLS method. The estimated results as presented in Table 2 shows that about 86 percent of the variation in income inequality has been explained by the explanatory variables included in the model. Although the model is significant as indicated by F-value, the resulting high value of standard errors of most coefficients along with the high value of R^2 indicate the problem of multicollinearity. A close examination of the Zero - order correlation matrix reported in Table 3 indicates that multi- collinearity problem exists among some explanatory variables and that the condition

of independence may not hold. One standard practice in such cases is to delete some weak explanatory variables provided, of course, there is no theoretical objection to their exclusion (i.e. specification error). Partial correlation coefficient provides useful information regarding the selection of weak and strong variables. The most frequent use of partial correlation in fact comes in step-wise regression procedure which is used to select the most strongly associated variables (Draper et. al. 1966). Stepwise regression procedure was therefore used to improve the model. Altogether four explanatory variables such as higher level of education (HPE), middle level occupation (OC), primary level of education (PPE) and age have been included in the model from the stepwise regression method and the estimated results are reported in Table 4.

As can be noticed from Table 4, there was an insignificant decrease in the value of R^2 from 0.86 to 0.85 as a result of exclusion of some variables. This suggests that variables not included in the model play a minor part in explaining regional differences in income inequality. About 85 percent of the variation in income inequality has been explained by four explanatory variables included in the model and as measured by T- value, all these variables except primary level of education (PPE) are statistically significant at 99 and/or 98 percent confidence level. Measured by beta coefficient, higher level of education (HPE) is the most important variable explaining variation in income inequality followed by occupation (OC). On the whole, the model involving these four explanatory variables is statistically significant as measured by F- value. The economic interpretation of the results obtained from the model is summarized below.

Education and Income Inequality

Education enhances peoples's prospect of earning higher level of income. The extent to which the level of education influences income inequality, however, depends pretty much upon the degree of opportunity in educational attainment. We have found positive and statistically significant relationship between higher level of education (persons with complete high school education) and income inequality. This implies that any expansion in the percentage of people with high school level education will further lead to an increase in income inequality in the urban areas. While the result appears to be contradictory to general reasoning, this is consistent with the hypothesis and available evidence that human capital level and inequality in educational attainment are positively related to income inequality⁶ (Chiswick 1971). In Nepal high school education is limited and the privilege of the better few. The unequal access to education results not only from dual system of education (elite private

6. Available literature also suggests that an increase in average level of education lowers inequality in the developed countries while in the developing countries, if it has any effect, it may increase income inequality (Chiswick, 1968).

school vs sub-standard public school) but more importantly from the inability of the poor to afford schooling expenses at the high school level. Hence the argument that government should subsidize investment in human capital development can be justified on equity grounds. It is also interesting to note that access to primary level education in Nepal is more equal than high school education because of state subsidies in the former. The negative coefficient of primary level of education perhaps tends to explain this phenomenon. But since this variable is not statistically significant, any expansion in the percentage of people passing primary education will have no effect on reducing income inequality.

Occupation and Income Inequality

The percentage of labour force employed in middle level occupation has been found to be inversely related to income inequality. This is because income is least concentrated in middle level occupations and progressively more concentrated as one moves to occupations with extremely low or high median income. Stated differently, since income from middle level occupation is distributed more equally than other income source such as property, a larger representation of this occupational grouping within urban area implies lower inequality of income within this occupation grouping thereby reducing, *ceteris paribus*, the inequality of total income. This finding is corroborated by other studies (Farbman 1975).

Age of Household Head and Inequality

As in the case of occupation, the average age of household head has been found to be inversely related to income inequality. This finding is consistent with the human capital theory which states that earning prolife of a person will be maximum at the age range 30-55. In a country like Nepal where majority of population fall under poor class, the age factor as a proxy for experience, plays an important part to increase earning capacity of poor household thereby reducing income disparity between urban areas.

Income Inequality in Rural and Urban Nepal

The degree of income inequality in rural and urban Nepal was measured and examined first at the household level and then at the individual level, using the MPHBS data (1984-85).

The degree of inequality in the distribution of household income in rural and urban Nepal can be judged from the estimates of inequality indices reported in Table 5. All the **inequality** indices show relatively greater degree of income inequality in urban Nepal than in rural Nepal. The estimated Gini Coefficient for urban Nepal (0.85) is found to be

considerably higher than that shown by NPC data (0.55) in 1977. In fact, the difference in income inequality (at the household level) between urban and rural Nepal has widened considerably over time if we compare the situation with the previous NPC survey result. The extremely high degree of urban inequality at the household level is a manifestation of the faster pace of urbanization and industrialization process taking place over the past decades. This is quite consistent with the previous finding that urban inequality is relatively more marked in areas with relatively heavy concentration of industrial and developmental activities. It seems therefore that Kuznet hypothesis as stated earlier is very much valid for urban areas of Nepal. If one concedes that concentration of developmental activities in urban Nepal is associated with increased inequality, then it could also suggest that all the industrial and developmental activities taking place in urban areas have mainly contributed to the concentration of income in the hands of the urban elite. On the whole Gini Coefficient estimated for the country as a whole (0.57) at the household level seems to be fairly high compared to that in other developing countries (see Table 6) although more recent estimates in these countries are not available.

The degree of inequality in the distribution of per capita income is also found to be relatively higher in urban Nepal than in rural Nepal as shown by all indicators of inequality (Table 7). Within urban Nepal, the degree of inequality at the per capita level is more skewed in the hills than in the Tarai as shown by almost all indicators with the exception of Coefficient of Variation. The relatively higher degree of income inequality in the urban hill perhaps reflects the relative wealth of capital city - Kathmandu, which is believed to be remarkably more skewed. The income share data reported in Table 8 also indicates that the share of bottom 40 percent of households in urban hill (24 percent) is lower than that in urban Tarai (27 percent) despite no differences in the share of top (10 percent) income bracket between these regions.

Within rural Nepal, the degree of income inequality as shown by all indices is remarkably more even (flat) indicating that poverty is being shared by almost the entire population. While the bottom 40 percent of the households in rural mountain received about one-third of total income, the share of top 10 percent is only 13 percent (Table 8). While all the indicators evidence the lowest degree of inequality in rural mountain, the degree of income inequality between rural hill and rural Tarai has been found to be differently ranked by different indicators (indicating that Lorenz Curve for these two regions intersect each other). The degree of income inequality between the hill and Tarai region of rural Nepal are more or less the same on the basis of Gini Coefficient (0.26) (Table 7). This is not the case, however, if one compares the inequality by other inequality measures. For instance, the rural inequality is more skewed in the Tarai as indicated by Coefficient of Variation and Theil Index while the opposite prevails on the basis of Standard Deviation and Variance of natural logarithms. Such conflicting ranking of the distribution is, however, plausible given the different weights attached by these different inequality indicators in different parts of the distribution. If we wish to give more weight/importance to the lower tail of the distribution,

then rural inequality is more skewed in the hill than in the Tarai and vice versa if equal importance is given to different income levels. This implies that any reliance on any single measure of inequality in the absence of certain welfare function often yield misleading results.

The income share data reported in Table 8 on the other hand also indicates minor difference in the relative share of top (10 percent) income bracket between rural hill (21 percent) and rural Tarai (23 percent). In any case, it is safe to conclude that income inequality (at the percapita level) between hill and Tarai is not that much distinct in rural Nepal as in the case of urban Nepal. In general while per capita income inequality in urban Nepal is relatively higher than in rural Nepal, the degree of income inequality in rural hill (rural Tarai) is higher than that in urban hill (urban Tarai)

Degree of Inequality by Income Source

The degree of inequality in total income is usually affected by relative share of various income sources and their relative degree of inequalities. It is generally argued that labour income (wage & salaries) is distributed more equally than property or capital income (Kravis 1960, 1973). For better understanding of the major differences in inequality in the distribution of different income sources a simple index of inequality (Gini Coefficient) has been estimated as reported in Table 9.

As expected, the income from wages and salaries is found to be more equally distributed than any other income source especially in rural areas. The degree of inequality in agricultural income is amongst the highest in rural Tarai (0.483) and rural hill (0.427) whereas in urban Nepal the highest degree of inequality is found in property income (0.36) in urban hills. Since agricultural land is the major source of income in rural Nepal and the distribution of holding is highly skewed, the observed high degree of inequality in agricultural income is but natural. Similarly, the income from property and other cash income in urban area is mostly concentrated into the hands of a relative few. The result also indicates that distribution of income from wage and salaries is more skewed in urban hill than in other regions. This implies that areas with large share of income going to labour can be expected to have lesser degree of income inequality.

Changing Pattern of Income Distribution

Existing data on income distribution in Nepal are highly unsatisfactory. The lack of periodic survey with consistency in definition and coverage make it difficult to arrive at any valid conclusions as to whether income distribution has changed over time (Sharma 1990). The Gini Coefficient of the distribution of household income obtained from different surveys over the period reported in Table 6 should therefore be treated with caution. First,

these surveys do not in fact reveal the real magnitude of the income inequality particularly because they suffer from the inability to capture fully the exceptionally rich and the exceptionally poor. If these figures were deemed to be directly comparable (which may not be the case, however), the results would suggest that the magnitude of income inequality in Nepal in general and in urban Nepal in particular have increased over time. Although rural inequality is seen to have slightly declined between 1977 (NPC survey) and 1985 (NRB survey), there are good reasons to believe that income inequality in rural area has also deteriorated over time. Indirect evidence on trends in income generating sources, particularly the land, indicates that there has been substantial deterioration in the distribution of land holding (Table 10) over time. Since operated land is the principal source of income in rural areas, the growing inequality in the distribution of operational holding has direct bearing on income inequality. This is further corroborated by the previous finding that income from agriculture is most unequally distributed in rural Nepal especially in the rural Tarai.

SUMMARY AND CONCLUSION

This paper has attempted to examine the regional disparity in the size distribution of income in Nepal using the household budget survey data published by Nepal Rastra Bank. Some of the major findings and implications emerging from the present analysis are summarized below.

First, the magnitude of income inequality in Nepal has been found to be remarkably more skewed at the household level than at the individual level (or per capita level) particularly since the family size increases with the level of household income. One obvious generalization that can be made from this finding is that prevailing institution/organisation of family in Nepal is directly associated with increased inequality.

Second, the magnitude of income inequality in urban Nepal is found to be relatively greater than in rural Nepal. While the lack of periodic survey with consistency in definition and coverage makes it difficult to assess the changing pattern of income distribution at the regional level, the analysis presented above reveals that the degree of inequality in both urban and rural Nepal has increased over time. The widening gap between rural and urban Nepal further suggests that urban inequality has increased at a faster rate than rural inequality. Besides, urban areas with high degree of industrial and developmental activities appear to be experiencing greater degree of income inequalities.

Third, the analysis of factors affecting spatial variation in income inequality in urban areas reveals that inequality in educational attainment particularly high school education is positively related to income inequality. The middle occupation and age of the household head on the other hand were found to be negatively related to income inequality. This clearly implies the need for devising educational subsidy policies so as to benefit the poor and hence

reduce income disparity

Fourth, within urban Nepal, the degree of inequality (at the per capita level) is slightly higher in the hill than in the Tarai. In rural Nepal the extent of inequality between hill and Tarai is found to be more or less the same, the mountain region shows the lowest degree of inequality as expected.

Fifth, there exist significant differences in the degree of inequality in various income sources, with labour income (i.e. income from wage and salaries) being found to be more equally distributed than income from agriculture and property. More specifically, in contrast to urban Nepal where income from property is more unequally distributed, the magnitude of income inequality in rural Nepal is amongst the highest in agricultural income - a clear manifestation of highly skewed distribution of land holding.

The analysis of income share data indicates that scope for improving the income position of the poor in Nepal through redistribution from rich income group seems to be rather limited. Transferring 5 percent of the income from the richest 10 percent to bottom 40 percent would increase the average income of the latter group by less than 8 percent. If the same percent of income is transferred from richest 10 percent to bottom 20 percent of the household the per capita income of the latter group would increase by more than 10 percent.

Given the low level of income of top income bracket on the one hand and pervasive poverty on the other, this implies that, for income redistributive policy to be effective, it is essential to identify the poor and separate out the 'poor' from 'real poor', 'real poor' from 'not so poor', and 'not so poor' from 'not poor at all'.

On the whole, income inequality and poverty in Nepal stems from very weak economic and resource base and inefficient and poor mobilization of these resources. In contrast to developed countries where ample scope exists for meeting the basic needs and eradication of poverty through promotion of equality by redistributive measure, the promotion of equality in underdeveloped countries like Nepal has to be associated with overall development thrusts because poverty in Nepal is inseparable from the overall problem of underdevelopment. Given the growing magnitude of income inequality in urban Nepal and the concentration of poverty in rural Nepal, income distribution policies should receive importance in improving the situation in urban areas while poverty oriented policies should receive more attention in raising the living standard in rural areas. This is important particularly in view of the fact that urbanization process has significantly accelerated in the last two decades. While inequality must be held in check at any rate and if possible even be reduced, the instrument to use must not be such as would hamper or retard the entire development process of a poor country like Nepal.

**Table 1 : Estimates of Household Income Inequalities in Urban Areas of Nepal
(1973-1975)**

Development Region	Gini Coefficient	Log Normal Variance	Coefficient of Variation	Standard Deviation of Log Income
<u>Eastern</u>				
1. Dhankuta (H)	0.3648	0.4798	0.7226	0.6929
2. Ilam (H)	0.3404	0.4021	0.6758	0.6341
3. Okhaldhunga (H)	0.3380	0.4090	0.6522	0.6395
4. Bhadrapur (T)	0.3979	0.5189	0.8332	0.7203
5. Biratnagar (T)	0.3910	0.5021	0.7996	0.7086
<u>Central</u>				
1. Kathmandu (H)	0.3710	0.5054	0.7372	0.7110
2. Lalitpur (H)	0.3568	0.4544	0.7450	0.6741
3. Bhaktapur (H)	0.3331	0.4177	0.6430	0.6463
4. Hetauda (T)	0.3468	0.4224	0.6942	0.6499
5. Birgunj (T)	0.4306	0.5941	0.9359	0.7707
6. Janakpur (T)	0.4170	0.5436	0.8720	0.7373
<u>Western</u>				
1. Pokhara (H)	0.3700	0.4595	0.7379	0.6780
2. Baglung (H)	0.3178	0.3386	0.6444	0.5820
3. Bhairahawa (T)	0.3064	0.3225	0.5933	0.5679
<u>Far Western</u>				
1. Surkhet (H)	0.3246	0.4338	0.6417	0.6586
2. Nepalgunj (T)	0.3584	0.4185	0.7372	0.6469
3. Dang (T)	0.3508	0.4368	0.7123	0.6610
4. Mahendranagar (T)	0.3164	0.3468	0.6387	0.5888

H = Urban Hill

T = Urban Tarai

Table 2 : Estimated Result of Multiple Regression Equation

Variables	Regression Coefficient	Standard Error	Beta Coefficient	T-value	Level of Significance
Number of Earners: ANE	0.0026	0.0132	-0.038	-0.199	
Primary Education:PPE	-0.00084	0.0020	-0.156	-0.778	
Higher Education:HPE	0.0075	0.0027	0.629	2.744	*
Occupation:OC	-0.0016	0.00118	-0.312	-0.157	
Wage &Salaries:WS	0.0025	0.0143	0.037	0.157	
Age:AG	-0.0055	0.0035	-0.301	-1.577	
<u>Regional Dummies</u>					
DH ₁	0.0025	0.0124	0.039	0.205	
DE ₂	-0.0028	0.0114	-0.041	-0.252	
DW ₃	-0.0085	0.0130	-0.131	-0.659	
Intercept	0.5765	0.1239		4.652	**

$R^2 = 0.859$; $\bar{R}^2 = 0.701$

Standard Error of Estimates =0.0182

F-value (9, 8 d.f.)=5.434, N=18

Note: * Significant at 0.05 level ** Significant at 0.01 level

Table 3 : Zero Order Correlation Matrix

	GINI	ANE	WS	OC	PPE	HPE	AG	DH1	DE1	DW3
GINI	1.00									
ANE	-0.55	1.00								
WS	0.39	-0.48	1.00							
OC	-0.62	0.29	-0.18	1.00						
PPE	-0.58	0.21	0.28	0.44	1.00					
HPE	0.73	-0.58	0.70	-0.20	-0.37	1.00				
AG	-0.44	0.15	0.30	0.26	0.28	0.19	1.00			
DH1	-0.32	0.28	-0.46	0.61	-0.05	-0.07	0.38	1.00		
DE2	0.16	0.04	0.25	-0.08	-0.02	0.26	0.10	0.12	1.00	
DW3	-0.55	0.35	-0.17	0.71	0.11	0.25	0.38	0.44	-0.31	1.00

Table 4 : Estimated Result of Stepwise Multiple Regression Equation

Variables	Regression Coefficient	Standard Error	Beta Coefficient	T-value	Level of Significance
Higher Level Education	-0.00773	0.00149	0.64	5.190	**
Occupation	-0.00188	0.00066	-0.34	2.820	*
Age	-0.0064	0.0028	-0.33	-2.798	*
Primary Education	-0.0068	0.00071	-0.18	-0.968	**
Intercept	0.5945	0.0753		7.893	

$R^2 = 0.848$; $\bar{R}^2 = 0.803$

Standard Error of Estimates = 0.0148

F-value (4,13 d.f.) = 18.37, N = 18

Note: * Significant at 0.05 level

** Significant at 0.01 level

Table 5 : Estimates of Household Income Inequalities in Rural and Urban Nepal

	Gini Coefficient	Standard Deviation of Log income	Variance of Natural Logarithms	Coefficient of Variation
Rural	0.55	0.524	0.274	0.516
Urban	0.85	0.788	0.621	0.644
All Nepal	0.57	0.512	0.262	0.516

Derived from MPBHS Data

Table 6 :Degree of Household Income in Nepal and Selected Countries

	Survey Year	Gini Coefficient
<u>Nepal</u>		
Hill	ARTEP (1973/74)	0.43
Tarai	ARTEP (1973/7400)	0.51
Rural	NPC (1977)	0.59
Urban	NPC (1977)	0.55
Rural	NRB (1984/85)	0.55
Urban	NRB (1984/85)	0.85
All Nepal	NRB(1984/85)	0.57
<u>Other Countries</u>		
Bangladesh (*)	1966/67	0.399
India(*)	1967/68	0.464
Pakistan(+)	1979	
Rural		0.32
Urban		0.41
Total		0.36
Sri Lanka(*)	1969/70	0.458
Thailand(*)	1970	0.385
Philippines(*)	1971	0.458
Korea(*)	1971	0.338

Source: (*) Jain. S. and A.E. Tiemann (1973)
 (+) Mohamod Z. (1984)

Table 7 : Estimates of Per Capita Income Inequalities in Rural and Urban Nepal (1984/85)

Measures of Inequalities	Urban			Rural			
	Hill	Tarai	Total	Mountain-tain	Hill	Tarai	Total
Gini Coefficient	0.24	0.22	0.26	0.11	0.26	0.26	0.23
Standard Deviation of Log Income	0.43	0.38	0.45	0.22	0.47	0.45	0.42
Variance of Natural Logarithms	0.20	0.15	0.20	0.05	0.23	0.20	0.17
Coefficient of variation	0.443	0.445	0.49	0.20	0.48	0.50	0.43
Theil Index	0.094	0.086	0.108	0.021	0.109	0.112	0.102

* Derived from Table 11

Table 8 : Per Capita Household Income Distribution in Nepal (Percentage Share of Total Income)

	Rural				Urban	
	All Nepal	Tarai	Hill	Mountain	Tarai	Hill
Bottom 40%	23 (18)	24	23	33	27	24
Middle 50%	54 (54)	53	56	54	52	56
Top 10%	23 (28)	23	21	13	21	20

Note: Total household income is indicated in parentheses
Source: MPHBS (1989)

**Table 9 : Degree of Inequality in Different Income Sources
(Gini Coefficient)**

	Current Cash Income	Income in Kind	Wage & Salaries	Agriculture Income	Other Cash & Property Income
Rural Tarai	0.348	0.201	0.020	0.483	0.323
Rural Hill	0.330	0.208	0.182	0.427	0.401
Urban Tarai	0.25	0.16	0.12	0.31	0.33
Urban Hill	0.30	0.11	0.21	0.13	0.36
Rural Nepal	0.32	0.18	0.14	-	-
Urban Nepal	0.31	0.15	0.24	-	-

Source : Devived from MPHBS Data

Table 10a : Distribution of Land Holding in Nepal 1961 and 1971

Size of Holding (hectare)	1961		1971	
	% Household	% Cultivated Area	% Household	% Cultivated Area
Less than 1	72.0	23.6	63.5	10.5
1 - 3	19.2	27.2	19.5	18.0
3 - 5	4.8	15.0	7.1	12.0
5 - 10	2.9	16.5	5.8	21.0
10-20	0.9	9.6	3.0	18.0
20 and above	0.3	8.2	1.0	20.5
Gini Coefficient	0.566		0.687	

Source : The 1961 figure have been calculated from Central Bureau of Statistics, Report on National Census of Agriculture 1962, Table 4. The household having less than 0.10 hectare of land have been excluded from this Table in order to make the data comparable to that of 1971. Figures for 1971 are from M.A. Zaman: Evaluation of Land Reform in Nepal. Ministry of Land Reform, 1973, P.6.

Table 10b: distribution of Landholding in Nepal (1981)

Size of holding (ha)	% Household	% Cultivated area	Average holding
Non agriculture	15.1	0.0	0.0
No land	0.3	0.0	0.0
0.0 - 0.5	42.5	6.6	0.15
0.5 - 1.0	13.7	10.8	0.75
1.0 - 2.0	14.7	19.9	1.29
Over 2.0	13.6	62.8	4.40
Gini Coefficient	=	0.70	

Source : CBS, National Sample Census of Agriculture 1981/82.

Table 11 : Distribution of Per Capita Household Income in Rural and Urban Nepal by Deciles (Percentage Share of Income)

Regions	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
<u>Urban Nepal</u>	4.40	5.95	5.98	7.12	8.28	9.02	10.64	12.63	14.21	21.77
Urban Hill	4.24	5.34	7.10	7.75	7.92	11.10	11.12	11.93	13.28	20.31
Urban Tarai	5.63	5.62	7.43	7.96	8.01	8.88	10.65	10.90	13.51	21.41
<u>Rural Nepal</u>	4.29	5.80	7.14	7.99	8.68	9.68	10.16	11.80	14.53	19.93
Rural Mountain	5.96	7.94	9.49	9.84	10.17	9.69	9.67	11.57	12.29	13.38
Rural Hill	3.85	5.34	6.45	7.79	9.15	9.07	10.71	12.60	15.28	20.76
Rural Tarai	4.34	5.53	6.97	7.29	7.72	9.68	10.14	11.79	13.92	22.62

Source : Multipurpose Household Budget Survey (1989).

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