Inequality of Income and Wealth Distribution in Nepal

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To my family

ABSTRACT

This dissertation focuses on the economic inequality problem in Nepal, in particular, to integrate insights from other social aspects into the distribution problems of economic resources. It consists of five chapters on income and wealth distribution in Nepal. The first Chapter presents an overview of Nepal's history, geography, economic development, policies and problems. The aim of Chapter Two is to provide an understanding of the inequality of income for 1984 and 1996 in Nepal and to describe how income/expenditure inequality in Nepal has changed during the period 1984 and 1996. In Chapter Three we examine the inequality of wealth distribution for 1995 and 1996 in Nepal. The Chapter four continues to investigate income and wealth inequalities using decomposition methods because they provide rigorous and powerful tools for identifying the underlying structure of income or wealth, which allow for direct interpretation of the estimated contribution in terms of the inequality index – the relative contribution of a set of population characteristics and of each income factor source that may be found within household income, expenditure and wealth. Chapter Five investigates the inequality of income in the process of development in Nepal. We first examine the Kuznets' proposition according to which 'the degree of inequality varies systematically with the level of income per head – initially increasing as incomes rise and then, beyond some point, decreasing, with further increases in income per head'. By considering historical, structural, institutional, political and socioeconomic issues, we offer an alternative explanation of reducing economic inequality in Nepal, with an emphasis on economic development.

Key words: Income, wealth, inequality, economic development, inequality indexes

INTRODUCTION

I The Background and Objective of the Study

This dissertation is a study on the inequality of income, expenditure and wealth distribution in Nepal. A number of recent economic theories postulate that inequality might be necessary to generate extra savings required for fast growth. A number of new studies published in the 1990s have found a negative relationship between inequality and growth (see Alesina and Rodrik, 1994, Persson and Tabellini, 1994, Clarke 1995 etc). Deninger and Squire (1996) found a negative relationship between the unequal distribution of assets and growth. Aghion and Bolton (1991) have examined the effect of wealth inequality on growth in the presence of imperfect capital markets. In this latter context, poor people are liquidity constrained; which leads to a more unequal wealth distribution. The result of this liquidity constraint is that it will be difficult for poor societies to invest in human and physical capital; and this will lead to lower productivity. Barrow (1991) and Alesina and Perotti (1996) have argued that higher levels of inequality stimulate political instability.

Opinions on the desirable level of inequality and standard of living of countries vary between different schools of economic thought. For example in Nepal, more than 40 percent of the population lives below the poverty line.[1] The United Nations Development Programme (UNDP, 1998) reported that poverty was greater in rural areas, especially at higher altitudes and less accessible regions. Poverty among the lower castes and ethnic minorities has been found to be higher than elsewhere. This suggests an unfair distribution of economic resources among the socio-economic classes. Therefore, a higher level of income inequality tends to be bad for the

[1] The estimates come from the official statistics 1996 and based on a poverty line of $1 per day per person.

economy because it increases the number of poor or it further deteriorates the condition of poor cohorts of population. In such a situation, there is always the increased risk of social and political conflicts.

The link between political risk and poverty has been often illustrated in Nepal. At the beginning of the 1990s, Nepal saw an extreme change in its political climate from absolute monarchy (which lasted until the late 1980s) to a democracy with a constitutional monarchy. The movement of the 1980s yielded a functional democracy and allowed many political parties to emerge in Nepal; among which the Nepal Congress Party (NCP) and the Communist Party of Nepal (CPN) featured prominently, alongside many other small parties. The first democratic election was held in 1991, which brought NCP to power with a majority to serve a five-year term. In the 1991 election, the Nepal Communist Party, United People's Front (*SJM*) became the third largest party in the House of Representatives. In 1994, the *SJM* split in order to participate in the second interim election. In 1995, former Parliamentarian *Pushpa Kamal Dahal*, left the *SJM* to form the Communist Party of Nepal (CPN, Maoist) and began guerrilla fighting against the elected government. In early 1996, the Maoists declared the so-called people's war. More than 10,000 people have lost their lives in the last nine years of civil war that have resulted since then. Between 1984 and 1996 Nepal experienced a rapidly worsening distribution of income and of wealth. The social conflict in Nepal has part of its roots in the increasing income and wealth inequality. Hence, to some extent, the last two decades were very important in modern Nepalese history; and show clearly the link between political risk and poverty – the available household surveys drew my attention to the issue of Nepal's income, expenditure and wealth inequality.

Economists have recently been interested in the studies of inequality of income and wealth. Most of these early studies focused on developed countries. Despite the bulk of literature in this field, however, Nepal lacks specific research because household data regarding income and wealth have not been previously available. Recently, however, the Central Bureau Statistic (CBS) of Nepal has initiated some surveys on living standards of Nepalese households and has collected the household income, expenditure, wealth and so on. The Central Bank of Nepal (NRB) has, probably for the first time, carried out a survey of household budgets that yielded specific data on income and consumption at the household level. Relying on the data from NRB

and CBS we analyse inequality for 1984 (income and expenditure only), 1996 (income, expenditure and wealth) and 2001 (rural income and expenditure).

In developed societies, opportunities for advancement are generally based on merit and open to everyone regardless of class, race, creed, sex or other discriminatory criteria. Inequality, therefore, is not a large concern in those societies. In Nepal, however, opportunities are not equally open to all. This leads us to argue that the unbiased socio-economic class system of Nepal (caste, ethnicity and so on) has highly affected its distribution of income and wealth. For example, the higher caste and ethnic groups are generally wealthy and retain the highest ranks of public and private jobs, granting them strong political influence. Additionally, they may be better able to afford high investment in human and physical capital, which directly improves their productivity. Therefore, the high earning jobs are concentrated in these groups, has led to a big gap between the higher and lower social classes of Nepal in terms of income, expenditure and wealth distribution. Hence, social stratification has become a foundation for economic inequality in Nepal. It seems, from our analysis, that the social classification of Nepalese people has become a tool for reinforcing economic gaps, as much as social values. The main objectives of our study are:

- to understand the inequality of income for 1984, 1996 and 2001 (only rural Nepal) and of wealth for 1995 and 1996. We are fully aware that having data for 1995 and 1996 only we cannot draw conclusions as to the dynamics of wealth. But these data are precious for examining the actual distribution for 1995 and 1996.[2]

[2] We have just received the data for Nepal Living Standard Survey for the year 2003/4 but due to lack of time we cannot include them in this thesis. We shall do so in a forthcoming research.

- to construct some useful explanations of the evolution of income/expenditure inequality from 1984 to 2001 and to analyse the inequality of wealth for 1995 and 1996. This will be assessed against an historical background. At the same time it is also important to compare the distribution of income inequality in the South Asian Nations in order to capture the impact of the South Asian Association for Regional Cooperation (SAARC) revolution.[3]

- This thesis will also provide broad information on the situation of household wealth inequality in the mid 1990s and will give some attention to the varying experience of different groups of the society. We will additionally supply information on regional dimensions of inequality of income, expenditure and wealth distribution in Nepal. To the best of our knowledge, an exhaustive study on wealth inequality does not exist yet in the case of Nepal; it is our intension to dedicate further effort to future studies in this field.

- to investigate the contributions of factor income components on inequality and the role of population subgroups (by social, geographical, economic etc. criteria) in forming the level of inequality of income, expenditure and wealth in Nepal.

- to explore some of the implications of inequality of income, expenditure and wealth in the process of development as discussed by Kuznets (1955).

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[3] The South Asian Association for Regional Cooperation (SAARC) was established on 8 December 1985 by the Heads of State or Government of Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. The Association provides a platform for the peoples of South Asia to work together in a spirit of friendship, trust and understanding. It aims to promote the welfare of the peoples of South Asia and to improve their quality of life through accelerated economic growth, social progress and cultural development in the region. Cooperation in the SAARC is based on respect for the principles of sovereign equality, territorial integrity, political independence, non-interference in internal affairs of the Member States and mutual benefit.

II Summary of the Thesis

This study is organised into five chapters. The first Chapter presents an overview of Nepal's history, geography, economic development, policies and problems. It covers the social, demographic as well as the administrative characteristics of the country. Additionally, we provide the first glimpse of the macroeconomic trends, distribution of resources and poverty in Nepal. We end this chapter by trying to identify the most relevant causes of poverty in Nepal. The remaining the chapters are summarised below.

The aim of Chapter Two is to provide an understanding of the inequality of income for 1984 and 1996 in Nepal and to describe how income/expenditure inequality in Nepal has changed during the period 1984 and 1996. These two dates represent two important decades during which Nepal experienced an absolute monarchy (in the 1980s) and democracy (since the beginning of the 1990s). At the same time it is also important to compare the distribution of income inequality with other South Asian Nations in order to capture the impact of the South Asian Association for Regional Cooperation (SAARC) revolution. We also try to provide the reasons for the inequality trend in South Asian Nations over the last two decades. Nepal appears to have had one of the highest levels of inequality in the SAARC nations in the 1990s. These international comparisons tend to be difficult because of differences in data sources and in measurement methods between countries. However, it may be said with certainty that Nepal's level of inequality has risen substantially in the 1990s *relative to* the levels observed in other SAARC countries.

This chapter also evaluates the analytical tools that are to be used in this study. Inequality of income may yield different results based on the same data due to the varying sensitivity of inequality measures. Some inequality measures may be sensitive in lower tails of the distribution and others in the upper tail. Therefore, judging income inequality by using only one index may be erroneous. In this chapter we have collected nine inequality indexes[4] such that some are lower tail sensitive, some are middle class sensitive and others are upper tail sensitive.

[4] We adopted these indicators from Sawyer (1976) and have refined them for our analysis.

It is especially useful in order to compare the two distributions – whether one is more unequal than another. If all measures show that the first is greater than the latter, then we may indisputably claim it to be true. One cannot go beyond the limitations of the data set at hand, but appropriate applications of research tools should provide more reliable results. In general, all inequality measures, regardless of magnitude, produce a similar interpretation in the trend analysis. These indexes are found to be valuable when we analysed the inequality trend of income for each country of the South Asian Association for Regional Cooperation (SAARC) nations, and the comparison of inequality between these countries – particularly when the difference is very small, some measures may produce positive difference while others may produce negative difference for the same distributions of income.

To measure the impact of income inequality we used income data *per* quintile group, since more detailed data are not available. Additionally, we compare the results from Nepal with those of Bangladesh, India, Pakistan, and Sri Lanka. We shall focus on the following points

- Measuring the Trend of Income Inequality in Nepal: The quintile shares for 1984 and 1996 reveals the amount lost by the entire lower four quintiles between these two periods. The gain of the top quintile was 5.3 percent of total income. In 1996 the 20 percent of households with the highest incomes earned nearly half — 44.8 percent — of national income, while the remaining 80 percent of the population divided the other half (56.2 percent) of national income. Thus, the distribution of income worsened between 1984 and 1996 and the losers were the lower quintiles. This result was confirmed by all inequality measures implemented in this study.

- Measuring Inequality Trends in Bangladesh 1981-96: Bangladesh experienced a decreasing income dispersion during the last two decades. The aggregate share of the richest quintile decreased from 1981 to 1996, though in the mid 1980s and from 1992-96 it showed a tendency to increase its share. On the contrary, the poorest quintile share has consistently increased throughout this period; while the middle three quintiles experienced a mixed pattern with a rise and fall of their income share in the national

income. Bangladesh has succeeded to reduce the inequality of income distribution in the 1990s compared with the 1980s.

- Measuring Inequality Trends in India 1981-96: Between 1983 and 1986 inequality slightly increased in India; the Gini's index increased by 0.56 percent point. India experienced a decline in inequality for the next four years. It reached the lowest inequality level of the last two decades in 1990, with a Gini index equal to 27.28 percentage points. Then, in the nineties the inequality rose drastically in India.

- Measuring Inequality Trends in Pakistan 1985-97: In the last two decades 6 household surveys were carried out to estimate the income distribution of the country. The initial inequality registered 0.30 for the Gini index. From 1986 to 1997, Pakistan experienced a decline of income inequality. Some exceptions are found – the inequality registered an increase between 1988 and 1991 for Log Variance and Atkinson's index (ε=2) and between 1991 and 1997 for Theil index; but for the rest of the measures we found a decline of inequality.

- Measuring Inequality Trends in Sri Lanka 1980-95: Four household surveys were used to estimate the income distribution of the country. The initial inequality is measured at 0.41 for the Gini index. Inequality of income increased between 1981 and 1987. During this period, inequality marked the highest point for the South Asian Nations – the Gini coefficient was 0.42. Between 1987 and 1990 the Gini index declined dramatically by more than 14 percentage points. This is due to the data for expenditure used for 1990; inequality of expenditure in general is lower than the inequality of income.

There was a considerable change in income inequality in the selected South Asian Association for Regional Cooperation (SAARC) countries. Among the SAARC countries, Nepal had the most equal distribution in the 1980s; while in the 1990s, Nepal had the worst distribution of income.

In Chapter Three we examine the inequality of wealth distribution for 1995 and 1996 in Nepal. The Central Bureau of Statistics (CBS) of Nepal collected in 1996 a comprehensive set of data on different aspects of household welfare, such as consumption, income, housing, labour markets, education, health, wealth, migrations etc. These data are used in Chapter Three for calculating the distribution of wealth between urban and rural areas, among various levels of development (Far-western, Mid-western, Western, Central and Eastern), ecological (Mountains, Hills, *Terai*) regions, and among various religious as well as ethnic groups of Nepal. To our knowledge this type of study has not previously been undertaken in the Nepalese context. This chapter, therefore, aims at providing a reference for future study in this field.

- *Wealth distribution between the rural and urban families*:

One of the major components of wealth is the family dwelling. The majority of families own their dwelling; rented houses being found only in the urban areas and in the central regions. Other important components of wealth in Nepal are land, livestock and farming assets. Around 83 percent of the total households have some farming land, but its distribution is very unequal. These three elements are the most valuable assets in an agrarian society, because they represent the core of production. The non-farm enterprises, around 24 percent of the households, are found to be operating such activities. Finally durable goods – *i.e.* the materials and supplies held by a family – and borrowings and lending are other important components of wealth.

First of all it is important to mention that the level of inequality of overall wealth distribution in Nepal is much higher compared to most industrialized countries. Our study on wealth distribution reveals a large variation between urban and rural families. We find that wealth is more concentrated in the upper class households of urban areas; however inequality of wealth remained higher in rural areas. Taken overall, Nepal's wealth distribution has slightly improved between 1995 and 1996. Urban families are far wealthier than rural ones, though. The

lower 40 percent of the families owned only 9 percent of the total agriculture land; while the top 6 percent occupied more than 33 percent. Hence, few rich households own the higher part of land, while most of the farmers are landless or marginal farm holders. It is worth noting that in rural areas the informal financial market is the sole source of credit; the so-called educated feudalists taking advantage of the illiteracy of rural people by lending money at high interest rates.

- *Wealth distribution among the households of development regions:*

Our measures show the least inequality of wealth in the far-western, followed by mid-western, eastern, western and central development regions, for both years, 1995 and 1996. Wealth distribution has improved in all regions except in the mid-western region; and average net wealth has increased. The households of the central region are wealthier by more than four-fold compared with the households of the far-western region and by more than three-fold compared with the mid-western and eastern development regions. The western development region is the second richest region in terms of wealth, where the households are wealthier by two times compared with the eastern and mid-western regions. The value of enterprises for households in the central and western development regions is higher, suggesting that they have alternative income resources apart from agriculture. It seems that the wealthier development regions are characterised by a higher inequality, while the poor development regions have better distribution of wealth. In this chapter we try to draw some conclusions on the reasons for this state of things.

- *Wealth distribution among the households of geographical regions:*

The lower 60 percent of households have a higher proportion of wealth in the Mountain region compared with other regions. Not only the relative value but even in terms of absolute value, the wealth of the Hill region is around three times higher than that of the *Terai* region; and five times higher than that of the Mountain region. The inequality of wealth distribution has decreased between 1995 and 1996, but it is still large for the Hill region. The

household wealth of all regions is composed mainly of the value of dwellings and landholding. Moreover, the livestock is essential in the formation of wealth because families heavily depend on herding and trading in the Mountain region, while in the Hill region the other assets and enterprises are important components of wealth. The density of the population is very high in the Hill and *Terai* regions. Agriculture is the predominant economic activity, supplemented by livestock. The vast majority of the households are land-hungry, hence the poor economic situation is due to land scarcity, and the acute inequality of its distribution and some forms of bonded labour are at the basis of high inequality of wealth distribution in these areas.

- *Wealth distribution classified by household religion*[5]*:*

The dominance of the higher classes of the Hindu society over the lower classes is evident in the socio-economic and religious values predominant in today's Nepal. It has certainly reflected on the distribution of wealth. Wealth distribution among Buddhist families tends to be more unequal, followed by Hindu households. The top percentiles of the Hindu and Buddhist households have experienced a decrease in their share of wealth between 1995 and 1996. The household wealth share of the lower 60 percent has increased for these groups, and, as a result, the distribution of wealth has slightly improved. The Buddhists were the wealthiest families of Nepal in 1996, and their value of entrepreneurship is relatively high compared with others. Wealth for the Muslim households is more equally distributed - this is not surprising since the concept of equality is stronger for them- and their range of profession is rather limited.

- *Wealth distribution among the ethnic/caste families:*

The Nepal Living Standard Survey (NLSS 1996) has considered fifteen ethnic groups in Nepal – *Bramin*, *Chetry*, *Newar*, *Gurung*, *Rai*, *Magar*, *Limbu*, *Tamang*, *Tharu*, *Yadav/Ahir*, *Muslim*, *Sarki*, *Kami*, *Damai*. The *Newar*, one of the oldest ethnic groups in Nepal, are the

[5] The Nepalese households are segregated into four groups according to the religion that the household believe in.

country's earliest inhabitants. Because of their identity business oriented, *Newar* have managed to remain lesser dominated by the ruling elite; and they are the wealthiest groups, followed by *Bramin*, *Gurung*, *Chetri*. The average net wealth has increased for all ethnic households between 1995 and 1996. *Gurung* households face the strongest wealth inequality, followed by *Chetri*, *Bramin*, *Tamang*, *Magar* and *Newar*. The Mongoloid groups (*Gurung*, *Rai*, *Magar* etc.) live in the remote hills and mountains of Nepal, where development has been very slow and the illiteracy rate is very high, while some families are in important positions in the *Gorkha* regiment in England or India. This has led them to have high earnings and savings; causing high inequality in the wealth distribution. *Limbu*, *Muslim*, *Yadav/Ahir*, *Taru* and the lower castes households, *i.e. Kami*, *Damai* and *Sarki*, are generally classified as poor households. Due to low education and skills, they have little chance of improving their situation; indeed other sectors (than agriculture) of the economy offer them fewer opportunities. They have relatively low inequality of wealth distribution, though, compared with other ethnic groups.

The inequality measure decomposition methods provide rigorous and powerful tools for identifying the underlying structure of income or wealth, which allow for direct interpretation of the estimated contribution in terms of the inequality index. Chapter Four analyses two types of decomposition of inequality – the relative contribution of a set of population characteristics and of each income factor source that may be found within household income, expenditure and wealth.

The first one deals with the influence of population subgroups, those identified by the Nepal Living Standard Survey and Household Consumption Survey of Rural Nepal[6], upon total inequality. This method divides the level of inequality 'between groups' and 'within groups'. This type of analysis provides the answers to the following question. How much inequality of Nepalese income, expenditure and wealth may be explained by the differences of between urban and rural areas and within each area, between development regions and within each development region, between various religion people/families and within each religion people/families, and

[6] Nepalese people are subdivided by geographical regions, development regions, rural and urban families/individuals, religions and ethnicity or castes.

between ethnic/caste groups and within each ethnic/caste group? Dynamic decomposition by the population subgroups identifies the changes in inequality due to the changing demographic composition by each subgroup, changes in the mean income/wealth of each group, and the inequality changes within each group. For our analysis we use three indexes, *i.e.*, the Gini index and two Theil indexes. We have developed the decomposition methodology for the Gini index proposed by Yao (1999) and the two Theil indexes by Shorrocks (1980).

This latter is the decomposition of inequality by factor sources, which allows for the estimations of the factor contribution of each income and wealth source to the overall inequality. The impact of these sources on total income or wealth is examined in this study. We disaggregate the total income of Nepalese households and individuals into seven sources. Similarly we disaggregate the total wealth into nine sources. Following Shorrocks (1982) we have developed three methods of inequality decomposition by income and wealth sources, they are: (a) the Theil Decomposition (T/D) rule, (b) the Variance Decomposition (V/D) rule and (c) the Factor Share (F/S) rule. We examine which factor of income and wealth contributes more to the level of inequality and by how much. T/D and V/D measures further identify which factor leads to an increasing or decreasing inequality.

In this chapter, we analysed the decomposition by population subgroups for income and consumption inequality (1996 and 2001) and for wealth inequality (1996).

- *The decomposition of inequality for expenditure:*

The within groups index dominates the between group on whichever partition criteria is used. The 'between inequality' term ranges from 3 percent to 32 percent of total expenditure inequality relative to undertaken partitions in this study. It ranges from 5 percent to 38 percent of total inequality when we use the per capita expenditure. The 'between inequality' term accounts for 11 percent and 12 percent in the aggregate inequality for development regions and ecological belts respectively in the household expenditure. It is even higher for individual expenditure. The urban rural decomposition registered around two fifth; while the ethnic/caste decomposition registered around one fifth of total inequality for the between terms. Little of expenditure inequality is explained by the between group for the decomposition of population by religion.

Though the disparity in household mean income among the religion groups is high, the higher proportion of population weight (above 80 percent) dictated low 'between inequality' term.

- *The decomposition of inequality for income:*

The results of income inequality decomposition show that the bulk of inequality is due to the differences within the population groups *rather than* to disparities among groups. The exceptions to this pattern emerged when population is grouped according to ethnicity as well as rural and urban residences. Around 10 percent of the aggregate inequality is accounted by the between term when the population is disaggregated by the ethnicity of the country. Similarly around 15 percent of the aggregate inequality is accounted by this term for urban and rural population decomposition.

- *The decomposition analysis of the inequality of wealth:*

The analysis of inequality decomposition by population subgroups for wealth reveals that the 'between inequality' term contributes to a small extent to total inequality compared with the 'within' term. We found that the between term is higher for the ethnic decomposition as well as for the urban/rural decomposition. The 'between inequality' term for the development and ecological regions is relatively high; but for the religion classification, it is very low as in the income and expenditure distributions. This suggests that wealth inequality can be reduced among the religious groups only by reducing inequality in each group.

- *The decomposition analysis of the inequality for rural Nepal 1996 and 2001:*

In this research we shall conclude that overall inequality has decreased between 1996 and 2001 for the decomposition of population by geographical regions in rural Nepal. In absolute terms the large part of the decrease is due to the within components, but it has decreased only by 6 percent; while the between term has decreased by 34 percent. Thus the improvement in expenditure distribution in rural Nepal between 1996 and 2001 is primarily due to the improvements of between development region inequalities. Similarly, when we decompose the rural household by ecological belt, the between inequality term seems to be

almost eliminated. The reduction of inequality is completely due to the within components of regional inequality.

- *Decomposition of wealth inequality by its sources:*

Dwelling, landholding and other assets represent a higher proportion of the aggregate household wealth; and the dominant positive influences on inequality relate to the same components. We shall find that all the components of wealth (except for the value of livestock) have a positive impact on total inequality. On the contrary, livestock negatively contributes to total inequality for both T/D and V/D rules.

More than 60 percent of total rural wealth comes from land holding, probably because of the agrarian-based rural economy. More than 65 percent of total inequality is caused by this component of wealth. Dwelling and other assets are a relatively high component of total wealth; they also contribute to the higher inequality level in rural Nepal. Only the livestock represents the negative factor in total inequality for the T/D rule, suggesting that it is negatively correlated.

The urban wealth distribution is dominated by dwellings, and then by landholdings and other assets. Farm assets and livestock have a negative value for the T/D rule; while for the V/D rule they are almost irrelevant. The remaining components of wealth in urban Nepal have a positive effect in the determination of total inequality.

- *Decomposition of income inequality by its sources:*

Farm income has the highest share in income of Nepal and more than 80 percent of the aggregate inequality measure is explained by this component for 1996. Wage income, rent of owner occupied house, and income from enterprises contribute to more than 10 percent of total income. Wage income has a negative impact on rural inequality of income distribution; while the remaining part of the components has a positive value. In urban income distribution, the share of farm income accounts for only around 10 percent. Enterprise income, wage income and owner occupied house rent, have a share above 20 percent each in total income. The highest share of total inequality comes from the earnings from enterprises. Similarly to rural income distribution, only wage income has a negative impact in the total inequality of income. This is why in most societies wage-income is the least concentrated of all other kinds of income.

Chapter Five investigates the inequality of income in the process of development as discussed by Kuznets (1955). We first examine the Kuznets' proposition according to which 'the degree of inequality varies systematically with the level of income per head – initially increasing as incomes rise and then, beyond some point, decreasing, with further increases in income *per* head'. This proposition has been tested using the quadratic equation of income inequality against *per capita* income. The first sample was tested for Nepal across 72 districts out of 75 in 1996. The results confirm the inverted U-shaped relationship between inequality of income and *per capita* income. We also examine the same hypothesis using the cross-country data for the sample of the SAARC nations. The test has further been extended by the Milanovic database of the world for two periods (circa 1988 and 1993). The empirical analysis continued to support the inverted U-hypothesis.[7]

Explanations of the Kuznets process relate to the nature of structural change. Early growth of income inequality may be concentrated in the modern industrial sector because employment in the urban modern sector is limited; but wages and productivity are high - as in the Lewis two sector theory of development. In this regard, Kuznets (1955) has discussed some mechanisms in which economic development often focuses on the rapid evolution of industrialisation. The economic measures of development have been often supplemented by literacy, schooling, health, urbanization, etc. We also examine the Kuznets curve further by incorporating these mechanisms into the simple quadratic equation in order to capture

(1) a trade-off between income inequality and growth,
(2) a trade-off between income inequality and the demographic transition,
(3) a trade off between income inequality and education, and
(4) a trade-off between income inequality and labour force shift.

[7] The Milanovic database consists of the data for income and expenditure distributions. We have also tested the above cited hypothesis including a dummy for the data sources in order to capture the effect of income and expenditure because inequality of income is rather higher than inequality of expenditure. The dummy variable is statistically significant in the model.

We examine these hypotheses empirically with the data of Nepal across 72 districts for 1996. We find that urbanisation has a negative impact on income inequality; while population growth and an initial increase in schooling have positive effect on income inequality.

The statistical test is further extended with South Asian Nations data (for last two decades) and the World data (for circa 1988 and 1993). Agriculture value added, population growth and growth rate of economy[8] have positive effects on income inequality. The higher level of education and urbanisation tends to improve the distribution of income.

III The significance of the thesis

This thesis represents a painstaking inquiry into the genesis, causes, dynamics and implications of inequality in the distribution of economic welfare in Nepal, one of the most ancient and distinguished countries of the Indian Sub-Continent. We attempt to combine historical, institutional, social, and economic arguments to explain why Nepal is still one of the least economically developed countries of the world, where economic inequalities are still at an acceptable level. However, at the end of our journey, we are not convinced that the performance of our native nation must be judged only through variable like income and wealth per capita or inequality indexes. In fact we are convinces that history, tradition, and social institutions are sometimes more important that any Gini coefficient or other inequality indexes for providing a judgement of the progress of our country. For these reasons we have provided a comprehensive historical, social and institutional background of our Nation.

[8] The growth rate of economy however is statistically insignificant in our analysis.

Chapter 1

Introduction to Nepal

1.1 Introduction

Nepal is a sovereign nation situated in the South Asian region. This Himalayan Hindu Kingdom has always existed as an independent nation despite some historic movement of its borders. The geographical landscape is widely varied. The altitude of Nepal varies to extremes within short distances; and ranges in altitude from just above the sea level to the summit of the Everest within the distance of just 193 kilometres.

In the Medieval times, Nepal was divided into many tiny states ruled by kings: *Khas* states in the west, *Malla* states in the Kathmandu valley, *Doy* state in the *Terai*, *Sen* states, and *Baisi-Chaubisi* states. The demarcation specified by the *Sugauli* Treaty between Nepal and the British East India Company in 1816 is generally taken as the starting point for the era of modern Nepal. The boarders in the east and the west are the *Mechi* and *Mahakali* River respectively. In the north, peaks and gorges divide Nepal and China. In the south, pillars fixed at one kilometre intervals mark the border between Nepal and India. The total land area of present Nepal is 147,181 square kilometres, stretching 885 km lengthwise and a width varying from 144 kilometres to 240 kilometres. Irrespective of its small size, especially taken in comparison to the political giants of the region, Nepal has been able to maintain its identity in international affairs. Geographically, Nepal lies on 26° 2’ to 30° 27’ north latitude and 80° 4’ to 88° 12’ east longitude.

For local governance, municipality and village development committees have been constituted. Presently there are 58 municipalities, some of which have been classified as metropolitan municipality, others as sub metropolitan municipality or municipality. A municipality may comprise 9 to 35 wards. Likewise, there are 3,912 village development committees (VDC) as local self-governance units. A VDC has nine wards. The concept of a model VDC has been put forward and experimentally implemented. A chairperson, vice chairperson, and various ward members are in charge of initiating development works in each village. There is a secretary for the administrative function of the VDC.

The period of Nepalese history from 995 to 1883 is known as the medieval period. During this epoch, Nepal was divided into subjects and districts ruled locally by a *samantas* - a type of dual rule. When central rule weakened and tension grew between the centre and the districts, political stability was endangered. After a few years, the subjects disobeyed the central command and Nepal was divided into three states, which lasted for two hundred years. These states had a constant power struggle for supremacy over each other. This struggle ended when these states broke into tiny local states like *Baisis, Chaubisis* and many others until Nepal regained its identity as one nation only in 1883.

1.1.1 *Unification and the Background of the Shah Dynasty*

The fame of *Prithvi Narayan shah* stands out indelibly in the Nepalese history. He had made a solid contribution to Nepal and Nepalese politics. In fact, he made possible Nepal as a nation so he is called the Maker of the Nation. He is remembered as a great politician, and a just, brave, and excellent commander. He not only reunified Nepal, but also developed the concept of a non-aligned foreign policy and the idea of economic independence.

1.1.2 *Post Unification Political scenario and the Rana Regime*

The reunification went well; but political troubles followed one after the other. The political state of the newly formed Nepal began deteriorating as a consequence of conspiracies for power among the royal families. In post reunification Nepal, the political instability and

uncertainty became a catharsis for bloodshed and assassination in the royal palace, which brought autocratic *Rana* rule and lasted for 104 dark years. During this regime, developments were nominal. The rulers spent most of their time and energy exploiting and suppressing the people.

The *Ranas* always ignored the role of the King and the people. The Nepalese people were denied a voice in the political process. The Prime Minister became the sole and supreme ruler, having the authority to promulgate, implement, and repeal laws. The *Rana* rule created a wide economic gap in the society. The national treasury was spent to decorate *Rana* palaces, while the common people went without food and shelter. The *Rana* rulers believed that if people were educated their despotic rule would be dismantled, so they did not allow schools and colleges to be opened. The *Ranas* indirectly followed the British in India. When the British fled from India, it had a great impact on the *Ranas*. Many colonies across the world were fighting against the British to free themselves. The *Ranas*, whose grip on power was reliant upon British rule in India, felt helpless when India gained independence.

1.1.3 *Modern history and politics*

The end of the *Rana* Regime in 1951 occurred when an armed revolt led by the Nepali Congress Party, armed partly with the moral support of King *Tribhuwan*, paved the way for a joint government of the Nepali Congress and the *Ranas*. The period 1951-59 was marked by a rapid succession of governments and political instability. An election was held under a parliamentary constitution in 1959, which brought the Nepali Congress Party to power. King *Mahendra*, father of the present King *Gyanendra*, dissolved the first popularly elected government of the country and replaced the democratic regime by the party- less *Panchayat* system. This system lasted for thirty years, until April 1990, when a pro-democracy movement, led jointly by the then banned political parties - the Nepali Congress and the United Left Front (a loose coalition of seven communist factions) - brought an end to the thirty-year ban on political organisations.

The new coalition prepared and promulgated a new Constitution incorporating elements of constitutional monarchy, multiparty democracy, and fundamental freedoms; and it held the first multi-party elections in thirty years. The new Constitution that came into effect in November 1990 underwrote a two-tiered legislature, the National Council (Upper House) consisting of 60 members and the House of Representatives (Lower House) consisting of 205 members. Members of the House of Representatives are to be elected every five years through national elections. The National Council consists of members selected by the Lower House, the King, and an Electoral College consisting of members from local level committees. The King, as Head of State, appoints the majority leader of the House of Representatives as the Prime Minister, who leads the affairs of the country with the help of council of ministers that s/he forms.

Administratively, the country is divided into five development regions, fourteen zones and seventy-five districts. The districts are the main units of local governance, with the structure comprising the Village Development Committees (VDCs) with a Chairperson and Vice-Chairperson and members consisting of representatives elected from various wards, and the District Development Committees (DDCs) elected indirectly by them. The urban areas elect their own Mayors who lead municipalities (that have similar structures). Efforts directed at greater decentralisation have primarily sought to strengthen the government machinery at the district level. The Regulations of the Local Self-Governance Act of 1999 have now been signed into effect, making it possible for elected local bodies to raise revenue, enter into collaborative ventures with the private sector, adjudicate and, generally, promote development in a decentralized, sectored fashion.

1.2 Geographical Division of Nepal

Some distinct physical features divide Nepal into different geographical regions. The division categorised according to landscape, water bodies, and climate is very distinct as each exhibit observably different characteristics in particular regions. The following is a brief description of different geographical regions of Nepal.

Differences in the topography influence the lifestyle of the local inhabitants. The cultural traits of the mountain dwellers have direct relation to the geographical characteristics, and the same goes with the *Terai* region. We can divide Nepal based on its landscape as follows.

1.2.1 *The Himalayan region*

The region in the north with altitude above 3,000 metres is known as the Himalayan region. It occupies 15% of the total area. *Gurung, Sherpa, Thakali, Manangi, Bhote* are the indigenous people living here. *Rai, Limbu, Brahmins and Newars* are also found sporadically living in this area. The lifestyle of these people is similar to that of Tibetans. In order to keep out the cold, houses are made of mud, have thick walls, and are cave-like in structure. Due to excessive cold in winter, people tend to migrate to warmer lowlands during the winter months. Because of the difficult climatic condition and poor fertility of the soil, the main occupations here are trade and animal husbandry, not particularly farming. Major crops are oat and barley though. There are wide pastoral areas for the cattle to graze.

1.2.2 *The Hills*

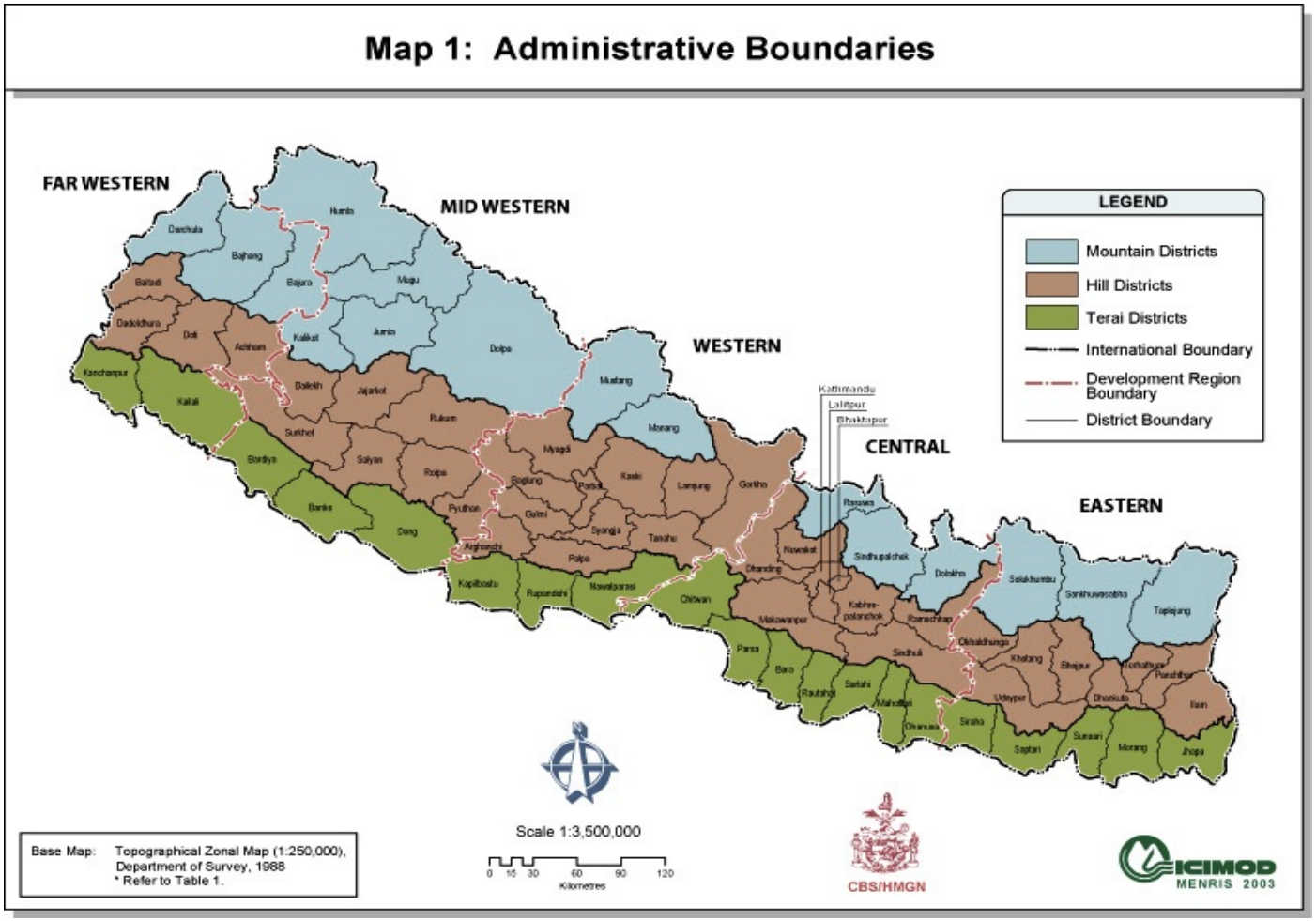
The region with the altitude from 300 metres to 3,000 metres is known as 'the hills'. It spreads from east to west in the middle of Nepal, the *Terai* in the south and the Himalayas in the north. There are two ranges in the hills: the *Mahabharat* range and the *Churia* range. The hill area is 75 km to 125 km wide and covers 68% of the total land area. All four *varnas i.e. Brahmins*, *Chetris*, *Vaishayas*, *Shudras*, and 36 castes are found living indigenously here. Diversity, mutual co-operation, and togetherness are typical characteristics of these inhabitants.

The main occupations of the hard-working hill people are agriculture, animal husbandry, trade, industry and public and private services.

1.2.3 *The Terai region*

The plain area has a width of 15 km to 21 km and lies in the south of Nepal. It is known as the *Terai* region. It runs all the way from east to west of Nepal and covers 17% of the total land area of the Kingdom. In some parts, it penetrates into the hills, forming the 'inner *Terai'*. Because of good transportation, communication, and high agro-yield, there is a high rate of inflow of population from the hills; and new communities are forming throughout the *Terai*. The indigenous communities living here include *Danuwar*, *Tharu*, *Yadav*, *Rajput*, *Dhimal*, *Mandal*, and immigrants include *Brahmins*, *Chhetris*, *Magars,* and others. Popularly known as the granary of the country, this region has incorporated trade and industry on a high scale, providing employment for the growing population. With typical traditions and rituals, which have many things in common with Indian culture, this region holds an important place in mainstream society of Nepal.

Map 1: Administrative Boundaries



1.2.4 *The river system*

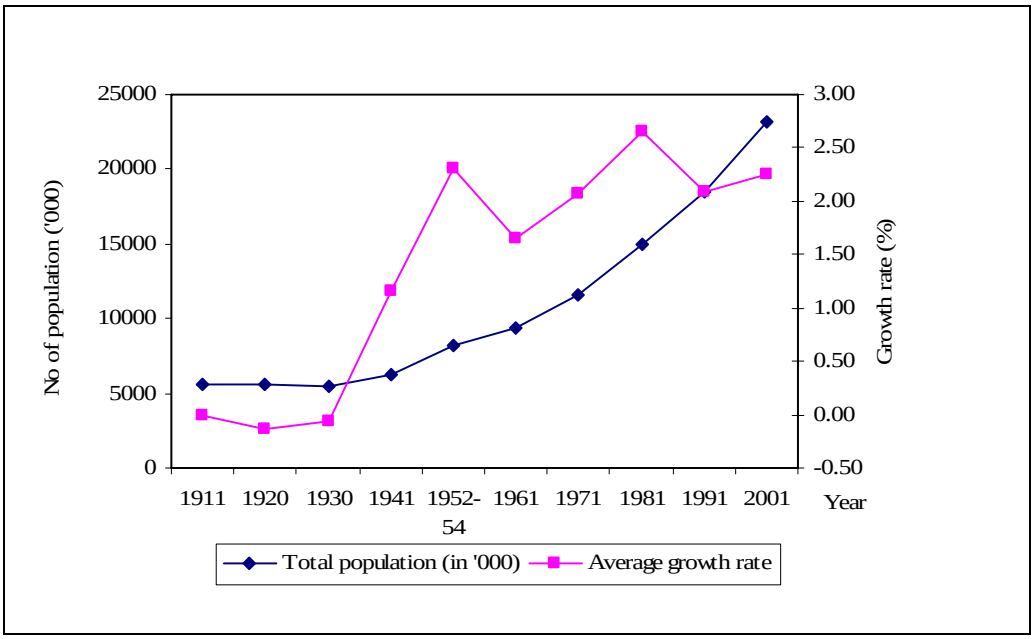
Nepal can be divided into three major river systems from east to west: the *Kosi River*, the *Narayani River* (India's *Gandak* River), and the *Karnal*i River. All ultimately become major tributaries of the *Ganges* River in northern India. After plunging through deep gorges, these rivers deposit their heavy sediments and debris on the plains, thereby nurturing them and renewing their alluvial soil fertility. Once they reach the *Terai* Region, they often overflow their banks onto wide floodplains during the summer monsoon season, periodically shifting their courses. Besides providing fertile alluvial soil, the backbone of the agrarian economy, these rivers present great possibilities for hydroelectric and irrigation development. The deep gorges formed by the rivers represent immense obstacles to establishing the broad transport and communication networks needed to develop an integrated national economy rather than to support any significant commercial facility by these rivers; for instance production of hydro-power. As a result, the economy in Nepal has remained fragmented. Because Nepal's rivers have not been exploited for transportation, most settlements in the Hill and Mountain regions remain isolated from each other. The eastern part of the country is drained by the *Kosi* River, which has seven tributaries. It is locally known as the *Sapta Kosi*, which means seven *Kosi* rivers (*Tamur, Likhu Khola, Dudhkoshi, Sunkoshi, Indrawati, Tama*, and *Arun*). The principal tributary is the Arun, which rises about 150 kilometres inside the Tibetan Plateau. The *Narayani* River drains the central part of Nepal and has seven major tributaries (*Daraudi, Seti, Madi, Kali, Marsyandi, Budhi*, and *Trisuli*). The *Kali*, which flows between the *Dhaulagiri Himal* and the *Annapurna Himal*, is the main river of this drainage system. The river system draining the western part of Nepal is the *Karnali*. Its three immediate tributaries are the *Bheri, Seti*, and *Karnali* rivers, the latter being the major one. The *Mahakali*, which flows along the Nepal-India border on the West Side, and the *Rapti* River also are considered tributaries of the *Karnali*.

1.3 The Population

Though Nepal had a population of 23 million in 2001, it might seem that the size of the Nepalese population is very small compared to its neighbours (India and China), each with more than one billion people. The first census of Nepal (1911) yielded a population size of 5.6 million. Since then, the census count has been conducted more or less at ten-year intervals. The annual average growth rate of population during the last decade, *i.e.* 1991-2001, was 2.25 percent. One of the major consequences of rapid population growth was the progressive deterioration of the ratio of people to exploitable land, which has affected both social as well as economic aspects of Nepal.[9] The following figure shows the demographic trend and the growth of population over the last fifty years.

[9] The population pressure on productive land has increased. The agricultural production has not sufficiently increased in order to meet the demand of the growing population; this has specially aggravated the living situation of the peasants in Nepal. The lack of employment in other sectors than agriculture has created the need to farm marginal land for food production. Forests are being depleted in order to expand the agricultural land, which have resulted in frequent landslides, floods, as well as soil erosion.

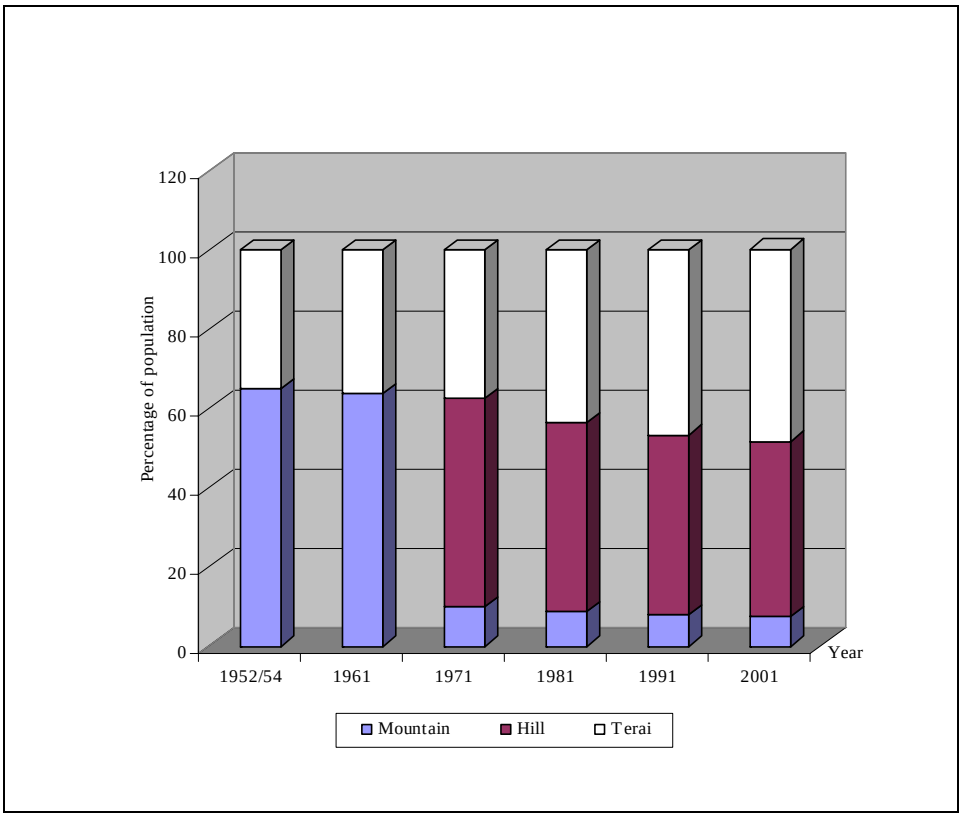
Figure 1.1 The population and its growth rate in Nepal (1911-2001)



Data source: Nepal Population Report (2002)

Until 1961, the population census in Nepal did not disaggregate the Hill and Mountain regions. The proportion of population living in the Terai is increasing, while the proportion of people living in the hills and mountains is declining over the years.

Figure 1.2 The population distribution in three ecological regions 1952-2001



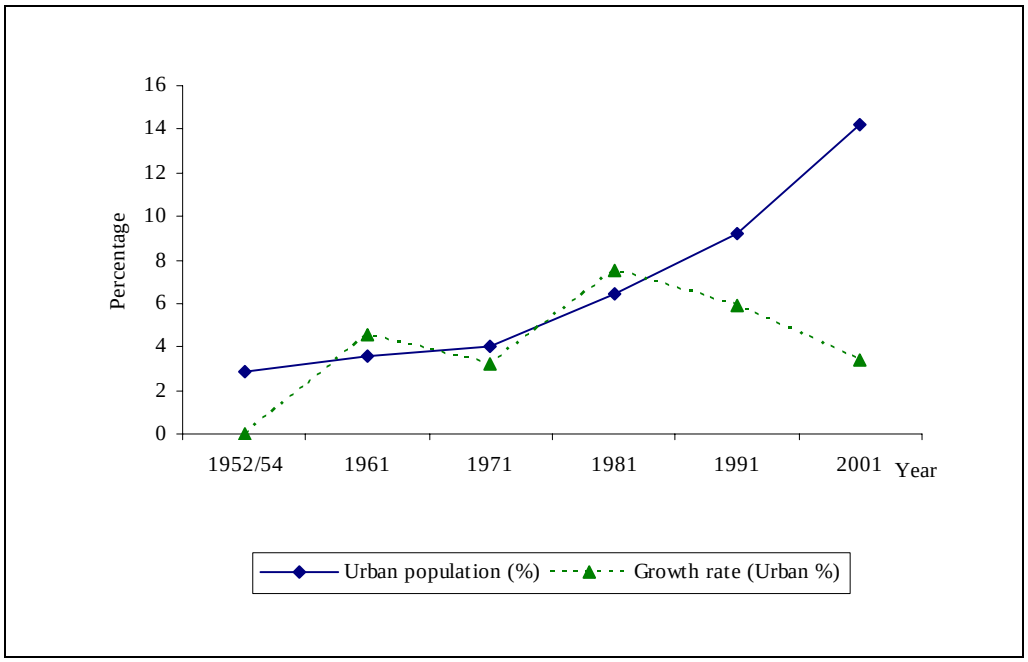
Data source: Nepal Population Report (2002)

Population density varies from region to region. The Terai is the most densely populated, while the mountains are sparsely populated. The Terai population has increased by four folds in the last half century as a result of the north-south movement of the population and immigration. The population report (2002) has recognized some reasons of these migrations into the Terai regions. They are: (1) unequal distribution of resources, (2) availability of productive land in Terai, (3) difficult topography of Hills and Mountains (4) disparity in socio-economic development and (5) the lack of basic facilities and infrastructure in these latter regions. These factors have led to an increased migration to the Terai area from hills and mountains and at the

same time the flow of immigrants from the bordering country have played a crucial role in the growing population living in the *Terai* region.

Nepal is one of the least urbanized countries in the world. Urban population of Nepal increased from 3.6 percent in 1952 to 14.2 percent in 2001. Although urban population has increased substantially, it is still low compared to the South Asian nations. The urban population growth over the last half century is depicted in the following figure.

Figure 1.3 The urban population and its growth rate in Nepal (1952-2001)



Data source: Nepal population report (2002)

Nepal is as ethnically diverse as it is geographically. It is home to several races and tribes, languages and religions. There are some 75 different ethnic groups that speak about 50 different languages (dialects). Most agree that the original inhabitants were Tibetan-Mongoloids from the north who migrated south and Indo-Aryans from the south who migrated north. Nepalese of Indo-Aryan ancestry constitute the great majority of the total population. Tibeto-

Nepalese form a significant minority of the country's population. The majority of the Nepali people are Hindus and the second largest group is Buddhists. Other religions represented are Islam, Christianity, and Animism. The share of the Hindu population has consistently remained over eighty percent since 1950s. The second largest religion in Nepal is Buddhism; practiced by about 11 percent, while Islam constitutes about 4.2 percent of the population.

Table 1.1 Population by religions in Nepal (1961-2001)

	No of population				
	1961	**1971**	**1981**	**1991**	**2001**
Hindu	8,254,256	10,329,893	13,445,441	15,996,648	18,330,533
Buddhist	870,702	866,699	799,215	1,438,607	2,441,949
Muslim	280,507	351,302	399,608	652,736	954,952
Others and Unspecified	7,530	8,089	378,576	403,106	1,009,521
Total	9,412,996	11,555,983	15,022,839	18,491,097	22,736,955

Data source: Nepal Population Report (2002)

There are also many tribal groups in Nepal. The co-existence of these ethnic groups and their cultures has been marked by tolerance and openness for centuries, building both unity and diversity into the rightful heritage of the Nepalese people. The official language is Nepali, a derivative of Sanskrit, and the *lingua franca* of around 50 percent of the population. Nepali is spoken and understood, at least to a limited extent, by most of the population. A summary of the major linguistic populations is provided in Table 1.2. The 1952/54 census collected information on 36 languages and the 1961 census collected information on 52 languages. According to the 1991 and 2001 censuses, more than 50 percent of the total population has Nepali as their mother tongue; followed by *Maithili*, *Bhojpuri*, *Tharu*, *Tamang*, *Newari*, *Magar* etc. The distribution of population of Nepal by mother tongue from 1961 to 2001 is shown in Table 1.2.

Table 1.2 The distribution of population by languages in Nepal (1961-2001)

Mother Tongue	1961	1971	1981	1991	2001
Nepali	4,796,863	6,061,113	8,767,329	9,302,871	11,053,255
Maithali	1,132,383	1,327,782	1,669,037	2,191,195	2,797,582
Bhojpuri	577,017	806,608	1,143,238	1,379,436	1,712,536
Tharu(Dagaura/Rana)	406,641	495,752	545,329	992,972	1,331,546
Tamang	529,010	554,687	522,795	904,215	1,179,145
Newar	377,461	455,306	449,183	689,718	825,458
Magar	255,092	288,900	213,324	430,843	770,116
Awadhi	477,239	316,634	234,356	375,369	560,744
Gurung	158,138	172,184	174,265	227,440	338,925
Limbu	138,371	171,029	129,196	253,328	333,633
Urdu	2,824	na	na	201,553	174,840
Rajbanshi	55,537	55,469	60,091	85,059	129,883
Sherpa	83,776	79,736	73,612	122,041	129,771
Hindi	2,824	na	na	170,118	105,765
Danuwar	11,296	10,400	13,521	24,038	31,849
Sunuwar	13,178	20,801	10,516	na	26,611
Thakali	6,589	na	6,009	7,396	6,441
Others	388,757	739,583	1,011,037	1,133,504	1,228,855
Total	9,412,996	11,555,983	15,022,839	18,491,097	22,736,955

Author's calculation from the Nepal Population Report (2002) data

1.4 Caste and Ethnicity

One integral aspect of Nepalese society is the existence of the Hindu caste system, modelled after the ancient and orthodox *Brahmanic* system of the Indian plains. The caste system did not exist prior to the arrival of Indo-Aryans. Its establishment became the basis of the emergence of the feudalistic economic structure of Nepal. The high-caste Hindus began to appropriate lands, particularly lowlands, that were more easily accessible, more cultivatable, and more productive including those belonging to the existing tribal people, and introduced the system of individual ownership. Even though the cultural and religious rigidity of the caste system has slowly been eroded, its introduction into Nepal was one of the most significant influences stemming from the migration of the Indo-Aryan people into the hills. The migrants from the north were later incorporated into the Hindu caste system, as defined by Indo-Aryan migrants, who quickly gained control of the positions of power and authority. Tibetan migrants did not practice private ownership; their system of law was based on communal ownership. No single, widely acceptable definition has yet been found to analyse the caste system. The fourfold caste divisions are:

- *Brahmins* (priests and scholars), primitively the caste of the priests, whose main duties are to study and teach, and also to preside over and perform all-important rituals.
- *Kshatriya* or *Chhetri* (rulers and warriors), originally the caste of kings, princes, rulers, warriors, in other words all those whose duty is to give protection to the *Brahmins* as well as to the whole population. Nevertheless, they too, should be able to study- but not to teach.
- *Vaisya* (or *Vaisaya*, merchants and traders), are those of the third highest caste: they are the traders, peasants, artisans, cattle breeders etc. They too, should know how to read the texts.
- *Sudra* (farmers, artisans, and labourers), those who should be the servants of the three upper groups. They are not supposed to read the texts.

Now, outside this caste structure are the ‘untouchables’ or outcastes a notion that is linked with that of purity, which in turn, rests on the natures of their profession. It is important to

note that one of the most ‘polluting’ professions - almost on the same level as sweepers and refuse collectors - are the four following professions: sweepers, blacksmiths (called *kami*), shoemakers or tanners (called *sarki*) and tailors (called *damai*).

These *Pahari* caste divisions based on the Hindu system, and thus not strictly upheld by the *Newars*. The *Newars* have their own caste hierarchy, which they claim is parallel in caste divisions to the *Pahari* Hindu system. In each system, each caste is ideally an endogamous group in which membership is both hereditary and permanent. Furthermore, caste determines an individual's behaviour, obligations, and expectations. All social, economic, religious, legal, and political activities of a caste society are prescribed by sanctions that determine and limit access to land, position of political power, and command of human labour. Within this constrictive system, wealth, political power, high rank, and privilege converge and are transmitted inter-generationally; hereditary occupational specialisation is a common feature. Nevertheless, caste is functionally significant only when viewed in a regional or local context and at a particular time. The assumed correlation between the caste hierarchy and the socio-economic class hierarchy does not always hold. Because of numerous institutional changes over the years and increased dilution (or expansion) of the caste hierarchy stemming from inter-caste marriages, many poor high-caste and rich low-caste households can be found.

Although the caste system has lost its legal support, the higher castes still control almost all the region’s wealth and carry considerable political power. Movement back and forth across the India-Nepal border is unrestricted, especially for marriages and socio-economic relations, thus cementing caste ties. In Nepal, the Hindu caste system socially and ritually defines all people by the group into which they have been born. It is further elaborated into a number of rules for eating, marrying, working, and touching. However, as strong and persuasive as this system is, Nepal has been unique in the Hindu world for the degree to which economic, political and romantic deviations from the caste norms are accepted and incorporated into society.

The 2001 census identified around 100 caste or ethnic groups and subgroups in the population. The major ethnic/caste groups are presented in Table 1.3 below.

Table 1.3 The distribution of population by caste/ethnic groups in 2001

Caste /Ethnic Groups	Number of Population	Population Ratio (%)
Chhettri	3,593,496	15.80
Brahman	3,030,973	13.33
Magar	1,622,421	7.14
Tharu	1,533,879	6.75
Tamang	1,282,304	5.64
Newar	1,245,232	5.48
Muslim	971,056	4.27
Kami	895,954	3.94
Yadav	895,423	3.94
Rai	635,151	2.79
Gurung	543,571	2.39
Damai/Dholi	390,305	1.72
Limbu	359,379	1.58
ThakurI	334,120	1.47
Sarki	318,989	1.40
Teli	304,536	1.34
Chamar, Harijan, Ram	269,661	1.19
Koiri	251,274	1.11
Kurmi	212,842	0.94
Sanyasi	199,127	0.88
Dhanuk	188,150	0.83
Musahar	172,434	0.76
Dusad/Paswan/Pasi	158,525	0.70
Sherpa	154,622	0.68
Sonar	145,088	0.64
Kewat	136,953	0.60
Baniya	126,971	0.56
Gharti/Bhujel	117,568	0.52
Mallah	115,986	0.50
Kalwar	115,606	0.51
Others	2,415,338	10.60
Total	22,736,934.00	100.00

Author's own estimates from the Nepal Population Report (2002) data

1.5 The Inheritance System and Women's Command over Resources

The inheritance system of Nepal, as codified in the National Code of Nepal (*Mulki Ain*) of 1963, is matrilineal in character and derives from the Hindu system of beliefs emphasising matrilineal descent and patriarchal residence. The family laws, which govern marriage, divorce, property rights, and inheritance, reinforce the patriarchy and put severe limits on women's command over economic resources. According to the National Code, amended in 1975, a woman shares equal rights of inheritance with her husband and her sons in her husband's property. She is also an equal co-partner (one who may claim a share) in the ancestral property (if her husband is not alive) provided she is at least 30 years old and/or has been married for at least 15 years. She is entitled to equal inheritance rights with her brothers in her parental household only if she is unmarried and is at least 35 years of age at the time of partition of the property. The property she gets in the marital household is conditional on her remaining faithful to the husband and his clan even if he is dead. She looses all rights to his property on marriage to another person or divorce. She has no claims on maintenance after five years of divorce.

A woman inheriting property in her parental household must return this property to her brothers or their direct male descendants if she decides to get married afterwards. A woman has absolute rights only over *Stridhan*. *Stridhan* is property, which originates in the woman's own earnings, gifts from her parental household, her husband, and his household or from any other sources. Her access to sources of income are also limited by the ‘family law’, according to which the husband has the right to decide the place of settlement, and the wife has to have her husband’s permission to work outside the home. In addition, a woman can make legal contracts only in connection with her *Stridhan*. These provisions severely limit economic and political options for women. Attempts at integrating women in development programmes and projects invariably come unstuck by these social and economic constraints. Women activists at various levels have waged a constant struggle over the last 5-6 years for reforms in inheritance laws so that daughters may inherit parental property. Discrimination against women covers the domain of physical survival, especially during infancy, childhood and childbirth, health and educational opportunity, work burden, and wage employment and income opportunities, ownership of

productive and other assets and overall cultural status. It should be noted that the construction of gender and gender relations varies to some extent by age life-cycle-related position with the family, cast, ethnicity, class, religion and so on. The high ritual and social value attached to sons as against daughters, places emphasis on gender specific socialisation and highly gender-segregated access to household productive resources, income and to a certain extent, household decision making and schooling. The female infant and child mortality rates are significantly higher than the rate for male child. The girl child spends more time than the boy sharing in house holding and family production responsibilities, including farm work. Schooling and other public experience, partly as a result, remain much more limited for girls. Primary school enrolment rates between male and female were 79 percent and 36 percent respectively during 1980-85 (according to the World Bank social indicators). Cultural norms that prescribe early marriage (by 19 years of age), early childbirth, and higher fertility inhibit women's educational and other opportunity. With the exception of certain ethnic communities of the Tibeto-Burman group, Nepali society is predominantly patriarchal, governed by Hinduism as a strong ideological force. All aspects of the growth and development of the child, both male and female, are shaped by a social structure value system informed by patriarchal traditions.

Even among the Tibeto-Burman communities, an increasing trend towards the adoption Hindu values and norms is noticeable among upwardly mobile groups. Nepal is a country with a very high incidence of ‘son preference’. Sons are economic insurance against the insecurities of old age. They virtually open the gateway to heaven by performing the death rites for their parents, and they carry on the family name and legacy. Daughters, instead, are raised to be given away in marriage, to care for their husband’s parents and protect their husband’s property. In the consideration of many parents, daughter’s economic value is restricted to their childhood years, and investments in their future, as education and often health care, are poor investments.

Thus, if a girl baby survives until early childhood, the peril of neglect faces her. Although girls receive the same care and nutrition as boys when infants, older girls often receive less health care and less food, resulting in higher mortality and morbidity rates among girls than boys. In middle and late childhood, they assume a large share of domestic responsibilities,

including sibling care, often to the detriment of their education and social participation. As adolescents, Nepali girl children are burdened with early marriage and pregnancy. Combined with poor health and inadequate prenatal practices, they face a high risk of prenatal complications and death. Their nutritional deficiencies may have effects on their children, resulting in infants' low weight birth, disabilities, or death. As they grow older, repeated pregnancies, continued malnutrition and excessive workload can result in early death, and Nepal is one of the few countries in which women's average life expectancy is shorter than men's.

1.6 Socialisation Patterns of the Male and Female Child

The socialisation patterns in Nepali society are such that young boys are prepared for the world of productive work and decision-making, while girls are trained to be housewives, mothers and service-providers. From a very young age, girls are instilled with the notion that their duty lies in providing services to their family; firstly their own, then their husbands' family. Boys' and girls' tasks are quite distinct in Nepali society, and boys, while helping with their fathers' work, seldom participate in household tasks. Decision-making, strength of expression, opinion-formation, and assertion of their needs and interests are implicitly discouraged in the socialisation process. In terms of social interaction, girls are for the most part confined to the inside world of the home. They have little contact with males outside their family or females outside their community, and lack access to the outside world of information, knowledge, and resources. Although not the case among all of Nepal's ethnic communities, open and frank discussions between young daughters, mothers and senior women regarding menstruation, sex and pregnancy are not the normal rule in traditional Hindu households. Girls often learn the facts of life from their peers and may be embarrassed to talk about their concerns with older women. Adolescent girls have little access to health education or medical services to deal with their problems, and virtually no access to sex education. This among other things leads to high mortality rate of childbirth and low life expectancy of women in Nepal.

1.7 Rural Society and Kinship

Nepal is predominantly a rural-agricultural society, where more than 90 percent of the people live in rural areas and more than 80 percent people depend on farming as a source of livelihood. Even in settlements designated as urban areas, the rural-urban distinction is easily blurred; more than 50 percent of urbanites outside the three cities in the Kathmandu Valley are engaged in farming for their livelihood. Even in the Kathmandu Valley cities, 30 to 40 percent of city dwellers are agriculturists. In this sense, most urban areas were economic extensions of rural areas; but with an urban manifestation and a commercial component. Farming is the dominant order of society and the mainstay of the economy, a situation that was unlikely to change, given the extremely sluggish pace of economic transformation.

The basic social unit in a village is the family, consisting of a patrilineally extended household. The extended family system should not, however, be construed as a necessarily harmonious form of village life. Many extended families break apart as sons separate from parents and brothers separate from each other. At the time of separation, the family property is equally divided among the sons. If parents are alive, they each receive a share. Family separation generally occurs in cases where the head of the household is less assertive and domineering, when the father dies, or when all sons marry. Unmarried sons normally do not separate from their parents; if the parents are deceased, unmarried sons usually stay with their older brothers. Because family separation always results in a division of family landholdings, landholdings are extremely fragmented and limited, both geographically and socially.

Beyond the immediate family, there exists a larger kinship network that occasionally involves sharing food. This network is also an important means of meeting farm labour needs, especially during the planting and harvesting seasons, when labour shortages are common.

Above the kinship network is the village, which functions as a broader unit of social existence. Some villages are no more than hamlets made up of just a few houses; others are sizeable communities of several neighbouring hamlets. In more populous villages, the caste groups contained occupational low (untouchable) caste groups, such as the Kami (ironsmiths who make tools), the Sarki (shoemakers), and the Damai (tailors and musicians), who fulfil the

vital basic needs of the village as a fairly self-contained production unit. Villagers occasionally pool their resources and labour together to implement village-level projects, such as building irrigation ditches or channels, or facilities for drinking water. If a household cannot afford to hire farm labour, it usually relies on the reciprocal labour-sharing system called *parma*, which allows villagers to exchange labour for labour at times of need.

Although farming traditionally ranked among the most desirable occupations, villagers frequently encourage some of their children to leave in search of civil service, army, and other employment opportunities. Individual migration is often the result of a family decision and an important economic strategy; it not only serves as a safety valve for growing population pressures but also generates cash incomes, thereby averting any undue economic crises in the family. Well-to-do village families usually push their children to obtain civil service jobs as a means of climbing the bureaucratic ladder and of developing valuable connections with the elite political structure.

Farming is the most important source of livelihood in rural areas, but the scarcity of land places severe constraints on agricultural development. Landholding is the most important basis for, or criterion of, socio-economic stratification. The 1981 agricultural census data identifies five classes of peasantry: land-less and nearly land-less, people with no land or less than half a hectare; subsistence, those with half a hectare to one hectare; small, holders of one to three hectares; medium, people with three to five hectares; and large, farmers of more than five hectares. In terms of production relations, the first two classes are dependent on large landowners for survival. Small landowners, on the other hand, are relatively independent; they do not have to depend on the large land-owning class for survival, especially if they are involved in circular migration as a source of supplementary cash income. Nor do they regularly employ members of the first two classes. Landowners of medium-sized plots are independent of large landowners. Their engagement in wages labouring or tenancy farming is sporadic, if present at all. In some cases, they employed others during peak farming seasons. The large land-owning class regularly employ farm workers and benefit from the existence of excess labour, which keep wages low. In general, the situation of landholders is exacerbated by the archaic nature of

farming technology and the absence of other resources. It is not surprising that rural poverty is widespread.

1.8 Social Classes and Stratification

In terms of differences in wealth and access to political power, Nepalese society may be divided into a small ruling elite; a growing, intermediate-sized group of government officials, large landholders, and merchants; and the vast majority of the population, consisting of a peasant base. These divisions are descriptive, functional class categories rather than social class entities based on the Marxian concept of the social relations of production. In a way, all three classes have been a long continuum in Nepal's social structure because most members of the ruling elite and government functionaries had their direct roots in the rural landed class, which was one stratum of the farming population.

Even though the agricultural sector as a whole has been faced with similar economic and technological circumstances, it was able to diffuse these pressures through a structure of diverse strata in landholding, relative economic dependence, and independence. The numerically small intermediate stratum of the farmers was only slightly less diverse than the rest of the rural population in terms of members' ethnic and geographical backgrounds. The relative economic and educational advantages of this group and its occupational activities, however, made its members relatively homogeneous in terms of shared interest. They generally aspired to achieve a middle- or elite-class status. The smallest and least diverse of the three categories was the ruling elite, largely composed of high-caste, and educated *Paharis*, namely different strata of *Brahmans* and *Chhetris*. At the zenith of this class was the monarch, whose authority was derived from the orthodox Hindu contention that the king was the reincarnation of *Vishnu* (Hindu God), whose assigned role in the Hindu trinity is protection. The monarch's authority was not based on electoral support. The continued expansion of the bureaucracy was a direct response to a consistent increase in the educated population. Because of the lack of development, a large number of educated people failed to find gainful employment upon graduation. Because they constituted the most potent revolutionary force, and happened to be geographically

concentrated in urban centres, the ruling class was almost compelled to absorb them into an already bloated bureaucracy in order to neutralise any socio-political disturbance they might cause.

1.9 The Economy of Nepal

Nepal is the one of the poorest and least developed countries in the world, with more than one third of its population living below the poverty line. Nepal had a late start in economic development. The government did not create a system of modern infrastructure and administration until the 1990s. Since then, however, Nepal has seen a number of positive results: school enrolment ratios have improved with nearly all boys and 90% of girls enrolling in primary school. Irrigation coverage has reached 25% of cultivated land (1999); road networks have increased from 124 km in 1956 to 15,000 km in 1998. Electricity used by number of households has increased from less than one per cent in 1956 to 15 percent in 1999. Despite these advances, Nepal's social indicators remain well below the average of South Asian region. Health and education indicators particularly of women are discouraging - life expectancy for women, as already said, is lower than that of men; and 81% of Nepal's women are illiterate compared with 46% of men. The pressure of population growth on scarce and fragile land means that the benefits of better education are often outweighed by more fragmented land and reduced availability of forest products upon which most of the rural population depends for its livelihood. The ratio of population to arable land (around 600 persons per square kilometre in 1998) is one of the highest densities in the world.

We now turn to a consideration of the structure of the Nepalese economy.

1.9.1 *Agriculture*

Agriculture plays an important role in the country. It provides employment to 80% (in 1998) of the population and, has a significant bearing on the manufacturing and export sectors. It contributes 40% of GDP (in 1998) and more than 50% of household income (more than 80% of population owns lands and 86% of them actually farm).

In 1995/96, a detailed NLSS (Nepal Living Standard Survey) study was undertaken. It revealed that even after decades of development effort, the number of poor people continues to grow in Nepal. More that 40% of population live below the poverty line. For almost 90% of the poor and very poor (those of bottom 25%) of household have remunerative activities in agriculture. Even at the top of the consumption scale, nearly 3/4 is engaged in agriculture. For both the lowest and the highest groups, farming income represents more than half (55% and 54% respectively) of all income. Nationwide, the importance of agriculture is unquestionable. However, the share of agriculture in GDP has constantly declined from 64.0% in 1977 to 40.5% in 1998. The average growth rate of agriculture in the last decade has been only 2.3% a year, which hardly meets the fast growing population of 2.5% per annum.

Rice is the leading staple. Corn, wheat, sugarcane, barley, and millet are widely grown. These are the major crops. Major cash crops such as sugarcane, jute, oil seeds, tea, and lentils are grown. Besides Nepal has potentiality to grow all kinds of vegetable and fruits due to her climatic biodiversity. Nepal is a major producer of medicinal herbs, which grow in the Himalayas. Cattle, buffalo, goat, sheep etc, are also commercially raised. Livestock production accounts for one third of the agricultural production.

Forestry is an important industry and wood from the forests is mostly used for fuel. It supplies most of the energy consumed in Nepal. This has resulted in widespread deforestation and severe erosion of the tree-depleted areas.

1.9.2 *Non-agriculture*

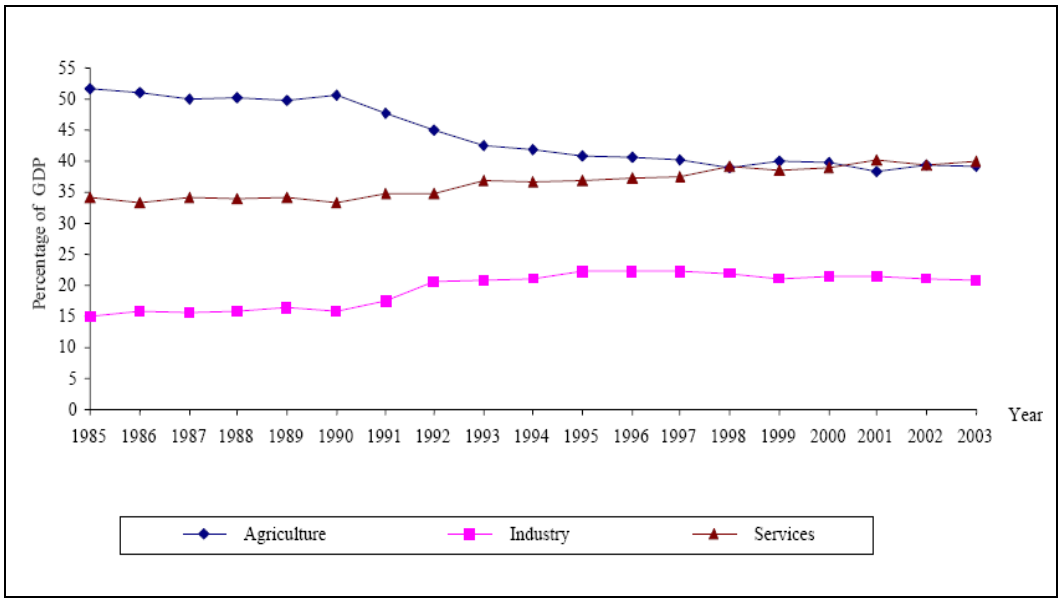
Industry: The growing industrial sectors accounts for only around 22.0% on GDP which is almost double compared to GDP in 1977 (with only 11.2%). The leading manufactures include cotton garments, carpets, bricks and tiles, papers, construction materials and processed foods. It also includes production of exportable items, namely ready-made garments and woollen carpets, which account for one third of manufacturing output.

Services: the service sector has now assumed a more prominent place in the structure of the economy. The marked increase in the share of service sector to GDP is mainly attributed

to the expansion of trade and tourism services. It accounts for more than 37% (in 1998) of GDP; against 25% in 1997. Tourism is an increasingly important source of foreign exchange.

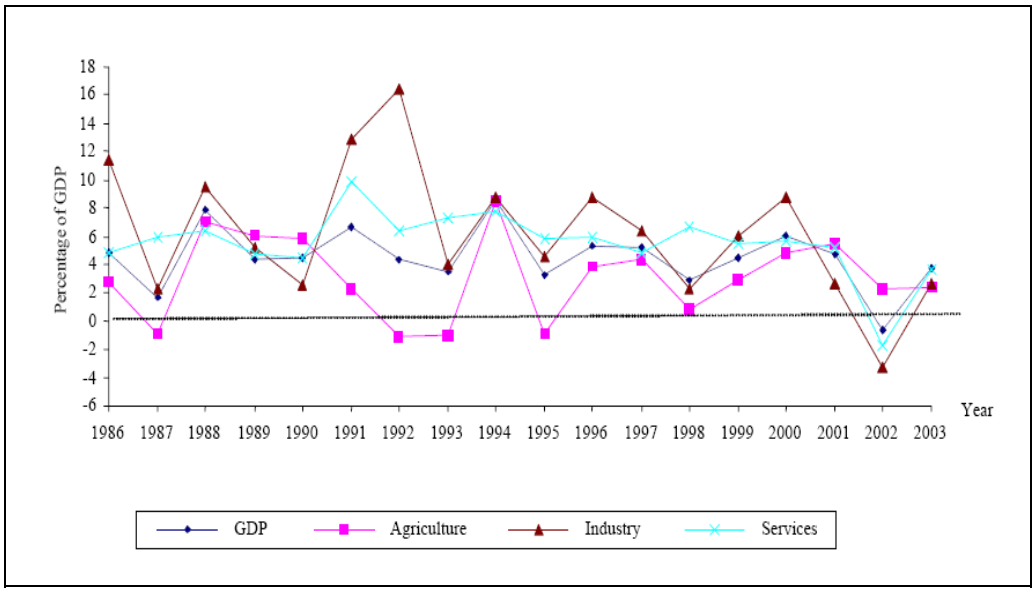
Expenditure (including that for development) by the central government greatly exceeds recurrent revenues, which are largely derived from tariffs and excises and from taxes on business and individuals. The difference between recurrent revenues and expenditures is mainly made up by external aid. India dominates Nepal's foreign trade, and has granted only limited transit rights for Nepalese goods. The average per capita agriculture GDP growth rate during the period 1977 – 1998 is very low, an ominous sign in an economy where employment continues to be heavily agriculture-based. This has accelerated poverty in the rural and agricultural households.

Figure 1.4 Structure of the Nepalese economy (percentage of GDP at current prices)



Source: Author's own estimate from Asian Development Bank, Key Indicators (2003 & 2004) data

Figure 1.5 Average annual growth of economy (percentage)



Source: Author's own estimate from Asian Development Bank, Key Indicators (2003 & 2004) data

1.9.3 *Income, consumption and saving*

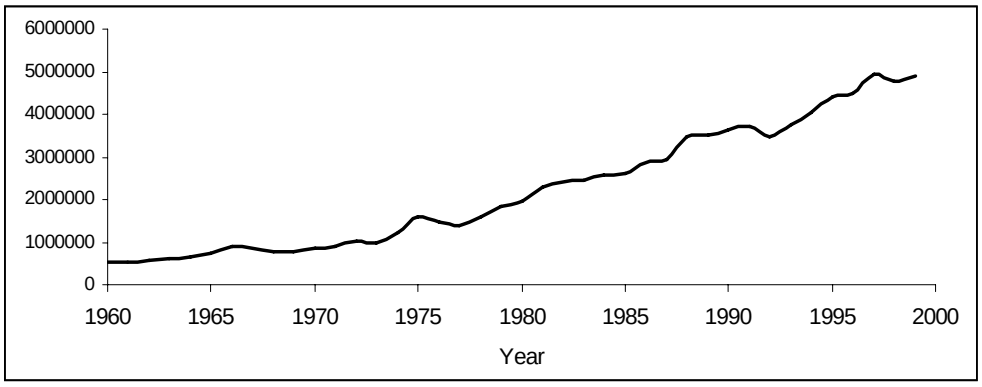
Nepal, with a per capita income of US$ 210 (GNP per capita 1998 and PPP $ = 1,186), belongs to the group of very low-income countries in the world. Given the high population growth rate of 2.5 percent per year, per capita income has grown by only 1.8 percent per annum during the last 20 years. With 42% of population living below the poverty line, the average consumer has remained at 0.867 during 1986-96. This high share of consumption in income is attributed to the rapid growth in both private and public sector consumption that grew by a compounded rate of 15.4 percent and 13.8 percent respectively during the period 1986-96 (see Table 1.4). The country's Gross Domestic Saving (GDS) is very low, as it stood around 10 percent on average during the last two decades. Public savings remained either negative or marginally positive. The low level of savings in both the public and private sectors has led to an unsustainable dependence on foreign aid and other sources of foreign financing.

Table 1.4 Structure of consumption and gross domestic savings (GDS) in million rupees

	1985	1990	1995	1996	Annual growth rate in % (1986-96)
Consumption	40,348	95,273	192,436	222,392	16.8
Private	35,977	86,314	174,394	200,917	15.4
Public	4,371	8,959	18,042	21,475	13.8
GDS	6,239	8,143	27,146	27,504	14.4
Public	-454	328	6,533	6,418	-
Private	6,693	7,815	20,613	21,086	11.0
GDP	46,587	103,416	219,582	249,896	16.0
Consumption as % of GDP	86.6	92.1	87.6	89	
GDS as % of GDP	13.4	7.9	12.4	11	

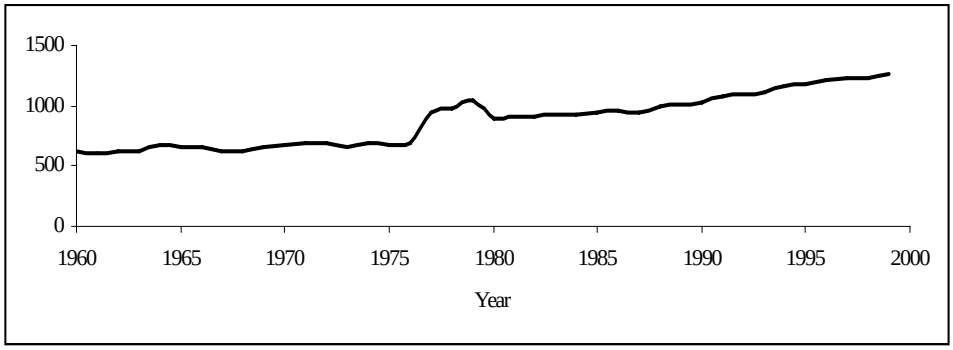
Source: Nepal Human Development Report (1998)

Figure 1.6 GDP at market prices (current US$ '000)



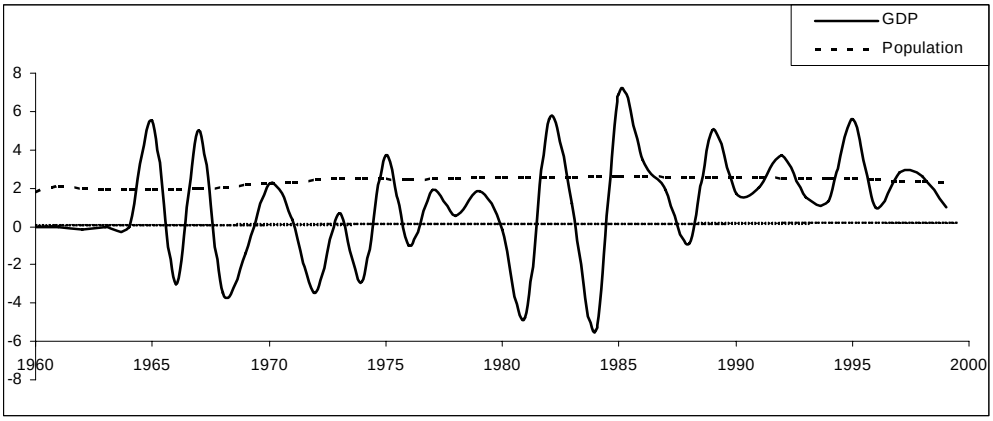
Source: Author's own estimate from World Bank data

Figure 1.7 Real GDP Per Capita in constant dollars



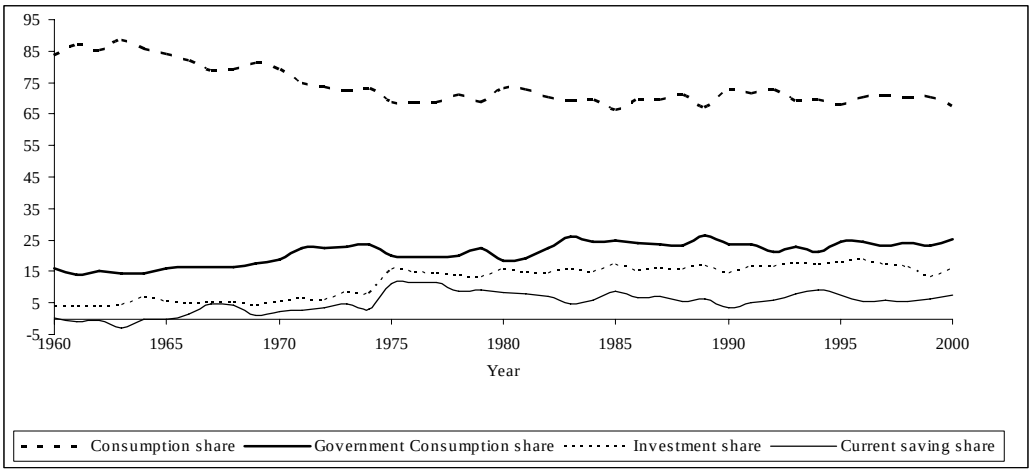
Source: Author's own estimate from World Bank data (International prices, base year 1985)

Figure 1.8 GDP Per Capita Growth and Population Growth in Nepal (percentage)



Source: Author's own estimate from World Bank data

Figure 1.9 The shares of consumption, investment, and saving (percentage of GDP)



Source: Author's own estimate from World Bank data

1.9.4 *Distribution of productive assets and income*

Agriculture is the main productive resource of Nepal, and yet it is an extremely limited resource. Moreover, it is an unevenly distributed resource. Disparity in the distribution of the productive assets (especially land) is very high. Land is highly divided, for example, around seventy percent of the landholdings are less than one hectare in size. Income earning opportunities have significantly influenced income distribution. For instance in Kathmandu the average per capita income lies between rupees 24,000-25,000; in urban areas still above 15,000 rupees; whereas in rural western average per capita is below than 7,000 rupees.

1.9.5 *Poverty in Nepal*

Nepal remains one of the poorest countries in the world with more than 11 million people living below the international poverty line. Additionally 90 percent of the people live in rural areas. Nepal's per capita GDP of $220 against the South Asian per capita GDP of $380 places it amongst the very poorest countries in the world. Poverty is greater and more pervasive in rural areas, 44 percent as compared to 23 percent for urban areas; and it is also varies across

regions. The Mid and Far Western Development Regions (72 percent), as well as the Mountain Belt, are much poorer than the Eastern Region (28 percent). Marked disparities exist among income groups.

The inequality of income distribution has increased over the last decade. Around 80 percent of the poor work in agriculture, generally on small and dispersed plots of low-quality land. While many poor people in rural areas do own some land, this is seldom sufficient for survival, and many have to supplement their income with low-wage labour. The demand for such agricultural labour, however, is highly seasonal and there are few opportunities for non-farm employment. As a result, there is insufficient work.

Poverty has generally been less acute in urban areas. Handicapped by numerous constraints, economic development is changing task in Nepal. The country has been moving towards a more market-oriented economy since the early 1990s. A series of economic reforms in the late eighties and early nineties enabled Nepal to achieve good progress in terms of accelerating economic growth and modestly improving its social and economic indicators; while the economic growth has just barely kept pace with its expanding population.[10] On the political front, it made a major transition from an absolute monarchy to a democratic government in 1991. In the past few years, however, Nepal has experienced considerable political instability, with nine different governments in power since the system of democratic government has been implemented. Notwithstanding, successive governments have found it difficult to forge a consensus to implement key reforms that are necessary to improve economic management. Moreover, this period has witnessed:

- An increasing politicisation;
- Increasing corruption and governance problems;
- Poor economic policies including ineffective public expenditure, insufficient public enterprise, weak tax administration etc.

[10] Growth as measured by GDP at factor cost, reached 3.3% while the population growth rate was 2.4% in 1999.

In addition to the inadequate political support for a coherent reform agenda, the overall quality of economic management has suffered from several structural factors.

1.10 Most Relevant Causes of Poverty in Nepal

1.10.1 *The centrality of agriculture*

Nepal must make the most of its very limited resources of arable land if the large shares of the population and of the poor who depend on it, are ever to taste well being. Agriculture employs more than eighty percent of the country's work force, as self-employed farmers. It provides more than two-thirds of all household income. Eighty percent of Nepalese keep some kind of livestock. For almost 90 percent of the poor and very poor (*i.e.* those in the bottom 25% of households measured by consumption) it is effectively the only remunerative activity available. The importance of agriculture is unquestionable. Nevertheless, as we said Nepal's agriculture is barely yielding to match population growth. The output in both volume and value terms is well below its potential. Paddy yields, which were once the highest in south Asia, are now the lowest and per capita production of staple food grains is actually declining. Many Nepalese in the hills still live more than a day's walk from the road. Intensive cropping has reduced soil nutrients as inadequate government fertiliser distribution and increased use of biomass for fuel and stall-feeding has limited nutrient replacement.

1.10.2 *The dearth of infrastructure*

Nepal is isolated from the most of the world's land, air, and sea transport routes. Poor road access is an important factor in reducing land productivity for the poor and the better off alike: higher costs of inputs and reduced access to product markets relegate large parts of the Nepalese countryside to subsistence production, with little market activity. Roads are the missing link in the development of the rural Nepal. On average, it takes three and half-hours on foot to reach the nearest point where transportation services is available. Especially in the rural hills, the deficit of roads and the poor quality of the roads act as a bottleneck to agriculture growth. The lack of roads is compounded by the lack of other infrastructure and the poor are

especially at a disadvantage. Not only are 61% of Nepal's rural communities without telephone, only 3% of the poorest Nepalese have electricity as against a countrywide average of 14 percent.

1.10.3 *Low social indicators*

The standard of living in Nepal is very low and infant mortality is extremely high; the average life expectancy is only 57 years. The social-welfare system consists of village development programs that attempt to provide basic necessities. Health facilities are inadequate and inaccessible to most of the rural population. Overcrowding and poor sanitation, as well as shortage of medical personnel, is common.

Table 1.5 The Social Indicators in Nepal, early 1990s

Indicators	Male	Female	Total
Life expectancy in years (1992-95)	58	57	57
Infant mortality (1994) for thousand births	96	98	100
Access to maternal health care in % (1996)	-	-	55.7
Child malnutrition under age 5 in % (1970-97)	-	-	47
Population with access to safe water in % (1970-97)	-	-	71
Population with access to sanitation in % (1995)	-	-	20
Human development index (USA = 0.939)[11]	-	-	0.504
Education: adult literacy (%)	-	-	48

Source: UNDP report 1998 (Nepal) and UNDP report 2002 (World)

1.10.4 *Poor productivity of rural labour*

Labour productivity is very low in rural areas. Farming is still highly labour intensive, with very little mechanisation and severe land fragmentation-house holder may have to walk

[11] For 2002.

hours just to visit highly dispersed but tiny land holdings. The pressure of the rapid growing population severely exacerbates an already difficult situation. The growing population unfortunately has very few opportunities outside agriculture, with non-agricultural production still rudimentary. It contributes only less than 20% of rural house income. Adult literacy is very low. Only 19% of women are literate as against 38% in India and 87% in Sri Lanka. This is a major obstacle to improving productivity, since women do the major share of productive works. In addition, foreign employment is not easy, as most Nepalese job seekers do not possess skills appreciated in the international labour market.

1.10.5 *Early stage in industrialisation*

Industrialisation in Nepal began only after the country opened its border to the outside world in 1951. The industrial base in Nepal remains weak. The manufacturing sector is small, accounting for less than 10 percent of GDP. Nepal experiences a very low rate of growth and the financial system is underdeveloped. The regulatory system is weak. The sector generates only limited employment. About 95% of all manufacturing establishments are cottage industries that employ about 90% of the persons engaged in the manufacturing; but they contribute only 20% of the manufacturing output. Because Nepal's industrial sector depends so heavily on imported inputs, Nepal's exchange rate and trade policy regime crucially influences the availability of imported inputs. Nepal's trade regime is unique: the Nepalese rupee (currency) is convertible vis-à-vis the Indian currency but inconvertible against other currencies. Several other constraints to the growth of Nepal's industrial sector include a limited natural resource base, small domestic effective demand, lack of a skilled managerial work force, and an isolated landlocked location coupled with a rugged terrain that constrains access to inputs at a competitive price.

1.10.6 *Late start in economic development*

Until the 1950s, Nepal had virtually no modern social infrastructure, cash economy, or significant economic linkages to the rest of the world. Since then Nepal has made major strides, opening up the country and putting in place many of the basic elements of a modern government

and market economy, at least in Kathmandu valley. An estimated 40-50% of the population still lives below the poverty line. The absolute number of poor people is rising as the population has grown faster than the economy's capacity to generate additional income.

1.10.7 *The unstable new democracy*

In 1990, a multiparty democracy was established and a new democratic Government gave increased momentum to the reform process, aiming at accelerating development. In the 1994 parliamentary election, no party won an overall majority. Since then there have been series of shifting coalitions, with no government able to last more than a year and a half. Political stability has been further compromised by deep splits within major political groupings, with two of the three major parliamentary parties now formally divided. The political instability has focused the attention of politicians on short term manoeuvring and led to increasing politicisation of the administration. The economic reforms have also been delayed by an unstable political environment.

1.10.8 *Poor governance and increasing allegations of corruption*

Nepal has many of the formal prerequisites for effective governance, but implementation remains weak and often lacks efficiency, transparency, and accountability in the administrative system. There are increasing allegations of corruption at many levels, and these represent a key constraint to effective delivery of essential services. Corruption is a further major obstacle to using Nepal’s assets more productively. Corruption is generally perceived to be widespread, contributing to misallocation of government resources. Government salaries are low - well below executive pay in the private sector – and this may be a contributing factor to high levels of corruption. There are frequent allegations of corruption in the media. The country’s bureaucracy has likewise become steadily more politicised.

Chapter 2

The Changing Income Inequality in Nepal (1984-96) and its Comparison with Other Countries of South Asian Association for Regional Cooperation (SAARC)

2.1 Introduction

In this chapter the changing income distribution in Nepal from 1984 to 1996 is investigated using various inequality measurements such as the Gini coefficient, generalised Lorenz Curves and other economic inequality measurements (see section 2.4 on the inequality measurements). The primary aim of this chapter is to study the earnings distribution in Nepal using the inequality indexes as a starting point. Moreover we shall try to identify the winning or losing social categories during the period considered. The second aim is to assess, through the use of the generalised Lorenz curves, the gains or losses in terms of general economic welfare, with the intent of providing a more vivid picture of the changing pattern of the earning distributions in Nepal in this crucial period.

The considerable recent expansion in the availability of household survey micro-data means that the study of income distribution has more recently gained enormous impetus. But

what exactly is inequality? How is it measured? When is inequality in country A greater than in country B? These questions are fundamental for studies on income distribution. The World Bank cites inequality means different things to different people: whether inequality should encapsulate ethical concepts such as the desirability of a particular system of rewards or simply mean differences in income, is the subject of many debates. Here we shall define inequality as the dispersion of the distribution of income/wealth or consumption. We shall examine inequality by using various indicators first introduced by Sawyer (1976) for five South Asian nations and then making comparisons between them. This examination will take place within a broader process of distributional dynamics. Obviously, poverty and inequality are very closely linked, as we shall see: for a given mean income, the more unequal the income distribution, the larger the percentage of the population living in income poverty (Litchfield 1999).

Inequality is normally studied within the broader context of poverty and welfare, although these concepts are quite distinct. Inequality is a broader concept than poverty, since it is defined over the whole distribution; and not only the censored distribution of individuals or households below a given poverty line. Incomes at the top and in the middle of this distribution may be equally important to us in perceiving and measuring inequality of those at the bottom. Indeed some measures of inequality are driven largely by incomes in the upper tail (Atkinson, 1975, chapter 1 and 2). Inequality is also a much narrower concept than welfare. Although both of these capture the whole distribution of a given indicator, inequality is independent of the mean of the distribution. This latter quality is a desirable property of an inequality measure - to be solely concerned with the second moment, the dispersion - of the distribution. These three concepts are closely inter-related, however, and are sometimes combined in composite measures such as those proposed by Sen (1973).

2.2 Tools of Analysis

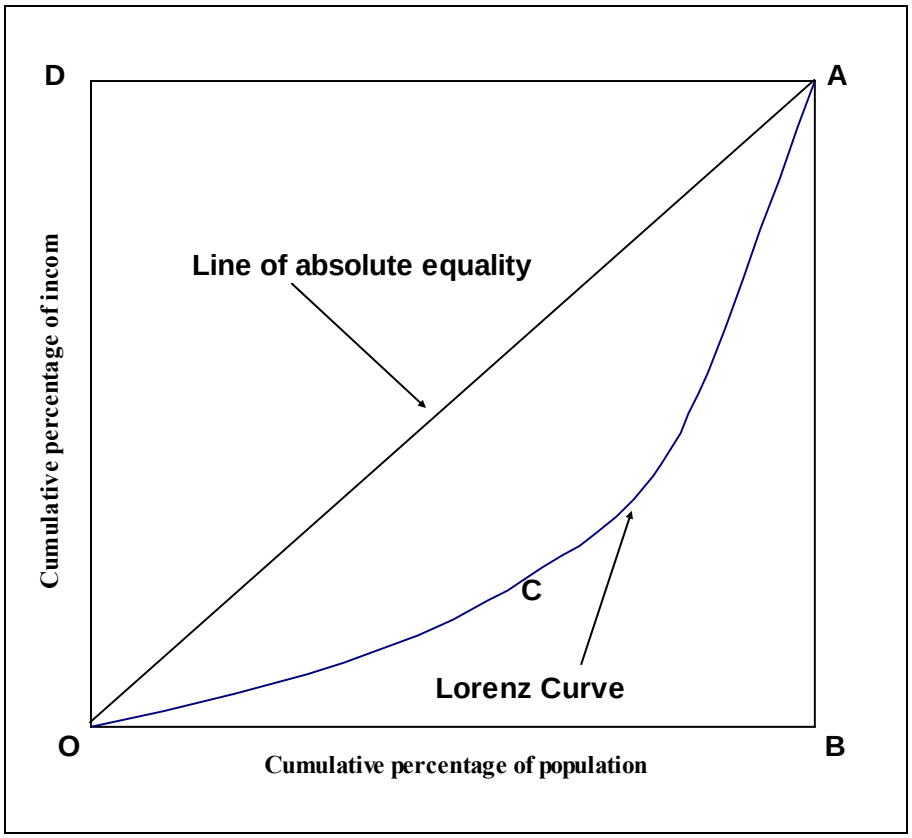
This study expounds the results derived from a cross-sectional analysis of the distributional effects on income distribution. To measure the impact of income inequality we use income data per quintile group, since more detailed data are not available. Additionally, we

compare the results from Nepal with those of Bangladesh, India, Pakistan, and Sri Lanka. Studies on the distribution of income show that Nepal has a relatively high level of income inequality compared to other countries during the 1990's. In this study we want to measure income inequality in Nepal and other SAARC nations by using the quintile data of household survey. In section 2.3 to section 2.5 we discuss the significance of methodological procedures of inequality measures. Section 2.6 focuses on the inequality of income in Nepal. In section 2.7 we provide a short description of some basic facts of SAARC countries. Sections 2.8, 2.9, 2.10, and 2.11 provide the trends of inequality for Bangladesh, India, Pakistan, and Sri Lanka respectively. We then go on to compare the results of Nepal with those of Bangladesh, India, Pakistan, and Sri Lanka in section 2.12. Section 2.13 summarises the results of this chapter.

2.3 The Lorenz Curve

It is a widely used technique to represent and analyse the size distribution of income, wealth as well as many other magnitudes. The curve plots the cumulative portion of income units and the cumulative proportion of income received when income units are arranged in progressive order of their income.

Figure 2.1 The Lorenz curve



In Fig 2.1, the population is arranged in percentage terms from the poorest to the richest along the horizontal axis OB. The percentage of income enjoyed by x percentage of the population is shown on the vertical axis OD. The straight line OA is called the egalitarian line, where each unit of population receives the same income. This corresponds to the case of perfect equality of incomes. In case of perfect inequality, the Lorenz curve coincides with angle OBA in the above chart, which implies that all income is received by only one unit. Obviously 0% of the population enjoys 0% of income and 100% of the population enjoys all the income.

The Lorenz curve displays the deviation of each individual's income from perfect equality. In a sense, it captures the essence of inequality. The nearer the Lorenz curve is to the egalitarian line, the more equal is the distribution. The Lorenz curve is closely related to the frequency distribution. For example, if we let income be distributed according to a distribution function F[12], the mean income μ will be given by $\int ydF(y)$, where the integration is performed over the entire range of y, and the proportion of total income received by those who have an income no greater than y is given by $G(y) = \left[\int^{y} ydF(y)\right]\mu^{-1}$.

2.3.1 *The features of the Lorenz curve*

The essential features of the Lorenz Curve are as follows:

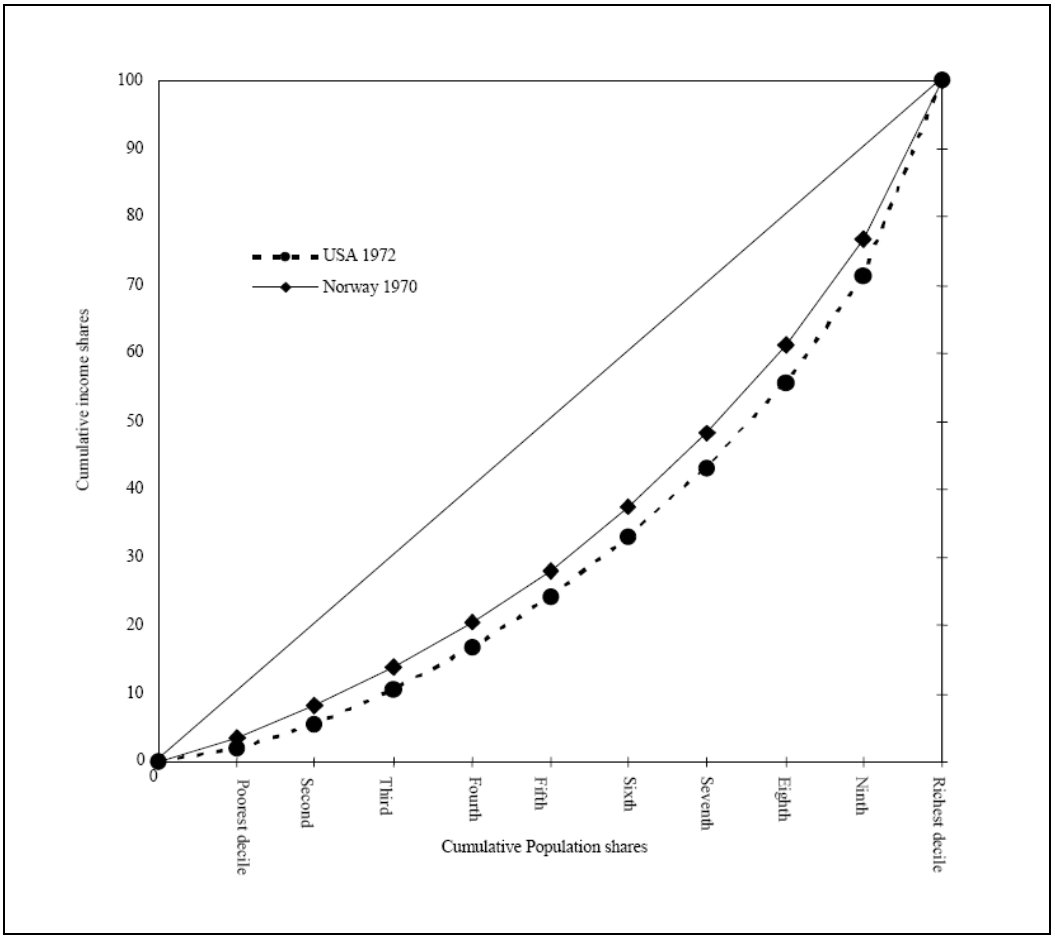
1) The Lorenz curve graphically shows the degree of dispersion of income (or of consumption, wealth, etc).
2) If income is equally distributed – for example every 10 percent of the population receives 10 percent of total income – the Lorenz curve overlaps the line of absolute equality.
3) If the Lorenz curves for two distributions do not intersect, then we can say unambiguously that the distribution closer to the diagonal (egalitarian line) is less unequal than the other.
4) It is quite possible to reach different conclusions if the Lorenz curves intersect.

It is useful to compare the size distribution of income between countries, or over time, in terms of degree of inequality. To do so the number of such curves must be drawn as many observations are to be compared. For instance, in Fig 2.2, the comparison of income inequality between Norway and the United States is illustrated by reference to the Lorenz curves.

---

[12] Suppose that the income y has a distribution in the population that can be approximated by a continuous function *F: F(y)* is the proportion of the population with an income less than or equal to y. *F (y+δ)-F (y)* is the relative frequency of the population that falls in a particular income interval *[y, y+δ]*. If *F* is differentiable then limit of *[F(y+δ)-F(y)]/δ* as *δ→0*, namely *dF(y)/dy*, is the density function of y written as *f(y).*

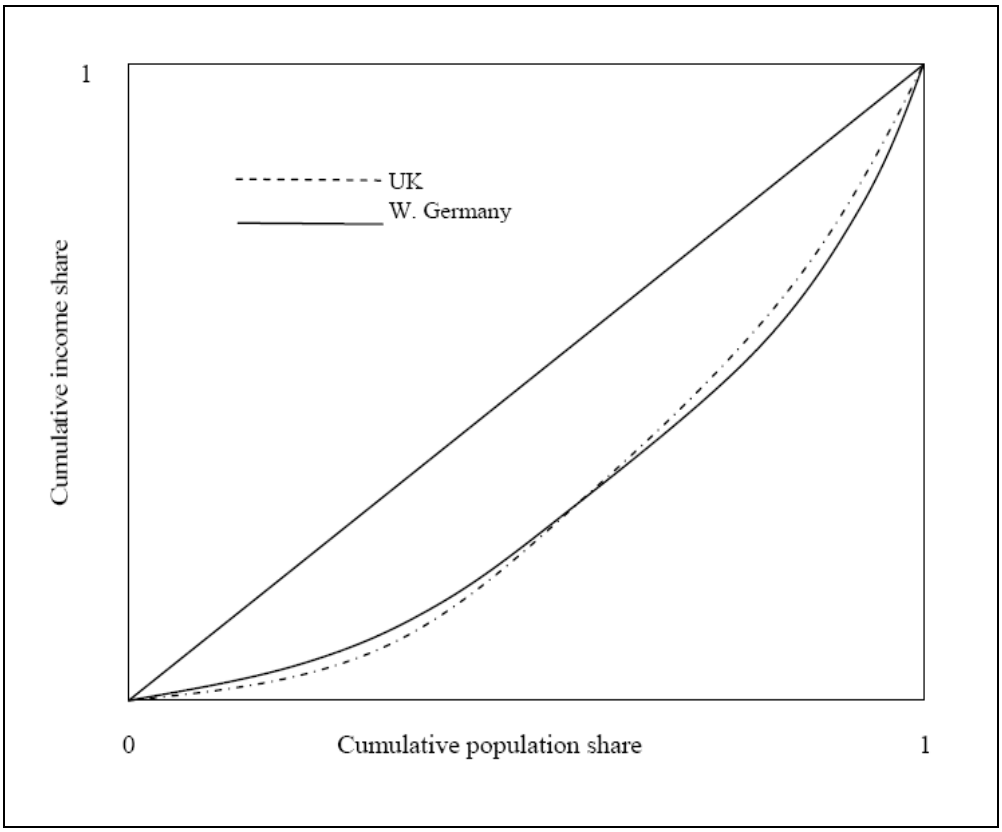
Figure 2.2 The Lorenz curves for pre-tax income distribution in the USA 1972 and Norway 1970



Author's own estimates from the Sawyer (1976) data

It is reasonably safe to say that the after tax income distribution represented by Lorenz curve for Norway is 'less unequal' than that represented by Lorenz curve for the USA since it is closer than the USA to the egalitarian line. The real problem occurs when the Lorenz curves of two distributions intersect, as in Fig 2.3, where they depict post tax household income distribution for the UK and Germany.

Figure 2.3 The Lorenz curves for the UK and Germany, 1975



Author's own estimates from the Sawyer (1976) data

It may be seen that the poorest and the richest quintile shares in the UK are relatively less rich than their German counterpart. Hence, it is not easy to state whether the UK or Germany has the least unequal distribution. In this case, the researcher clearly must make a

value judgement, which is a notoriously bad method of economic assessment[13]. Hence, to avoid the problem of subjectivity, we need other inequality indicators or techniques to assess the effect on the ranking of countries in terms of their income inequality. Numerous measures of inequality may be found in the literature. The most frequently used inequality indicators will be applied to assess the inequality of Nepal and of other south Asian countries.

In order to estimate inequality it is necessary to make choices. There are many ways of measuring inequality, each of them with some mathematical appeal (see Cowell, 1995). For example, variance from the mean is one of the simplest measures of inequality, but it is not independent of the income scale. Simply doubling all incomes would register as a quadrupling of the estimate of income inequality. Most people would argue that this is not a desirable property of an inequality measure. Therefore, it seems appropriate to discuss a set of axioms that must be satisfied.

2.3.2 *The axiomatic approach*

Litchfield (1999) discusses some key axioms required by inequality measures:

The Pigou-Dalton transfer [14]

This axiom requires the inequality measure to rise (or at least not fall) in response to a mean preserving spread. When an income is transferred from a poor to a rich person it should be registered as a rise (or at least not as a fall) in inequality. In a similar manner, when income is transferred from a rich to a poor person it should register as a fall (or at least not as an increase)

[13] For example, one may wish to stress the shares occurring to the poorest quintile, in that case German income inequality is less unequal and in contrast, another may stress the shares of the richest quintile. So in this case since in the UK has a low-income share in richest quintile, it can be less unequal to the opposite view.

[14] See Dalton (1920); and Pigou (1912).

in inequality. Most measures to be found in the literature, including the Generalised entropy class, the Atkinson class, and the Gini Coefficient, satisfy this principle.[15]

Income scale independence

This axiom requires the inequality measure to be invariant to uniform proportional changes. If each individual's income changes by the same proportion (for example when changing currency unit) then inequality should not change. Hence for any scalar $\lambda>0$, the inequality indicator '*I'* must have the property: $I(y)=I(\lambda y)$. Again, most of the standard measures pass this test; except the log variance.[16]

Principle of population

The population principle requires inequality measures to be invariant to replications of the population – merging two identical distributions should not alter inequality. For any scalar $\lambda>0$, $I(y) = I(y[\lambda])$, where $y[\lambda]$ is a concatenation of the vector y, λ times. The inequality measurements should be independent of the size of the population. All that matters are the position of the population that earns a different level of income.

Anonymity

This axiom (sometimes also referred to as 'Symmetry') requires that the inequality measure be independent of any characteristic of individuals other than their income (or the welfare indicator whose distribution is being measured). Hence for any permutation y' of y, $I(y)=I(y')$. We measure the inequality regardless of who is earning the different income.

Decomposability

This requires overall inequality to be related consistently to constituent parts of the distribution, such as population sub-groups. If inequality were seen to rise amongst each sub-group of the population, then we would expect overall inequality to increase. Some measures, such as the Generalised Entropy class of measures, are easily decomposed into intuitively

[15] See Atkinson (1970), Cowell (1983, 1985) and Sen (1973). The logarithmic variance is an exception (see Cowell, 1995).

[16] See Cowell (1999).

appealingly components of ‘within-group’ inequalities and ‘between group’ inequalities of the form:

$$I_{total}=I_{within}+ I_{between}$$

Lorenz criterion

If one Lorenz curve is everywhere closer to the diagonal than another, the associated measurement of the income inequality should be judged less unequal.

2.4 Inequality Measurements

A variety of approaches may be employed to summarise the characteristics of income distribution and its evolution over time – the Lorenz curve and various inequality indexes (such as the Gini coefficient) have been widely used for this purpose. These are described below. Income distributions can be measured by an index number. However, these do not all yield the same results as they are more or less sensitive to movements in different parts of the distribution. Six indexes are discussed in this section.

2.4.1 *The Gini coefficient*

The Gini coefficient, named after the Italian statistician, may be represented in two ways:

2.4.1.1 *Geometrically*

$$\textit{The Gini coefficient} = \frac{\text{Area between Lorenz curve and diagonal}}{\text{Total area under diagonal}}$$

In Fig 2.1 above the Gini coefficient is equal to the area occupied between the Lorenz curve OCA and diagonal OA divided by the area occupied by triangle OBA. The coefficient may range from 0, when all incomes are equal (the Lorenz curve follows the diagonal) to 1 at the other extreme (the Lorenz curve in the latter case overlaps the OB and BA line and has a ⌟ shape).

2.4.1.2 *Mathematically*

Suppose we choose two people at random from the income distribution, and express the difference between their incomes as a proportion of the average income; then this difference turns out to be, on average, twice the Gini coefficient; *i.e.* a coefficient of 0.4 means that the expected difference between two people chosen at random is 80 percent of the average. In the literature, there are many different formulae and methodologies for deriving the Gini Coefficient. Needless to say, different methodologies have advantages and limitations. Some Gini formulae are very complicated and impractical. Some are biased estimators and/or not decomposable. The Gini coefficient formula may be used for individual data and for evenly or unevenly grouped data. The Gini index incorporates the more detailed share data into a single statistic, which summarises the dispersion of the income shares across the whole income distribution. It may be expressed as a proportion or as a percentage. The Gini coefficient equals 0 when the distribution is completely egalitarian. Conversely if the society's total income accrues to only one person/household unit, leaving the rest with no income at all, then the Gini coefficient will be equal to 1, or 100%.

The Gini Coefficient was put forward by Gini in 1912, originally defined as:

$$G = \frac{\Delta}{2\mu} \tag{2.1}$$

where, $\Delta = \frac{1}{n(1-n)} \sum_{i=1}^{n} \sum_{j=1}^{n} \left| Y_i - Y_j \right|$

Y_i being the income or expenditure of the i^{th} unit, μ being arithmetic mean income/expenditure of the distribution, and n the total number of units or observations and Δ is the arithmetic mean of the $n(n-1)$ differences of all possible pairs of income/expenditures taken as absolute values.

The maximum value of Δ is 2μ, which would be obtained when one unit receives all the income or incurs all the expenditure, as the case may be. On the other hand, the minimum value of Δ is zero, and would be obtained when every individual receives/incurs the same income/expenditure. Consequently, the Gini coefficient ranges from zero (indicating perfect equality among persons) to one (indicating perfect inequality).

The formula for computing the Gini with N elements sorted from poorest to richest is[17]

$$G = 1 + \frac{1}{n} - \left(\frac{2}{\mu n^2} \right)(Y_n + 2Y_{n-1} + 3Y_{n-2} + ... + nY_1) \tag{2.2}$$

where $Y_n \geq Y_{n-1} \geq ... \geq Y_1$

n is the total number (given) in consideration, μ is the arithmetic mean and Y_n, Y_{n-1}, ..., Y_1 the income units in decreasing order. We have derived a simple formula for the Gini index in appendix 2A.

2.4.2 *The Kuznets index*

The Kuznets index is defined as:

$$K = \frac{1}{1.8} \sum_{i=1}^{10} \left| y_i - 0.1 \right| \tag{2.3}$$

where the term $|y_i\text{-}0.1|$ is the absolute divergence of the share of class i from its share. If incomes were distributed equally, *i.e.* each 10 percent of the population receives 0.1 share of total income, the $\sum_{i=1}^{10} \left| y_i - 0.1 \right|$ dividing by 1.8 normalises the index to 0. On the other hand, if all

[17] See Sen (1973).

income were received by 10 percent of the population, the $\sum_{i=1}^{10}|y_i - 0.1|$ dividing by 1.8 normalises the index to 1. A close related index divides the summation by 2 rather than 1.8, and this is of the proportion of total income that needs to be moved from the rich to the poor in order to achieve full equality. Although the measure is simple and appealing, it does have the obvious shortcoming, that one unit taken from the rich has the same impact on measure inequality as one unit given to the poor. Moreover, it does not change when transfers occur between deciles, both of which have shares on the same side of 10 percent of income.[18]

2.4.3 *The Theil index*

While the Gini is the most widely used inequality index, relying as it does on household surveys poses problems. Only a few countries have data for virtually every year. There is no way to construct Gini coefficients for countries and years for which adequate household sample surveys were never constructed in the first place. The Theil's index can be computed from almost any type of grouped data, even if incomes within the groups overlap. The Theil statistics also has the property, which other measures of inequality lack. For example, it can be broken down into components without residuals when the data on which it is based are organised into groups; while Gini index is frequently decomposed with the condition that there is a residual after the decomposition. However, if we want to measure total inequality, only household surveys used in the calculation of the Gini index suffice; since everything else is a subset of the population.

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[18] The Kuznets index is $K = \frac{1}{1.6}\sum_{i=1}^{5}|y_i - 0.2|$ when quintile data are used. In this case the denominator 1.6 allows normalising the index in the range between 0 and 1. For example if the income is equally distributed the $\sum_{i=1}^{5}|y_i - 0.2| = 0$, the index is also 0 and in the contrary; if all the income is received by one recipient, the $\sum_{i=1}^{5}|y_i - 0.2| = 0$ and this results the index 1 by dividing 1.6.

Members of the Generalised Entropy class of measures exhibit the general formula as follows:

$$GE(c) = \frac{1}{c^2 - c}\left[\frac{1}{n}\sum_{i=1}^{n}\left(\frac{y_i}{\mu}\right)^c - 1\right], \qquad c \neq 0, 1 \tag{2.4}$$

where, n is the number of individuals or households or earners, in the sample, y_i is the income of the individual $i \in (1,2,3,...,n)$, μ the arithmetic mean income, and c reflects the different 'perception of inequality' with lower values indicating a higher degree of 'inequality aversion'.

The value of the index ranges from 0 to ∞. When all income units (individuals or families) get the mean income, the *GE* index has value 0, representing the perfect equality. Obviously, the higher values represent the higher levels of inequality. Litchfield (1999) stresses that in the presence of any zero income value *GE (c*=0*)* will always tend to infinity (∞). Additionally the parameter *c* in the *GE* class represents the weight given to distances between incomes at different parts of the income distribution, and can take any real value. Lower values of *c* are more sensitive to changes in the lower tail of the distribution and the higher values affect the upper tail of the distribution. When *c* takes the value zero, the *GE(0)* becomes the Mean Logarithmic Deviation (MLD) as shown in equation 2.5 below (see appendix 2B for the derivation of this equation).

$$GE(0) = \frac{1}{n}\sum_{i=1}^{n}\log\frac{\mu}{y_i} \tag{2.5}$$

Similarly, when *c* takes the value one, the GE(1) becomes the well known Theil index such as given in equation 2.6 below (see also appendix 2B for the derivation of this equation).

$$GE(1) = \frac{1}{n}\sum_{i=1}^{n}\frac{y_i}{\mu}\log\frac{y_i}{\mu} \tag{2.6}$$

These are the two Theil measures of inequality (Theil 1967), the MLD and the Theil index respectively, which have been developed from the *GE* measures with parameters zero and one. Sometimes the index with c=2 is also used in the literature. As it takes the value 2, the *GE* measure becomes half the square Coefficient of Variance (CV), as shown in the equation below.

$$GE(2) = \frac{1}{2n\mu^2}\sum_{i=1}^{n}(y_i - \mu)y_i = \frac{Var(y)}{2\mu^2} = \frac{1}{2}(CV)^2 \tag{2.7}$$

Therefore a value of c=0 gives more weight to distances between incomes in the lower tail, a of value c=1 applies equal weights across the distribution, while a value of c=2 gives proportionately more weight to gaps in the upper tail (see Litchfield, 1999).

For simplicity, it has been used with the logarithm base on 10 in this chapter. The incidence of one unit transfer of income of poor depends on the logarithmic relation between the two income units in case. In the original formula, the logarithms were calculated with the base 2. For convenience, logarithms to 10 have been used here, but this change does not affect the inequality rankings given by the measures. For a small transfer of income, its impact depends on the logarithm of the ratio between individual income and the average income.

2.4.4 *The Atkinson index*

The Atkinson index is given by:

$$A = 1 - \left[\sum_{i=1}^{n}\left(\frac{y_i}{\bar{y}}\right)^{1-\varepsilon} f_i\right]^{\frac{1}{1-\varepsilon}} \qquad \text{with } \varepsilon \neq 1 \tag{2.8}$$

where y_i denotes the income of those in the i^{th} income ranges (n ranges altogether); $\overline{y}$ denotes the mean income and f_i denotes the proportion of the population with incomes in the i^{th} range. When ε=1, then we can write equation (2.8) as

$$A = 1 - e^{\frac{1}{n}\sum_{i=1}^{n} \log\left(\frac{y_i}{\overline{y}}\right)}$$

Equations 2.8 introduces distributional objectives through an explicit parameter ε. This parameter represents the weight attached by society to the inequality in the distribution. It ranges from zero, which means that the society is indifferent about the distribution, to infinity, which means that society is much concerned with the position of the lowest income group [$\infty \geq \varepsilon \geq 0$]. For simplicity, we assume the world of two persons A and B with earnings distribution \$5 and \$15. We consider that a transfer of \$5 from the richer to the poorer person brings about perfect equality. In terms of the Atkinson Index, the distributional value of the parameter ε can yield the index 0 (perfect equality) when the value of ε is 0 (ε=0). Thus, the key role is played by the distributional parameter ε. In our example this is done by taking one unit (5 dollars) from B and giving a portion 'x' to A. At what level of 'x' do we cease to regard the redistribution as desirable?

The answer, if the person is concerned at all about inequality, is that 'x=1' is desirable.[19] What is crucial is how far he is prepared to let 'x' fall below one before calling for a stop. It determines the implicit value of ε in the following formula (2.9):

$$\frac{1}{x} = 2^{\varepsilon} \qquad (2.9)$$

[19] *x=1* stands for the whole portion *i.e.* 5 dollars; that yields the distribution egalitarian. In the formula 2.8 we can see that when the value of ε is equal to zero, the transfer from rich to poor is maximum *i.e. x=1* and the index coincides the minimum value. The new distribution will be \$7.5and \$12.5 in the above example. This will lead to an Atkinson index of value 0.032.

For example, if the person stops at x = ½, this corresponds to ε=1 from equation 2.10. In other words, the parameter ε =1 implies that the transfer from the richer person (B) to the poorer person (A) is only half of 'x' (in the above example ½ of 5 dollars *i.e.* 2.5 dollars)[20]. When the values of ε are 2 and 3, the shares of 'x' transferred from B to A correspond to 1/4 and 1/8 respectively[21].

The Atkinson's measure explicitly introduces a value judgement on inequality through the value of the parameter ε, which has to be selected. We give another example:

Table 2.1 Income distribution in UK and W. Germany in 1964

Deciles	**Cumulated share of income**	
	UK	**W. Germany**
1	2.00	2.10
2	5.10	5.30
3	9.30	10.00
4	15.30	15.40
5	22.80	21.90
6	31.90	29.10
7	42.90	37.50
8	55.80	47.10
9	70.70	58.60
10	100.00	100.00

Author's own estimates from the Atkinson (1975) data

[20] The new distribution will be \$7.5and \$12.5 in the above example. This will lead to an Atkinson index of value 0.032.

[21] In this case, the new distributions between A and B are (a) \$6.25 and \$13.75, and (b) \$5.625 and \$14.375 regarding to the values of ε with 2 and 3 respectively. The Atkinson indexes for the new distributions are 0.141 and 0.259. In this way the explicit parameter ε represents the degree of inequality aversion.

Table 2.2 Value of Atkinson's index for the UK and W. Germany

Value of ε	UK	W. Germany	Difference (W. Germany-UK)
0.5	0.12	0.17	0.05
1.0	0.24	0.29	0.05
1.5	0.34	0.38	0.04
2.0	0.43	0.45	0.02
2.5	0.55	0.54	-0.01

Author's own estimates from Table 2.1 data

In Table 2.2 the total income would be required to achieve the same level of social welfare as at present if incomes were equally distributed. A value of 0.12 means that we would reach the same level of social welfare with only (1-0.12) 88 percent of present total income. Alternately, the gain from the redistribution to bring about equality would be equivalent to rising total income by 12 percent. In this way, the measure is an index of the potential gains from redistribution, and provides a tool, which can be used to attach some absolute measure to the degree of inequality.

We have given the value of the Atkinson index for the UK and W. Germany. These values are calculated for different levels of ε. A higher value of Atkinson's index denotes a greater degree of inequality. The values of the Atkinson index are lower in the UK for all values of ε up to 2.0. As the weight of ε rises (the value of $\varepsilon \geq 2.5$) the Atkinson index is lower in W. Germany than the UK. In terms of interpretation of ε given the value 3, a transfer of one eight would lead to W. Germany as having a less unequal distribution compared with the UK. In this respect, we may conclude that a lower value of ε is sensitive to the position of the low-income groups; and a higher value of ε is sensitive to the position of the upper income groups.

2.4.5 *The variance of logarithms*

The variance of logs is defined as:

$$V = \left[\sum_{i=1}^{N} \frac{(\log y_i - \log \bar{y})^2}{N} \right] \tag{2.10}$$

The impact on this measure of a small transfer of income is proportionate to:

$$V = \frac{1}{y_j} \log\left(\frac{y_j}{\bar{y}} \right) - \frac{1}{y_i} \log\left(\frac{y_i}{\bar{y}} \right) \tag{2.11}$$

Since the term $\frac{1}{y} \log\left(\frac{y}{\bar{y}} \right)$ does not always increase with an increase in y, there can be a negative impact on the variance of logs indicating a decrease in the inequality measure arising from a transfer of income from a relatively rich household to an even richer one.[22] The inequality measure thus resolves the problem of ranking size-distributions by degree of inequality in circumstances where the Lorenz curves intersect[23], but only in terms of the value judgements built into each particular measure. They do not, however, measure relative degrees of inequality in the sense that inequality may be said to be '*x*' percent more in one case than in another.

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[22] If both households have income above the mean, and at least one of them an income in excess of 2.718 times the mean, then this "perverse" effect may occur, if both are excess of 2.718 times the mean then it will occur (Sawyer 1976). In the illustrative calculations made below, these conditions are not met.

[23] There is an exception in the case of the variance of logs, since as indicated in the text above, it does not fulfil the Pigou-Dalton condition. This means that in turn, under some circumstances, it may rank two distributions differently to that given by inspecting the Lorenz curves, even when the Lorenz curves do not intersect.

2.4.6 *Champernowne's index*

Champernowne's index is defined as:

$$C = 1 - \frac{\mu_g}{\mu_a} \tag{2.12}$$

Where, μ_g is the geometric mean, and μ_a is the arithmetic mean of household income. In this case a transfer of income from a unit with income y_1 to a unit with income y_2 there will be an impact on this measure of inequality, which is proportional to the difference of the reciprocals of the income of the two units involved (*i.e.* $\frac{1}{y_1} - \frac{1}{y_2}$). If we take $y_1 = \lambda y_2$, then the impact on this measure is proportional to $\frac{(1-\lambda)}{\lambda} \cdot \frac{1}{y_2}$. Thus the impact depends on the relative income of the two income units involved (λ), and the absolute level of the recipient unit is in such a way that the impact on the measure is greater, the poorer is that unit. The impact on the Champernowne coefficient of a transfer of income depends on the incomes of the units involved, whereas for the Gini coefficient it depends upon the ranks of the units involved.

2.5 Sensitivity of Selected Inequality Measurements

Table 2.3 shows the effects on the various measures of making specific changes in a given income distribution. All measures show the same direction of change in inequality. They would give rather different ideas of the extent of change in inequality if interpreted cardinally.

Table 2.3 Sensitivity of the various indicators of income inequality for hypothetical redistribution

	Theil	Kuznets	LV	Champernowne	Gini	Atkinson			
						ε=0.5	ε=1	ε=1.5	ε=2
Nepal 1984	0.0562	0.2665	0.0496	0.1201	0.2790	0.0628	0.1201	0.1709	0.2149
A	0.0406	0.2134	0.0330	0.0716	0.2168	0.0314	0.0716	0.1097	0.1450
B	0.0323	0.2040	0.0271	0.0698	0.2122	0.0362	0.0698	0.1005	0.1281
C	0.0313	0.2040	0.0255	0.0668	0.2068	0.0348	0.0668	0.0957	0.1213
D	0.0365	0.2040	0.0286	0.0759	0.2168	0.0401	0.0759	0.1074	0.1347
E	0.0360	0.2040	0.0277	0.0742	0.2148	0.0394	0.0742	0.1045	0.1366
F	0.0752	0.3040	0.0660	0.1560	0.3188	0.0829	0.1560	0.2182	0.2694
G	0.0628	0.2790	0.0583	0.1360	0.2948	0.0706	0.1360	0.1945	0.2455
H	0.0612	0.2790	0.0538	0.1298	0.2908	0.0681	0.1298	0.1836	0.2292
I	0.0601	0.2790	0.0519	0.1265	0.2868	0.0666	0.1265	0.1786	0.2227
J	0.0401	0.2290	0.0362	0.0887	0.2388	0.0455	0.0887	0.1288	0.1652
K	0.0500	0.2540	0.0425	0.1061	0.2628	0.0556	0.1061	0.1506	0.1890
L	0.0515	0.2540	0.0460	0.1140	0.2684	0.0578	0.1140	0.1589	0.2026
M	0.0256	0.2540	0.0476	0.1143	0.2708	0.0592	0.1143	0.1641	0.2081

Author's own estimates: the indexes are calculated from the data on income distribution of Nepal for 1984

Notes to Table 2.3:

A= hypothetical redistribution of 5% of total income from the top quintile to all other quintiles with equal share.

B= hypothetical redistribution of 5% of total income from the top quintile to the bottom three quintiles, the first quintile obtains 2.5% of total income, the second quintile 1.67% of total income and the third quintile obtains 0.83% of total income.

C= hypothetical redistribution of 5% of total income from the top quintile to bottom two quintiles, quintile 1 obtains 3% and quintile 2 obtains 2%.

D= hypothetical redistribution of 5% of total income from the top two quintiles (top quintile 3% and fourth quintile 2%) to the bottom two quintiles in the same proportion.

E= hypothetical redistribution of 5% of total income from the top two quintiles (top quintile 3% and fourth quintile 2%) to the bottom two quintiles, the first obtains 3% and second obtains 2%.

F= hypothetical redistribution of 4% of total income from all the bottom four quintile by one percent each to top quintile.

G= hypothetical redistribution of one percent of total income from the bottom quintile to the top quintile.

H= hypothetical redistribution of one percent of total income from the second quintile to the top quintile.

I= hypothetical redistribution of one percent of total income from the third quintile to the top quintile.

J= hypothetical redistribution of 4% of total income from the top quintile to all bottom quintile by one percent each.

K= hypothetical redistribution of one percent of total income from the top quintile to the bottom quintile.

L= hypothetical redistribution of one percent of total income from the top quintile to the second quintile.

M= hypothetical redistribution of one percent of total income from the top quintile to the third quintile.

Table 2.3 shows the change in various indicators of income inequality for a given income distribution for Nepal in 1984. We observe that all measures tend to follow the same direction to changes in inequality. For instance, a hypothetical redistribution of the income share from the top quintile to the other quintiles reduces inequality indicators[24]. The same may be said for the redistribution of income from the lower quintiles to the higher quintile, which increases the level of income inequality[25]. It is obvious that the sensitivity of inequality indexes reflect the differences between size distributions of income. As a result, the changes in magnitude of inequality vary according to the characteristics of inequality indicators. The results in Table 2.3, however, show that the proportional change in income distribution leads, in certain cases, to significant variations while in other circumstances they are insignificant.

The initial income inequality can result in different magnitudes according to the size of the redistribution being made. In terms of the ratio in respect to the initial size, the Gini coefficients and Kuznets inequality measurements obtain a higher mark; while Champernowne, Theil, and Variance of logarithms inequality measures mark lower points in inequality. Additionally, the Atkinson inequality indexes with the lower aversion value represent lower inequality changes; and the higher aversion values provide the higher variation respectively. But in terms of percentage points the results from Tables 2.4 and 2.5 lead to the following conclusions:

The Theil index

The redistribution to the lowest quintile from the highest quintile of one percentage of total income sharply reduces the Theil index (by more than 11 percentage points). Simultaneously, a redistribution of 1% each from the second third and fourth quintiles to the poorest quintile respectively reduces the Theil index by the rates 8.36%, 6.41% and 4.45% (see Table 2.4). On the other hand, a redistribution of 1% from the lowest quintile to the highest

[24] The exception is found in some cases of the Kuznets index. For example in Table 2.3, rows B, C, D and E, the Kuznets index remains unchanged.

[25] Again the exception is found in some cases of the Kuznets inequality index. For example, it remains unchanged in the cases K, L and M.

quintile increases the index by 11.74% points. The redistribution from the second, third and fourth quintiles by one percentage point each to the richest quintile raised inequality at diminishing rates 8.9%, 6.94% and 4.8% percentage points respectively (See Table 2.5).

The Kuznets index

The Kuznets index shows that the redistributional effect of any transfer of income from all the quintiles (from the top quintile to others or from the other quintiles to top quintile) have the same effect except for the redistribution between the fourth and the richest quintile (see Tables 2.4 and 2.5).

The Variance of logarithms (LV)

The LV exhibits the highest shifts in inequality both for the redistribution from the richest to the poorest quintile as well as from the poorest to the richest quintile. It is measured by 14.32% and 17.5% points respectively. But the variances are sharply reduced for the other quintiles. The results of a redistribution of income from the top quintile to the other quintiles, and from the other quintiles to the top quintiles, are reproduced in Tables 2.4 and 2.5.

The Champernowne index

The Champernowne inequality indicator is more sensitive than the Theil's index. When we redistribute 1% of total income from the top quintile to the poorest quintile, the index is reduced from 100% to 88%[26]. It is lower than the corresponding Theil index. On the other hand, by redistributing income from the poorest quintile to the richest quintile, the Champernowne index is increased more than the Theil index; whereas in other cases the redistributional influence from the top quintile to the other three quintiles monotonically decreases the inequality when compared to the Theil index. In contrast, the redistribution of income from these three quintiles to the top quintile raises monotonically the inequality measurements in comparison with the Theil index (see Table 2.4 and Table 2.5).

[26] The actual ratio before redistribution is assumed 100%.

The Gini index

Compared with the other inequality indexes (*i.e.* the Theil index, the Variance of Logarithms, and Champernowne's index) the Gini index varies less when a redistribution of income is implemented. On the basis of one percent of total income transferred from the top to the poor quintile and vice-versa, the variation is lower than with the other indexes (see Table 2.4 and Table 2.5).

The Atkinson Index

Atkinson's indexes are typically determined by the value of the distributional parameter ε. The inequality rises as the parameter value increases in terms of percentage value.[27] By contrast, inequality falls according to an increase in the distributional parameter. Redistribution from the top to the poorest quintile results in higher changes compared to the Theil index. But the redistribution of income from the top quintile to the second quintile, third quintile, and fourth quintile respectively, has a relatively lower effect on the index compared to the Theil index. On the other hand, the redistribution from the lower quintile to the top quintile has a lower incidence on the Atkinson index compared to the Theil index. The transfer of one percent of income share from the poorest quintile to the richest quintile, leads to increases in the Theil index by 12.6%, 13.2%, 13.81%, and 14% with the aversion parameter ε=0.5, ε=1, ε=1.5 and ε=2 respectively. While the Theil index for the same unit of transfer from poor to rich is 11.74%. It is lower than all Atkinson's indexes observed in Table 2.5, whereas in all other transfer cases, *e.g.* of one percent of income share transferred from the second, third and fourth quintiles to the top quintile, has a smaller impact in equality compared to the Theil index. Thus, Atkinson's measures emphasises either the high or the low end of the distribution.

[27] Assuming the actual value is 100%.

Table 2.4 The share of various inequality indexes (for a redistribution of income from rich to poor)

Stage	Theil	Kuznets	LV	Champer-nowne	Gini	Atkinson			
						ε=0.5	ε=1.0	ε=1.5	ε=2.0
1	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
2	88.97	95.31	85.68	88.34	94.19	88.68	88.34	88.12	87.95
3	91.64	95.31	92.74	92.76	96.20	92.19	92.76	92.98	94.28
4	93.59	95.31	95.97	95.17	97.06	94.42	95.17	96.02	96.84
5	95.55	100.00	98.19	97.17	98.49	96.33	97.17	97.89	98.46

Author's own estimates from the Multipurpose Household Budget Survey data in Nepal (1984)

Notes to Table 2.4:

In stage 1, all inequality measures are normalised to 100 percentage.

In stage 2, the normalised percentage of the inequality measures when one percentage of the total income is transferred from the richest quintile to the poorest quintile.

In stage 3, the normalised percentage of the inequality measures when one percentage of the total income is transferred from the richest quintile to the second poorest quintile.

In stage 4, the normalised percentage of the inequality measures when one percentage of the total income is transferred from the richest quintile to the third quintile.

In stage 5, the normalised percentage of the inequality measures when one percentage of the total income is transferred from the richest quintile to the fourth quintile.

Table 2.5 The changes of various inequality indexes (for a redistribution of income from poor to rich)

Stage	Theil	Kuznets	LV	Champer-nowne	Gini	Atkinson indexes			
						ε=0.5	ε=1	ε=1.5	ε=2
1	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
2	111.74	104.69	117.50	113.24	105.70	112.60	113.20	113.81	114.00
3	108.90	104.69	108.50	108.08	104.20	108.60	108.10	107.43	107.00
4	106.94	104.69	104.60	105.33	102.80	106.20	105.30	104.51	104.00
5	104.80	100.00	102.20	103.16	101.40	104.00	103.20	102.46	102.00

Author's own estimates from the Multipurpose Household Budget Survey data in Nepal (1984)

Notes to Table 2.5:

In stage 1, all inequality measures are normalised to 100 percentage.

In stage 2, the normalised percentage of the inequality measures when one percentage of the total income is transferred from the poorest quintile to the richest quintile.

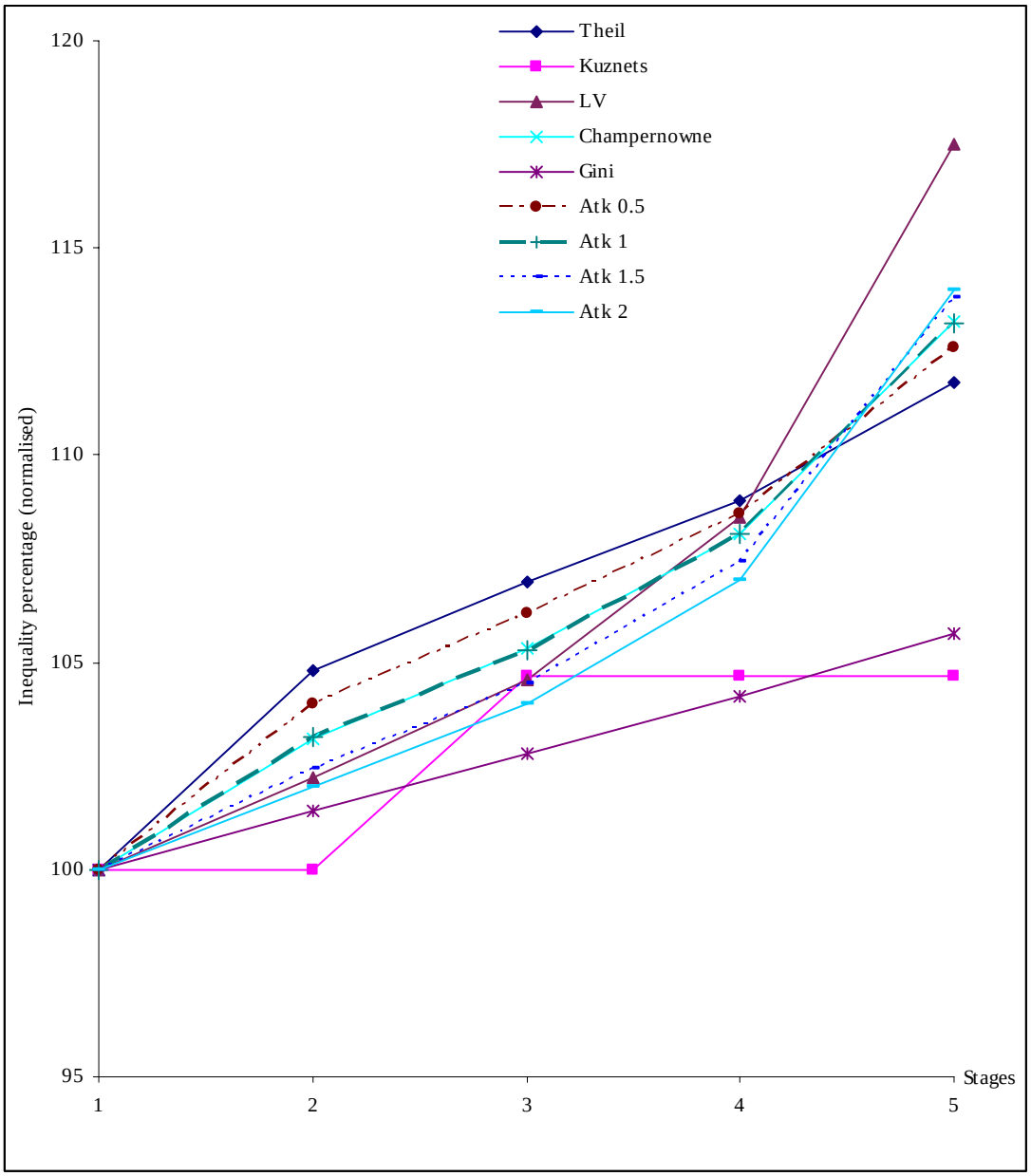
In stage 3, the normalised percentage of the inequality measures when one percentage of the total income is transferred from the second poorest quintile to the richest quintile.

In stage 4, the normalised percentage of the inequality measures when one percentage of the total income is transferred from the third quintile to the richest quintile.

In stage 5, the normalised percentage of the inequality measures when one percentage of the total income is transferred from the fourth quintile to the richest quintile.

The arguments are represented in the graphs below:

Figure 2.4 The graphical representation of the sensitivity of various inequality measurements (When 1% of income is transferred from the poorer quintiles to the richest quintile)



Author's own estimates from the Multipurpose Household Budget Survey data in Nepal (1984)

In Fig 2.4 the vertical axis represents the inequality percentage (normalised).[28] The horizontal line represents the change in the inequality measures, by assuming the redistribution of 1% of total income to the richest quintile from the other quintiles.[29] At the initial stage, the vertical line provides all the inequality indicators at 100 percent. The horizontal axis provides the different stages of inequality levels, which shifted 1% share of total income from the lower quintiles to the richest quintile. It represents the variation of various inequality measurements in the case of a 1% transfer from the poorer quintiles to the top quintile. For stage 2 the vertical axis represents the variation in all inequality indicators from the initial inequality level while redistributing 1% of total income from the second richest quintile (fourth) to the richest quintile by keeping the remaining quintiles constant. The stage 3 identifies the variation in all inequality indicators from the initial inequality level when redistributing 1% of total income from the third quintile to the richest quintile by keeping other quintiles constant. At stage 4, the vertical axis identifies the variation of all inequality indicators from the initial inequality level when redistributing 1% of total income from the second poorest quintile to the richest quintile by keeping other quintiles constant again. Finally at stage 5, the vertical line identifies the variation of all inequality indicators from the initial inequality level when redistributing 1% of total income from the poorest quintile to the richest quintile again by keeping other quintiles constant. In this way, the lines for the various inequality measures provide the variation of the distribution of income (in this instance the distribution of income in Nepal for 1984) with the hypothesis of a simulation of transferring 1% of total income from the poorer quintiles to the richest quintile. The process of transferring is successively allocated to each quintile starting from the highest one. It is worth noting that the Atkinson index for $\varepsilon = 1$ and the Champernowne index overlap each other at all stages. It seems these indexes are perfectly replaceable.

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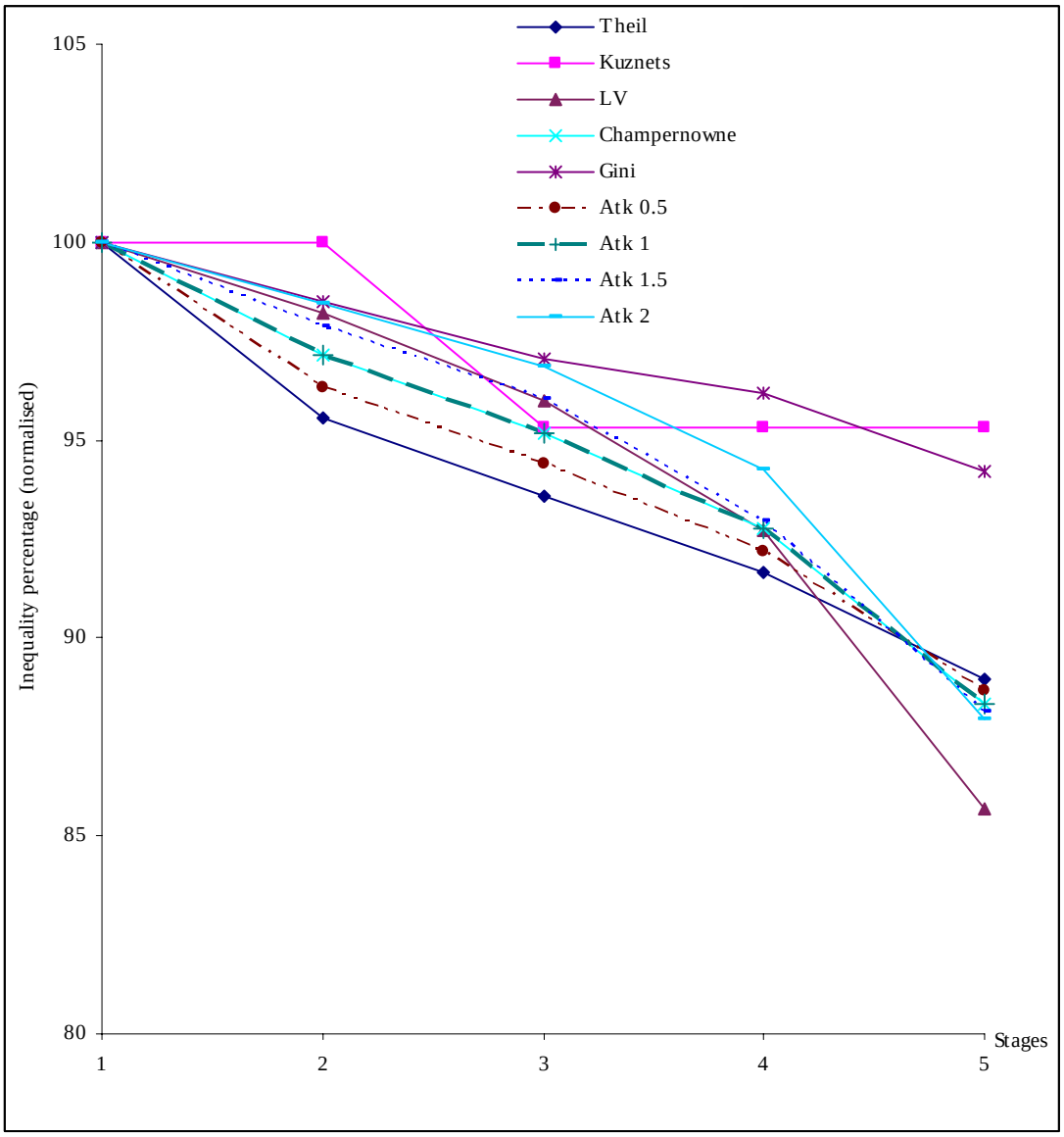
[28] The initial inequality before the redistribution (hypothetical) is assumed to be 100%.

[29] At the initial stage (denoted by 1), all the inequality indexes are normalised to 100%. In the successive stages 2, 3, 4, and 5 the inequality indexes are measured after transferring 1% of total income from the rest of the quintiles to the richest quintile respectively.

Figure 2.5 The graphical representation of the sensitivity of various inequality measurements (When 1% of income is transferred from the richest quintile to the rest of the quintiles)



Author's own estimates from the Multipurpose Household Budget Survey data in Nepal (1984)

In Fig 2.5 we attempt to map the sensitivity of various inequality measures used thus far. To do so, we transfer 1% share of total income from the top quintile to the other quintiles respectively. The various inequality measurement lines show the effect on a given income distribution. The sample refers again to the distribution of income for Nepal in 1984. The figure shows the fluctuation of the inequality measures while transferring 1% of income to the poor quintiles from the richest quintile. It thus involves a simulation of a transfer of 1% successively allocated to each quintile starting from the fourth quintile to the poorest quintile.

2.6 Measuring the Trend of Income Inequality in Nepal

As we have seen, there are several ways to express the degree of income inequality in a given society. The simplest way is to arrange whatever units, one chooses (*i.e.* persons, families, dynasties, or households) in rank order, from the poorest to the richest; then to divide the hierarchy into fifths (quintiles) or tenths (deciles), and compute either the average income by decile or quintile or the share that each grouping has of the society's total income. Then, the shares or averages of the rich and poor can be compared. In the case of Nepal, for the reasons expounded above, we have data only for 1984 and 1996 (two observations only). In Table 2.6 the five columns on the left give the share of income earned by each quintile of households, from the poorest to the richest. In addition, columns six through nine show the ratios of those shares for the richest to poorest, the middle to the poorest, and the richest to the middle[30].

[30] Note that from 1984 to 1996 the increase in inequality was almost entirely the result of the rich getting richer at the expense of the lower-middle and middle ranks.

Table 2.6 Income distribution in Nepal (1984 and 1996)

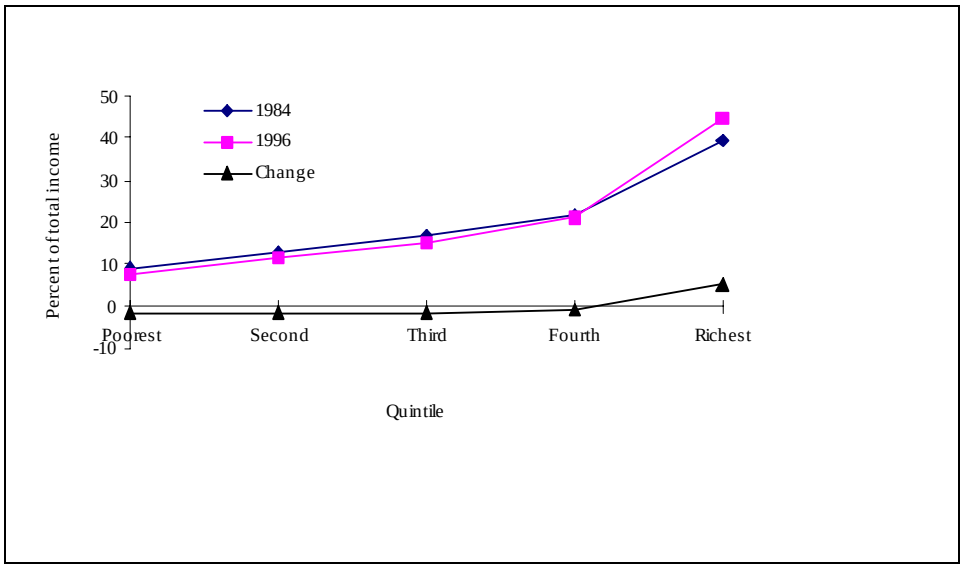
	Share of income by quintile					Ratio		
	Poorest	**Second**	**Third**	**Fourth**	**Richest**	**Q5/Q1**	**Q3/q1**	**Q5/Q3**
1984	9.11	12.89	16.68	21.82	39.50	4.34	1.83	2.37
1996	7.60	11.50	15.10	21.00	44.80	5.90	1.99	2.97
Change	-1.51	-1.39	-1.58	-0.82	5.30	1.56	0.16	0.60

Author's own estimates from the data sources–Deninger and Squire database (1996) and World Bank Development Report 1998

The selected ratios in Table 2.6 also indicate an increase between 1984 and 1996. All the selected ratios have risen significantly in 1996. The quintile shares for 1984 and 1996 reveal that the amount lost by the entire bottom four quintiles on average is more than one percent point. The gain of the top quintile is 5.3 percent of total income. Every income group, except for those at the top of the income scale, received a significantly smaller share of national income in 1996 than in 1984. The highest-income groups consequently earned larger shares. In 1996 the 20 percent of households with the highest incomes received nearly half — 44.8 percent — of national income, while the other 80 percent of the remaining population divided the other half (56.2 percent) of national income. The 44.8 percent of national income going to the top fifth of households represents a statistically significant change from the 39.5 percent figure for 1984 of 5.5 percent points. The share going to the middle three-fifths of the population combined was at a record lower than 50 percent of total income. This argument is shown in the following chart[31]:

[31] The first, second, third and fourth quintiles have lost their share in national income between 1984 and 1996 by 1.51, 1.39, 1.58, and 0.82 percent points respectively and the income share of the top fifth of households rose by 5.3 percent.

Figure 2.6 The change in quintile shares of income in Nepal between the 1980s and 1990s



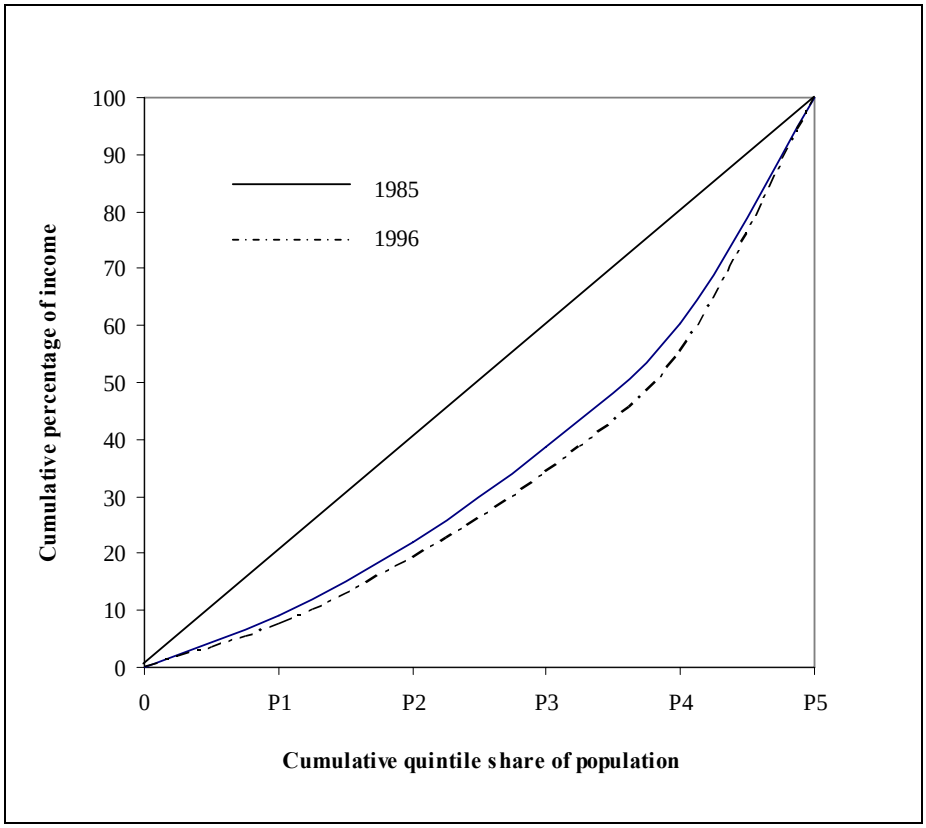
Author's own estimates

In Fig 2.6 we have presented the quintile shares for 1984 and 1996 and their changes between these two periods. The vertical line shows the percentage of total national income received by income groups, and the horizontal line represents the quintile share of population from the poorest to the richest respectively. The line depicted for 1996 is always below the line for the first four quintiles for 1984. It means that all four quintiles had lower percentage shares in national income in 1996 than in 1984, while the top quintile line for 1996 is above the line for 1984. This variation is also provided by a change-line. This has clearly been a worsening in the distribution of income in Nepal between these two periods. This technique is simple and revealing, but not without awkwardness: which comparison to choose?

Now we begin plotting the distribution through the Lorenz curves. In the graph below, the horizontal axis shows the cumulative shares of population and the vertical axis, the

cumulative share of income earned by the plotted quintile.[32] The graph plots these values for 1984 and 1996. The Lorenz curve for Nepal for 1996 is further away from the egalitarian line than in 1984. Hence, the distribution of income in Nepal in 1984 was less unequal than the distribution of income in 1996.

Figure 2.7 Lorenz curves for income distribution in Nepal

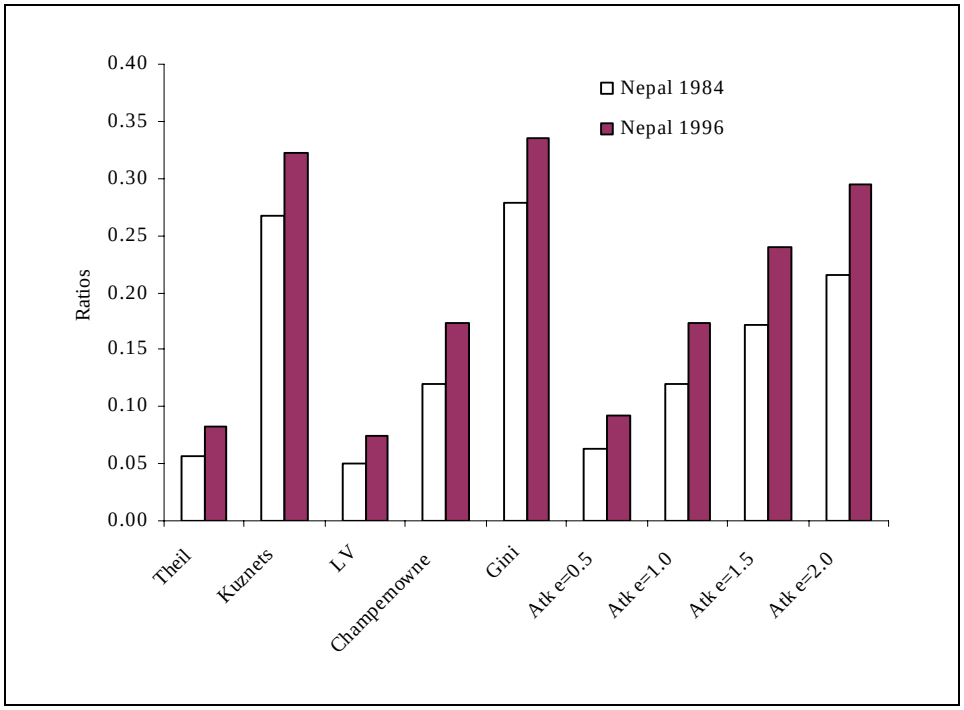


Author's own estimates

[32] For example, for 1984, the cumulative value for quintile 1 is the share earned by the poorest quintile, or 9.11%; that for the quintile 2, 12.89% +9.11%, or 22%; and so on, up to quintile 5, when the sum is 100%.

Though income quintile shares and the Lorenz curves clearly show the situation of income distribution in Nepal, they do not represent the whole distribution in one unit. Thus, it is important to define a country's inequality level as a whole in order to facilitate the comparison of results across countries. In addition, we provide several different indicators given that these indicators vary in sensitivity to observations in the tails of the distribution. We begin with the following chart, which includes all the measures of inequality that we discussed in section 2.4 (above) to explain Nepalese income inequality.

Figure 2.8 Inequality measurements and changes in inequality between 1984 and 1996



Author's own estimates

The above Fig 2.8 shows the inequality measures in Nepal between 1984 and 1996 by various indicators. It also shows the change in inequality between 1984 and 1996. The Gini index for the earnings varies from 0.279 in 1984 to 0.336 in 1996; a change of 0.057 points. The

Kuznets index shows a higher inequality change than the Gini index. It increases from 0.267 in 1984 to 0.323 in 1996, showing an increase of 0.056 points. The Champernowne index, the Theil index and the Variance of logarithms show very small inequality variations compared with the Gini index and Kuznets index in terms of inequality size. The Atkinson indices vary according to the distributional parameters. The absolute magnitude is determined by ε. As this parameter rises, the inequality also increases. The inequality measures in 1984 and 1996 with the lowest parameter ε=0.5 are 0.063 and 0.092 respectively. The inequality measure is thus increased by 0.029 points. With the highest distributional parameter ε=2, inequalities are measured for 1984 and 1996 at 0.215 and 0.295 respectively. Here again, the inequality degree is slightly greater, and the concentration in the distribution of income between 1984 and 1996 is increased by 0.080. The worsening in income distribution from 1984 to 1996 is therefore confirmed by all inequality measurement indexes analysed.

2.7 Measuring the Trends of Income Inequality in Other SAARC Nations

The South Asian Association for Regional Co-operation (SAARC) includes the seven countries of South Asia, *i.e.* Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka. It is an association based on the objectives of peace, freedom, social justice, and economic prosperity, which are thought to be best achieved in South Asia by fostering mutual understanding, good neighbourly relations, and meaningful co-operation among the member states. The idea of regional co-operation in the South Asia was first proposed around November 1980. The Foreign Secretaries of South Asian countries expressed their desire for regional co-operation at this time when they held several meetings in Colombo. Consequently, the SAARC was formally launched on 8th December 1985. Its goal was to promote the well-being of the populations of South Asia and improve their standard of living; to speed up economic growth, social progress and cultural development; to reinforce the links between the countries of this area; and, finally, to promote mutual collaboration and assistance in the various fields. With 1.3 billion inhabitants in 1999, these countries represented almost 22% of the world population, but earned only 1.97% of world GNP (575 billion US$ in 1999). Average *per capita* income in the

region was $441 (World Bank, 1999). Thus one could say that, poverty is a fundamental characteristic of South Asia.

As discussed in section 2.4 (above), rather than relying on one-inequality measures, this analysis uses nine measures of inequality. Given the associated welfare function in the inequality measurements, this analysis will try to ascertain their impact, while simultaneously analysing the inequality trend in selected SAARC countries.[33]

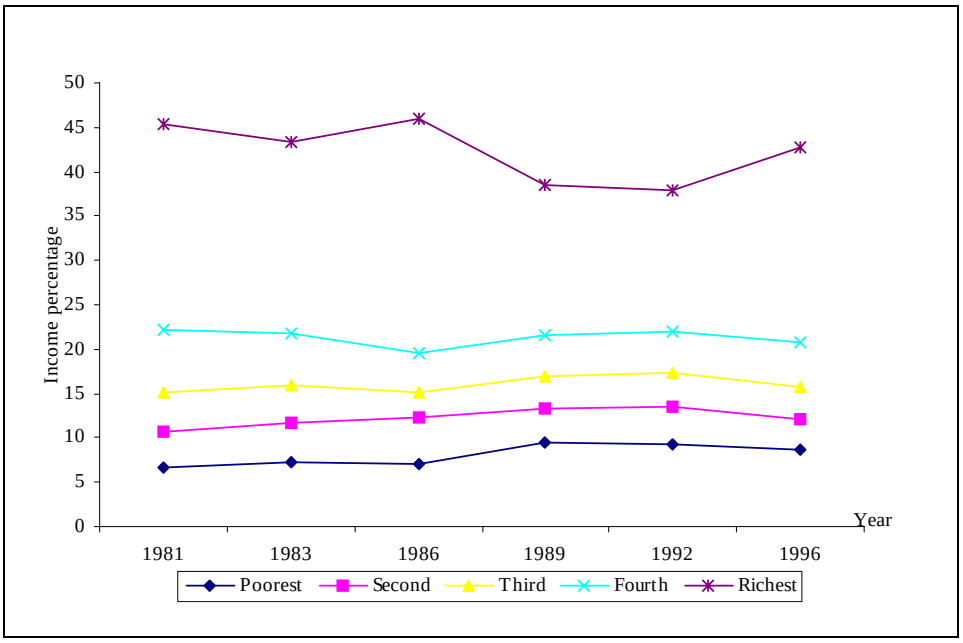
2.8 Measuring Inequality Trends in Bangladesh 1981-96

Bangladesh (a member of SAARC countries) experienced a falling income dispersion during the last two decades. The aggregate income share of the richest quintile has decreased from 1981 to 1996, though in the mid 1980s and from 1992-96 it had a tendency to increase. The income share of the poorest quintile has consistently increased throughout the period, while the middle three quintiles experienced a mixed pattern with a rise and fall of their income share in the national income. The variation in these three quintiles is relatively low. On average, the lowest quintile has gained approximately 1.5 percent of income; while the top quintile has lost almost 3 percent of income share between the 1980s to 1990s. The third and fourth quintiles gain around 0.8 percentage each; whereas the fourth quintile remains constant during the same period.[34] These results are depicted in Fig 2.9 below.

[33] We have selected only five SAARC countries out of seven *i.e.* Bangladesh, India, Nepal, Pakistan and Sri Lanka because income distribution data are available only for these countries.

[34] Average share is used to compare for the periods 1980s and 1990s.

Figure 2.9 Changes in the quintile shares in Bangladesh during the last two decades



Author's own estimates from the data sources–Deninger and Squire database (1996) and World Bank Development Report 1998

Between 1981 and 1983, the two richest quintiles have lost their share of income; while the rest of the quintiles gained. In this case we can say that inequality of income has fallen in Bangladesh because the only poor quintiles have gained in income share. In 1986, the richest quintile and the second poorest quintile gained their income shares at the cost of other quintiles. It is not easy to judge whether inequality has risen or fallen here, but we will examine this later with the help of inequality measures. Between 1986 and 1989, all four lower quintiles have gained their share of income at the cost of the richest quintile. We can unambiguously say that the distribution of income has improved because the only gainers are the poor income groups. The lower four quintiles continued to gain their share of income until 1992 then between 1992 and 1997, the shares of all four quintiles dropped. These modifications of income shares have led to the following shifts in the various inequality measurements (see Table 2.7).

Table 2.7 Changes of income inequality in Bangladesh 1981-96

	Gini	Kuznets	Theil	LV	Champer-nowne	Atkinson			
						ε=0.5	ε=1	ε=1.5	ε=2
1981	0.3550	0.3430	0.0917	0.0890	0.1946	0.1024	0.1946	0.2729	0.3368
1983	0.3294	0.3139	0.0789	0.0749	0.1686	0.0882	0.1686	0.2385	0.2974
1986	0.3411	0.3198	0.0884	0.0797	0.1820	0.0971	0.1820	0.2533	0.3117
1989	0.2660	0.2525	0.0512	0.0447	0.1096	0.0571	0.1096	0.1564	0.1974
1992	0.2624	0.2488	0.0493	0.0442	0.1072	0.0554	0.1072	0.1541	0.1957
1996	0.3080	0.2950	0.0704	0.0601	0.1453	0.0773	0.1453	0.2028	0.2502
Average 1980s	0.3229	0.3073	0.0776	0.0721	0.1637	0.0862	0.1637	0.2303	0.2858
Average 1990s	0.2852	0.2719	0.0599	0.0521	0.1263	0.0664	0.1263	0.1784	0.2229

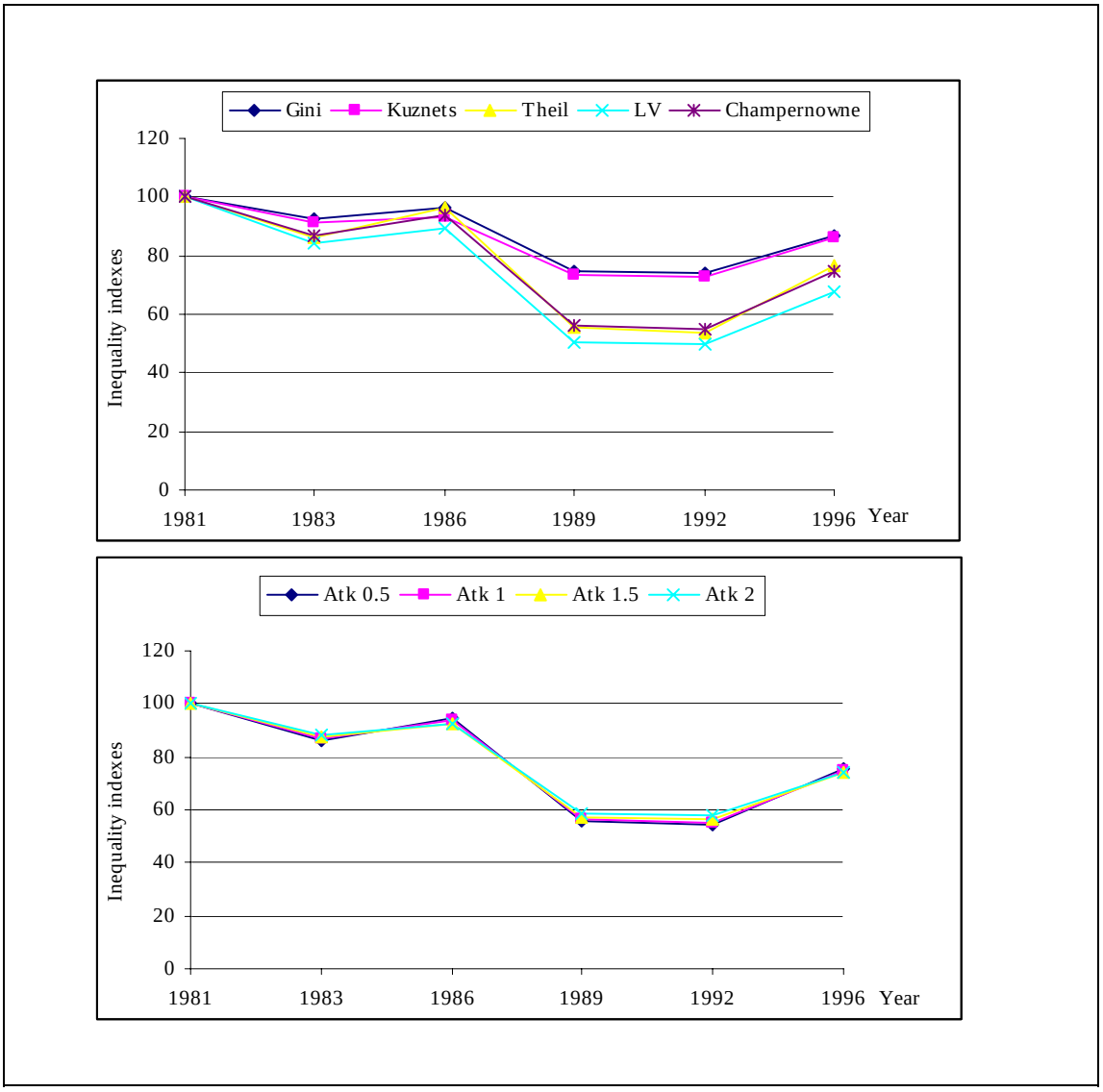
Author's own estimates from the data sources–Deninger and Squire database (1996) and World Bank Development Report 1998

Note: Quintile shares are used to calculate the indexes.

Table 2.7 summarises the nine inequality measures for income distribution in Bangladesh. The picture of diversity from Table 2.7 shows the changes in the various inequality measures since 1981. They show that inequality fell between 1981 and 1983. The Gini index has decreased by over 2% and then rose slightly between 1983 and 1986. Bangladesh experienced the largest decline in the Gini index ever between 1986 and 1989 with more than 7 percentage points. It reached the lowest inequality in 1992 and it began to rise (most probably the largest change) between 1992 and 1996. However, Bangladesh improved income distribution in the 1990s compared with 1980s (see average inequality measures for the 1980s and the 1990s in Table 2.7).

To facilitate comparisons, we standardise all measures with 100% for 1981. The graph of the results is plotted in Fig 2.10. This will not only facilitate the time-series patterns of inequality, but also the comparisons among the inequality indexes.

Figure 2.10 Standardised Inequality indexes: Bangladesh 1981-96 (1981=100%)

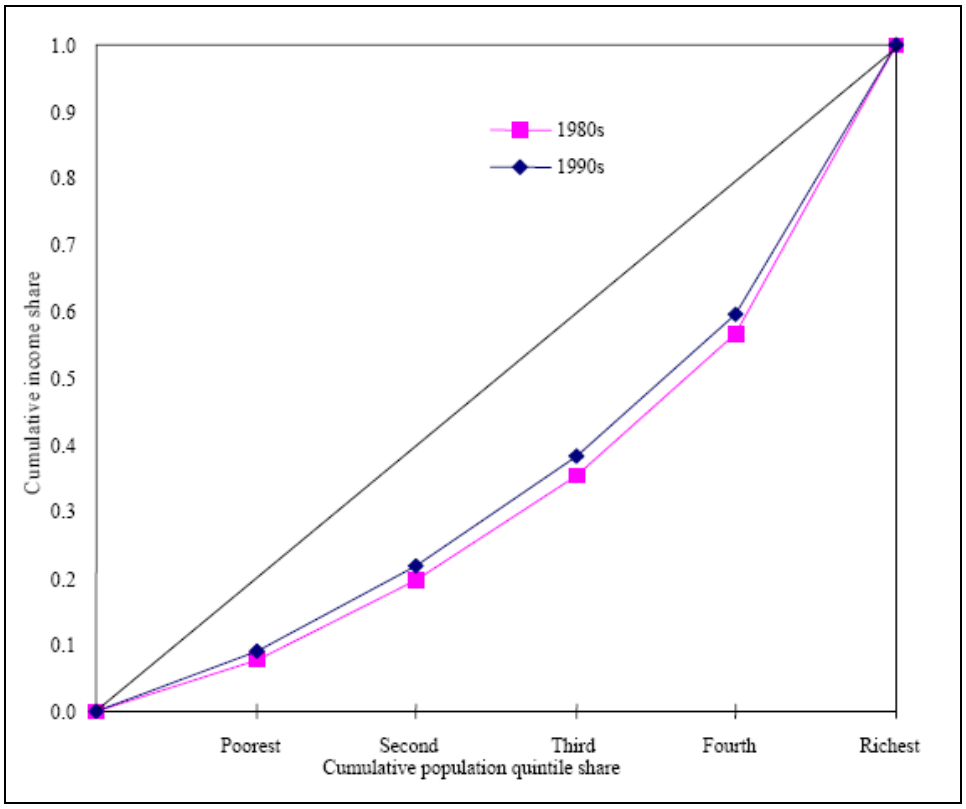


Author's own estimates from the data sources–Deninger and Squire database (1996) and World Bank Development Report 1998

Fig 2.10 demonstrates the homogeneity among inequality measures over time. For example, all inequality measures show a decline in inequality between 1981-83, a rise in the

inequality in 1983-86, a fall in the inequality in 1986-89 again, and so on. There is no inequality measure that shows an opposite result of another inequality measure. Nevertheless, the sensitivity among the inequality measures varies. For example, the Gini index and Kuznets' index are less sensitive compared with the rest of the indexes because the change of inequality over time is quite slow. For example, between 1986 and 1989 the Gini index declines from 96% to 75%, as does the Kuznets' index. The Theil index declines from 96% to 56%. The change in LV is more rapid than other measures. This evidence may be observed in the above figure given that the slope of this measure is the steepest downward (when the inequality declines). Hence, we can see that except for the Gini index and Kuznets indexes, the measures are sensitive in the lower tail. It is also noteworthy that one of the measures between Champernowne's index and Atkinson's index (ε=1,5) disappears in the graph because they overlap each other. We have constructed the Lorenz curve for the 1980s and 1990s using the average quintile shares in figure 2.11 below:

Figure 2.11 Lorenz curves of income distribution in Bangladesh for the 1980s and 1990s



Author's own estimates from the data sources–Deninger and Squire database (1996) and World Bank Development Report 1998

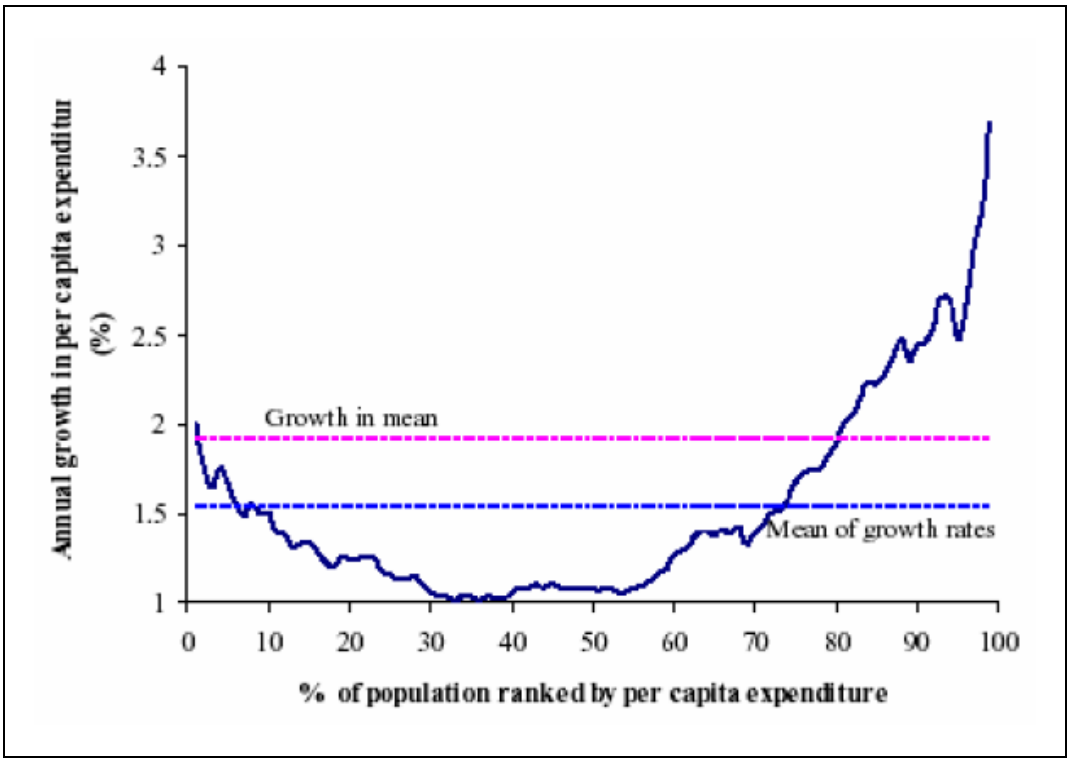
The Lorenz curve for the 1990s is closer to the egalitarian line than the Lorenz curve for the 1980s. We used household income data for the 1980s and individual expenditure data for the 1990s for the analysis of inequality. Therefore, we cannot compare our results for the 1980s and 1990s directly. Inequality has declined in our study between the 1980s and the 1990s; but the result is opposite to that obtained by Wodon (2000). In his study the inequality of expenditure has increased slowly in the Eighties, while in the Nineties it has increased sharply, reaching the Gini coefficient 0.31 in 1997 from 0.26 in 1983 (Table 3, Wodon 2000). Although the Gini coefficient has increased sharply between the 1980s and 1990s, the level of inequality registered is the lowest among the South Asian Nations. Furthermore, his analysis of inequality

decomposition shows that the between groups inequality is increasing over time[35], suggesting that the rural and urban gap is widening. The report of Ministry of Finance, Bangladesh (2003) specified that inequality in urban areas has increased much more than in rural areas in the Nineties. Hence the level of inequality has increased over time in Bangladesh.

Bangladesh achieved independence in 1972 and it is the third poorest country in the world and has the largest number of poor people. Bangladesh witnessed a quite high growth rate (5% on average) of GDP in 1980s and 1990s. In terms of value added, the share of agriculture declined while the non-agricultural sectors expanded their share. Given a large number of poor people is engaged in the agriculture (62% of labour force in 2000), a slow growth in this sector has widened a large gap in income between rich and poor. The growth of income has benefited all segments of the population in the Nineties, but growth rates varied considerably across income groups. Higher income groups have benefited relatively more than other groups, which led to a higher Gini coefficient in the Nineties.

[35] See Wodon (2000), Table 3.

Figure 2.12 Growth incidence curve for Bangladesh, 1991/92 to 2000



Source: Figure adapted from the World Bank (2002), Report no. 24299-BD

The World Bank 2002 (Report No. 24299-BD, p. 7) states: 'In part, the rise in inequality over the decade reflects increased fragmentation and inequality of landholdings, as well as higher premiums enjoyed by the segment of the population fortunate enough to have relatively better skills and education'. The inequality of income distribution in Bangladesh increased over time largely as a consequence of the land tenure system and uneven access of the population to education skill development and employment, and gender discrimination. 'The sources of rising inequality are linked with the uneven spread of economic and social opportunities, unequal distribution of assets especially in respect to human capital and financial capital, growing disparity between urban and rural areas as well as between developed and

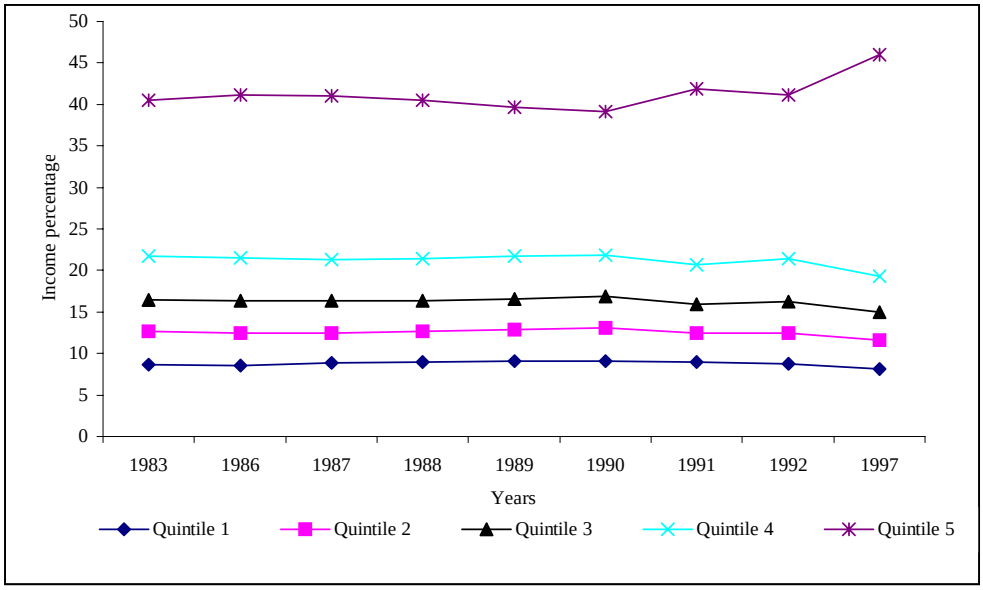
underdeveloped areas. As a result, income sources associated with human capital (such as services) and financial capital intensive activities (such as trade and many non-farm activities requiring considerable injection of capital) as well as remittances were found disequalising in both urban and rural areas.' (Ministry of Finance, Bangladesh 2003, Chapter Two, p. 8)

2.9 Measuring Inequality Trends in India 1981-96

The income data from 1983 to 1997 are based on the household surveys. In the last two decades nine household surveys have been done to estimate the income distribution of the country. Based on the Deninger and Squire database (1996) and the World Bank Development Report (1998) we have estimated the trends of quintile shares for these periods.

The richest quintile share obviously increased in the period 1990-97. Between 1983 and 1986 it is slightly increased and then remained almost constant between 1986 and 1987. Then it started to decrease until 1990. Then, again, it increased between 1990 and 1991. The drastic rise took place between 1992 and 1997. It marked almost 5 percent points, which is statistically significant. Although during these periods there are ups and down, the increase of the richest quintile share is clearly seen for the period 1983 to 1997 (see Fig 2.13).

Figure 2.13 Changes in the quintile shares in India during the last two decades



Author's own estimates from the data sources–Deninger and Squire database (1996) and World Bank Development Report 1998

On the contrary, the poorest quintile share has lost around 0.4 percent points between the 1980s and 1990s. The trend in Fig (2.13) shows that the poorest quintile slowly increases its share until 1990, and then starts to decline. The variance during these periods is negligible. The second quintile share has the same trend as the poorest one. It decreases by around 0.6 percent points between the 1980s and 1990s. It experiences a small increase in 1990 and then drops down again. The third quintile share remains almost constant for the whole decade (the 1980s) and then falls down by almost 1 percent point in 1991. In 1992 it recaptures its previous position, but again in 1997 it drops by 0.7% point. Thus, the third quintile also experiences a decline of its share in national income between the 1980s and 1990s by approximately 1 percentage point. Analogously, the fourth quintile share also declines between the 1980s and 1990s by more than 1 percentage point. This quintile experiences a small decline in the 1980s

and it regains its share in the early 1990s; but between 1992 and 1997 it drops more than 2 percentage points.

In this way, the only one to gain has been the richest quintile at the expense of the other quintiles. The shift turns up in the various income inequality indicators. The results are presented in Table 2.8.

Table 2.8 Changes in the distribution of income inequality in India 1983-1997

	Gini	Kuznets	Theil	LV	Champer-nowne	Atkinson			
						ε = 0.5	ε = 1	ε = 1.5	ε = 2
1983	0.2912	0.2775	0.0614	0.0551	0.1312	0.0686	0.1312	0.1865	0.2341
1986	0.2968	0.2825	0.0641	0.0572	0.1361	0.0713	0.1361	0.1928	0.2412
1987	0.2920	0.2788	0.0624	0.0542	0.1312	0.0691	0.1312	0.1852	0.2309
1988	0.2868	0.2738	0.0600	0.0523	0.1268	0.0666	0.1268	0.1794	0.2242
1989	0.2800	0.2675	0.0568	0.0499	0.1210	0.0633	0.1210	0.1721	0.2161
1990	0.2748	0.2613	0.0544	0.0484	0.1170	0.0609	0.1170	0.1672	0.2110
1991	0.2960	0.2825	0.0651	0.0550	0.1348	0.0716	0.1348	0.1887	0.2336
1992	0.2940	0.2813	0.0631	0.0552	0.1330	0.0700	0.1330	0.1878	0.2341
1997	0.3340	0.3250	0.0854	0.0714	0.1712	0.0926	0.1712	0.2350	0.2855
Average 1980s	0.2894	0.2760	0.0609	0.0537	0.1293	0.0678	0.1293	0.1832	0.2293
Average 1990s	0.2997	0.2875	0.0670	0.0575	0.1390	0.0738	0.1390	0.1946	0.2410

Author's own estimates from the data sources–Deninger and Squire database (1996) and World Bank Development Report 1998

Table 2.8 summarises the nine inequality-measures for the income distribution of India. Between the 1980s and 1990s India registered an increase in inequality. All inequality measures support the exacerbation of the Indian income distribution from the 1980s to the 1990s. For example the Gini's index is increased by more than 1 percentage point; this is also true for Kuznets' index and Atkinson's indexes (with ε=1.5 and ε=2). Other inequality indexes

show a change of less than 1 percentage point. This conclusion is derived from the time series analysis of income distribution in India for 1983-97.

Between 1983 and 1986 inequality slightly increased in India – the Gini's index increased by 0.56 percent point. Indian experienced a decline in inequality for the next four years. It reached the lowest inequality level of the last two decades in 1990, with a Gini index equal to 27.48 percentage points. Then it begins again to increase.

The results of income inequality until 1990 are supported by all indexes examined in this study. Nevertheless, between 1991 and 1992 the result yields a different story pertaining to the various inequality-indexes. The seven inequality measures show a decline in equality in this period; but LV and Atkinson's indexes with inequality aversion parameter ε=2, reveal an increase in the inequality. In this case it is difficult to interpret the trend. This is yet another reason why in this study we chose to use various indexes to examine the inequality trend instead of relying on a unique measure. We must however be careful while choosing the inequality measures.

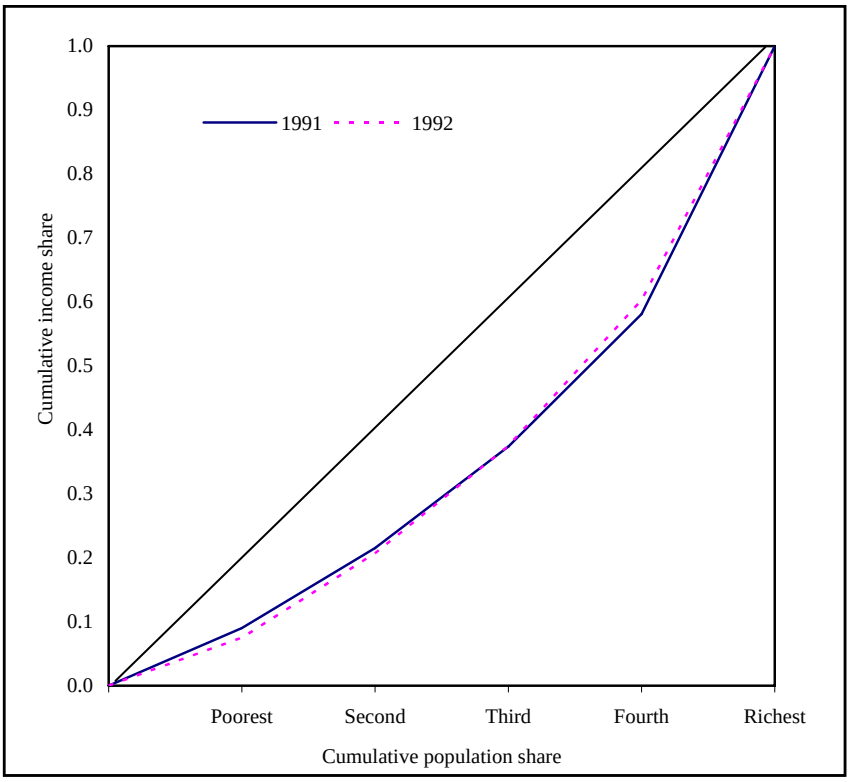
From this study we identify some of the reasons why the different inequality measures have contradictory results.

We have examined all the quintile shares of income distribution for 1991 and 1992. The richest quintile declines by 0.8 percentage points. The second richest quintile gains 0.7 percentage points of its income share and the third quintile also gains 0.3 percentage points. Yet the second poorest quintile remains constant, and the poorest quintile decreases by 0.2 percent point. The LV and the Atkinson index with ε=2 tend to increase, although the reduction in the lowest quintile is much smaller than for the highest quintile. At this standpoint, these inequality measures are very sensitive to the lower tail of the distribution, while other measures are less sensitive to the lower tail or even upper tail sensitive.

For income distribution of these two periods, the Lorenz curves have been tested. The areas between the Lorenz curve and the diagonal line for both income distributions (1991 and 1992) are almost equal. The Lorenz curves intersect for these periods (see Fig 2.14). This may be the reason why all inequality measures do not follow the same direction; *i.e.* some measures

show a decline in income inequality and the other measures show an increase in income inequality.

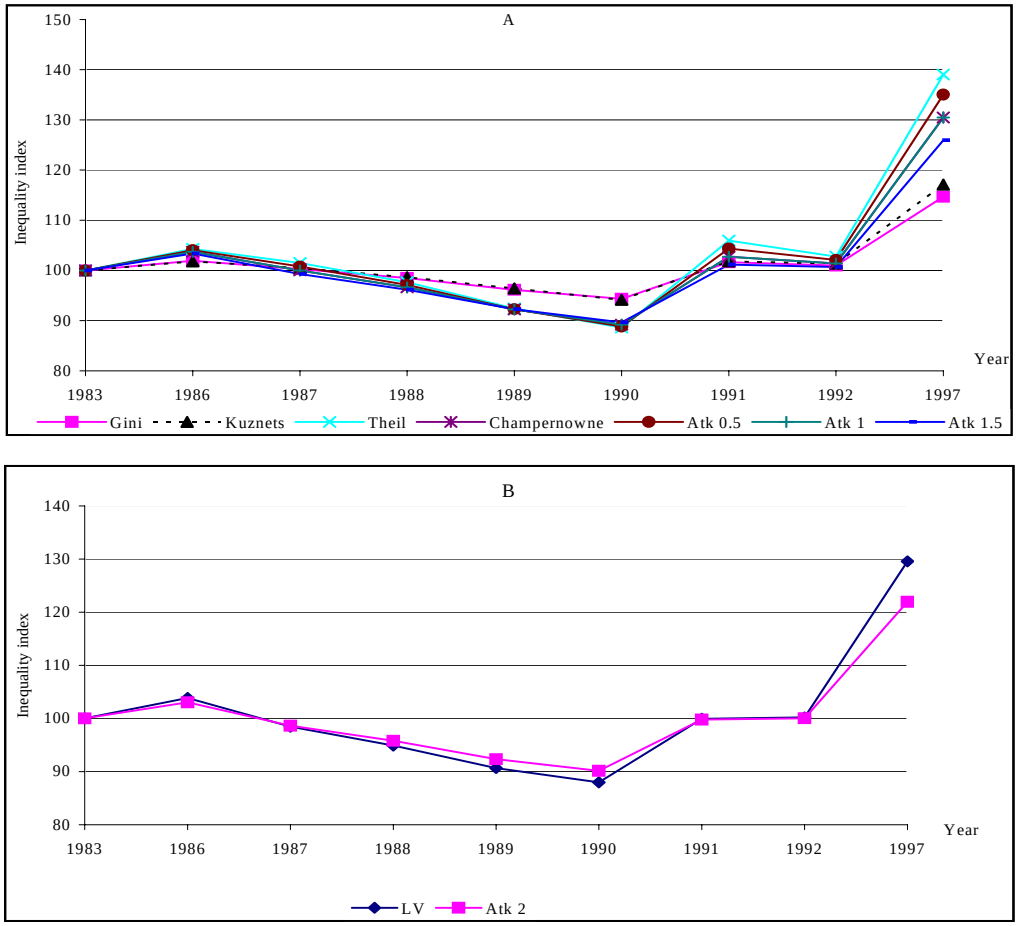
Figure 2.14 Lorenz curves for 1991 and 1992 (India, disposable income)



Author's own estimates from the data sources–Deninger and Squire database (1996)

Coming back to the interpretation of the trend in income inequality in India, between 1992 and 1997 we find a higher inequality. The Gini index increases by 4 percent points and all other measures of inequality also reveal an increase. Thus we can see that income distribution in India in 1983-97 has been exacerbated. The results are presented in the following figure (2.15).

Figure 2.15 Standardised inequality indexes: India 1983-97, disposable income (1983=100%)



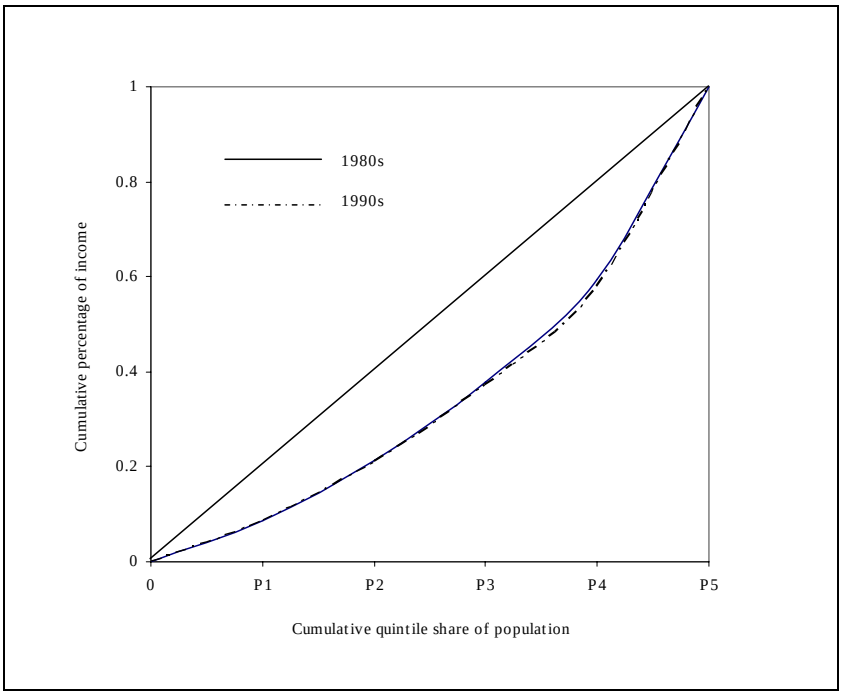
Author's own estimates from the data sources–Deninger and Squire database (1996) and World Bank Development Report 1998

Fig 2.15 demonstrates the standardised trend in inequality for the period 1983-97. We have divided the graph in two parts according to the sensitivity of the inequality measures. In Fig. A we gather all measures that show the same trend; although the magnitude of the change over time varies according to the inequality indexes. In Fig. B we gather the inequality indexes,

which do not always follow the same trend, collected in Fig. A. In Fig. A all indexes show an increase in inequality for the period 1983-86. It decreases until 1990 and then rises again. In 1991-92 inequality slightly declines then rises rapidly between 1992 and 1997. The process of increasing and decreasing in inequality, except for the Gini and Kuznets indexes, is quite fast. The figure shows that in early 1990s and mid 1990s income distribution worsened drastically. For example between 1992 and 1997, the Gini's index has increased by 14% and the Theil's index has increased by 36%.

In Fig. B, LV and Atkinson's (with ε=2) index show the income inequality in India for the same period. The results for the same period in this figure are slightly different compared with the other inequality indexes. For other periods, these two indicators also show similar changes as demonstrated by other indicators, though the magnitude varies from one indicator to another. The exception is found between Champernowne's index and Atkinson's index with ε=1.5, that show the same magnitude and the same tendency. Finally, to capture a change in inequality between the 1980s and 1990s, we draw the relative Lorenz curves (see Fig 2.16).

Figure 2.16 Lorenz curves for income distribution in India, 1980s and 1990s (average)



Author's own estimates from the data sources–Deninger and Squire database (1996) and World Bank Development Report 1998

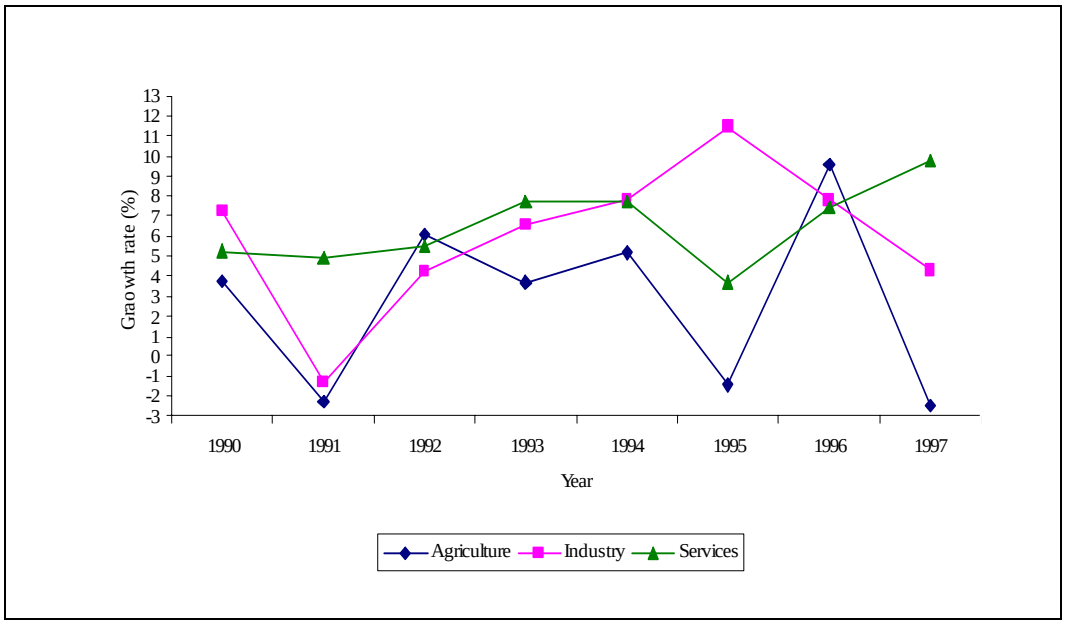
The Lorenz curve for the 1990s is slightly farther from the diagonal compared to the Lorenz curve for the 1980s.[36] This suggests that the inequality of income distribution has increased in the Nineties. Our result is supported by numerous other studies.[37]

A possible reason for the increase of inequality in India could be due to the more pronounced growth of the service sector in comparison to that of agriculture. In Fig. 2.17 it can be seen that the growth rate of the agricultural sector is much lower than that of the other sectors (industries and services) in the Nineties.

[36] The curves are estimated from the average quintile shares for the decade.

[37] See Deaton and Drèze 2002, Sen 2004, Datt 1999, Tendulkar and Jain 1995, Chaturvedi and Upadhyay (2004) and others.

Figure 2.17 The sectoral growth of GDP in India (1990-97)



Author's own estimates from the Asian Development data

Normally, higher income sectors such as industries and services seek higher educated people. When such sectors grow faster, relatively few people with high education are privileged; while the majority of population does not have access, initially because they do not possess sufficient qualification. For this reason a rapid growth of the service and industrial sectors initially caused an increase of inequality in the Nineties in India. Deaton and Drèze (2002) have studied interesting aspects of the income distribution. They find that during the Nineties the real salary of farmers have increased on average by 2.5% per year, while that of public officials by 5%. This causes an increase of inequality in income distribution between rich and poor. Besides, they find a large gap between rural and urban income. The liberalisation of the market according to the same authors, is the fundamental factor for the growth of income inequality, especially in the Nineties. Indian government carried on economic reforms in 1991 based on competition market and privatisation.

Little (1996) stressed that the reforms must be leading to the following characteristics in the economy:

- Free trade and freedom of investment (by foreigners in India and Indian in the foreign countries).
- Predominant privatisation, competition, and fair trade.
- The State relieves extreme poverty, and ensures that the poor have access to primary health and educational services.

Deaton and Drèze (2002) find that after the liberalisation, some individuals are excluded from the economic growth. Structural changes of the 1990s in India led also to the disappearance of some economic sectors; particularly some big industries experienced insolvency. Income inequality was further aggravated by the introduction of competitive markets; here state intervention was less pronounced, some subsidies were cut down and poor people had a sudden reduction of their income. In this process, most probably, rural peasants (basically, the low-income groups of the society) slashed the price of their products in the competitive markets; whereas the productivity was very low in the agricultural sector.

Sacks et. al (2002) carried out a study on economic growth over the Indian states. Bihar is the poorest state with a per *capita* income of 1010 rupees per month compared with the richest state *Maharastra*.

Table 2.9 Rates of growth of per capita Gross State Domestic Products (GSDP)

State (ranked from highest income in 1980/1)	1980-81 to 1990-91	State (ranked from highest income in 1990/1)	1992-93 to 1998-99
Punjab	3.8	Punjab	2.8
Maharashtra	4.3	Haryana	2.6
Haryana	4.6	Maharashtra	6.8
Gujarat	3.8	Gujarat	7.8
West Bengal	2.3	Tamil Nadu	5.0
Kerala	2.5	Karnataka	3.5
Karnataka	3.6	West Bengal	4.8
Tamil Nadu	5.0	Kerala	4.6
Andhra Pradesh	2.9	Andhra Pradesh	3.7
Madhya Pradesh	2.9	Rajasthan	4.4
Uttar Pradesh	3.0	Uttar Pradesh	1.6
Orissa	1.0	Madhya Pradesh	3.9
Rajasthan	5.8	Orissa	1.6
Bihar	2.9	Bihar	-0.2
Unweighted Average	3.5	Unweighted average	3.8

Sources: Adapted from Table 4, p. 30 of Sacks et.al. (2002)

We can see from the above Table 2.9 that the poor states (*Bihar*, *Orissa*, and *Uttar Pradesh*) experienced a slow and even negative growth in the Nineties; while the rich states enjoyed a higher growth during the same period. In this way the regional inequality has apparently increased; to which has led to a more unequal distribution of income/expenditure in overall India.

2.10 Measuring Inequality Trends in Pakistan 1985-97

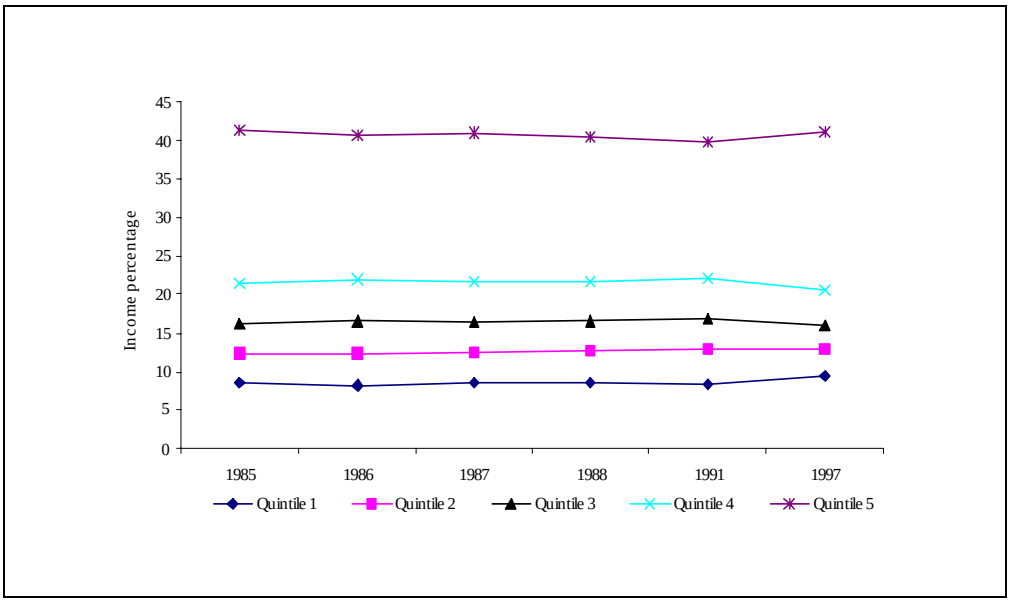
The household survey data for Pakistan for the last two decades is available from 1983 to 1997. In the last two decades only six household surveys were carried out to estimate income distribution of the country. Following the Deninger and Squire Database and the World Bank Development Report (1998), we have estimated the trends of the quintile shares for the six observations. In the last two decades the poorest quintile share of income has consistently increased. Although between 1988 and 1991 the share of this quintile slightly decreases, it

recovers between 1991 and 1997. In 1985 this quintile held 8.54 percent of national income, while in 1997 its quota reached 9.50 percent. The average quintile share for the 1980s was 8.46 percent, which increased to 8.95 percent in the 1990s. Hence the poorest quintile has improved its share in 1985-97.

The second poorest quintile also increased its share of income consistently in 1985-97, from 12.34 to 12.90 percent. There is no downturn in the whole period. The average between the 1980s and 1990s has increased by 0.37 percentage points. In Fig 2.17, the quintile 2 line is always upwards sloping from left to right, which proves its gaining process.

On the contrary, the third quintile share decreased in 1985-97, from 16.22 to 16 percent. The average in the 1980s was 16.45 percent and it remained almost constant in the 1990s. From 1985 the third quintile share increased until the early Nineties. In 1991 its share reached the maximum for the last two decades; but suddenly it declined between 1991 and 1997 by 0.87 percentage points. This trend is shown by the quintile 3 line in Fig 2.18.

Figure 2.18 Changes in the quintile shares in Pakistan during the last two decades



Author's own estimates from Deninger and Squire Database (1996) and the World Bank Development Report (1998)

The fourth quintile also experienced a decline from 1985 to 1997. In 1985 its share was 21.53 percent, and it declined by more than 1 percent point in 1997. The average share in the 1980s was 21.72 percent and it declined to 21.33 percent in the 1990s. In the mid Eighties its share increased, but then it decreased in the late Eighties. This quintile share, regaining in the early Nineties, fell again in mid Nineties. Thus the Pakistanis fourth quintile share of income experienced a trend of rises and falls over the last two decades. This picture is depicted by quintile 4 in Fig 2.17.

The richest quintile share did not change much from 1985 to 1997. It loses around 0.25 percentage points during this period. The average for the 1980s was 40.86 percent. In the 1990s the average declined by 0.46 percentage points. Until the early Nineties, the richest quintile experienced a regular decline of its income share; but it recovered suddenly between 1991 and 1997. These modifications in the quintile shares have caused the following consequences in inequality measurements:

Table 2.10 Changes in the distribution of income in Pakistan 1985-1997

	Gini	Kuznets	Theil	LV	Champer-nowne	Atkinson			
						ε = 0.5	ε = 1	ε = 1.5	ε = 2
1985	0.2994	0.2863	0.0653	0.0579	0.1381	0.0725	0.1381	0.1951	0.2434
1986	0.2983	0.2845	0.0641	0.0591	0.1381	0.0719	0.1381	0.1969	0.2477
1987	0.2966	0.2828	0.0638	0.0573	0.1359	0.0711	0.1359	0.1928	0.2415
1988	0.2898	0.2754	0.0608	0.0546	0.1301	0.0679	0.1301	0.1851	0.2325
1991	0.2876	0.2733	0.0593	0.0549	0.1290	0.0668	0.1290	0.1849	0.2339
1997	0.2832	0.2700	0.0600	0.0496	0.1239	0.0658	0.1239	0.1734	0.2148
Average 1980s	0.2960	0.2822	0.0635	0.0572	0.1355	0.0709	0.1355	0.1925	0.2412
Average 1990s	0.2854	0.2716	0.0597	0.0523	0.1264	0.0663	0.1264	0.1792	0.2244

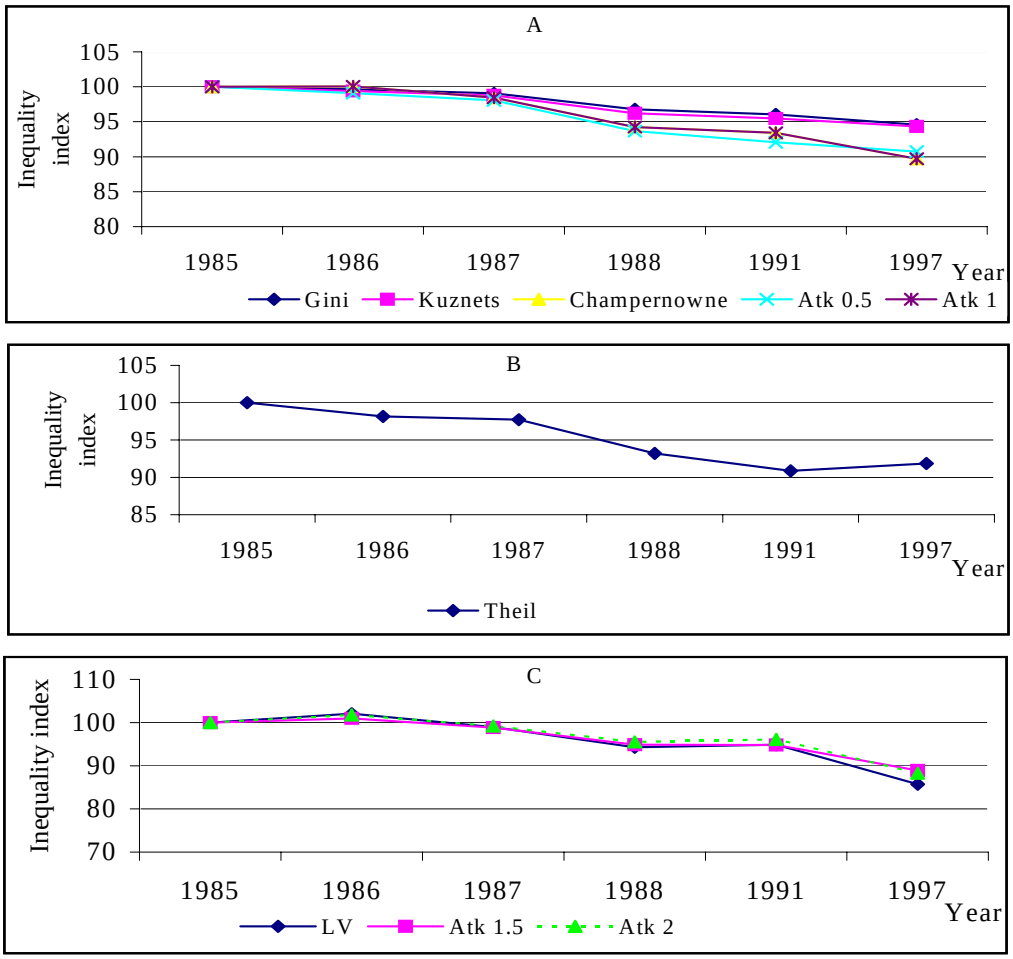
Author's own estimates from the data sources–Deninger and Squire database (1996) and World Bank Development Report 1998

Table 2.10 summarises the nine inequality-measures for income distribution in Pakistan for 1985-97. The initial inequality is 0.2994 for the Gini index and it is 0.0579 for the LV. Between 1985 and 1986, the Gini index, Kuznets' index, Theil's index, and Atkinson's indexes (with ε=0.5 and ε=1) reveal a rise in inequality; while the Champernowne index and Atkinson index (with ε=1.5) remain unchanged. In addition, LV and Atkison's index with ε=2 show a small increase in inequality. In such a way, we have three different results for the same distribution. These results derive from the impact of the alteration in quintiles share between 1985 and 86 – the middle three quintiles share increased and the poorest, and the richest quintile declined.

From 1986 to 1988, Pakistan experienced a decline in inequality. All inequality measures show a decrease in this period (see Table 2.10). Between 1988 and 1991, except LV and Atkinson's index (with ε=2), all other inequality measures exhibit a decline in inequality. This is the same case in India between 1991 and 1992. The reasons may be drawn from the Indian case study. In 1997, except for the Theil index, inequality decreases in Pakistan. The Theil index increases by 0.07 percentage points. In 1991-97, a transfer from the 3rd and 4th quintile to the poorest and the richest quintiles took place. The Theil index, as was anticipated, seems more sensitive to the middle components of the distribution.

By standardising all measures with 100% for 1985, we compare the behaviour of the inequality measures over time for Pakistan in Fig. 2.19. It represents graphically the summary results of the standardised inequality. The figure is separated into three categories. Fig. A gathers 5 inequality measures – Gini's index, Kuznets' index, Atkinson's indexes (with ε=0. and ε=1) and Champernowne's index. The idea of collecting these indicators in the same group is to show the homogeneity of the evolution of the inequality; in fact all indicators show a decline in inequality from 1985 to 1997. The Atkinson indexes with parameters ε=0.5 and ε =1, and the Champernowne's index, all declined rapidly while the declining process of Gini's index and Kuznets' index was slow (see Fig. 2.19 A).

Figure 2.19 Standardised Inequality indexes: disposable income Pakistan 1985 to 1997 (1985=100%)



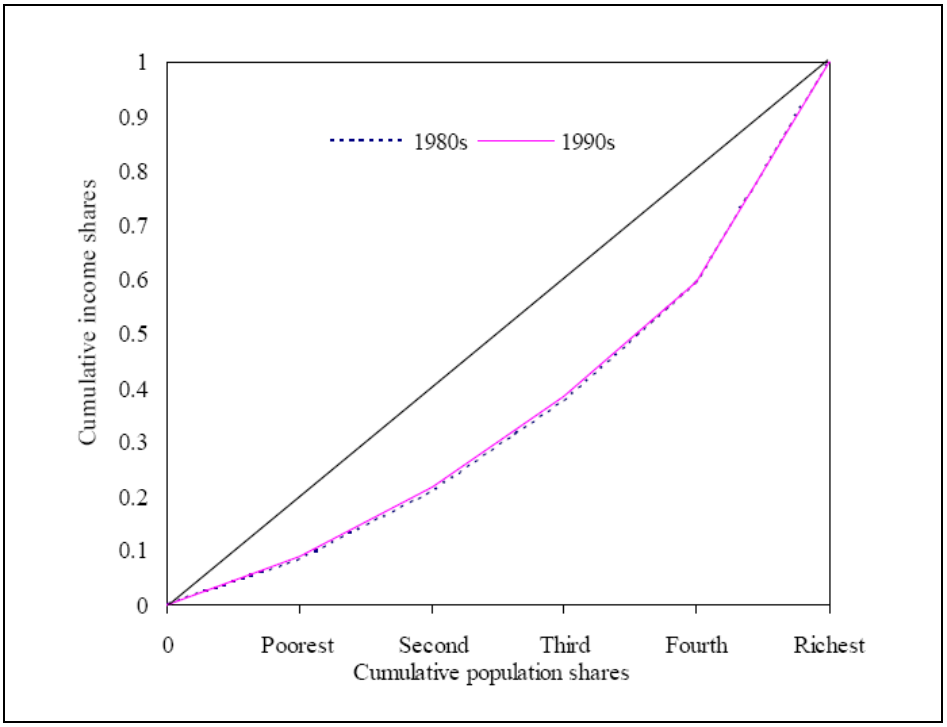
Author's own estimates from the data sources–Deninger and Squire database (1996) and World Bank Development Report 1998

In Fig. B we have depicted the Theil index. It also declines from 1985 to 1991, but, unexpectedly, it reveals an increase of inequality in Pakistan between 1991 and 1997; while all indicators presented in Fig. A show a decline in inequality for the same period. Fig. C gathers LV and Atkinson's indexes (with ε=1.5 and ε=2). These indicators reveal an increase in

inequality between 1985 and 1986 and between 1988 and 1991; while other indicators (gathered in chart A) show a decline in inequality for the same period.

In this way, the trend of inequality in Pakistan varies according to the different inequality measures. This prevents us from concluding whether inequality in general is rising or declining in Pakistan. However, inequality in Pakistan declines between 1985 and 1997 by more than 1 Gini percentage point. The average inequality for the 1990s has also declined compared to the average inequality for the 1980s. In this regard, we may conclude that inequality in Pakistan has declined during the last two decades. To capture the change in inequality between the 1980s and the 1990s we draw the Lorenz curves (see Fig 2.20).

Figure 2.20 Lorenz curves for income distribution in Pakistan



Author's own estimates from the data sources–Deninger and Squire database (1996) and World Bank Development Report 1998

The Lorenz curve for the 1990s in Pakistan is slightly nearer to the diagonal compared to the Lorenz curve of the 1980s.[38] Thus we may conclude that during the 1990s the inequality was lower in Pakistan than in the 1980s. In our analysis on income inequality, we used expenditure data and found that the inequality has gradually decreased over the years 1984-97. The result of the 1980s is similar with the trend registered income inequality (see Iqbal and Siddiqui 1999 and 2001, and Kemal 2001 for the result of income inequality), *i.e.* inequality in income distribution has also declined in the same period. In their studies, income inequality increased in the 1990s, while in our study expenditure inequality has declined. In the Eighties most of developing countries, including Pakistan, faced persistent budget deficits and balance of payment crises. Pakistan adopted the Structural Adjustment Programmes (SAP)[39] and stabilisation programs in the late Eighties, aiming at reducing fiscal and budget deficits. The rationalisation of tariff structure, import liberalisation, tax reforms, reduction in subsidies etc. was implemented. Iqbal and Siddiqui (1999 and 2001), Kemal (2001) and others examined the SAP in Pakistan and found that the reforms initially worsened income distribution. The reduction of tariffs in Pakistan made their goods cheaper, and hence probably the purchasing power of the poor increased and inequality of expenditure has decreased; whereas Kemal et al. (2001) finds that the reduction of tariff increased the gap between rich and poor (the share of capital has increased while the share of labour has declined) in the 1990s. This has worsened income distribution.

Balance budget is another component of the SAP, which can be maintained by raising taxes, but this is restricted by the IMF policies. Hence most of the countries cut government spending on education, health etc., and removed state subsidies. These policies hurt especially the poor groups of the society. Kemal (2001) stressed that government revenue in Pakistan has

[38] The curves are estimated from the average quintile shares for the decade.

[39] SAP are World Bank and IMF made economic policies that countries must follow in order to qualify for new World Bank and International Monetary Fund (IMF) loans. SAP generally require countries to devalue their currencies against the dollar; lift import and export restrictions; balance their budgets and not overspend; and remove price controls and state subsidies.

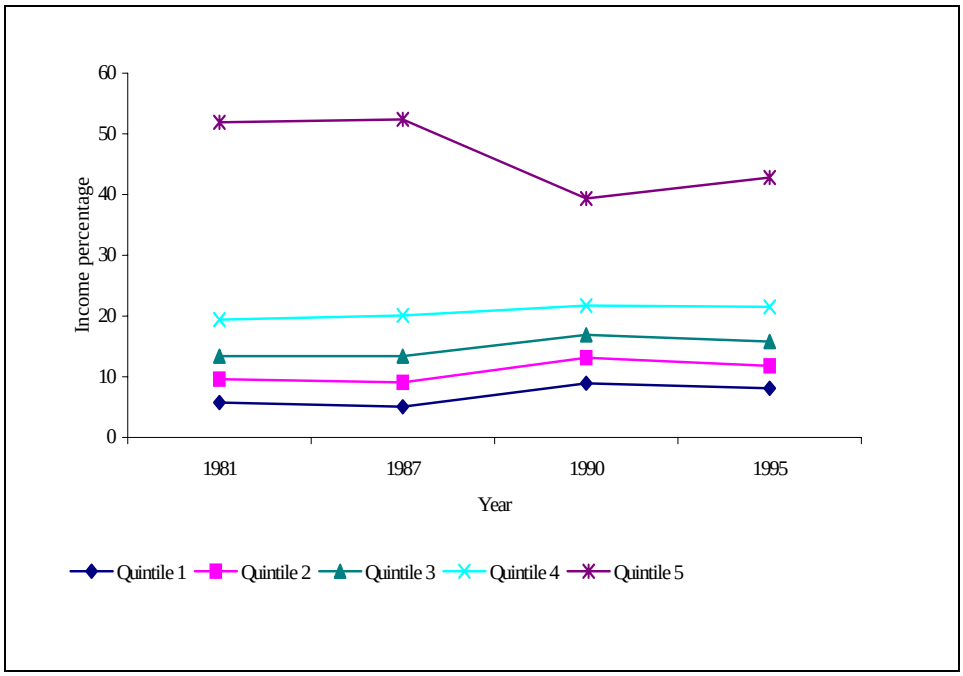
deteriorated after reforms, which has resulted in a higher budget deficit. Further, expenditure on development programs has been reduced, which has led to a reduction in the earnings of the poor.

Pakistan succeeded in reducing poverty and inequality of income distribution in the Eighties with a rapid economic growth. The average growth rate accounted for more than 6 percent in the Eighties. The growth slowed down to 4 percent on average in the Nineties, causing higher unemployment and exacerbating income distribution.

2.11 Measuring Inequality Trends in Sri Lanka 1980-95

The household survey for Sri Lanka from 1981 to 1995 is based on disposable income and expenditure. In the last two decades, four household surveys were done to estimate the income distribution of the country. Based on the Deninger and Squire database and the World Bank Development Report (1998) we estimate the trends of the quintiles share for the available periods. Sri Lanka experienced a decrease in income dispersion during the last two decades. Fig 2.21, based on national income distribution, shows the trends in the quintile shares from 1981 to 1995.

Figure 2.21 Changes in the quintile shares in Sri Lanka during from 1981 to 1995



Author's own estimates from the data sources–Deninger and Squire database (1996) and World Bank Development Report 1998

The share of the poorest quintile was 5.73 percentage points in 1981; and in 1995 it rose to 8.10 points. The changing pattern is however highly unstable. In the 1980s this quintile declined for a whole decade. Between 1981 and 1987 the poorest quintile share declined by 0.67 percentage points. In the early Nineties, it rose by 3.86 percentage points then, it fell again in the mid Nineties. In the 1980s the average share of the poorest quintile was thus 5.40 percent; while in the 1990s it rose to 8.51 points.

The second poorest quintile also experienced a trend similar to the poorest quintile for Sri Lanka. Between 1981 and 1987, there was a decline of its share and in 1990 it reached 13.13 percentage of national income. The increase was more than 4 percentage points between 1987 and 1990. Then it decreased to 11.80 points between 1990 and 1995. The average in the 1980s marked 9.34 percentage points; while in the 1990s it reached 12.47 percentage points.

The third quintile also followed the same trend. Between 1981 and 1987 there was an insignificant change. Between 1987 and 1990, this quintile share increased by 3.51 percentage points; then it declined between 1990 and 1995. As a result, the average share of the 1990s increased by around 3 percentage points compared with the average share of 1980s.

The fourth quintile share rose continuously from 1981 to 1990; and then between 1990 and 1995 it declined slightly. The average share for the Nineties was 19.75 percentage of national income; while in the Nineties it increased to 21.61 percentage points.

The share of the richest quintile decreased from 1981 to 1995 in Sri Lanka. In the 1980s, the average share was 52.15 points of national income; which declined to 41.07 percentage in the 1990s. More than 10 percent of national income was thus transferred from the richest quintile to the other quintiles between the 1980s and 1990s.

Table 2.11 Changes of income inequality in Sri Lanka 1981-96

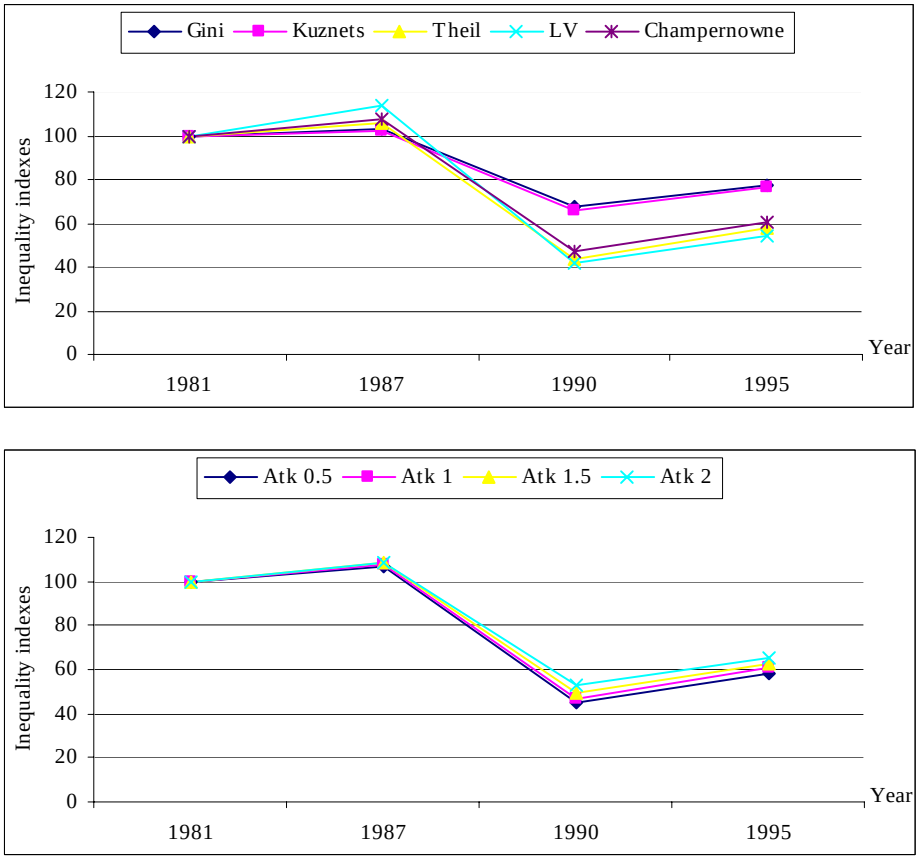
Year	Gini	Kuznets	Theil	LV	Champer-nowne	Atkinson			
						ε=0.5	ε=1	ε=1.5	ε=2
1981	0.4087	0.3989	0.1274	0.1198	0.2539	0.1383	0.2539	0.3436	0.4109
1987	0.4227	0.4060	0.1348	0.1359	0.2736	0.1479	0.2736	0.3722	0.4461
1990	0.2777	0.2633	0.0557	0.0499	0.1198	0.0623	0.1198	0.1713	0.2161
1995	0.3164	0.3038	0.0732	0.0654	0.1536	0.0811	0.1536	0.2159	0.2677
Average 1980s	0.4157	0.4024	0.1311	0.1278	0.2638	0.1431	0.2638	0.3579	0.4285
Average 1990s	0.2971	0.2835	0.0644	0.0577	0.1367	0.0717	0.1367	0.1936	0.2419

Author's own estimates from the data sources–Deninger and Squire database (1996) and World Bank Development Report 1998

Table 2.11 summarises the inequality measures for income distribution in Sri Lanka. The initial inequality is measured at 0.4087 for the Gini index; it is measured at 0.1198 for the LV. The inequality of income increases between 1981 and 1987. During this period the inequality marks the highest point for the period considered – the Gini coefficient is 42.27%. All

measures of inequality show the same trend. Sri Lanka experienced the largest decline in inequality ever between 1987 and 1990. The Gini index declined by more than 14 percentage points and other measures also declined sharply (see Table 2.11). In the mid Nineties, inequality rose again in Sri Lanka. Hence the pattern is more mixed. However, Sri Lanka improved income distribution in the 1990s compared with 1980s (see average inequality measures for the 1980s and the 1990s in Table 2.11). Fig 2.22 below demonstrates the trends of the inequality indexes for the distribution of income in Sri Lanka.

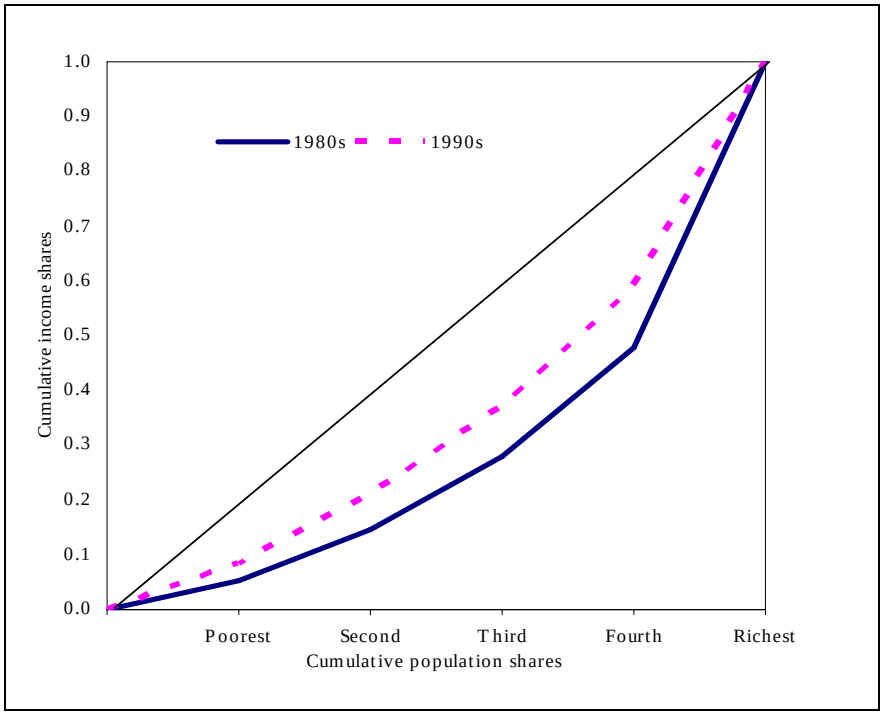
Figure 2.22 Standardised Inequality indexes: Sri Lanka 1981-95 (1981=100%)



Author's own estimates from the data sources–Deninger and Squire database (1996) and World Bank Development Report 1998

All inequality measures show a rise in inequality for the period 1981-87. Sensitivity among the inequality measures varies. For example, the LV is more sensitive when inequality rises; and the Gini and Kuznets indexes are less sensitive compared with the rest of the indexes when inequality decreases (see Fig 2.22, 1987-90). Fig 2.22 clearly shows the inequality trend, which rises in mid Eighties and then falls sharply in the early Nineties in Sri Lanka. Then again in the mid Nineties, inequality rises. We have drawn the Lorenz curves to capture a change in inequality between the 1980s and 1990s.

Figure 2.23 Lorenz curves of income distribution in Sri Lanka for the 1980s and 1990s



Author's own estimates from the data sources–Deninger and Squire database (1996) and World Bank Development Report 1998

The Lorenz curve of the 1990s for Sri Lanka is closer to the diagonal compared with the Lorenz curve of the 1980s.[40] Thus we may conclude that the distribution (of income or expenditure) in Sri Lanka clearly improved in the 1990s.

We found that the inequality of income distribution has decreased in the 1990s compared with the 1980s in Sri Lanka. In our analysis, we used income data for the 1980s and expenditure data for the 1990s. Since the inequality of expenditure (consumption) tends to be lower than of income for various reasons[41], we cannot compare directly the inequality measures between 1980s and 1990s. A working paper of the Asian Development Bank (Gunetelle and Senanayeke 2004) analyses the personal income distribution and finds an increase of inequality from the 1970s to the 1980s. Since then the Gini coefficient remained at 0.50 for the last two decades. The Gini coefficient for Sri Lanka is much higher for not only South Asia but also for the whole Asia.

Sri Lanka (home of 19 million people), also known as Ceylon in the past, gained independence in 1948. The government soon adopted socialist policies. Four ethnic groups are found in Sri Lanka; (1) the Sinhalese, practicing Buddhism, comprising the majority (74 percent) of the population, (2) the Tamils, generally practicing Hinduism, comprising almost 18 percent of the population (3) the Muslims, making up 7 percent of the population and (4) others (*Burghers*, *Eurasians*, *Malay*, *Veddha*) 1 percent. Each of the main ethnic groups is subdivided into several major categories. The *Sinhalese*, dominant in population and public influence, has a caste system based on commercial activities. The Tamil communities are fragmented according to the Hindu caste system. These traditional systems of social stratification create, to some extent, differences in wealth holding which also influence income distribution. The country's ethnic conflicts escalated in the 1980s due to the concentration of wealth and influence of public works among the *Sinhalese*. The Liberation Tigers of Tamil Eelam (LTTE) and the militant movement of the *Sinhala* community have led to the civil war between the Tamils and *Sinhalese*, which lasted for at least two decades.

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[40] The curves are estimated from the average quintile shares for the two decades.

[41] We will describe the reasons in the data appendix at the end of this chapter.

In a study of the World Bank on the poverty reduction, some reasons of the poverty in Sri Lanka are recognized and may explain the increase in inequality in the 1980s. First of all, it is important to mention the civil war initiated in the 1970s, which intensified in the 1980s and 1990s. The social costs of the conflict were very high and the government had to spend a lot of money to oppose the civil war, while the government did not have sufficient fund to invest in the welfare of poor. This has led to worsen the condition of the poor in the Eighties.

Secondly, during the last 20 years the public institutions have deteriorated. For many years the government offered a large numbers of public jobs, leading to a better distribution of public resources across all social classes and ethnic groups. This is one of the reasons why the Sri Lankan distribution has improved.

The World Bank (2000, p. iii 'executive summary') argues that 'the political bias in the implementation of successive state sponsored poverty programs has rendered the poor vulnerable to changes in the political climate'. For many years government resources for the poverty program were allocated in the wrong way, *i.e.* the top three quintiles came to benefit of around 50 percent of the resources. This could be another reason of the high inequality in income distribution in Sri Lanka.

Privatisation of State owned enterprises was announced as a state policy in 1987; still the State continued to dominate the financial sector and some commercial enterprises. Though the size of the public sector has declined over the years, the rigid rules in the labour market have hampered the efficiency of the private sectors. Despite these obstacles, Sri Lanka has succeeded in maintaining high economic growth. The manufacturing and service sectors have been the main sources of the economy. The agricultural sector continues to decline, while the majority of the poor live in rural areas and agriculture remains the main employment source. This has led to a further deterioration of distribution of income.

2.12 Comparison of Nepalese Income Inequality with other SAARC Countries

There was a considerable change in income inequality in the selected SAARC countries. Unfortunately, for Nepal we only have data for 1984 and 1996. In general, the other SAARC countries have experienced rising and falling income dispersion since 1981. With the shortcoming of yearly data, we compare income distribution in five SAARC countries based on the average of the decades. We begin the comparison with the quintiles share of these countries for the 1980s and 1990s[42]. In the 1980s, Nepal had the highest poorest quintile share with 9.11 percent; while Sri Lanka had the lowest in the same quintile share with 5.40 percent, followed by Bangladesh, Pakistan, and India. In the 1990s, in Nepal the poorest quintile lost 1.51 percentage points that places it at the lowest rank among the SAARC countries. In this period, Bangladesh with 9.03 percentage of the poorest quintile share is the highest in ranking followed by Pakistan, India, Sri Lanka, and Nepal. Nepal and India are the only countries that experienced a decline of the poorest quintile. The poorest quintile of Sri Lanka gained more than 3 percentage points between the 1980s and 1990s.

In the 1980s, the second poorest quintile of Nepal also held the highest share of national income followed by India, Pakistan, Bangladesh, and Sri Lanka. The second poorest quintile share of Nepal was 12.89 percent; in Sri Lanka 9.34 percent. In the 1990s, the second poorest quintile of Pakistan held the highest share of national income (with 12.89%), followed by Bangladesh, Sri Lanka, India, and Nepal (with 12.67%, 12.47%, 12.43%, and 11.50% respectively). This quintile share of Nepal decreased by more than one point; while that of Sri Lanka increased by more than 3 points between the 1980s and 1990s. Pakistan and Bangladesh experienced a moderate increase of the second poorest quintile share; while India registered it with a decline.

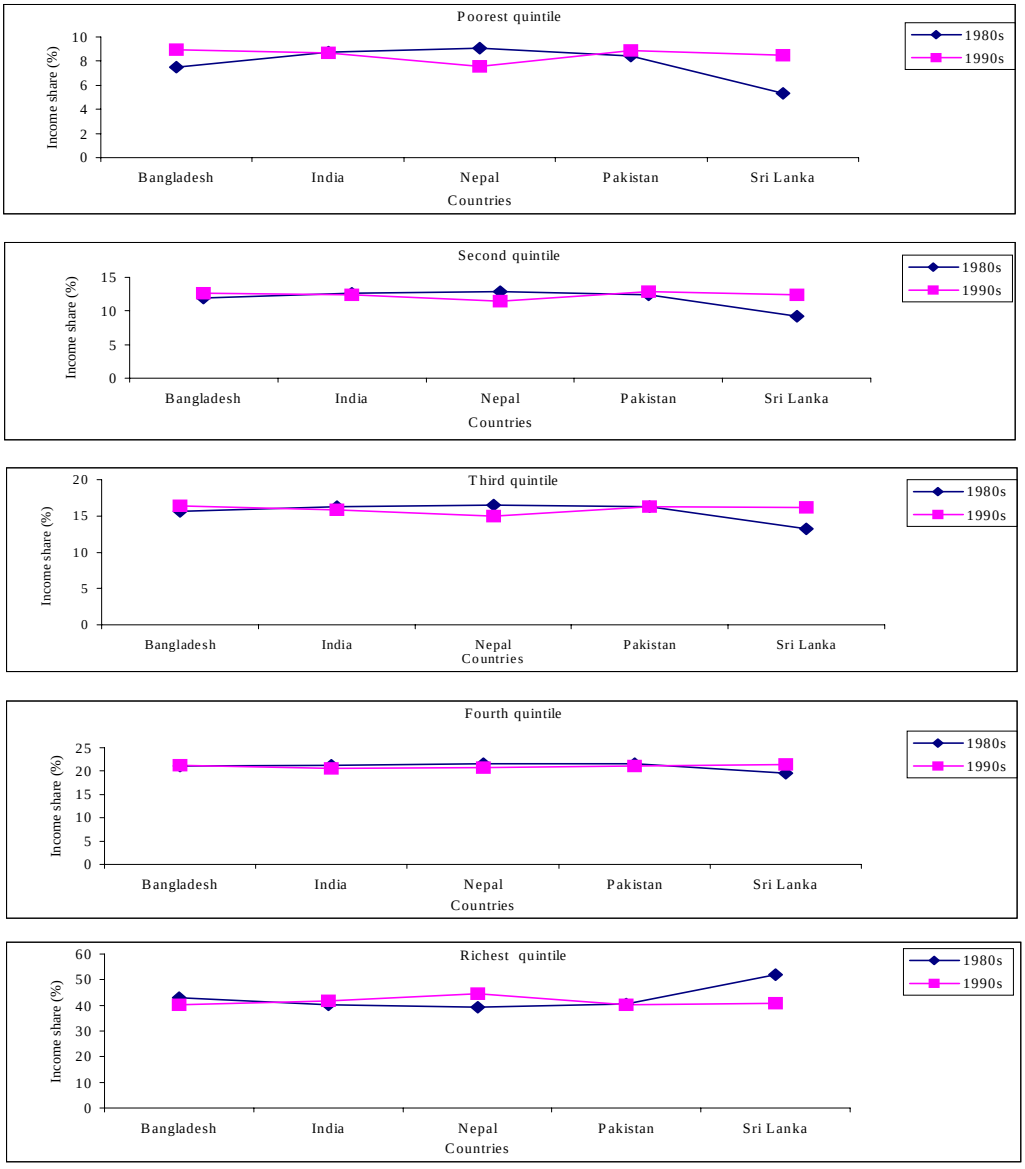
[42] We use an average quintile share of the decade for the countries, which have more than one observation in the given decade.

The third quintile share of Nepal accounted for 16.68 points of total income in the 1980s, followed by Pakistan, India, Bangladesh, and Sri Lanka. The difference between the shares of Nepal and Sri Lanka was more than 3 percent in the 1980s. In the 1990s, Bangladesh held the highest third quintile share with 16.47% followed by Pakistan, Sri Lanka, India, and Nepal. Thus, Nepal experienced the highest decline of the third quintile share between the 1980s and 1990s. Nepal, India, and Pakistan experienced a decline of the third quintile share between the 1980s and 1990s; while Sri Lanka and Bangladesh experienced a rise between the same periods.

Nepal also held the highest fourth quintile share of the national income in the 1980s (with 21.82%) followed by Pakistan, India, Bangladesh, and Sri Lanka (with 21.72%, 21.52%, 21.25%, and 19.75% respectively). In the 1990s Sri Lanka held the highest fourth quintile share of national income, followed by Bangladesh, Pakistan, Nepal, and India. Sri Lanka experienced the highest gain and Pakistan and Bangladesh experienced a moderate gain of his fourth quintile share between the 1980s and 1990s. On the contrary, Nepal and India experienced a decline of the fourth quintile share of income between the 1980s and 1990s.

The richest quintile of Sri Lanka held the highest national income share, followed by Bangladesh, Pakistan, India, and Nepal in the 1980s. The richest quintile share of Sri Lanka accounted for 52.15 percent while Nepal accounted for only 39.50 percent. Fig. 2.24 exhibits the graphic presentation of quintiles income share of these countries for the 1980s and 1990s.

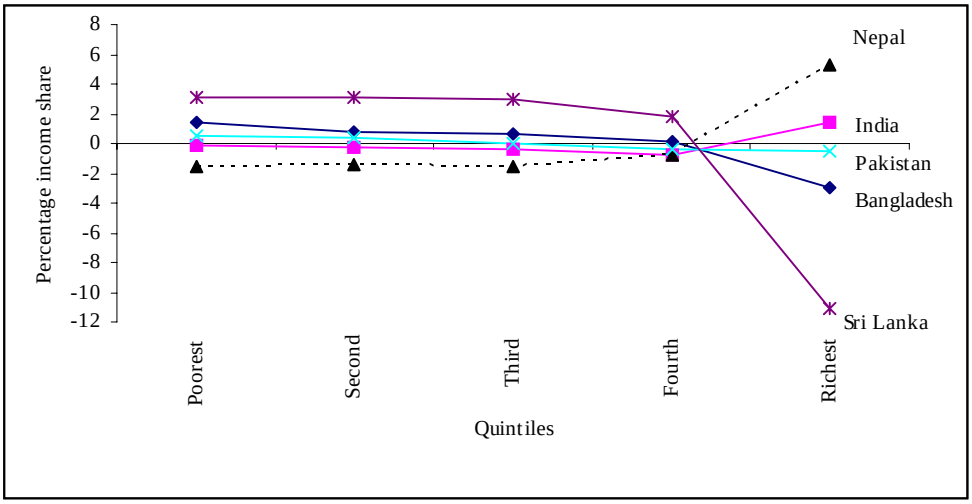
Figure 2.24 Quintiles income share of disposable income in SAARC countries between the1980s and 1990s



Author's own estimates from the data sources–Deninger and Squire database (1996) and World Bank Development Report 1998

Fig 2.25 below represents the changes in all quintiles share of five SAARC nations between the 1980s and 1990s.

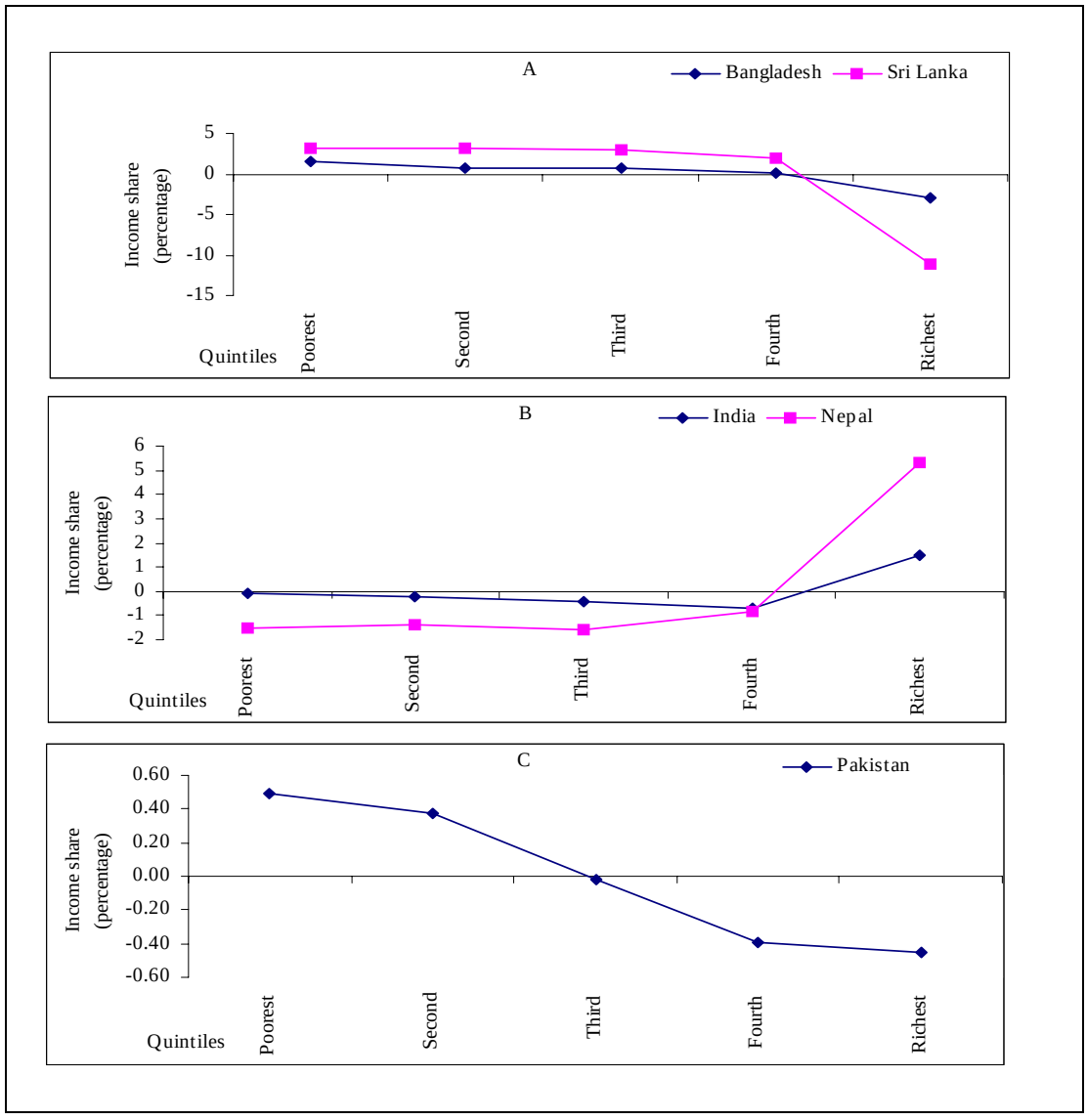
Figure 2.25 Changes in quintiles share in SAARC countries between the 1980s and 1990s



Author's own estimates from the data sources–Deninger and Squire database (1996) and World Bank Development Report 1998

We divide these countries into three groups according to the patterns of changes, which occurred (see Fig. 2.26). For example, in Fig. 2.26 Group 'A' – Sri Lanka and Bangladesh register a rise for the bottom four quintiles. The share of these countries for the top quintile declines between these periods. Group 'B' provides the change of the quintile share of Nepal and India between the 1980s and 1990s. Both countries experienced a decline of the bottom four quintile shares and only the richest quintile share increased between the same periods. Group C exhibits a mixed pattern of changes of the quintiles share in Pakistan for the 1980s and 1990s. Therefore the two poorest quintiles share of income in Pakistan increased, the third quintile share remained almost constant, and the fourth and richest quintiles share decreased between these period (see Fig 2.26).

Figure 2.26 Patterns of changing quintiles share in SAARC countries between the 1980s and 1990s



Author's own estimates from the data sources–Deninger and Squire database (1996) and World Bank Development Report 1998

Fig. 2.26 ‘A’ shows that the lower four quintiles gained ground at the expense of the richest quintile in Sri Lanka and Bangladesh between the 1980s and 1990s. On the contrary, Fig. 2.26 ‘B’ indicates the only richest quintile gained at the expense of four poor quintiles in Nepal and India between the 1980s and 1990s. While Fig. 2.26 ‘C’ shows that the poorest two quintiles gained income shares at the expense of the two richest quintiles in Pakistan between the same periods. These modifications of income quintiles lead to changes in the inequality measure between the 1980s and 1990s. The ranks of the measures are shown in Table 2.12 below.

Table 2.12 Inequality ranking of SAARC countries with various indicators

1980s									
	Gini	**Kuznets**	**Theil**	**LV**	**Champer-nowne**	**Atkinson's indexes**			
						ε =0.5	**ε =1**	**ε =1.5**	**ε =2**
Bangladesh	4	4	4	4	4	4	4	4	4
India	2	2	2	2	2	2	2	2	2
Nepal	1	1	1	1	1	1	1	1	1
Pakistan	3	3	3	3	3	3	3	3	3
Sri Lanka	5	5	5	5	5	5	5	5	5
1990s									
	Gini	**Kuznets**	**Theil**	**LV**	**Champer-nowne**	**Atkinson's indexes**			
						ε =0.5	**ε =1**	**ε =1.5**	**ε =2**
Bangladesh	1	2	2	1	1	2	1	1	1
India	4	4	4	3	4	4	4	4	3
Nepal	5	5	5	5	5	5	5	5	5
Pakistan	2	1	1	2	2	1	2	2	2
Sri Lanka	3	3	3	4	3	3	3	3	4

Author’s own estimates

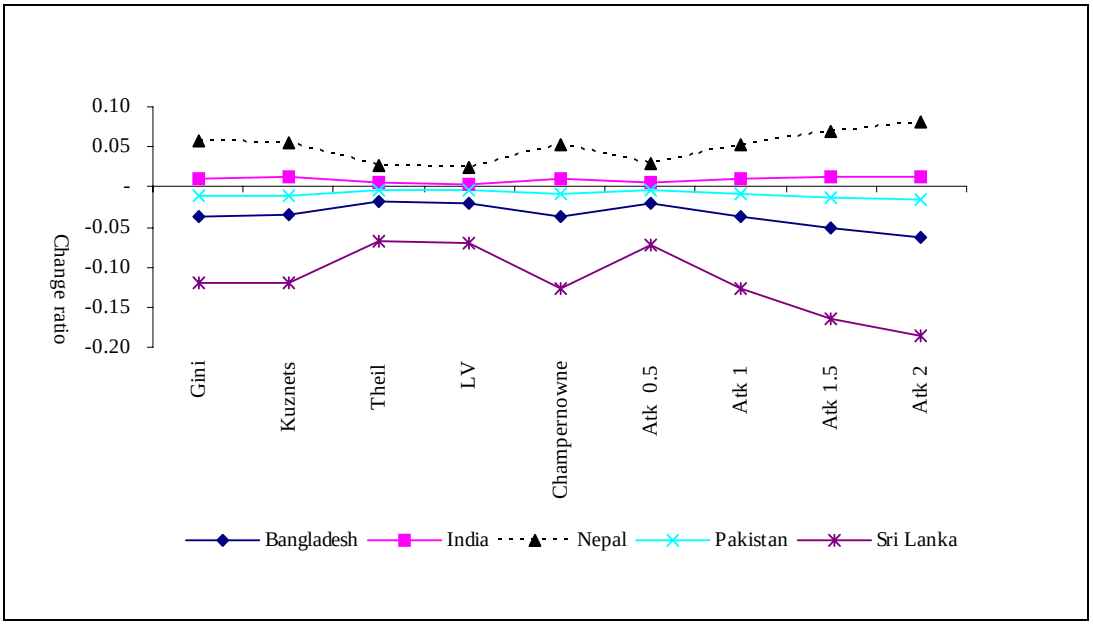
Note: The rankings are in ascending order - *i.e.* rank 1 implies the lowest inequality, etc.

Given the sharp differences in the equivalence scales across countries between inequality measurements, the question on the sensitivity of inequality rankings put forward has special policy significance. Table 2.12 exhibits the inequality ranking for five SAARC countries for the two decades. They are obtained by using various equivalence scales of inequality indicators, which represent the ranks of the countries according to the lower levels of inequality. For example, in the 1980s, Nepal ranks first; which means that it had the most equal distribution of income.

The rank of inequality for the 1980s shows that all indicators of inequality displayed in Table 2.12 (above) show that Nepal has the least unequal distribution of income, followed by India, Pakistan, Bangladesh, and Sri Lanka.

For the 1990s, the rankings of inequality of these countries vary according to the different inequality measures. This is because the sensitivity of these measures varies. Nepal displays, by far, the most unequal distribution of income, followed by Sri Lanka, India, Pakistan, and Bangladesh when we use the LV and Atkinson's index (ε=2) to measure the inequality in these countries. When we use the Gini index, Atkinson's indexes with ε=1 and ε=1.5 and Champernowne's index, the worst distribution of income is in Nepal, followed by India, Sri Lanka, Pakistan, and Bangladesh. For the remaining inequality measures, Nepal had the worst distribution of income followed by India, Sri Lanka, Bangladesh, and Pakistan. Hence Table 2.12 for the 1990s shows that the rank of the countries (on the basis of inequality) varies with the different inequality measures. The rankings of these countries show the state of inequality among SAARC countries. However, they do not necessarily represent the degree of inequality over time; for example, the improvement of ranking may not mean the improvement of inequality between the 1980s and 1990s. Thus, it is not sufficient to compare the inequality measures only by the rankings. To capture the inadequacy of rankings of inequality, we discuss the results of the inequality indexes among these countries.

Figure 2.27 The comparison of income inequality in SAARC countries between the 1980s and 1990s via 9 inequality measures



Author's own estimates

Fig 2.27 above shows the changes of various inequality measures between the 1980s and 1990s in SAARC countries. The horizontal straight line represents the 'no change' of inequality between these periods. Lines below this line represent a decrease of inequality and lines above the same line represent an increase of inequality. The lines of various inequality measures for India and Nepal are above the horizontal line. Hence we deduce that the distribution of income in India and Nepal worsened between the 1980s and 1990s. On the other hand, the lines of various inequality measures for Bangladesh, Pakistan, and Sri Lanka are below the "no change line". This means that income distribution in these countries improved between the 1980s and 1990s.

To show the comparison of inequality in these countries, we also provide in Figs 2.28 and 2.29 the dispersal diagrams of inequality for each measure separately. The dispersal figure in the horizontal line represents the level of inequality for the 1980s; and the vertical line represents

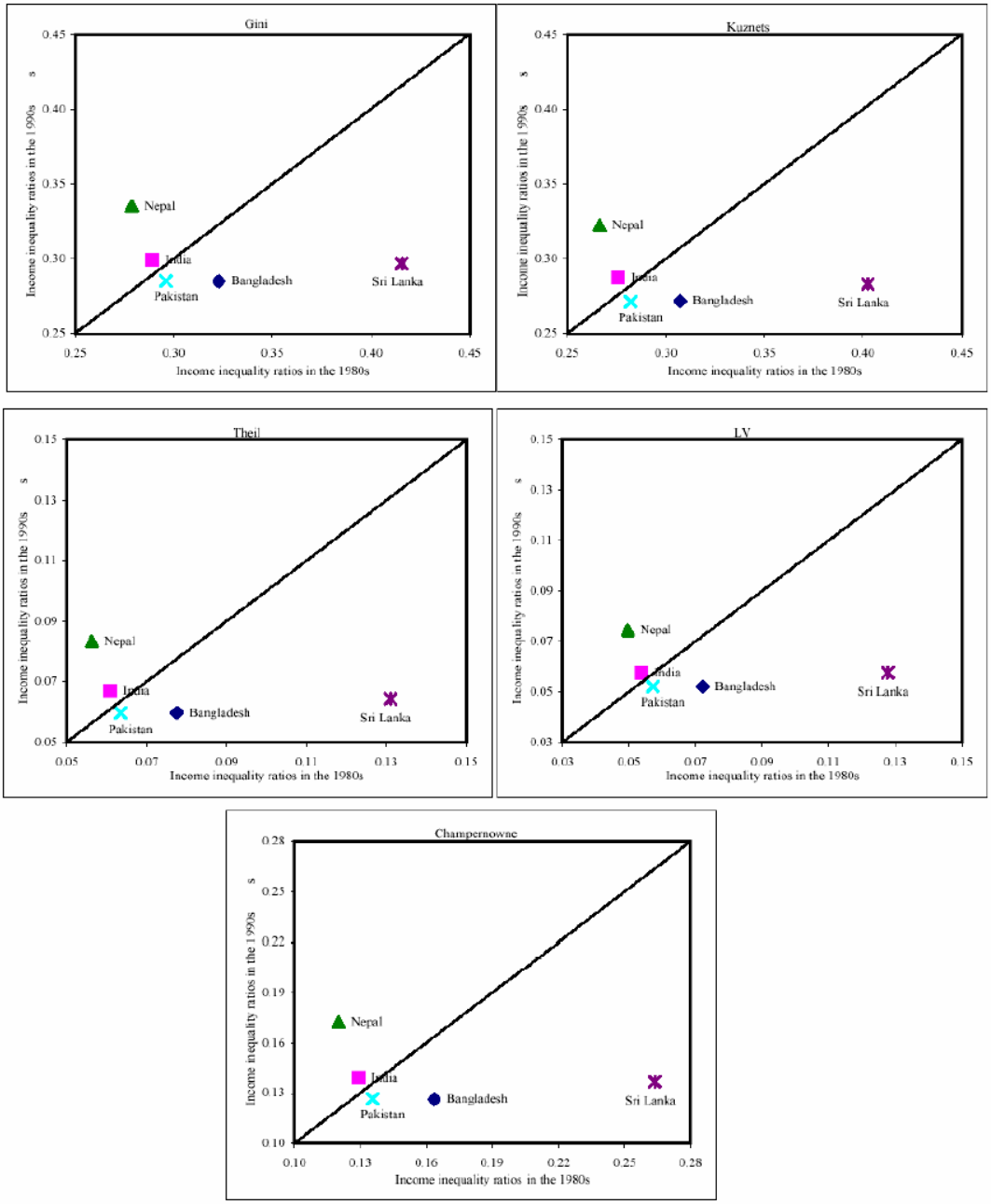
the level of inequality for the 1990s. The diagonal separates the inequality for the two time periods. The diagonal with 45 degrees captures no variation of inequality for the given periods. While the countries situated in the upper triangle show an increase in inequalities for the given countries, and the countries situated in the lower triangle represents the decline in inequality. In doing so, we will be able to compare the inequality among these countries by capturing the level of inequality. In addition, the country closer to the origin exhibits the lower level of inequality, and vice versa in the both triangles (upper and lower).

In Fig. 2.28 we plot the five inequality measures (*i.e.* Gini's index, Kuznets' index, Theil's index, LV, and Champernowne's index) by the dispersal diagram for the 1980s and 1990s. Nepal and India are situated in the upper triangles. Income inequality rose in these countries between the 1980s and 1990s. On the contrary, Bangladesh, Pakistan, and Sri Lanka are situated in lower triangles; hence inequality declined in these countries between the 1980s and 1990s.

All five measures of inequality confirm an increase in inequality in Nepal and India and a decrease of inequality in Bangladesh, Pakistan, and Sri Lanka. The countries closer to the horizontal axis have a lower inequality in the 1990s and the countries closer to the vertical axis have a lower inequality in the 1980s. It is clear in Fig 2.28 that Nepal is closer to the vertical axis, followed by India, Pakistan, Bangladesh, and Sri Lanka. On the contrary, Nepal lies distant from the horizontal line followed by India, Sri Lanka, Bangladesh, and Pakistan.

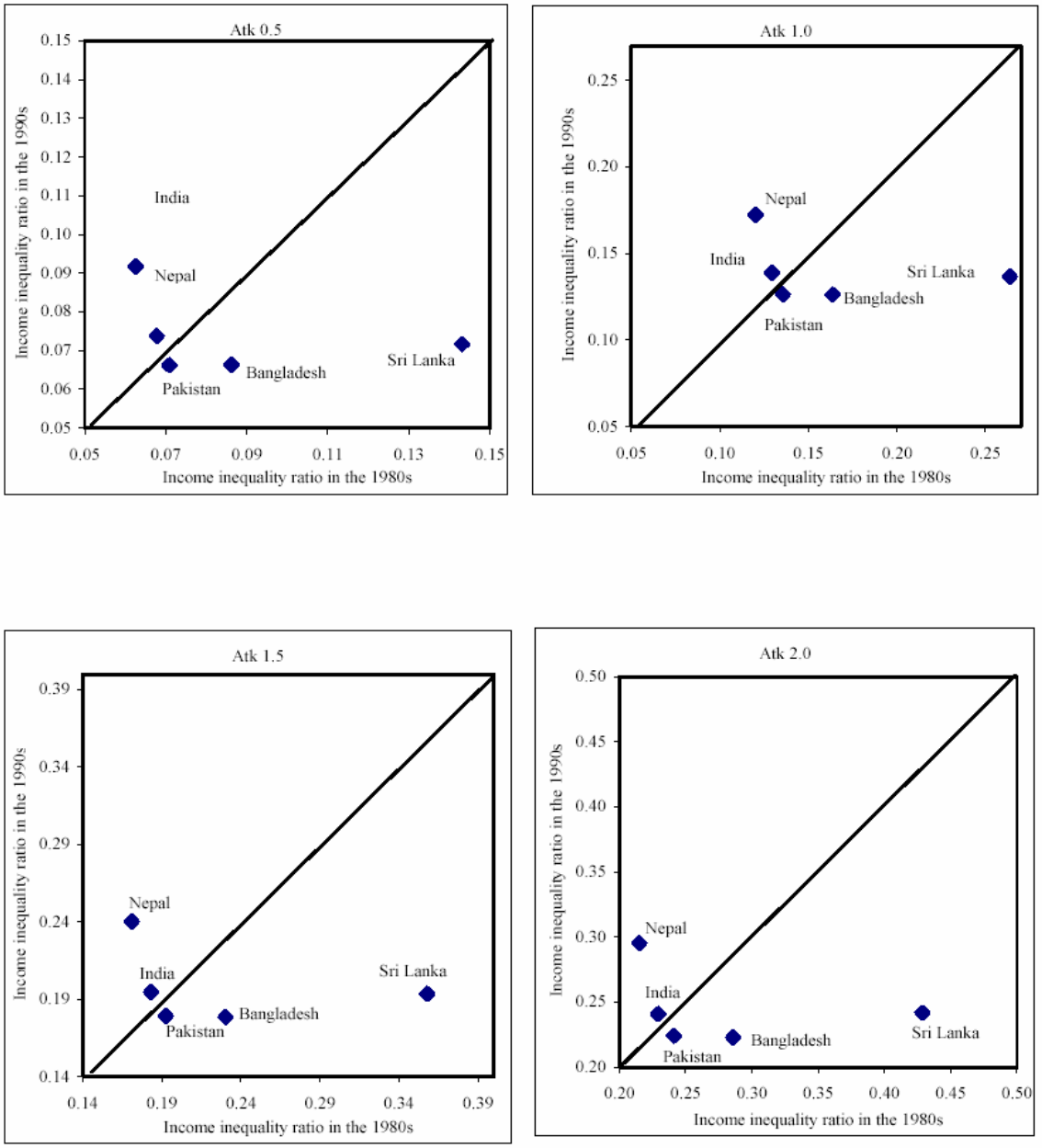
As in Fig. 2.28 we draw Fig. 2.29 for four Atkinson's indexes. Table 2.12 shows that as the distributional parameter ε rises, the degree of income inequality also increases. In the entire value of the distributional parameter ε (0.5 – 2), the order is not affected though the size inequality is increased. During the 1990s Nepal displays the highest inequality compared to other countries for all measures of Atkinson. India and Sri Lanka show a moderate inequality during this decade. Pakistan and Bangladesh account for the lowest inequality.

Figure 2.28 Dispersal of inequality measurements in South Asian economies



Author's own estimates

Figure 2.29 Dispersal of inequality measurements in South Asian economies



Author's own estimates

2.13 Conclusions

The purpose of this chapter was to study the pattern of income distribution and its trend in SAARC countries.[43] Nine different inequality measurements (rather than simply comparing the percentage shares of income) allow us to take into account an in-depth examination of income distribution in Nepal and other SAARC countries. Though some countries experienced a worsening inequality and others experienced an improvement in income distribution, in general income inequality seems somewhat to converge across SAARC countries between the 1980s and 1990s. It may be the result of the progressive abolition of old-fashion frontiers; or it may be due to other factors. However, SAARC evolution does not give a precise notion of whether it has brought about a more unequal society or more equal society; since the process of the inequality changes follows a mixed pattern in these countries.

The general conclusion of the evolution of income distribution pattern is that a substantial change has occurred from 1984 to 1996 in Nepal. The pattern of income distribution has rapidly approached the highest level of the inequality. Between these two periods there are gainers and losers in this process. All four poorer quintiles are losers and only the richest quintile is a winner. We also examined income distribution in the other four SAARC countries for the last two decades. The results reveal that inequality also increased in India between the last two decades. Bangladesh, Pakistan, and Sri Lanka however experienced an improvement of income distribution for the same periods. In particular, Sri Lanka has reduced income inequality by the highest mark, followed by Bangladesh between the 1980s and 1990s. Nepal has experienced the highest increase in income inequality followed by India for the same period. Income inequality was relatively stable in Pakistan between the 1980s and 1990s. The results summarised in Fig 2.4 and Fig 2.5 show the sensitivity of different inequality indexes. The results of transferring 1% income from lower quintiles to the highest quintile in the first figure and vice versa in the second figure visually indicate the extent to which income inequality measures are sensitive to

[43] The available data are unfortunately not sufficient to permit a proper statistical appraisal as far as the comparison of the inequality in SAARC countries is concerned.

different degrees of the measurement choices. These results indicate that the inequality index matters – they can influence negatively or positively a given point in the distribution of income. We tried to catch the sensitivity of inequality measures while analysing the inequality trend in the selected SAARC countries. For example, Atkinson's (1970) index explicitly incorporates social welfare criteria through the inequality aversion parameter ε. As the degree of ε increases, more weight is attached to transfers of income towards the bottom of the distribution.

A summary of findings pertaining to the properties of the inequality indexes

The following remarks of the inequality measures are confirmed from the evidence of SAARC country income distributions:

1) The index registers a greater change of income inequality when income is transferred from the lower quintile to the middle quintiles (increase of the inequality), and from the top quintile to the middle quintiles (decrease of the inequality). Hence the Gini index is more sensitive to variations among the middle quintiles (Atkinson 1970, Sen 1973).
2) Like the Gini index, the Kuznets index also registers a stronger increase or decrease when a transfer of income to the middle quintiles occurs.
3) When a transfer occurs in the poorest quintile, the change of the LV is greatest. We reached the same results already pointed out by Atkinson (1970) and Sen (1973) regarding to the LV.
4) Like the LV, the Theil index registers a greater change when the transfer is made to the poorest quintile.
5) Atkinson's indexes, as ε rises, are more sensitive when a transfer is made in the lower quintile of the distribution (see also Atkinson, 1970; Champernowne & Cowell, 1998).
6) Using the quintile share of income, the Champernowne index is perfectly replaceable by the Atkinson's index with ε =1.
7) When the Lorenz curves intersect, it is possible that two inequality measures will rank the distributions differently.

These conclusions in part confirm previous works in this field, and in part are original; this is why due caution here must be used in this context.

2.14 Data Appendix

This study uses cross-country databases with two types of data. The main source of data from 1980 to 1994 is the Deninger and Squire study (1996); and after 1994 data are gathered from the World Development Report 1998 (World Bank). The data for the 1980s included in the database are a slightly updated version of the full version of the database described in Deininger and Squire (1996). They assembled them by starting with the full set of all measurements of the income distribution - 682 observations for 108 countries. In this study, we use data covering the five SAARC countries for the last two decades. We only use data that are described as "high quality" by Deninger and Squire. The other data, those that are not highly qualified, are omitted from this analysis. The high quality data set described in the paper of Deninger and Squire can be obtained by utilising only the data marked with "accept" in the quality column. The main shortcoming of this data is its limited coverage. Additionally the data in the distribution of income is reflected in the percentage shares (quintiles) of either income or consumption.

We use the latest observation for each country from the World Development Reports 1998 (World Bank). Data on personal or household income or consumption are drawn from nationally representative household surveys. The survey year indicate whether the rankings are based on *per capita* income or consumption. The quintile shares are estimated from the available grouped data (World Bank, 1998). The following sources of non-comparability should be noted.

First, surveys can differ in many respects, including whether they use income or consumption expenditure as the living standard indicator. Given that the cross-countries household data are based on different measures of living standard, it is problematic to compare directly the inequality of income distribution. Income based inequality measures are bound to show higher inequality than those based on consumption. At one survey date, income will usually be low for some households and unusually high for others, with some opportunities for saving or borrowing; consumption will be less unequal than income. Hence, we feel that the figures are not sufficiently comparable to those of the countries selected for this study. We

define some important reasons why inequality of income distribution is more unequal than the distribution of consumption:

- Savings are proportionally higher for the high-income groups, which will reduce the share of their consumption. As a result, inequality, which is calculated from consumption, will be lower than inequality that is calculated from income.
- Transfers accrue mainly to the low-income groups; thus the share of their consumption will increase, which in turn will result in a lower inequality.
- Low-income groups may also borrow to maintain their standard of living, which will reduce the disparity of the distribution.

Additionally data are available only for quintile shares, so that selected inequality measurements in this study are calculated on quintiles. It follows that the calculations may differ from the calculations, which are done through decile-based statistics. That is why the figures are not directly comparable with other studies.

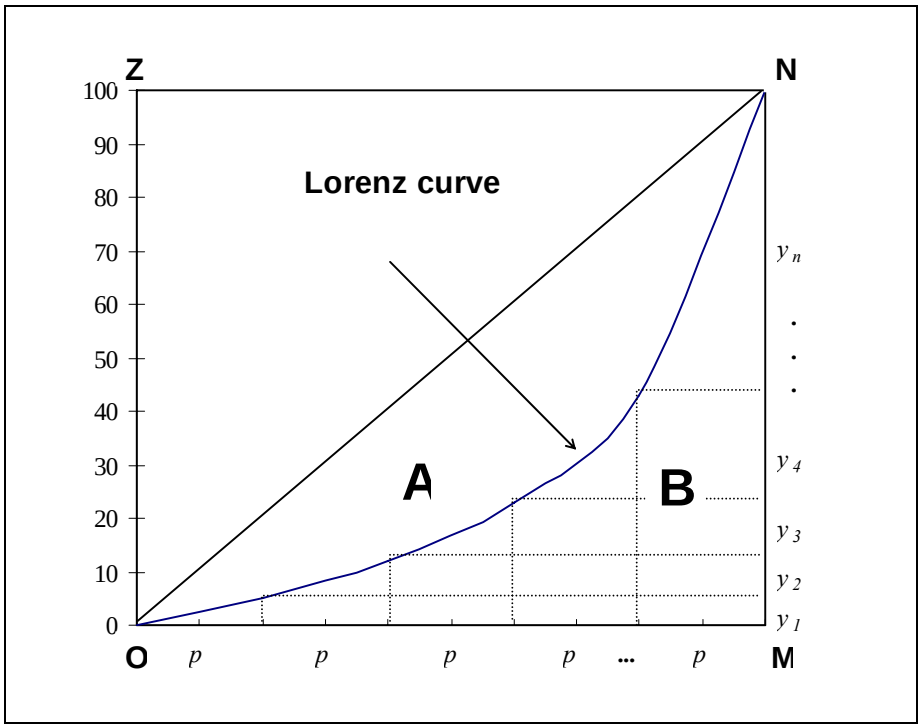
2.15 Appendix 2A

Gini Index

The Gini coefficient may be derived from the Lorenz curve, which plots cumulative shares of the population, from the poorest upwards, against the cumulative share of incomes that they receive. If incomes were equally distributed, the plot would trace a diagonal 45°-line ('line of perfect equality'). At the other extreme – if the richest unit received all income – the Lorenz curve would lie along the horizontal axis, and then along the vertical axis at the 100 per cent income share ('line of perfect inequality'). The Gini coefficient is defined as the area between the Lorenz curve and the 45° line, taken as a ratio of the whole triangle.

First of all we begin with the simple formula for a Gini coefficient.

Appendix Figure 1: The Lorenz curve



In the above graph the horizontal axis shows the population percent or ratio p_1, p_2, ..., p_n for *1*, *2* , ..., *n* groups.

$$p_1 + p_2 + ... + p_n = 100\% \text{ or } 1$$

The vertical axis shows the income percent or ratio y_1, y_2 , ... , y_n for *1*, *2*, ..., *n* groups.

$$y_1 + y_2 + ... + y_n = 100\% \text{ or } 1$$

Total population is divided into *n* income groups (a group can contain just one person, or one household, or many people or many households).

The Gini coefficient is the ratio between the area occupied by Lorenz curve and diagonal, which is denoted by A and the area occupied by triangle MNO in the graph is *(A+B).* Therefore the Gini coefficient *(G):*

G = Area occupied by A divided by area occupied by triangle ABC or Area (A+B) and given the measure of population and income are in ratios, the Area of triangle is equal to ½ (ΔMNO = ½ or 0.5). Since the Gini coefficient is the ratio between area A and area of the triangle MNO, we can write in following form:

$$G = \frac{A}{\Delta\text{MNO}} \; or \; \frac{\Delta\text{MNO} - B}{\Delta\text{MNO}}$$

Because $\left[A + B = \Delta\text{MNO}\right]$

$$\therefore G = 1 - 2B$$

Calculation of 2B: Referring to the above figure, we first calculate the area of 2B as follows:

$$B = p_1(\tfrac{1}{2} y_1) + p_2(y_1 + \tfrac{1}{2} y_2) + ... + p_i(y_1 + y_2 + ... + \tfrac{1}{2} y_i) + ... + p_n(y_1 + y_2 + ... + y_i + ... + \tfrac{1}{2} y_n)$$

or,

$$B = \tfrac{1}{2}\left(\begin{matrix} p_1(2y_1 - y_1) + p_2(2y_1 + 2y_2 - y_2) + ... + p_i(2y_1 + 2y_2 + ... + 2y_i - y_i) + ... + \\ p_n(2y_1 + 2y_2 + ... + 2y_i + ... + 2y_n - y_n) \end{matrix} \right)$$

$$\Rightarrow 2B = p_1(2y_1 - y_1) + p_2(2y_1 + 2y_2 - y_2) + ... + p_i(2y_1 + 2y_2 + ... + 2y_i - y_i) + ... +$$
$$+ \; p_n(2y_1 + 2y_2 + ... + 2y_i + ... + 2y_n - y_n) \qquad (A1)$$

Let q_1, q_2, …, q_i,…, q_n be the cumulative function of income such that:

$q_1 = \sum_{k=1}^{1} y_k$, $q_2 = \sum_{k=1}^{2} y_k$, ..., $q_i = \sum_{k=1}^{i} y_k$, ... , $q_n = \sum_{k=1}^{n} y_k$, and we substitute these values in equation A1, then we get

$$2B = p_1(2q_1 - y_1) + p_2(2q - y_2) + ... + p_i(2q_i - y_i) + ... + p_n(q_n - y_n) = \sum_{i=1}^{n} p_i(2q_i - y_i)$$

Therefore, the Gini index $(G) = 1 - \sum_{i=1}^{n} p_i(2q_i - y_i)$ (A2)

We introduced equation A2 as an alternative of calculating the Gini index for its simplicity. However, equation A2 is valid since it is equivalent to equation 2.2. The proof will be given below. From equation A1, we get:

$$\begin{aligned} 2B &= p_1(2y_1 - y_1) + p_2(2y_1 + 2y_2 - y_2) + ... + p_i(2y_1 + 2y_2 + ... + 2y_i - y_i) + ... + \\ &\quad + p_n(2y_1 + 2y_2 + ... + 2y_i + ... + 2y_n - y_n) \\ &= -(p_1y_1 + p_2y_2 + ... + p_iy_i + ... + p_ny_n) + \\ &\quad 2\left[(n)p_1y_1 + (n-1)p_2y_2 + ... + (n-i+1)p_iy_i + ... + (1)p_ny_n)\right] \end{aligned} \quad \text{(A3)}$$

In equation 2.2, the population (income receivers) is divided into n identical groups, and therefore

$p_1 = p_2 = ... = p_i ... = p_n = p = 1/n$. Further, in our equation we use the proportion of income (y_i) which is the ratio of i^{th} income group in the total income. Hence,

$$y_i = \frac{Y_i}{\sum_{i=1}^{n} Y_i} = \frac{Y_i}{n\mu} \quad \text{and} \quad \sum_{i=1}^{n} y_i = 1,$$

where, $\mu = \frac{1}{n}\sum_{i=1}^{n} Y_i$

Now substituting these values into equation A3 and some algebraic manipulation, we get:

$$2B = -p\left(\sum_{i=1}^{n} y_i\right) + 2p\left[(ny_1 + (n-1)y_2 + ... + (n-i+1)y_i + ... + y_n)\right]$$

$$= -\frac{1}{n} + \frac{2}{n} * \frac{1}{\mu n}\left[(nY_1 + (n-1)Y_2 + ... + (n-i+1)Y_i + ... + Y_n)\right]$$

Therefore,

$$G = 1 - 2B = 1 + \frac{1}{n} - \left(\frac{2}{\mu n^2}\right)(Y_n + 2Y_{n-1} + 3Y_{n-2} + ... + iY_{n-i+1} + ... + nY_1) \qquad \text{(A4)}$$

Note that equation A4 is derived from equation A2 (expression for the Gini calculation) and it is equal to equation 2.2.

2.16 Appendix 2B

Members of the Generalised Entropy class of measures have the general formula as follows:

$$T_c = \frac{1}{n}\frac{1}{c(c-1)}\sum_i\left[\left(\frac{y_i}{\mu}\right)^c - 1\right] \quad \text{for } c \neq 0 \text{ , } 1.$$

For the values 0 and 1 of c, we calculate the limit of index I_c.

For $c \to 0$:

$$T_c = \frac{\frac{1}{n}\sum_i\left[\left(\frac{y_i}{\mu}\right)^c - 1\right]}{c(c-1)} = \frac{f(c)}{g(c)}, \text{ where } f(c) = \frac{1}{n}\sum_i\left[\left(\frac{y_i}{\mu}\right)^c - 1\right] \text{ and } g(c) = c(c-1).$$

Given that:

$\lim_{c\to 0} f(c) = \lim_{c\to 0} g(c) = 0$ we can apply the theorem of Bernoulli-L'Hôpital.

$$f'(c) = \frac{d}{dc}\left\{\frac{1}{n}\sum_i\left[\left(\frac{y_i}{\mu}\right)^c - 1\right]\right\} = \frac{1}{n}\sum_i\left[\frac{d}{dc}\left(\left(\frac{y_i}{\mu}\right)^c - 1\right)\right] = \frac{1}{n}\sum_i\left[\frac{d\left\{e^{c\cdot Log\left(\frac{y_i}{\mu}\right)}\right\}}{dc}\right] =$$

$$= \frac{1}{n}\sum_i e^{c\cdot Log\left(\frac{y_i}{\mu}\right)} Log\left(\frac{y_i}{\mu}\right) = \frac{1}{n}\sum_i\left(\frac{y_i}{\mu}\right)^c Log\left(\frac{y_i}{\mu}\right)$$

$$g'(c) = (2c-1)$$

$$\lim_{c\to 0} f'(c) = \frac{1}{n}\sum_i Log\left(\frac{y_i}{\mu}\right) \quad \text{and} \quad \lim_{c\to 0} g'(c) = -1.$$

According to Bernoulli L'Hôpital:

$$\lim_{c\to 0} T_c = \lim_{c\to 0}\frac{f(c)}{g(c)} = \lim_{c\to 0}\frac{f'(c)}{g'(c)} = -\frac{1}{n}\sum_i Log\left(\frac{y_i}{\mu}\right) = \frac{1}{n}\sum_i Log\left(\frac{\mu}{y_i}\right) = T_0$$

For $c \to 1$:

$$\lim_{c\to 1} f(c) = \lim_{c\to 1} \frac{1}{n}\sum_i \left[\left(\frac{y_i}{\mu}\right)^c - 1\right] = \frac{1}{n}\sum_i \left[\left(\frac{y_i}{\mu}\right) - 1\right] = \frac{1}{n\mu}\sum_i (y_i - \mu) = \frac{1}{\mu}\left(\frac{1}{n}\sum_i y_i - n\mu\right) = 0$$

$$\lim_{c\to 1} g(c) = \lim_{c\to 1} c(c-1) = 0$$

Also in this case we can apply Bernoulli L'Hôpital:

$$\lim_{c\to 1} f'(c) = \lim_{c\to 1} \frac{1}{n}\sum_i \left(\frac{y_i}{\mu}\right)^c Log\left(\frac{y_i}{\mu}\right) = \frac{1}{n}\sum_i \left(\frac{y_i}{\mu}\right) Log\left(\frac{y_i}{\mu}\right) \quad \text{and} \quad \lim_{c\to 0} g'(c) = 1$$

We finally have:

$$\lim_{c\to 1} T_c = \lim_{c\to 1} f'(c) = \frac{1}{n}\sum_i \left(\frac{y_i}{\mu}\right) Log\left(\frac{y_i}{\mu}\right) = T_1$$

Appendix Table 1: Income/consumption share

Country	Year	Quntile 1	Quntile 2	Quntile 3	Quntile 4	Quntile 5	Income or Expenditure	Personal or Household
Bangladesh	1981	6.64	10.72	15.20	22.12	45.32	Income	Household
Bangladesh	1983	7.20	11.75	15.94	21.73	43.38	Income	Household
Bangladesh	1986	6.99	12.36	15.07	19.55	46.03	Income	Household
Bangladesh	1989	9.50	13.30	17.00	21.60	38.60	Expenditure	Personal
Bangladesh	1992	9.35	13.51	17.24	21.99	37.91	Expenditure	Personal
Bangladesh	1996	8.70	12.00	15.70	20.80	42.80	Expenditure	Personal
India	1983	8.60	12.70	16.50	21.70	40.50	Expenditure	Personal
India	1986	8.50	12.50	16.40	21.50	41.10	Expenditure	Personal
India	1987	8.90	12.50	16.30	21.30	41.00	Expenditure	Personal
India	1988	9.00	12.70	16.40	21.40	40.50	Expenditure	Personal
India	1989	9.10	12.90	16.60	21.70	39.70	Expenditure	Personal
India	1990	9.10	13.10	16.90	21.80	39.10	Expenditure	Personal
India	1991	9.00	12.50	15.90	20.70	41.90	Expenditure	Personal
India	1992	8.80	12.50	16.20	21.40	41.10	Expenditure	Personal
India	1997	8.10	11.60	15.00	19.30	46.00	Expenditure	Personal
Nepal	1984	9.11	12.89	16.68	21.82	39.50	Income	Personal
Nepal	1996	7.60	11.50	15.10	21.00	44.80	Expenditure	Personal
Pakistan	1985	8.54	12.34	16.22	21.53	41.37	Expenditure	Household
Pakistan	1986	8.21	12.46	16.57	22.06	40.70	Expenditure	Household
Pakistan	1987	8.47	12.50	16.41	21.66	40.96	Expenditure	Household
Pakistan	1988	8.61	12.76	16.60	21.64	40.39	Expenditure	Household
Pakistan	1991	8.40	12.87	16.87	22.16	39.70	Expenditure	Personal
Pakistan	1997	9.50	12.90	16.00	20.50	41.10	Expenditure	Personal
Sri Lanka	1981	5.73	9.59	13.37	19.40	51.91	Income	Household
Sri Lanka	1987	5.06	9.08	13.38	20.09	52.39	Income	Household
Sri Lanka	1990	8.92	13.13	16.89	21.72	39.34	Expenditure	Personal
Sri Lanka	1995	8.10	11.80	15.80	21.50	42.80	Expenditure	Personal

Data sources: Deninger and Squire database (1996) and the World Bank Development Report 1998

Chapter 3

Wealth Distribution in Nepal

3.1 Introduction

Wealth may be defined as the aggregate of all marketable assets of a given individual or family. Wealth is also a source of a consumption flow. It provides direct money when needed because assets can be directly converted into cash. Wolff (1998) argues that the availability of financial assets may provide liquidity to a family in times of stress, such as occasioned by unemployment, sickness, or family break up**.**

Economics began as the study of wealth (*e.g.* Adam Smith's *Wealth of Nations*) and how levels of wealth change during a given period. Keynesian economic theory tends to place a greater emphasis on income as the object of study in macroeconomics. However, it has since been accepted that income tends to affect the behaviour of individuals as it affects their wealth. Household savings and wealth accumulation may be calculated based on yearly data on income and consumption. Unfortunately, the lack of yearly data prevents us from studying trends in aggregate household wealth. In this study we shall confine ourselves to analyse wealth distribution in Nepal for the year 1995 and 1996 more thoroughly also due to absolute lack of other data. We estimate all possible components for personal wealth distribution in Nepal. Consequently, it seems that our estimation of wealth distribution gives maximum information on cross-section comparison of Nepalese wealth. Wealth is highly concentrated among few rich families, which leads to a high level of inequality. To assess the economic and social role of wealth, the state of wealth inequality is extensively examined.

3.2 An Overview of Nepal Living Standard Survey (NLSS) 1996

One of the principal objectives laid down in the five-year Plan of Nepal is the alleviation of poverty. However, the scarcity of reliable and timely data regarding the living standard of the people and, consequently, the level of poverty has hindered such efforts significantly (NLSS, 1996). An understanding between His Majesty's Government of Nepal (HMGN) and the World Bank was reached so that a Living Standards Survey could be launched in Nepal. With the assistance of the World Bank, similar surveys have been conducted in a number of developing countries. The Central Bureau of Statistics (CBS) of Nepal, launched the Nepal Living Standards Survey (NLSS) in June 1995 jointly with the World Bank. According to its objectives, the survey envisaged the collection of a comprehensive set of data covering various topics as well as highlighting the various determinants of poverty. The NLSS also provided household level data to evaluate the impact of various government policies and programmes on the living conditions of the population.

Data collection has been done to cover a complete cycle of one-year duration, to avoid seasonal variations likely to occur in various socio-economic activities of the households. This survey gathers information at the national level concerning household data on population, housing, education, agricultural activities, consumption, and other socio-economic characteristics. Community level data have also been collected. Due to its comprehensive data collection design, the data from the survey can be used to study the impact of education on health or on employment and so on.

The sample is divided into four strata based on the geographic and ecological regions of the country: (i) the Mountains, (ii) urban Hills, (iii) rural Hills, and (iv) the *Terai*. This sample is designed to provide enough observations within each ecological stratum to analyse the results separately.

The NLSS (1996) was designed as a multi-topic survey collecting a comprehensive set of data on different aspects of household welfare such as consumption, income, housing, labour markets, education, health, wealth, migrations etc. The sample size for the NLSS is made up of 3373 observations. This sample was divided into households by various criteria.

Because of lack of time series data on Nepalese wealth distribution, we are not able to examine the trends of wealth distribution, but we provide the cross-section comparisons among the family groups.[44] These regional and social aspects of the country have heavily influenced the distribution of wealth in Nepal. Understanding the distribution of wealth in Nepal through this study may enable the policy makers to design programs that are more effective in the future.

In this chapter, we will study and analyse household wealth in both urban and rural levels of Nepal, analysing the pattern of wealth concentration and the level of wealth. Furthermore, we will compare the distribution of wealth between these areas and try to extract some findings about wealth inequality in these areas at the household level. Similarly, we will study the family wealth distribution of various development regions, ecological regions, various religious groups, as well as ethnic groups of Nepal. The following table shows how the sample is allocated among the four strata:

[44] The Nepalese people can be sub-divided by various criteria. For example, these families may be divided into rural and urban families, families by development regions, families by ecological regions, families by ethnicity and families by religion.

Table 3.1 NLSS National Sample

Strata	Number of Households	% of Families
All Nepal	3,373	100.00
Rural Nepal	2,657	78.77
Urban Nepal	716	21.23
Ecological belts:		
Mountains	409	12.13
Hills	1,740	51.59
Terai	1,224	36.28
Development Regions:		
Farwest	352	10.44
Midwest	360	10.67
West	624	18.50
Central	1,320	39.13
East	717	21.26
Religion:		
Hindu	2,927	86.78
Buddhist	275	8.15
Muslim	128	3.79
Others	43	1.28
Caste/Ethnicity:		
Bramin	553	16.39
Chetry	662	19.63
Newar	360	10.67
Gurung	130	3.85
Rai	56	1.66
Magar	168	4.98
Limbu	63	1.87
Tamang	153	4.54
Tharu	185	5.48
Yadav/Ahir	102	3.02
Muslim	127	3.77
Sarki	52	1.54
Kami	154	4.57
Damai	56	1.66
Others	552	16.37

Source: author's estimation from the NLSS (1996) data

3.3 What are the Components of Nepalese Family Wealth?

The NLSS (1996) contains many questions on household wealth holdings, in order to take a measure of available household wealth. The NLSS was designed to represent the full range of wealth distribution by the use of special sampling frames.

Household wealth is not a simple concept in the Nepalese context. Since there is a vast difference in geographical regions, wealth stock composition varies from region to region. Furthermore, culture and religion have also complicated the shape of wealth holdings. For example, animal husbandry and its stock may be one of the main components of wealth. Some high-class Hindu households do not keep a pig, whereas in other families, pig ownership may represent the larger part of wealth. Because of the geographical dearth and the underdeveloped infrastructure of the country, the holdings of transportation such as a car, motor cycle, or bicycle tend to vary, and may be concentrated only in some urban areas. In the rural Mountain and Hill areas, on the other hand, animals such as mules, horses and so on are kept. Given that the value of the transportation holdings is also included in the durable goods as a part of wealth, question of transport ownership can play an important role in wealth composition.

Table 3.2 shows the components of wealth in Nepal. Wealth is the total assets of a household from different sources minus borrowings. We briefly discuss the components included in the structure of wealth in Nepal.

Table 3.2 Balance sheet of family's wealth in Nepal

Liabilities	Assets
The amount of borrowings	The value of dwellings
	The value of land-holdings
	The value of enterprises
	The value of farming assets
	The value of durable goods inventory
	The value of livestock
	The amount of lending
Net wealth	The value of other assets
Total	**Total**

Source: author's estimation from the NLSS (1996)

3.3.1 *The value of dwellings*

Dwellings or accommodation are largely related to the living standards of the population in the country. The well being of any family depends on the quality and the quantity its dwelling. Regarding the occupancy status of the households, one may imagine the wealth status of Nepalese families. The NLSS (1996) reported that in general the majority of households in Nepal are poor and lack facilities such as water, sewerage, refuse disposal and so on. Very few households have electricity. Whatever the condition of the dwelling, there is some value inherent in it. The amount assigned to the value of each dwelling is based on the recorded current value in NLSS for the year 1996. In the sampling, no family has bought or sold the house over the past 12 months, allowing us to set the same value for the year 1995 as well. The value of any house may depreciate or appreciate over time, but because of the lack of information in the NLSS, we retain the same value of the dwelling for 1995 and 1996. The value only accounts for the dwelling occupied by the family. The majority of households own their dwelling in

Nepal. Rented houses were found only in the urban areas and in the central regions. The NLSS also gathered information on the material used to build the houses. A large number of families have made their houses with mud bonded bricks and are stonewalled, with thatched or slate roof. In rural areas, more than one third of the households live in poorly constructed housing units. The rich families of Nepal have houses made up of cement bonded bricks and stones or concrete. Such houses are considered good dwellings. Nearly 10 percent of the families own the dwellings of this latter category and they account for half of the urban households.

3.3.2 *The value of land-holdings*

Land is considered the most valuable asset in an agrarian society, in which it is indeed the most important factor of production. Moreover, land and its characteristics inevitably determine the agrarian structure and directly bear upon and have implications for the economy as a whole. Land characteristics are physical, social, economic, and even political. Land is the only productive economic resource for rural residents of Nepal; its possession offers economic security. The well being of rural Nepalese society depends on the size of the landholding. The NLSS volume II (1996) has reported that 83 percent of total households have some farming land. Over 98 percent of the families in the Mountain regions operate land compared with 88 percent in the Hill and 76 percent in the *Terai*. But, the quantity distribution of land is very unequal. The average size of farmland for Nepal in the sample is 1.09 hectares per household. The top 6 percent of agriculture households, however, occupy more than 33 percent of total land. The NLSS reveals that 40 percent of small farmers hold less than 0.5 hectares of land, on average, and 13 percent of large farmers hold more than 2 hectares of land in Nepal. The unequal distribution of land is a serious issue in Nepal, since more than 80 percent of the employment is offered by land. The value of the landholding is the current value of the farming land held by the households for 1996. The NLSS also collected data on how the value of the landholding has changed over the 12 months previous to the survey. Hence, we can also estimate the value of the landholding for 1995. The change in land holding takes place due to the sale or purchase of land. We add (subtract) the value of land; which is sold (purchased) over the past 12 months into the value of 1996 in order to estimate the value of landholding for 1995.

3.3.3 *The value of enterprises*

The NLSS (1996) covers the data of all non-farming activities that the household is engaged in. The non-farm enterprises include all self-employment generated from non-agriculture activities and enterprises[45]. Around 24 percent of the household are found to be operating non-farming enterprises. In the ecological belt of Nepal, around 25 percent in the Hills, 25 percent in the *Terai* and 17 percent in the Mountain of total households are engaged in non-farm enterprises. Among them, 52 percent are involved in trade. This is probably because the rural poor have no land or nearly landless, and they operate small enterprises for survival. We set the value of enterprises as another component of wealth for 1995 and 1996.

3.3.4 *The value of farm assets*

Farming assets are another important component of household wealth since many Nepalese are farmers and their living depends on these assets. Mechanization of agriculture in Nepal is found at a very low level. A traditional plough is the most common agricultural instrument of the Nepalese farmers. Less than one percent of the families own a tractor and around one percent of the families own a thresher. The current value (1996) of these assets is taken into account, we have estimated the value for 1995 adding the depreciated value over the past 12 months, and the farm assets bought (sold) are deducted (added).

[45] They are: hunting, forestry and logging, fishing, coal mining, petroleum & gas, metal ore mining, other mining, food and beverages, textiles and apparel, wood, furniture, paper/printing, chemical/petroleum, other non-metallic, basic metallic, fabricated metallic, handicrafts and other, electricity/gas/water, water works, building, streets/highways, irrigation, sports projects, docks/communication, sewers/water mains, other construction, wholesale, retail, restaurant, transport, communication, finance, insurance, real estate, machinery fitters, sanitary, social, recreation/culture, personal/household, international, etc.

3.3.5 *The value of durable goods inventory*

This includes the total quantity of goods, materials, and supplies held by a family and having values that can be ascertained as assets. It also includes work-in-progress as well as all finished products. Durable goods are substantial, usually costly, products and materials that can be expected to last and be functional over a long period.[46] We use the current value for 1996 as a component of wealth. To estimate the value for 1995, we first find the rate or amount of depreciation or appreciation. Then we add (subtract) the amount depreciated (appreciated) over the past twelve months. If a family has bought (sold) some durable goods over the past 12 months, the value is subtracted (added) to the current value (1996) in order to find the value for 1995. The value of goods received as a gift or part of an inheritance or dowry is estimated according to the expectation of the family in the NLSS (1996).

3.3.6 *The value of live-stocks*

Section 12 (NLSS) covers the information on farming and livestock. The purpose of this section was to collect the data on the household's income and expenditure from farming and livestock. Livestock is an important component of the Nepalese farming system providing food for humans, manure for plants, draft power for farms, and cash income for farm families. Cattle, buffaloes, sheep, goats, pigs, and poultry are the livestock species reared across different agro-ecological zones. In Nepal, women are actively involved in livestock production. Poultry farming on a commercial basis in Nepal is a relatively new enterprise. Animal species such as cows, buffaloes, goats, sheep, yaks, pigs, donkeys/mules, poultry, and other livestock are included in the NLSS (1996). We use the current value (1996) of the stock of these animals as a part of the household wealth. We estimate the value of livestock for 1996 by adding (subtracting) animals sold (bought) over the past 12 months.

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[46] They include the following items: camera, bicycle, motorcycle/scooter, motor car, refrigerator/freezer, washing machine, television/VCR, telephone sets/cordless, sewing machine, furniture, kitchen utensils, jewellery and so on.

3.3.7 *Credit and savings*

3.3.7.1 *Borrowings*

Borrowing refers to the amount borrowed from either individuals, relatives/friends, an Agriculture Development Bank, commercial bank, Grameen-type Bank, or other financial institution, a local group, NGO or relief agency, landlord/employer, shopkeeper, moneylender or others. This section covers the loans that the households borrow. In total, 3030 loans were taken out by around 59 percent of the household in the sample. The distribution of loans shows that the highest number of loan transactions has taken place in the Hills followed by the *Terai* and Mountain regions. The NLSS volume II (1996) reported that 12 percent of the total loan is borrowed by 35 percent of urban household, while the remaining 88 percent is borrowed by the rural households. The three prominent sources, *i.e.*, bank, family relatives, and local moneylenders are found in the survey. Only 16 percent of the total loan is financed through formal institutions to households. Major loans are taken out for household consumption (nearly 49 percent). Around 29 percent of the loan is taken out for business purposes and the rest for other personal purposes. The amount that the household should still repay is recorded for 1996 and the loan value for 1995 has been estimated by adding (subtracting) the repaid (new loan taken) over the past twelve months. Commercial bills, mortgage loans, bank overdrafts and other bank and non-bank domestic and foreign loans are included in this section.

3.3.7.2 *Lending*

It is the loan made by one household to another household or individual, reported in current value (1996). We estimate the value for 1995 by adding (subtracting) the payment received (new loan made) over the past twelve months.

3.3.8 *The value of other assets*

The other assets include fixed assets such as land, building, and other such real assets; which are not reported in the landholdings and dwellings. These assets are used for business purposes and thus are separated from previous sections. Other real assets include a taxi, a truck,

or similar vehicle that is rented out to other households or individuals. This section also includes the values of saving accounts, fixed deposits, treasury bills, stocks, shares, employee providence fund, pension, commission, etc for 1996 and the value for 1995 is estimated based on the information available in the NLSS (1996).

3.4 Nepalese Wealth Comparison with Industrial Countries

In this section we compare the concentration of personal wealth of Nepal for 1996 with wealth distribution of other industrial countries. Table 3.3 provides the comparison of Nepalese wealth distribution to other Western countries. The estimates allow us to conclude that the distribution of wealth in Nepal is highly concentrated compared to developed countries. For example, the wealth share of the top 1 is much higher for Nepal except for the US and France. Similarly, the top 5 wealth share for Nepal is even more concentrated than in other developed countries except the United States.

Table 3.3 The inequality of household wealth in selected countries

Countries	Percent of wealth held by	
	Top 1%	Top 5%
Nepal, 1996	24	53
United States, 1983	35	56
Canada, 1984	17	38
France, 1986	26	43
Sweden, 1985/86	16	31
United Kingdom, 1986	22	Na

Sources: 1) Calculated from CBS (statistical bureau centre of Nepal) for 1996 Nepal. 2) For other countries, Edward (1998, Table 12)

3.5 Rural and Urban Households in Nepal

The separation of rural and urban areas has been marked since the beginning of industrialisation. This process has been typically related to the growth of infrastructures such as transport, communication, power supply, and so on in any country. The high concentration of people, the predominance of non agricultural activities, better provisions for a social net including health, education, safe water and sanitation infrastructures are some of the characteristics of urbanisation. However, the classification of rural and urban areas across and between different nations has two important criteria: namely, the size of the population and the percentage of non-agriculture workforce. Hence, the major force behind urbanisation is industrialisation, whereas the rural community is treated as "residual" and synonymous with agricultural activities. Only the size of the population (more than 9000 people) is used to declare a settlement as urban in Nepal. For the United Nations (1993) any settlement with a municipal corporation, municipality, town committee and urban councils, etc, is considered to be urban.

Nepal is made up of rugged mountainous terrain[47] and has extremely limited means of transportation, communication and electrification. The country is characterised by a widespread disparity between urban and rural areas in the ecological versus the developed regions. Nepal is not only the least urbanised among the developing countries, but also among the South Asian countries. The population living in the urban areas is, however, gradually increasing. In the last 50 years, Nepal's urban population has increased from 3.6 percent to 14.2 percent. Nepal Population Report (NPR 2002) has identified three reasons for growth of the urban population in Nepal:

- Declaring an area as urban is a political decision made by the government.
- Old urban areas increase their geographical size by incorporating the neighbouring rural areas.
- Increase in the urban population is due to the natural increase plus the migration.

[47] The Mountain and Hill area account for nearly 77% of the total area.

3.6 Wealth Distribution in Urban and Rural Nepal

Our study on wealth distribution reveals a large variation between urban and rural families. We have estimated the shares of net wealth held by the richest 5%, 10%, 20%, 40%, and the poorest 60% of the household in Nepal taken across urban and rural areas respectively (see Table 3.4). This gives us a more revealing picture of the concentration of wealth. Table 3.4 also provides a comparison of wealth distribution between the two periods 1995 and 1996. We first compare the wealth by the measures mentioned above between rural and urban households for 1995 and 1996. From Table 3.4 we can also observe the changes of the concentration of wealth across rural and urban areas for two periods. When we measure the family wealth by the top 5 percent, 10 percent and 20 percent, the rural family seems to have a higher share of the total wealth than the urban family for both 1995 and 1996. The rural top 5 families have a higher share of total wealth (by around five percentage points) in both years compared with the urban top 5 percent of households. This sort of comparison is valid up to the top 20 percent share of wealth and hence we may say that wealth in rural areas is more concentrated; but the result is reversed when we use the top 40 percent share of wealth. We find that urban household share in the top 40 percent is higher than the rural household share. This is due to the higher proportion of wealth share in the second quintile of urban households than rural households. Thus wealth is more concentrated in the upper class households of urban areas than of rural areas. However, the bottom 60 percent of rural households are better off than urban households due to the level of wealth concentration. Furthermore, the wealth of the lowest 60 percent of households increases its share over time both in urban and rural areas.

In overall, the survey indicates that the top percentiles have lost part of their share of wealth; while the bottom 60 percent has slightly gained between 1995 and 1996. This suggests that wealth distribution in Nepal has improved between 1995 and 1996. These measures give only the level of wealth concentration of a certain class of the distribution. For the distribution of income in Chapter 2, we use various inequality measures, *i.e.*, the Gini coefficient, the Atkinson indexes, and the Theil index, which summarise the whole distribution of wealth. Wealth inequality in Nepal measured by the Gini coefficient is approximately 0.74. The Theil Index and

Atkinson Indexes are also presented in Table 3.4. We may confirm by these concentration ratio that wealth inequality has slightly decreased between 1995 and 1996. This is due to a decrease in both rural and urban wealth inequality. All measures of inequality prove that distribution of wealth in urban area is worse than in rural area.

Table 3.4 Concentration of Wealth in Rural and Urban Families in Nepal (1996) (Percentage share of wealth and inequality ratios)

	All Nepal		Urban Nepal		Rural Nepal	
	1995	**1996**	**1995**	**1996**	**1995**	**1996**
Top 5	53.45	52.79	39.88	38.93	44.78	44.12
Top 10	68.19	67.44	55.96	55.30	57.38	56.58
Top 20	81.51	80.86	73.77	72.79	71.99	71.26
Top 40	92.38	91.99	92.13	91.20	87.28	86.80
Bottom 60	7.63	8.02	7.87	8.80	12.72	13.20
Gini	0.742	0.735	0.698	0.687	0.661	0.654
Atkinson ε=0.5	0.485	0.474	0.444	0.422	0.376	0.367
Atkinson ε=1	0.762	0.744	0.795	0.741	0.637	0.623
Theil	0.612	0.597	0.448	0.430	0.491	0.477

Source: author's own calculations from the NLSS (1996) data

3.7 The Household Wealth Structure in Rural and Urban Nepal

In the NLSS (1996) household assets are divided into nine categories: dwellings, landholdings, enterprises, farm assets, inventory, livestock, borrowings, lending and other assets. We have estimated the net wealth from the value of these assets and liabilities. Table 3.5 presents some dimension of wealth for 1995 and 1996. Average wealth (measured by the net wealth in Table 3.5) has increased in Nepal between 1995 and 1996. Urban and rural household

wealth has also increased between 1995 and 1996. This was a result of the growth of the values of inventory, enterprises, and other assets. The rest of the assets remained almost constant. The average household wealth in urban Nepal is around six times higher than that of rural Nepal and around three times higher than of the national average; the size of wealth in urban and rural areas varies significantly. However the ratio was almost constant in 1995 and 1996. Wealth inequality has slightly decreased in rural and urban areas. The most striking aspect of household wealth distribution is its extreme inequality. In the previous chapter we discussed the inequality of income. The higher inequality of income affects wealth inequality through past saving behaviour. Savings are included in the value of other assets. Given that other assets (average amount) are significantly large and savings are growing, the latter seems to have affected the distribution of wealth in Nepal. Thus, current income is important in explaining the disparity of wealth. Bequests may play a central role in wealth distribution in Nepal since the landholdings and dwellings include a major part of wealth because these assets are constant over time in the NLSS sample. In other words the inheritance of landholding and dwellings largely determine the level of inequality of wealth in Nepal.[48] The result is much in line with what happens in the developed world as well (except may be the US).

The average net wealth of the urban household is 1,584,388 compared with 296,817 NC in 1996, which is above 5 times higher than the rural household. Except for the values of livestock ownership and agriculture tools, all the components of wealth in urban Nepal have higher values than in rural Nepal. This indicates that urban people are on average far wealthier than rural families (see Table 3.5).

[48] See sections 1.5 and 1.6 for the inheritance system in Nepal.

Table 3.5 Mean Wealth of Rural and Urban Families in Nepal (1996)
In NC = Nepalese currency 1996 price (1$ =57NC 1996)

	All Nepal		Urban Nepal		Rural Nepal	
	1995	**1996**	**1995**	**1996**	**1995**	**1996**
Dwellings	211,394	211,394	784,251	784,251	57,022	57,022
Landholdings	230,486	227,609	383,719	371,193	189,193	188,916
Enterprises	20,193	22,379	70,217	79,581	6,713	6,964
Farm Assets	1,496	1,550	529	539	1,757	1,822
Inventory of Durables	7,765	23,660	31,277	72,843	1,429	10,406
Livestock	10,152	10,898	2,125	2,484	12,315	13,166
Lending	2,831	2,738	6,348	5,758	1,883	1,924
Other Assets	79,898	87,199	273,125	305,538	27,828	28,361
Borrowings	16,647	17,290	36,851	37,800	11,200	11,763
Net Wealth	547,574	570,135	1,514,740	1,584,388	286,945	296,817

Source: author's own calculation from the NLSS (1996) data

Wealth distribution in both rural and urban Nepal is extremely concentrated. Given that the level of wealth is very low in rural Nepal compared with urban Nepal and inequality is higher, many interlocking barriers slow down any progress. Rural households have little land, less access to education and health services or other important assets.

It is not surprising that wealth distribution in rural areas is extremely unequal, since differences between family backgrounds in rural areas are higher and progress towards equality is thus slower.

The rural economy is mostly dependent on agriculture. Land is the only productive resource for rural families – we noted above that land possession offers economic security. The Central Bureau of Statistic of Nepal (1993) has reported that only 17 percent of the total area of the country is arable. The *per capita* land holding is 0.14 hectare. The bottom 40 percent of the families operate only 9 percent of the total agriculture land, while the top 6 percent occupy more

than 33 percent. Hence, the land is owned mostly by few rich households, called '*Jamindar*' (Feudalist), in the rural areas; while most of the farmers are landless and marginal farm holders. They are the most disadvantaged group of Nepal. They don't own anything else, so for livelihood they depend on a feudalist.

In Chapter One we described the political history of Nepal. In the mid eighteenth century, the unification of Nepal took place. Over the past century, land remained the major source of economic wealth in Nepal. It was also an income-generator for the ruling elites. The surplus generated by the peasants was used by the elites to finance the military. After unification, the land seemed to become state owned for a period of time. Later on, the ownership was transferred to the people. The *Birta* system was introduced; wherein the land was awarded to the members of the royal family and nobility as a prize for their bravery. The *Birta* was also influenced by religion. The rich people gave land as gift to *Bramins*, who were privileged by the Hindu religion, as a medium to easily earn virtue, which is prized by the gods. The land under the *Birta* system was not taxable and the recipient of the land grant was entitled to the revenue assessed on it. The *Terai* lands were extensively redistributed under this tenure system. This system was took plant during the *Rana* regime and the land was granted in order to enrich the ruling elites and their collaborators. In this period the *Birta* land accounted for 86 percent (1.6 million ha) of all land in the *Terai*. Thus, the land was concentrated in the hands of a few ruling elites and the surplus was generated by these classes through severe exploitation of labour from the farmers. The tenants were forced to work in *Birta* land and to accomplish other household work for the elite groups without a wage, because there was no alternative to survive[49]. The economic development was achieved by the extreme exploitation of labour class by the ruling class. Following the overthrow of *Rana* in 1951, some reforms were made to the land holdings.

[49] This was in fact a slavery system, which was abolished in 1959.

The land act of 1962[50] was put in place to redistribute the land. The land redistribution process did not proceed immediately. Landowners were well informed before the act was supposed to become effective, giving an opportunity to the large estate-holders to handover excessive land to their relatives. Not surprisingly, the land redistribution system did not work because the lawmakers were the same ruling people who held excessive amounts of land. Apparently, the state protected the landowners, whereas the majority of the peasants remained landless or small landholders. The land act 1964 authorised registered tenants to lay claim to one fourth of the land or its equivalent value from the landowner in case the landowner would sell the land or release it from tenancy.

In *Birta* system the landlords utilised the land without rent to the state (taxes, royalty etc), while the rest of the land became registered and liable to taxation. In order to collect the taxes from the registered land, the state selected non-official local functionaries from each local area. The *Jamindar* and *Talikdar* were the authorised bodies in the *Terai* and Hill regions designated respectively with collecting the government revenue at a local level. Given that the *Terai* region was infested with a high prevalence of Malaria, the elite class avoided collecting the taxes in this region. The state therefore selected a *Jamindar* from each area of the *Terai* region[51] and gave it the authority to collect revenue. The *Jamindar* were also authorised to expand the land (normally by destroying the forest) in order to fulfil the demands of a growing population. They were also granted land as a prize of their work. Given the lack of state government supervision after their appointment, these *Jamindar* manipulated their easily won power and profited from the peasants under their charge.

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[50] It has recognised three important measures: (i) The fixed ceiling of land holdings: a person can hold 16.93 ha in the *Terai*, 4.07 ha in the Hills and Mountain, and 2.54 ha in Kathmandu. (ii) Fixed rent: fifty percent of the crop grown in a year to the landlord was established like *mezzadria* system in Italy. (iii) The *Birta* system was abolished.

[51] The big landlords were selected as *Jamindar*. The idea behind this selection criteria was that the *Jamindar* could easily be a representative of the area that would facilitate his work of collecting revenue.

Until that time, internal migration from the Hills and Mountain regions to *Terai* area had been very limited. After the successful control of Malaria in the *Terai* region, migratory movement from Hill and Mountain areas to *Terai* increased. Motivating factors in this migratory movement included harsher condition in the Hills and Mountains, limited supply of arable land and lack of employment opportunities in these areas. Moreover, the availability of arable land in *Terai* immediately after the control of malaria and the *Terai's* better infrastructural facilities, increased migration from Hills and Mountains to *Terai*. This migration was spurred along by the resettlement programmes set up by the government in the late sixties. All of the above factors contributed to the migration of Hill and Mountain people to *Terai* areas.

Given that many families in rural areas do not hold sufficient land to earn their living, the access to credit is extremely important for other economic activities or even when these people have health problems and need money. Feudalists lend money to the poor at high interest rates, which make the former even wealthier, and the latter poorer. It often happens that people cannot repay money and so they are forced to sell and lose their lands. In rural areas, the informal financial market is the sole source of credit. In 1994 the National Bank of Nepal (NBR) published a survey of rural credit; which found that among the types of borrowings from landlords, the most prevalent is the bonded labour type. *Kamaiyas* in rural *Terai* and *Haliyas* in rural Hills are some forms of debt bondages that one may find in Nepal. In these systems the debtors (*Kamaiyas* or *Haliyas*) are forced to work for the creditors *in lieu* of interest payment as well as payment of the principle amount. Further, debts are inter-generationally transferable, so that class rigidity remains high. As a result these people find it difficult to improve their situation.

The literacy rate among rural people is very low. This is another reason why educated feudalists exploit these people. For example, the landlords may invent fake papers concerning an imaginary debt, and thus take advantage of illiterate people and by taking away their possessions. These illiterates cannot promote legal actions against the landlord, given that the landlords have privileged links with the government bodies. Hence, to some extent, corruption has directly or indirectly favoured the rich in Nepal. The Human Development Report Nepal (1998) partially noted this systemic corruption by stating, "Some of the landlords, relying upon

the illiteracy and innocence of the *Kamaiyas*, are reported to illegitimately upscale the loan taken by the *Kamaiyas*".

In addition, an inefficient transport infrastructure acts as a bottleneck to the rural economy. Poor rural families cannot afford to sell their products on major markets. They have to sell them in their own area, at a low price, to the local merchant. Furthermore, the social behaviour of the society (male dominated) has influenced economic activities of rural people. For example, in rural areas, males exclusively plough and; the remaining agricultural work is done by females. Provided that there are no other economic activities than agriculture for the males, they engage in gambling and drinking. This often leads to a reduction of their existing properties through subsequent debt accumulation and indenture.

3.8 The Household Wealth Distribution in Development Regions of Nepal

Administratively the country is divided into five development regions: far-western region, mid-western region, western region, central region and eastern region. Table 3.6 provides the degree of wealth concentration and the inequality measures for these regions. Among these regions, the household wealth distribution in the far-western development region is more equal than the distribution of other regions. The top 5 percent of the far-western region families holds around 33 percent and 31 percent in 1995 and 1996 respectively. The lowest wealth share of the top 5 percent in the far-western development region is followed by mid-western, western, eastern, and central development regions respectively. The share of the top five percent households has decreased by around 2 percent points between 1995 and 1996 in farwestern region. This share has decreased slightly for all regions except for Midwestern region. We also find a decrease of wealth share for the top 10%, 20% and 40% in four regions; while in the Midwestern region, these shares have increased. Similarly the bottom 60 percent of the households of all regions except the Mid-western region have gained their share of wealth. Hence, the less wealthy people are becoming better off. Wealth is heavily concentrated among the upper class of the society in the central development region followed by western, eastern, mid-western and far-western development regions. The bottom 60 percent of households in

central development regions enjoys the least share of wealth compared with other regions. From these results, *i.e.*, the lower share of bottom percentile and the higher share of upper percentiles lead to the higher degree of inequality of wealth. The reverse will result to the less unequal of wealth distribution. This statement is checked with the measurements of inequality.

All four indexes of inequality show the least inequality in wealth distribution in the far-western development region followed by mid-western, eastern, western, and central development regions for both years 1995 and 1996. These measures also confirm that the wealth distribution has improved in all development regions except the mid-western regions (see Table 3.6). The relative measurements do not show whether the households with low or high inequality are wealthier than others. We examine it with wealth size and its composition in Table 3.6 below.

Table 3.6 Concentration of Wealth in the Development Region's Families of Nepal (1996) (Percentage share of wealth and inequality ratios)

	Farwestern		**Midwestern**		**Western**		**Central**		**Eastern**	
	1995	**1996**	**1995**	**1996**	**1995**	**1996**	**1995**	**1996**	**1995**	**1996**
Top 5%	32.66	31.13	34.89	36.07	45.16	45.14	51.08	50.45	45.49	44.87
Top 10%	45.27	43.44	49.74	50.81	61.32	61.01	67.13	66.33	58.87	58.31
Top 20%	59.88	58.17	67.58	67.82	75.96	75.48	83.62	82.80	73.89	73.59
Top 40%	77.99	76.68	84.89	84.92	89.49	89.17	94.51	94.06	89.06	88.82
Bottom 60%	22.01	23.32	15.11	15.08	10.51	10.83	5.49	5.94	10.94	11.18
Gini	0.532	0.512	0.620	0.621	0.693	0.688	0.760	0.753	0.680	0.677
Atkinson ε=0.5	0.235	0.216	0.330	0.328	0.416	0.407	0.517	0.503	0.404	0.400
Atkinson ε=1	0.409	0.378	0.596	0.578	0.684	0.664	0.814	0.792	0.689	0.688
Theil	0.259	0.239	0.346	0.353	0.485	0.478	0.597	0.582	0.551	0.533

Source: author's own calculation from the NLSS (1996) data.

3.9 The household Wealth Structure in the Development Regions of Nepal

Table 3.7 provides the structure of wealth for the development regions in 1995 and 1996. The wealth is estimated for the households of development regions in the same way for the rural and urban Nepal. The average net wealth in all development regions has increased between 1995 and 1996. Wealth of the central region is made up of a higher part of the value of dwellings, while the value of the landholdings contributes to the highest share in the wealth formation for other regions. It is clear that since the majority of the population earns their living through farming, the land is their capital and people tend to invest their saving in landholdings in order to increase their production. Although the value of dwellings represents the highest share for the central region, the value of landholdings also seems much more important, given that the average value of landholdings is the highest among all development regions. Hence, one of the important economic assets in all development regions of Nepal is the ownership of land. As ownership of land mainly determines the standard of living of the rural households, people tend to invest their savings in land rather than other sectors.

Dwelling seems to be a less important asset than land ownership for all development regions, except for the central region. The value of other assets comprises a high amount in the central development region and the western development region. This confirms that the households of these regions also have been influenced by financial and stock markets. The values of livestock and farm assets have little weight in the composition of wealth for the households of central and western development regions but; in other regions these components have a relative high weight. Livestock and farm assets are an integral part of the farming system. The Nepalese household wealth at nominal value grew in all regions between 1995 and 1996.

Table 3.7 Mean Wealth of the Development Region's Families in Nepal (1996)
In NC = Nepalese currency 1996 price (1$ =57NC 1996)

	Far-western		Mid-western		Western		Central		Eastern	
	1995	**1996**	**1995**	**1996**	**1995**	**1996**	**1995**	**1996**	**1995**	**1996**
Dwellings	42,937	42,937	45,191	45,191	183,562	183,562	402,206	402,206	50,482	50,482
Landholdings	126,590	126,186	161,119	161,985	250,200	250,095	302,269	295,377	167,008	166,018
Enterprises	2,163	2,239	11,667	17,347	31,986	32,548	26,431	30,448	11,579	11,087
Farm Assets	2,147	2,365	1,906	1,934	1,205	1,252	744	766	2,609	2,659
Inventory	790	10,401	1,452	10,479	10,768	25,607	12,999	37,413	2,109	9,772
Livestock	16,064	18,295	13,291	12,935	9,701	10,577	7,344	7,975	11,236	11,907
Lending	802	804	3,004	2,875	3,912	4,156	3,380	3,068	1,790	1,778
Other Assets	11,726	10,173	22,746	25,271	59,772	72,368	151,317	161,974	28,094	31,350
Borrowings	5,460	5,413	10,064	10,193	19,017	19,136	21,301	22,402	14,796	15,667
Net Wealth	197,775	207,986	250,314	267,824	532,090	561,023	885,388	916,825	260,112	269,386

Source: author's own calculation from the NLSS (1996) data.

The households of the central development region are wealthier by more than four folds compared with the households of the far-western development region and by more than three folds when compared with households of the mid-western and eastern development regions. The households of the western development region are wealthier by approximately two folds when compared with the households of three poor regions. The value of enterprises for the households in the central and western development regions is higher; suggesting that the families in these regions have alternative income resources apart from the agriculture income. Hence these families are less dependent on agriculture.

In this section we found that the families of the western development region hold the least average wealth and the inequality of wealth is also low compared with other regions. As we examine the level of average wealth, the families of the mid-western and eastern development

regions have slightly higher wealth than the far-western development region. If we carefully examine further, the level of average wealth in the households of the western and central development regions is much higher than other regions and the inequality of wealth is much higher. It seems that the wealthier development regions face higher inequality, while the poor development regions have better distribution of wealth.

Why is the distribution of wealth more equal in far-western region than in others? Here we put forward some possible explanations:

1) Population density is very low in the far-western region. This means more arable land and pasture land are available for the households. Given that the major part of wealth is the value of land and the distribution of land in this region is more equal than others, consequently the distribution of wealth is less skewed.
2) Most of the households are poor and the wealthiest households also do not hold much wealth. This causes less fluctuation in holding wealth.
3) Although the size of landholding is high in this region, the level of productivity is low due to the lack of farming infrastructure such as irrigation system, roads, and the financial institution, which may play an effective role to the production process. Furthermore, this region has less rainfall, which has further hindered the progress in agro-economy. The market activities are also low and people are very poor. The richest feudalists are not attracted to this region and the level of feudality is also lower. This has reflected upon the lower inequality in wealth distribution.
4) A high proportion of young people from poor households emigrates to India in search of work. Their income possibly fills the gap between the rich and poor families, which results in lower inequality of wealth.

These are some reasons why the household wealth distribution in far-west development regions of Nepal is more equal than in other regions.

3.10 The Household Wealth Distribution in the Ecological Regions of Nepal

As we have already pointed out Nepal is a Mountainous country and the terrain is extremely diverse within a relatively small area of less than 150,000 sq. km. The altitude ranges from less than 100m to 8848m the highest point on Earth, Mount Everest. Geographically, the country is divided into three ecological regions: Mountain, Hill and southern flat land called *Terai*. In this section we examine the distribution of the household wealth in these regions. We begin with the same percentile shares and inequality indexes that we used in previous sections in order to analyse the concentration of wealth. We provide the summary of these indexes in Table 3.8.

The households of the Mountain, Hill, and *Terai* regions have experienced a small decrease in their shares of wealth for the top 5%, 10%, 20%, and 40% between 1995 and 1996. On the other hand the bottom 60 percent of the households in all regions has slightly increased (around 0.6 percent in Mountain, 0.5 percent in Hill, and 0.3 percent in the *Terai* region). As a result, the inequality indexes have decreased between 1995 and 1996. For example, the Gini index has decreased by 2 percent points in the Mountain regions and it has decreased by one percent point in other regions.

Among these three regions the household share of wealth of the top 5%, 10%, 20%, and 40% are large in the Hill area compared with other regions. The top 5 percent of the Mountain region held only around 33 percent in 1995 and 31 percent in 1996. These household shares of wealth are smaller than the households of other regions. For example, these household shares of wealth are smaller by 8.13 percent points compared with the *Terai* region household shares of wealth for 1996. This gap is even lager between the Mountain and Hill regions. The other top percentile shares of the Mountain region are much smaller than the other regions. The bottom 60 percent of households seem to be better off in the Mountain region than other regions because its share of wealth is approximately 21 percent for 1996. However, it is only the relative share and, hence, it is not clear whether they are better off than the other regions' households. This will be clear below when we analyse the absolute average share of family wealth. However the distribution of wealth in the Mountain region is far better than the other regions. The Gini

index for this region is 0.53 in 1996; which is smaller by 21 percent points compared with the Hill region and is smaller by 13 percent points against the *Terai* region. The other inequality measures also show a smaller inequality for the Mountain region compared with the other regions (see Table 3.8). Although the inequality of wealth distribution has decreased between 1995 and 1996, it is still large for the Hill region compared with other regions.

Table 3.8 Concentration of Wealth in the Ecological Region's Families in Nepal (1996) (Percentage share of wealth and the inequality ratios)

	Mountain		**Hill**		**Terai**	
	1995	**1996**	**1995**	**1996**	**1995**	**1996**
Top 5%	32.83	30.83	50.86	49.96	39.64	38.96
Top 10%	45.16	43.34	67.03	65.94	54.30	53.51
Top 20%	60.18	59.14	83.18	82.29	71.85	71.20
Top 40%	79.41	78.82	93.51	93.00	89.03	88.75
Bottom 60%	20.59	21.18	6.49	7.00	10.97	11.25
Gini	0.547	0.534	0.749	0.741	0.669	0.663
Atkinson ε=0.5	0.252	0.238	0.495	0.480	0.393	0.386
Atkinson ε=1	0.454	0.431	0.775	0.749	0.695	0.687
Theil	0.286	0.264	0.585	0.567	0.458	0.445

Source: author's own calculation from the NLSS (1996) data

3.11 The Household Wealth Structure in the Ecological Regions of Nepal

We present the average household wealth and its compositions with absolute values in Table 3.9 for the Mountain, Hill, and *Terai* regions. The amount of the average wealth has increased in all three regions between 1995 and 1996. The household wealth of all regions is composed mainly of the value of dwellings and landholding. In the Mountain region, the

livestock also seems to be important in the formation of wealth, while in the Hill region, the other assets and enterprises are also important components. The household wealth of the Hill region is around three times higher than that of the *Terai* region and it is around five times higher than that of the Mountain region for 1995 and 1996. Although the value of enterprises in the Mountain region is small, it is an important component because Mountain families do not have sufficient agricultural production. The traders lack the sufficient investment, as can be observed from the value of enterprises, which is very low. Therefore, most of the Mountain households are poor; they hold the least wealth compared with other households of the Hill and *Terai* regions.

Table 3.9 Mean Wealth of Ecological Region's Families in Nepal (1996)
In NC = Nepalese currency 1996 price (1$ =57NC 1996)

	Mountain		Hill		Terai	
	1995	**1996**	**1995**	**1996**	**1995**	**1996**
Dwellings	32,234	32,234	357,547	357,547	63,495	63,495
Landholdings	93,935	95,277	285,986	281,122	197,217	195,753
Enterprises	6,796	6,713	32,594	36,706	7,041	7,245
Farm Assets	316	342	375	387	3,485	3,608
Inventory	570	9,439	13,590	37,921	1,888	8,138
Livestock	13,349	15,778	9,239	9,910	10,381	10,672
Lending	1,712	1,728	4,232	4,113	1,213	1,121
Other Assets	12,618	11,006	134,468	150,480	24,805	22,699
Borrowings	8,415	9,530	22,116	22,732	11,627	12,146
Net Wealth	153,116	162,987	815,928	855,452	297,898	300,585

Source: author's own calculation from the NLSS (1996) data

The Mountain region is characterised by rugged topographic conditions and economic activities are extremely limited. This region is sparsely populated. The farming activity exists

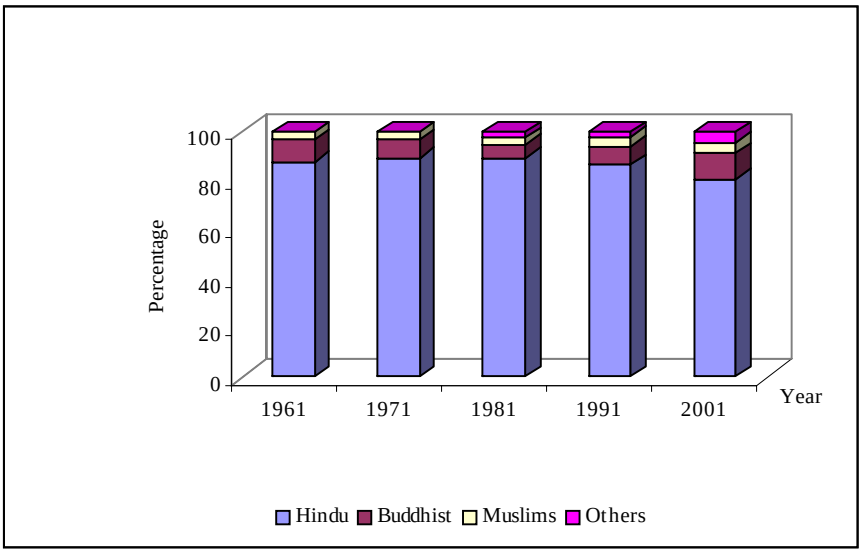
only in the low-lying valleys. Given that their heavy dependence on herding and trading, the value of livestock is relatively high in this region. The traders migrate seasonally between highlands and lowlands, buying and selling goods and commodities in order to generate much needed income and to secure food supplies. The average wealth in this region is very low and the inequality of wealth is also low compared with other regions, suggesting that most of the households are poor in terms of wealth.

The density of the population in the Hill region is very high. The agriculture is the predominant economic activity supplemented by livestock raising, foraging, and seasonal migrating of labourers. The vast majority of the households living in the Hills are land-hungry. The poor economic situation is due to lack of sufficient land. Furthermore, the acute inequality of land distribution has caused high inequality of wealth distribution in this area. The bonded labour *Haliyas* in rural Hills are some forms of debt bondages found. This might be another reason why the distribution of wealth is highly unequal in this region.

3.12 The Household Wealth Distribution of Religion Groups of Nepal

Nepal is unique in being the world's only country which is considered a Hindu state. Nepal is constitutionally a Hindu kingdom with legal provisions of no discrimination against their religion. The Hindu population in Nepal has consistently been over 80 percent since the 1950s. The second largest religion in Nepal is Buddhism; practiced by about 11 percent. The Muslim religion consists of about 4 percent and the rest are Christian, Jain and others. The following chart represents the population distribution by religion in the last 40 years.

Figure 3.1 Population distribution by religion in Nepal (1961-2001)



Sources: Author's own estimation from the data of Nepal Population Report 2001

The social values that are present in the Nepalese society today are influenced, to a certain extent, by the Hindu religion; which dates back centuries in time. Nepal was, for a long period, the mixing grounds for migrating groups of people from the Indian plains in the south and the Tibetan plateau in the north. People from either region brought in and implemented their system of beliefs, culture, and technology in the various regions where they ultimately settled. The dominance, however, of one race over the other is evident in the social and religious values in today's Nepal, which also reflects on the realm of present day politics and economics. The historical aspect is important in order to understand the current situation of wealth distribution among the religion of the family in Nepal.

Table 3.10 shows the household wealth distribution for 1995 and 1996 within the religion groups. The top percentiles of the Hindu and Buddhist households have experienced a decrease in their share of wealth between 1995 and 1996. Similarly, the top 20 and 40 percentiles of Muslim households have also decreased but the top 5 and 10 percentiles have experienced an increase of wealth share for the same period. The household wealth share of the

bottom 60 percent has increased. As a result the distribution of wealth has improved for all three groups of households. Hindu and Buddhist families have improved their wealth distribution by around 1 percent of the Gini index. Muslim families also experienced a small reduction according to the Gini index. The other measures used in this study clearly show a decrease in inequality of wealth for Muslim households. While the household wealth share of other religions has slightly increased for the top percentiles except for the top 40 percent and it has increased for the bottom 60 percent. Wealth distribution has worsened in Other (religion) households between 1995 and 1996. The top 5 percent household wealth share is more concentrated for the Hindu families followed by Buddhist, Others and Muslim families but the top 10 percent household wealth share is more concentrated for Buddhist families. All other top percentile shares of wealth for Buddhist families are higher compared with the families of other religions (see Table 3.10). Thus wealth distribution of the Buddhist families is more unequal; followed by the Hindu households. Wealth for the Muslim households is more equally distributed; this is not surprising since the concept of equality is stronger for them, and since their range of profession is rather limited. Islam also has special laws of inheritance.

Table 3.10 Concentration of Wealth by Religion of Nepal (1996)
(Percentage share of wealth and the inequality ratios)

	Hindu		**Buddhist**		**Muslim**		**Others**	
	1995	**1996**	**1995**	**1996**	**1995**	**1996**	**1995**	**1996**
Top 5%	52.62	51.91	51.56	51.23	26.04	26.75	40.07	48.23
Top 10%	67.25	66.49	70.38	69.47	43.17	43.57	59.65	64.27
Top 20%	80.80	80.13	86.95	85.91	64.28	64.14	80.22	80.42
Top 40%	92.03	91.62	95.89	95.41	85.55	85.30	91.91	91.74
Bottom 60%	7.97	8.38	4.11	4.59	14.45	14.70	8.09	8.26
Gini	0.735	0.728	0.776	0.770	0.603	0.602	0.704	0.712
Atkinson ε=0.5	0.475	0.464	0.542	0.528	0.322	0.322	0.426	0.437
Atkinson ε=1	0.753	0.733	0.824	0.805	0.623	0.625	0.688	0.687
Theil	0.603	0.588	0.605	0.591	0.294	0.294	0.445	0.489

Source: author's own calculation from the NLSS (1996) data

3.13 The Household Wealth Structure of Religion Groups of Nepal

Table 3.11 provides the households wealth structure according to religion for 1995 and 1996. Wealth estimated for the household in this section is similar to rural and urban Nepal. The average net wealth for all religion families has increased between 1995 and 1996. Wealth is composed by higher part of the values of dwellings and landholdings. The average amount of other assets (including savings) is also high except for Muslim households. It seems that the Muslim households are the least income-earning group of Nepal and they have least savings. The average value for the Buddhist household wealth is much higher than others, suggesting that they are the wealthiest families of Nepal. It is noteworthy that all households are associated in farming. The entrepreneurship is relatively high for the Buddhist households compared with others.

Table 3.11 Mean Wealth of for the Families Wealth by Religion in Nepal (1996)
In NC = Nepalese currency 1996 price (1$ =57NC 1996)

	Hindu		Buddhist		Muslim		Others	
	1995	1996	1995	1996	1995	1996	1995	1996
Dwellings	195,571	195,571	471,733	471,733	72,890	72,890	55,035	55,035
Landholdings	233,293	230,532	284,658	279,281	92,521	91,327	107,188	107,188
Enterprises	19,278	21,079	37,614	44,525	7,651	9,087	9,698	10,419
Farm Assets	1,548	1,610	384	396	3,117	3,069	206	218
Inventory	6,912	21,986	20,092	50,083	1,542	7,274	6,422	19,330
Livestock	10,687	11,465	7,434	8,115	4,992	5,150	6,286	7,010
Lending	2,717	2,554	5,259	5,790	999	1,078	718	864
Other Assets	72,493	80,608	181,145	181,257	28,208	29,110	97,895	114,226
Borrowings	13,724	13,982	50,314	55,061	14,253	14,766	9,870	11,271
Net Wealth	528,780	551,423	958,005	986,119	197,667	204,220	273,578	303,021

Source: author's own calculation from the NLSS (1996) data

We find that the household wealth distribution of the Buddhist and Hindu families is extremely unequal and that the Muslim wealth distribution is more egalitarian. The Buddhist families are wealthy; and their level of wealth is much higher than other religion families. The two main religions Hindu and Buddhist have intermingled to the extent of influencing each other not only in the past but also up to modern times in Nepal. They celebrate the same festivals, albeit these may have different meanings and connotations for each religion group. Thus, they show a similar pattern of social life. Both religion groups face a high inequality of the household wealth.

The hierarchy in the Hindu social structure is based upon the axiom of purity in the caste. The caste system is an integral part of the Hindu society, which has highly influenced the economic activities of the families. *Bramins*, *Chetris*, *Vaisyas* and *Sudras* are four basic divisions of the people in this society. *Bramins* are scholars who belong to the top class. The second level is composed of *Chetris,* originally the caste of Kings, princes, rulers, warriors, etc. The *Vaisyas* are the traders, peasants, artisans, cattle breeders etc. The fourth class is *Sudras* who are the servants of the three upper groups. The concept of untouchables among various castes comes from this concept of purity and pollution, as interpreted and enforced by the *Bramins*. The *Sudras*, being the least pure, were not allowed to come in contact with members of the other caste. The dominance of the higher classes of the Hindu society over the lower classes is evident in the socio-economic and religious values in today's Nepal. This is also reflected on the distribution of wealth.

Muslims are found to be the least wealthy families with the least average household wealth in the sample and the distribution of their wealth is less unequal. The Muslim laws concerning the inheritance of wealth may have influenced the distribution of wealth in Nepal. Given that the Muslim families cannot inherit from the non-Muslim families, it is less probable than in other religion group that intergenerational transfer of wealth can cause a rise in inequality of wealth. Furthermore, the level of Muslim wealth is very low (compared with the household wealth of other religions); probably this is one of the reasons why the level of wealth inequality is also low.

Box 3.1: Islam's laws of will and inheritance

Islam has special laws of inheritance. The Qur'an and Sunnah have specified the relatives who may inherit and have also specified their shares in the inheritance. A person is free to give whomsoever he/she wills during his or her life but after death every thing has to be distributed according to the laws of Allah. One can consult books on Islamic laws of inheritance to learn more details, but basic principles are as follows:

All outstanding loans or debts should be paid before the distribution of one's wealth. The will of the deceased should be followed very strictly unless it is against the laws of Allah.

A person has a right to donate up to one third of his or her wealth to someone or some institution according to his/her however a person cannot give more to someone who is supposed to inherit under the laws of inheritance. The rest of the inheritance must be distributed according to the rules of the Shari'ah.

Only a Muslim can inherit a Muslim. Non-Muslim relatives cannot inherit from Muslims, nor inherit from their non-Muslim relatives. If a Muslim has a non-Muslim spouse or some other relatives and he wants to give something to that person then he must make a special will for that person and it should not be more than one third of his/her wealth. If a non-Muslim relative writes a Muslim's name among his/her heirs and leaves something for a Muslim, a Muslim may take it as a gift, but should not claim it as a right in inheritance.

Only legitimate children can inherit from a person. Illegitimate or adopted children cannot inherit under the Islamic law of inheritance.

A murderer or a person who was accessory to the murder of a person cannot be a beneficiary of person whom he/she murdered.

Among the surviving relatives spouses, parents and children always inherit. If any of them is predeceased then other relatives receive their shares, but the rule is that the near relatives exclude those who are a step distant from them in their relation to the deceased.

All shares must be according to the designated and specified percentage.

Source: Will and Inheritance (http://www.pakistanlink.com/religion/97/re02-28-97.html)

3.14 The Household Wealth Distribution of Ethnic Groups of Nepal

Around 1200 A.D., during the rise of the Muslim invasion, there was an important arrival of the Hindu migrants in Nepal. These Hindus were mainly of the Indo-Aryan race that had achieved significant progress in their lifestyle. With their superior technology of production and art of war, they had dominated over the migrant dwellers from the north (of *Tibeto-Mongolian* race). By the 14th century, they were able to establish petty feudal kingdoms through a gradual assimilation of tribal communities. The Aryans adopted the newcomers (non-Hindu) into their constitution as the *Vaisya* caste of their social hierarchy. The Kingdom of Nepal was instituted, circa 1800 A.D., through the process of unification of various tribal and ancient states scattered across Nepal. This dynasty followed the same Hindu aristocratic system.

Nepal is a multiethnic and multilingual state and all Nepalese, irrespective of their religion, race, caste or tribe, collectively constitute the nation. The NLSS (1996) has distinguished fifteen ethnic groups in Nepal. They are *Bramin, Chetry, Newar, Gurung, Rai, Magar, Limbu, Tamang, Tharu, Yadav/Ahir, Muslim, Sarki, Kami, Damai*, Others.

Table 3.12 presents the distribution of wealth for 1995 and 1996 within the specified ethnic groups of Nepal. We first compare the wealth by some percentile measurements and other inequality measurements for the household wealth. Then we provide and explain the structure and level of the household wealth for these groups in Table 3.13 for 1995 and 1996.

With due precaution, we may say that *Muslim* household wealth share for the top 5 percent and top 10 percent have increased but it has decreased for the top 20 percent and the top 40 percent households between 1995 and 1996. However the bottom 60 percent of the family has gained their share of wealth, as a result the inequality has decreased in 1996 compared with previous year.

Wealth share of the top 5%, 10% and 20% household have increased for Limbu caste between 1995 and 1996. The poorest 60 percent household have also gained their wealth share while the only loser is the second quintile household. Despite a small improvement in the poor household wealth share, the aggregate inequality of wealth distribution has increased due to higher transfer of wealth share from the second quintile to the top tail of the distribution.

Tharu family wealth has decreased for the top 10%, and 20% households, while the second quintile share has increased. The lowest 60 percent households have gained their share of wealth. The top 5 percent household's share of wealth for *Tharu* has remained almost constant (an insignificant increase).

Table 3.12: Concentration of Wealth among Various Ethnic Families of Nepal (1996)

Percentage Share of Wealth and Inequality Ratio

1995	Bramin	Chetri	Newar	Gurung	Rai	Magar	Limbu	Tamang	Tharu	Yadav/ Ahir	Muslim	Sarki	Kami	Damai	Others
Top 5%	48.56	54.23	37.49	43.11	45.18	58.02	24.97	54.17	38.30	18.48	25.71	38.31	45.25	33.25	53.09
Top 10%	62.80	67.95	56.29	62.71	62.23	69.77	36.96	66.79	53.91	33.24	42.62	50.82	55.02	45.34	66.08
Top 20%	77.88	80.00	73.47	82.21	74.86	78.31	56.51	81.09	70.21	53.35	62.19	67.60	69.68	59.23	80.56
Top 40%	90.56	90.68	91.22	93.37	88.76	89.25	76.50	92.17	87.74	77.55	84.52	86.54	86.26	80.00	93.39
Bottom 60%	9.44	9.32	8.78	6.63	11.24	10.75	23.50	7.83	12.26	22.45	15.48	13.46	13.74	20.00	6.61
Gini	0.71	0.72	0.69	0.74	0.69	0.71	0.49	0.73	0.66	0.49	0.60	0.62	0.63	0.56	0.73
Atkinson ε=0.5	0.43	0.45	0.42	0.48	0.41	0.45	0.20	0.46	0.38	0.20	0.32	0.33	0.34	0.29	0.48
Atkinson ε=1	0.70	0.70	0.71	0.79	0.69	0.69	0.36	0.72	0.67	0.40	0.63	0.58	0.59	0.60	0.78
Theil	0.56	0.60	0.42	0.51	0.43	0.64	0.20	0.59	0.44	0.18	0.29	0.34	0.42	0.28	0.62
1996	**Bramin**	**Chetri**	**Newar**	**Gurung**	**Rai**	**Magar**	**Limbu**	**Tamang**	**Tharu**	**Yadav/ Ahir**	**Muslim**	**Sarki**	**Kami**	**Damai**	**Others**
Top 5%	48.19	52.81	36.53	46.14	48.85	58.06	25.81	53.62	38.31	18.41	26.39	38.05	44.07	31.56	51.62
Top 10%	61.87	66.86	55.09	64.65	64.01	69.33	37.80	65.86	53.66	33.35	42.99	49.96	53.59	43.28	64.71
Top 20%	76.83	79.17	72.24	82.67	77.21	77.86	57.03	80.27	69.97	53.30	61.99	66.42	68.68	58.08	79.62
Top 40%	89.89	90.18	90.31	93.64	90.05	88.69	76.33	91.40	87.82	76.94	84.30	85.87	85.60	79.81	92.72
Bottom 60%	10.11	9.82	9.69	6.36	9.95	11.31	23.67	8.60	12.18	23.06	15.70	14.13	14.40	20.19	7.28
Gini	0.698	0.713	0.678	0.744	0.704	0.707	0.491	0.721	0.655	0.490	0.599	0.612	0.617	0.549	0.725
Atkinson ε=0.5	0.418	0.439	0.399	0.487	0.431	0.440	0.200	0.448	0.375	0.202	0.320	0.320	0.325	0.269	0.466
Atkinson ε=1	0.672	0.676	0.681	0.766	0.696	0.669	0.371	0.697	0.666	0.394	0.627	0.571	0.558	0.533	0.765
Theil	0.539	0.579	0.403	0.522	0.478	0.638	0.203	0.578	0.441	0.181	0.294	0.326	0.401	0.256	0.596

Author's own calculation from the NLSS (1996) data

Gurung and *Rai* have experienced a transfer of wealth share from poor to rich; while the rest have experienced on the contrary between 1995 and 1996. *Limbu*, *Yadav/Ahir*, *Muslim* and lower caste groups have low relative inequality of wealth distribution compared with other ethnic groups for both year 1995 and 1996. *Gurung* households, on the other hand, face the extreme wealth inequality followed by *Chetri*, *Bramin*, *Tamang*, *Magar*, *Newar*, etc. Later we draw some reasons why some groups exhibit a less unequal distribution and some groups exhibit an extreme unequal distribution of wealth.

Table 3.13 provides the average net wealth and the components of wealth of Nepalese ethnic households for 1995 and 1996. The average net wealth has increased for all ethnic households between 1995 and 1996. Newar households are the wealthiest groups, with average wealth of Rs 1,545,347 followed by *Bramin*, *Gurung*, *Chetri*, and so on. The lower castes households (*Kami*, *Damai* and *Sarki*), *Limbu*, *Muslim* and *Yadav/Ahir* are found to be poor households in terms of wealth in Nepal. Wealth of Newar household is almost double their counterparts (*Bramin* second wealthier households) and it is more than 14 times higher compared with the poorest household wealth (*Damai*) in absolute value (average). As in the previous sections, we find that the values of landholding and dwellings include a higher part of the household wealth in Nepal. For *Gurung*, *Newar*, *Tamang* and *Magar*, the value of dwellings contains a higher value than the landholding value in their wealth, while for the rest of the households, landholding value exceeds the value of dwellings. It probably suggests that the more people become wealthy; they invest more in dwellings because the higher dwellings represent a higher status of living in the Nepalese society. However the landholding without doubt is an economic certainty for the household in an agrarian society like Nepal (with more than 80 percent of the population is employed in this sector).

The lower caste groups, *Limbu*, *Muslim*, *Yadav/Ahir* are poor in terms of wealth as a consequence of their land scarcity. Given that these families hold less land, they have little chance to improve their situations. In fact other sectors (industry and services) of the economy offer less opportunity to these back-warded households, since these families possess less education and skills. The land redistribution may play an important role in the short run and the public policies in education may improve their situations in the long run. The value of other assets for *Newar* is higher; followed by *Bramin*, *Gurung* and so on, suggesting that the savings (included in other assets) increase as the family becomes wealthier. Our analysis concludes that the *Newar* households are more entrepreneurial than others.

Table 3.13: Mean of the Family Wealth for the Ethnic Groups/Castes of Nepal (1996)

In NC = Nepalese Currency 1996 Price

1995	Bramin	Chetri	Newar	Gurung	Rai	Magar	Limbu	Tamang	Tharu	Yadav/ Ahir	Muslim	Sarki	Kami	Damai	Others
Dwellings	269995	181992	677551	343504	51634	143808	57611	192714	50127	51673	73826	47054	42406	42729	106674
Landholdings	353151	290974	457046	144823	88975	134585	80662	137512	216023	150664	93891	88624	67491	45827	122597
Enterprises	25967	23042	58774	39256	2714	1924	2093	16911	3107	1828	7931	413	1613	1393	12505
Farm Assets	969	2978	681	169	313	243	288	330	4819	1811	3276	208	173	302	1090
Inventory	7648	6335	26386	28358	891	4814	2512	5057	1107	1359	1556	828	394	1409	3718
Livestocks	12971	14494	3883	8149	9976	11843	7895	8499	14290	14364	5001	6220	6649	5514	7766
Lending	4382	2829	8257	5524	411	637	1068	905	434	530	1005	677	598	38	1509
Other Assets	137154	50369	273961	49580	51646	69232	6143	42951	62461	13434	28379	6229	2434	505	29674
Borrowings	17244	13757	34544	20373	9951	6478	9779	13194	6946	14507	14487	4281	7627	6056	21333
Net Wealth	795024	559256	1471994	598990	196609	360608	148493	391685	345421	221155	200377	145971	114132	91659	264201
1996	**Bramin**	**Chetri**	**Newar**	**Gurung**	**Rai**	**Magar**	**Limbu**	**Tamang**	**Tharu**	**Yadav/ Ahir**	**Muslim**	**Sarki**	**Kami**	**Damai**	**Others**
Dwellings	269995	181992	677551	343504	51634	143808	57611	192714	50127	51673	73826	47054	42406	42729	106674
Landholdings	341227	289646	450423	144658	89868	135345	81217	137603	216326	149889	92813	88687	67056	46577	122819
Enterprises	27366	23342	65479	44363	2857	2509	2207	17958	3203	3284	9395	582	1941	1714	17232
Farm Assets	1026	3065	691	197	304	266	321	340	4993	1996	3229	351	177	307	1134
Inventory	26956	22711	71049	50395	8247	16575	13532	16570	7266	6533	7350	6003	4711	8163	12006
Livestocks	14319	15982	4507	8271	10244	11996	8855	9697	13254	15575	5164	7569	6703	8237	7912
Lending	4493	2858	7101	5911	515	829	895	967	467	619	1085	788	502	43	1359
Other Assets	150970	51875	302616	102282	77514	81134	6653	47471	59194	14263	29330	7023	2794	1043	20465
Borrowings	17840	13708	34070	19747	12058	7142	12887	14399	6484	15554	14963	5315	8915	6476	23427
Net Wealth	818511	577761	1545347	679834	229125	385314	158404	408920	348347	228277	207228	152742	117375	102337	266174

Author's own calculation from the NLSS (1996) data

The poor households do not have sufficient land to grow enough food; therefore these families tend to breed animals, although on a small scale, in order to survive as our data analysis envisages. Concerning the inventory (stock of durables), the Nepalese households tend to keep the basic necessary goods. As they become wealthier, they increase their stock.

3.15 Ethnic Groups of Nepal and Causes of their Wealth Inequality

3.15.1 *The Nepalese*

They are the major ethnic group in Nepal, and speak Nepalese, the country's official language. The Nepalese have many racial, cultural, and linguistic similarities with the people of northern India. Their domestic and religious practices are also patterned after the higher Hindu castes of India. Most of the Nepalese live in small villages in hilly terrain and are accustomed to travelling long distances on foot. Their population consists primarily of three castes, or social classes: the *Bramin* (priests and scholars), the *Chetry* (rulers and warriors), and the *Sudras* (labourers, servants, and untouchables) as discussed in Hindu religion households. The 1991 census showed that a combined population of *Bramin* and *Chetri* make up about 37 percent of the total population, whereas they hold more than 81 percent of the leadership positions in several areas of governance, such as judiciary, executive, legislature, public administration etc, and political leaders. The untouchables perform the lowest level of work considered in the society, such as ironsmith (*Kami*), tailoring (*Damai*) and shoemakers (*Sarki*) who belong to the untouchable ethnic groups of Nepal. The untouchables are considered to be unclean and excluded from the ritual activities by other classes of Hindus. Most of the Nepalese are farmers. They live in small rural settlements. Houses are usually made of mud-brick with thatch or tin roofs. We have seen above that *Bramin* and *Chetri* households face a high inequality of wealth distribution, while the untouchables have the least inequality of wealth distribution. *Bramin* and *Chetri* are two of the wealthiest groups of Nepal and the major cause of their inequality of wealth is due to an uneven land distribution. Land distribution within each ethnic group was found to be extremely skewed, which has resulted the high inequality of their wealth distribution. On the other hand the untouchable groups are extremely poor in terms of wealth.

This was created to some extent by Hindu social structure, as they are the servants of other high caste households. This has impeded in the advancement of their economic activities and these families hold a small quantity of land. They are limited in their traditional labour activities with which they can hardly manage to survive. Furthermore, these families are facing bonded labour (*Haliya*, we refer to the section on rural and urban wealth distribution) in the sense that they are bound by debt to work for landlords. The majority of *Haliya* are untouchables who have less land and are obliged to work for the high caste Nepali landowners. As they have limited assets, the inequality of wealth distribution is also low.

3.15.2 *The Newar ethnic group and causes of their wealth inequality*

The *Newar*, one of the oldest ethnic groups in Nepal, are the country's earliest inhabitants. Although the *Newar* are scattered throughout Nepal, they are primarily concentrated in the Kathmandu Valley. While most of the *Newar* are Hindu, there are also a significant number of Buddhists. Both of these religious groups have caste systems (social classes) based on occupations. The Kathmandu Valley was located at the centre of the India-Tibet trade route, and most of the *Newar* are skilful merchants and traders. Many others have government jobs, and some are farmers. Most *Newar* settlements are built on elevated ground surrounded by farmland. The settlements look like small cities. Rows of three-story brick buildings stand along narrow lanes. The settlements have many ornate Buddhist and Hindu temples, built in medieval age and suggesting that the *Newar* were wealthy in the past before the reunification of Nepal. Kathmandu Valley was a *Newar*'s nation before the reunification of present Nepal in the eighteenth century. These latter arrivals, the *Shahs* of *Gorkha* and other *Chetry* and *Brahmans*, dominated the valley in short order and set about to unify the country politically, while the *Newar* underwent a significant process of change.

During the course of history, a considerable amount of cultural influence has been exerted on the *Newar* culture by various groups of immigrants. These immigrants were ultimately absorbed into the *Newar* community. The *Mallas* ruled from the thirteenth to the eighteenth century. They brought with them the influence of a Hindu socio-religious base in the *Newar* society. Scholars believe that the *Newar* were predominantly Buddhist in the early

period. Later, *Brahmin* immigrants from India brought Hinduism with them. Because of the business oriented identity, *Newar* have managed to remain lesser dominated by the ruling elite. They even managed to secure important positions in the administrative structure of Nepal. In addition, Kathmandu, the capital city of Nepal, is the base of the major *Newar* and they have greater access to the privileges that the modern world has provided. *Newar* outside the Kathmandu valley do not share the same privileges as their Kathmandu counterpart, but with their quality of being good traders, they have managed to remain less subdued by the higher caste.

As we have seen from our data analysis that the *Newar* are the wealthier people of Nepal, but characterised by a high inequality of wealth distribution. Given that they are historically richer and having good skills in business they maintained their high level of wealth. However, the influence of the Hindu religion and its caste system has aggravated the unequal distribution of wealth. Furthermore, the families living outside the Kathmandu Valley are disadvantaged households in the *Newar* ethnic groups, which have created a large disparity pertaining wealth holdings.

3.15.3 *The Mongoloid ethnic groups and causes of their wealth inequality*

The Mongoloids category is a vast one, for this categorization provides a common racial bond for the numerous divergent ethnic groups of Nepal, all of whom trace their origin to the north. By now most of the ethnic groups relate to the Hindu religion. These people have had very little privilege in the occupation at the administrative level. These people reside in the remote Hills and Mountains of Nepal, where development has been very slow and the illiteracy rate is very high.

3.15.3.1 *Gurung*

Gurung are primarily to be found in Nepal's middle Hills and some live on the higher slopes of the high Mountains. The majority of their villages are situated on the Mountain slopes at elevations between 1,000 and 2,000 meters. The origin of the *Gurung* is unknown, however, they are believed to have come from Tibet to settle in Nepal. Most of the *Gurung* are farmers.

Despite the fact that they are hard workers, most of them are very poor. Their main food sources are millet, maize, and some rice. In the northern part, the *Gurung* raise sheep and goats. Wool is used to make woven crafts, which are sold in tourist markets. The *Gurung* live in villages built high on the ridges. They are predominantly animists (they believe that non-human objects have spirits), and have been strongly influenced by Hinduism and Buddhism. Some families are in good positions in the Gorkha regiment in England and these families have high earnings and savings; while the rest of the families are very poor. The Gorkha soldiers have increased the mean wealth of *Gurung*, but the major part of the families is poor. This has resulted in the extreme inequality in wealth distribution.

3.15.3.2 *Rai*

Although the *Rai* are scattered all over Nepal, they are particularly concentrated in the eastern part of Nepal. They are primarily rice farmers, but the men do have a tradition of migrating to the cities in search of work. As farmers, they have been limited by insufficient knowledge of technology, causing a poor yield in crops. Farmers trade any surplus crops that they may have for needed items such as kerosene and salt. They supplement these needs they set up with incomes through craftwork, tailoring etc. Collectively, *Rai* are known as very courageous, daring, and fearless people. In recent history, they have won worldwide reputation for their bravery as *Gurkhas* in the Royal Nepalese Army. This means that they are considered to be among the finest soldiers in the world. *Rai* groups live in one or two-storied wooden or stone houses with thatched roofs. The majority of them are Hindu, but there are a number of Buddhists. As the *Gurung*, *Rai* also have engaged in British army who have fuelled to grow the mean wealth of their ethnic group but major part of the *Rai* families is poor. This has led to highly unequal distribution of wealth within this group.

3.15.3.3 *The Magar*

The *Magar* are one of the oldest known tribes in Nepal, has unclear origin. They are believed to be of Tibetan descent because their language and dances are similar to those within the Tibetan culture. Some of the *Magar* live in the plains where the Himalayan Hills begin.

Others occupy the lower Hills of the *Mahabharat Lekh.* A few inhabit the high altitude Mountain areas. They are found in both Eastern and Western parts of Nepal. Most of the *Magar* are artisans, although some who own their own land have become farmers. Ninety percent of the *Magar* practice ethnic religions, while about ten percent are practising Hindu[52]. The *Magar* families got a high prize (*Birta*) in the form of land from king *Prithvi Narayan Shah* and his descendents who fought for him to reunify the present Nepal. Furthermore, some families are in good positions in the Gorkha regiment in India and England and these families have high earnings and savings, while the rest of the families are poor. This is one of the reasons for which the distribution of wealth among the *Magar* families is more unequal.

3.15.3.4 *The Limbu*

The *Limbu* are also one of the largest tribal groups in Nepal. They live mainly in eastern Nepal. Tibeto Burman language is spoken. Agriculture is the main source of income for them but the landholding is well below average for this ethnic group. Economic hardship among the *Limbu* has made it worthwhile for many of the men to join the army, both in Nepal and in India. This earns them a degree of respect, especially for those who have earned a high rank. The *Limbu* are predominantly Buddhists, but participate in many popular Hindu festivals. They are poor in terms of land, but their employment is concentrated in agriculture, which has resulted in them being poor ethnic group of Nepal. As a consequence their wealth distribution is the most egalitarian in Nepal.

3.15.3.5 *The Tharu of Nepal*

The *Tharu* are clearly Mongoloid in their facial features. They live on the edge of the forests, farming and raising livestock on the plains. Traditional *Tharu* homes are usually single-storied structures with straw roofs, their sizes depending upon the size of each family. They are traditionally animistic in their beliefs, worshipping various animals such as monkeys, snakes, and cows. Today these beliefs are overlaid with Hinduism. They are farmers and cattle breeders.

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[52] However, in NLSS (1996) they all are considered as Hindu families.

With a population of 1.19 million (6.5 per cent of the national population), the *Tharu* are one of the country's largest ethnic groups. They are indigenous to the *Terai* region from east to west and are particularly numerous in the West and Farwestern regions, which are the poorest regions of Nepal (see the section on the development regions of Nepal).

Until the 1950's, the *Tharu* endowed the lands and forest offered by nature in the *Terai* region because this region was neglected due to the risk of malarial. After the eradication of malaria, a new frontier was opened up for settlers from the Hills thereby paving the way for the marginalisation of the *Tharu* people. The new settlers would just take position of the cultivated land, for which the *Tharu* did not have legal ownership papers in their own names. The high castes settlers took advantage of the *Tharu*'s illiteracy. The *Tharu* gradually became landless and they were forced either to migrate or to work for the new landowners. The landowners did not give fair wages and the *Tharu* were forced to take loans from the high caste people and it continued to accumulate ultimately pushing them to the status of bonded labourers (*Kamaiya* see rural and urban wealth distribution). They were never able to pay back their debts to the landlords and for generations they worked for them in order to pay back interest on the loans. They were exploited economically and socially; thus they are poor in both income and wealth. These are the reasons why these families have a low level of wealth that has led to the lowest level of inequality in wealth distribution.

3.15.3.6 *Muslim*

Muslim households are relatively small in Nepal. Many *Muslim* refugees settled in Nepal after the Indo-Pakistan war that gave birth to Bangladesh. Most of the *Muslim* communities are found in western *Terai*. In rural areas most of the *Muslims* are farmers. In urban areas, they are mostly traders, shopkeepers, vegetable and fruit sellers, cobblers, tailors etc. We refer to the section on wealth distribution of religion households to understand their wealth and the causes of wealth inequality because the same *Muslim* ethnic group also refers to the *Muslim* religion in the sample, and hence, the results are the same for wealth distribution.

3.16 Conclusion

This chapter has examined the structure of household wealth and its inequality for Nepal on the basis of the household survey NLSS 1996. We extrapolated all possible information on the wealth of Nepalese families from the NLSS survey data. The main findings may be summarised as follows:

- Wealth inequality is higher compared to most of industrial countries.
- Wealth distribution of rural household is more egalitarian than wealth distribution of urban household.
- When the Nepalese households are classified according to the development regions, we find that the family wealth of the Far-western region is more equally distributed than the family wealth of the other regions for both 1995 and 1996.
- When the Nepalese households are classified by ecological regions of the country, we find that the household wealth of the Mountain region is more equally distributed than the household wealth of other regions.
- When the Nepalese families are classified by the ethnic groups, we find that wealth of *Limbu*, *Muslim*, *Yadav/Ahir*, the lower castes families more equally distributed.
- When the Nepalese families are classified by religion, then *Muslim* family wealth seems to be more equally distributed.

We found that the distribution of wealth in Nepal is extremely unequal compared with the industrial countries. Of course, wealth distribution is not directly comparable because of the different compositions of wealth, different methods of valuation, different unit values, different periods etc. For example, the financial wealth in industrial countries captures a higher proportion of wealth (Wolff, 1998[53]) while the values of dwellings and landholdings represent the main part of net wealth in Nepal. The inequality of Nepalese family wealth is to a large extent driven by the unequal distribution of land. Furthermore, social values and norms, as well as historical factors, have played an important role.

[53] Around 73% of net worth for 1983 and 77% of net worth for 1995 are captured by financial wealth in the USA.

Chapter 4

Decomposition of Income, Expenditure and Wealth Inequality by Population Class and Sources in Nepal

4.1 Introduction

In chapter two we analysed the inequality of income distribution in Nepal and compared it to its neighbouring countries (SAARC). In chapter three we analysed the inequality of wealth distribution in Nepal. To better understand income or wealth or expenditure distribution in Nepal it is also necessary to assess the levels of inequality for different factor components and population subgroups, as this will help to identify those factors that are better or worse distributed. It will also help pinpoint those groups of the population that have played an important role in creating an unequal distribution of wealth, income, and expenditure.

Herefore, in this chapter we analyse the decomposition of income (consumption) inequality for two periods (1996 and 2001) and of wealth inequality for 1996. The result should provide a comprehensive overview of income, expenditure, and wealth through time, across the regions of the country, and among the various ethnic groups of Nepal. We also analyse the decomposition of income and wealth by the sources of income and wealth for Nepalese families and individuals. First, we attempt to quantify the degree of inequality in the distribution of

income, expenditure, and wealth of all Nepalese ethnic groups and religion groups by examining the distributional issue as it applies to all the major ethnic groups in Nepal. Similarly, we attempt to quantify the degree of inequality in the distribution of wealth, income, and expenditure over the regional population of Nepal. Only in recent years have researchers been able to gain access to the micro-data sets of the Household Economic Surveys conducted by Statistics Office of Nepal. This access has enabled sophisticated methodologies to be applied to Nepalese data. The findings of the studies using such data are reliable, and of greater use to policymakers.

Our study covers two periods, 1996 and 2001, using relevant data from two household surveys. Extensive reform of the Nepalese economic policies took place during this period the broad object of which was to create conditions leading to more rapid growth with stable prices, so that the living standards of Nepalese could improve on a sustained basis. The details of the reforms are not the subject matter of this chapter, but interested readers may refer to chapter one for overview. A major aim of this chapter is to estimate the distributional issue concerning the way in which the national income, wealth, and consumption are spread out across groups in society. It is not only an aspect concerning the ethnic dimensions, since we shall also examine the regional dimensions of income, wealth, and expenditure distributions. The decomposition of inequality can be done in two ways: by population subgroups and by sources of income and wealth of the families or individuals.

The first one deals with the influence of population subgroups such as those defined by age, sex, race etc to total inequality. We disaggregate the Nepalese population in this study by geographical regions[54], by development regions[55], by rural and urban families/individuals, by religions[56] and by ethnicity or castes[57] The latter deals with different sources of income and

[54] Families/individuals are grouped by three ecological regions of Nepal: Hill, Mountain, and *Terai*.

[55] Development regions of Nepal are Central, Eastern, Western, Midwestern and Farwestern.

[56] Nepalese families are disaggregated by four religions: Hindu, Buddhist, Muslim and Others.

[57] The NLSS has recognised 15 groups: *Bramin*, *Chetri*, *Damai*, *Gurung*, *Kami*, *Limbu*, *Magar*, *Muslim*, *Newar*, *Rai*, *Sarki, Tamang*, *Tharu*, *Yadav*/*Ahir* and others (see Chapter 3 for the detail information on these groups).

wealth in total income and wealth. The impact of these sources or components on the total income or expenditures will be examined in this study. We disaggregate the total income of Nepalese households and individuals into seven sources[58]. Similarly we disaggregate the total wealth into nine sources and we finally evaluate the contribution of each component to the total inequality.

4.2 Background Information on the NLSS (1996) and HCSRN (2001) Data

This study is based on two household survey data of Nepal: the Nepal Living Standard Survey (NLSS, 1996) and the Household Consumption Survey of Rural Nepal (HCSRN 2001). The first sample is based on a national representative household survey, while the latter is based only on a survey of the rural area of the country.

4.2.1 *Income and expenditure data for 1996 from NLSS*

We have already discussed the NLSS (1996) in chapter 3 section 3.2 and, therefore, we refer readers to Chapter 3 for further details. Nor do we discuss data on wealth because it is dealt with extensively in the last chapter. In this chapter we are interested solely in the decomposition of income, wealth and expenditure on consumption of goods and services. To do so, we examine total expenditure on consumption for various goods and services reported in the NLSS (1996) and total income from various sources. The total expenditure of Nepalese households is defined as the expenses in the last 12 months on consumption goods and services. The goods and services consumed by households are converted to Rupees (Nepalese currency), expressed annually. We have disaggregated total household expenditure into three different components of consumption goods and services. They are:

[58] They are wage and salary, farm income, income from business, pension, remittance, income from home product, and others.

(i) Expenditure on food items: it is the sum of expenses on the various types of food consumed during the past 12 months (excluding tobacco and its products). The total amount also includes the values of the estimated home produced food and food received in kind (as salary or gift). The values of purchased food, home-produced food together with food received in-kind[59] are aggregated to obtain the total value of food expenditure.

(ii) Expenditure on non-food: The non-food items are expenses incurred on direct taxes, gifts and contributions, insurance premiums, remittances sent and expenditure on social ceremonies (such as births, wedding, etc.) and litigation expenses. The values of other non-food items purchased or received in-kind by the household over the past 12 months are summed to derive the total expenditure on non-food. The data for non-food expenditure include frequent non-food, infrequent non-food and the non-food home production. The yearly depreciation of durable goods is used as a flow of expenditure and is included in the non-food expenditure.

(iii) Expenditure on housing and services: This category of expenditure summarises the money spent on consumption of housing services, which is in turn based on data for the rental values of dwellings. Expenditure on utilities and amenities[60] are also included. In cases of owner occupied dwellings, consumption of housing was taken to be the annual rent that they would have had to pay for their dwelling.

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[59] The food items include grains and cereals, pulses and lentils, egg and milk products, cooking oil, vegetables, fruits and nuts, fish and meat, spices and condiments, sweets and confectionery. Non-alcoholic beverages, alcoholic beverages and miscellaneous food products that the households reported having consumed in the past 12 months were also collected (HCSRN reported).

[60] Under utilities and amenities data are collected on the household's expenditures on drinking water, garbage disposal, lighting, etc. The information on fuel for cooking, source of firewood and access to and expenses on the facilities were gathered.

Table 4.1 The average household expenditure on various components of consumption of goods and services for 1996 (in Nepalese currency)

Sample partitioned by	Food expenditure	Non food expenditure	Housing utility	Total
All Nepal	25,140	14,211	9,702	49,053
Rural	22,495	9,131	3,206	34,832
Urban	34,955	33,062	33,808	101,825
Development regions				
Central	28,619	19,054	16,389	64,062
Eastern	24,517	12,162	3,517	40,196
Farwestern	19,904	7,613	4,572	32,089
Midwestern	18,287	7,300	3,663	29,250
Western	25,400	14,028	9,044	48,472
Ecological regions				
Hill	27,946	18,777	15,721	62,444
Mountain	22,571	8,315	2,853	33,739
Terai	22,008	9,689	3,435	35,131
Religion groups				
Buddhist	30,049	21,144	20,872	72,065
Hindu	24,810	13,748	9,035	47,593
Muslim	20,553	9,465	3,149	33,166
Others	30,171	15,996	4,042	50,208
Ethnic groups				
Bramin	28,886	17,355	11,460	57,701
Chetri	23,691	13,683	7,622	44,996
Damai	20,445	6,875	3,411	30,731
Gurung	30,268	21,189	20,283	71,740
Kami	17,985	5,495	2,815	26,294
Limbu	33,969	14,000	3,500	51,469
Magar	22,005	9,027	6,608	37,641
Muslim	20,701	9,485	3,162	33,347
Newar	34,942	30,172	32,768	97,882
Others	20,810	9,938	4,711	35,459
Rai	25,285	12,635	3,150	41,070
Sarki	19,856	5,725	2,321	27,902
Tamang	24,755	12,131	5,966	42,853
Tharu	22,304	7,881	2,911	33,096
Yadav/Ahir	23,735	10,196	2,413	36,343

Author's own estimates from NLSS (1996) data

4.2.2 *Income/expenditure data for 2001 from the HCSRN*

The data are derived from the Household Consumption Survey of Rural Nepal (HCSRN) 2001 by the Central Bureau Statistic (CBS). The HCSRN (2001) was undertaken over approximately six months and was completed in July 2001. This survey was carried out to ascertain the level of well being of the families. The NLSS (1996) covered both the rural and urban areas of the country. At the same time the Nepal *Rastra* Bank (Central Bank of Nepal) 1995/96 conducted a similar survey in urban areas of the country. The urban areas of Nepal were therefore surveyed twice during this short period. This was probably the reason why CBS decided to cover only the rural part of the country in the NCSRN. Unfortunately, the urban survey has not been made available by NRB for 2001 and, which limits our study on expenditure distribution in rural areas of Nepal for this period. The NCSRN (2001) has adopted similar methodology for the NLSS (1996) limiting only the income and expenditure information. In both data, we use nominal prices as the data are tabulated by the CBS. Given that no price adjustment is made for this study, the data analysis may not exactly match the estimation reported in the CBS reports for the NLSS (1996) and the HCSRN (2001).

The HCSRN survey reports in the NLSS that , 'the price index ... had taken the rural Eastern *Terai* as the base case, *i.e.*, all consumption expenditures were adjusted so as to make the purchasing power of one rupee in the respective region comparable to that of one rupee in rural East *Terai*'. No such price index was constructed in the HCSRN.

The HCSRN covered all rural areas of the country to create a sample at the national level. The survey examined general household information, such as: expenditure on housing, utilities and amenities (ownership, rent, and expenditure on water, electricity, telephone, cooking fuel, etc), food expenses and home production, non-food expenditures and income. The survey covered a period of 12 months. The year was divided into two parts (seasons) to capture the consumer expenditure behaviour (seasonal expenditure patterns). The survey reported that the consumption pattern is quite different in these two periods of the year. In the summer season, for example, there are fewer festivals and most of the people are busy in their agricultural activities. The autumn season, on the other hand, contains significant cultural festivals like *Dashain* and

Tihar. The Autumn season, is more likely to record higher consumption expenditures on both food and non-food items as a result.

We have grouped the expenditure data into three main components of household expenses for our aim as in the NLSS data: (i) expenditure on food items, (ii) expenditure on non-food items and (iii) expenditure on housing. These three components are aggregated to estimate a measure of total annual household consumption. We have reported the household expenditure for the HCSRN and the NLSS in Table 4.2 below.

Table 4.2 Comparison of rural household expenditure on various components of consumption of goods and services between 1996 and 2001 (mean in NC)

Sample partitioned by	Food expenditure	Non food expenditure	Housing utility	Total
Year 1996 (only rural Nepal)				
Development regions				
Central	24,087	8,849	3,816	36,752
Eastern	24,934	11,836	3,250	40,020
Farwestern	17,975	6,297	3,498	27,770
Midwestern	17,714	6,276	2,329	26,319
Western	22,809	9,714	2,619	35,142
Ecological regions				
Hill	23,368	9,306	3,561	36,235
Mountain	22,571	8,315	2,853	33,739
Terai	21,574	9,252	2,974	33,800
Year 2001 (only rural Nepal)				
Development regions				
Central	38,831	20,089	4,853	63,773
Eastern	45,122	24,902	3,526	73,550
Farwestern	29,350	14,898	3,129	47,377
Midwestern	41,798	14,204	3,332	59,334
Western	40,813	23,086	5,518	69,417
Ecological regions				
Hill	39,152	18,724	4,738	62,614
Mountain	42,846	16,011	3,906	62,763
Terai	41,095	23,734	4,007	68,836

Author's own estimates from NLSS (1996) and HCSRN (2001) data

The differences observed in household expenditure between these two surveys may be explained by price inflation over the 5-year period (only nominal values are reported in the Table). The results suggest that the nominal expenditure has increased between these two periods for families of all regions. The nominal consumption per household in rural Nepal has almost doubled over the past five years. Consumption expenditures on food-items absorbed the largest portion of the total consumption. The percentage of food consumption per household across the rural development regions ranged from 62 to 67 of total expenditure in 1996. The food consumption slightly decreased in four regions, while in the Midwestern region it increased by 3 percent between 1996 and 2001. In the rural ecological belts, the mean family consumption doubled in nominal terms in 2001 compared with 1996. The proportion of food expenses to the total expenditure remained almost constant except for the *Terai* region (see Table 4.3). An interesting result is to be found in comparing the three geographical belts of the country; the rural Hill region registered the highest consumption, while the *Terai* the lowest for the 1996. Similarly, the mountain region registered the highest mean consumption expenditure in 2001. This is mainly because of the high population concentration in the *Terai* and of the price factor in the Hill and Mountain regions.

Table 4.3 Percentage per capita household consumption on rural NLSS and rural HCSRN by the development regions and ecological belts (in %)

	Food	Non food	Housing	Total
Year 1996 (only rural Nepal)				
Development regions				
Central	66	24	10	100
Eastern	62	29	8	100
Farwestern	65	23	12	100
Midwestern	67	24	8	100
Western	65	27	7	100
Ecological regions				
Hill	64	26	10	100
Mountain	67	25	8	100
Terai	64	27	9	100
Year 2001 (only rural Nepal)				
Development regions				
Central	61	31	8	100
Eastern	61	34	5	100
Farwestern	62	31	7	100
Midwestern	70	24	6	100
Western	59	33	8	100
Ecological regions				
Hill	62	30	8	100
Mountain	68	26	6	100
Terai	60	34	6	100

Author's own estimates from NLSS (1996) and HCSRN (2001) data

4.3 A Review of Income and Consumption Inequality in Nepal

In chapter two we have found that income inequality in Nepal has worsened between 1984/5 and 1996. In this section we focus on the statistical measures of inequality of household income and expenditure for individual regions, individual ethnic groups and caste groups, religion groups, etc. The Gini index, two Atkinson's indexes and two Theil indexes are used to measure the level of inequality. These indexes are already described in chapter two. The inequality indexes are calculated for each segment depending on the disaggregation criteria.

We begin with the statistical measures of regional disparity, as well as various caste/ethnic groups and religion groups of income and expenditure distribution for 1996 and 2001 (rural). The results for 1996 reported on Table 4.4 show that all inequality indexes are greater for the distribution of income than for the distribution of consumption. The inequality measurements follow the same pattern for each of the disaggregated population sub groups; *i.e.* income distribution is more unequal than consumption distribution.

This result is not surprising and is to be found in most studies of this kind, simply because, in its simplest form $C=C^*+cY$, where C^* is positive and $0<c<1$. In other terms there is a lower limit for consumption; moreover consumption in general, increases less than proportionately as income rises.[61]

The inequality is greater in urban area than in rural areas for both income and expenditure distributions. For example the urban Gini indexes for income and expenditure distribution are higher by 4% and 7% points than rural Gini index respectively. The household mean income and consumption both are around three times greater for the urban region than for the rural region. It seems that as the level of household income and consumption increases, the inequality also rises in rural and urban areas (see the results in Table 4.5).

[61] This is defined as 'Keynes's psychological law' of consumption and saving.

Table 4.4: Descriptive statistics of income and expenditure for Nepal (1996) (Mean in Nepalese currency)

		Family consumption (1996)						Family income (1996)					
	Description	Gini	Atk 0.5	Atk 1	Theil (1)	Theil (0)	Mean RS/year	Gini	Atk 0.5	Atk 1	Theil (1)	Theil (0)	Mean RS/year
Development:	Central	0.46	0.17	0.30	0.40	0.37	64,062	0.54	0.24	0.42	0.73	0.67	81,812
	Eastern	0.36	0.10	0.19	0.24	0.23	40,542	0.51	0.21	0.37	0.75	0.60	49,481
	Farwestern	0.40	0.13	0.23	0.33	0.28	32,240	0.58	0.29	0.46	1.14	0.79	51,636
	Midwestern	0.38	0.11	0.21	0.27	0.25	29,250	0.49	0.20	0.35	0.71	0.59	44,031
	Western	0.44	0.16	0.28	0.43	0.36	48,758	0.53	0.23	0.39	0.83	0.58	59,423
Ecological:	Hills	0.47	0.18	0.32	0.43	0.40	62,445	0.56	0.26	0.44	0.76	0.68	74,053
	Mountains	0.35	0.10	0.18	0.23	0.23	34,372	0.39	0.12	0.23	0.32	0.41	32,777
	Terai	0.35	0.10	0.18	0.24	0.22	35,232	0.54	0.24	0.41	0.91	0.66	58,953
Ethnic Groups:	Bramin	0.41	0.14	0.26	0.31	0.31	57,894	0.54	0.24	0.42	0.80	0.70	77,917
	Chetri	0.44	0.15	0.27	0.37	0.34	44,881	0.53	0.23	0.40	0.76	0.64	55,787
	Damai	0.32	0.08	0.16	0.21	0.24	33,554	0.32	0.08	0.16	0.23	0.38	33,800
	Gururg	0.51	0.22	0.37	0.61	0.49	71,740	0.63	0.34	0.53	1.24	0.83	91,276
	Kami	0.33	0.08	0.16	0.19	0.19	26,840	0.37	0.11	0.20	0.25	0.31	27,587
	Limbu	0.29	0.07	0.13	0.18	0.17	53,402	0.47	0.18	0.31	0.48	0.57	38,749
	Magar	0.42	0.14	0.25	0.44	0.35	39,238	0.47	0.18	0.31	0.59	0.55	48,577
	Muslim	0.29	0.07	0.13	0.17	0.17	34,763	0.43	0.15	0.26	0.46	0.38	50,867
	Newar	0.42	0.14	0.26	0.32	0.31	98,118	0.53	0.23	0.41	0.71	0.62	124,416
	Other	0.39	0.12	0.22	0.34	0.27	35,627	0.53	0.23	0.39	0.79	0.62	53,652
	Rai	0.31	0.08	0.14	0.21	0.23	44,656	0.54	0.26	0.41	0.85	0.69	61,801
	Sarki	0.28	0.06	0.12	0.14	0.16	28,758	0.36	0.10	0.20	0.23	0.27	31,378
	Tamang	0.42	0.14	0.26	0.34	0.32	43,586	0.46	0.17	0.32	0.45	0.50	39,597
	Tharu	0.32	0.08	0.15	0.19	0.19	33,823	0.49	0.21	0.34	0.80	0.54	57,932
	Yadav/Ahir	0.29	0.07	0.13	0.15	0.15	36,890	0.43	0.16	0.28	0.40	0.54	47,907
Religion Groups:	Budhist	0.50	0.20	0.36	0.47	0.47	72,559	0.61	0.31	0.52	0.95	0.90	87,614
	Hindu	0.44	0.15	0.28	0.39	0.34	47,593	0.54	0.24	0.42	0.80	0.65	62,015
	Muslim	0.29	0.07	0.13	0.17	0.17	34,745	0.42	0.15	0.26	0.45	0.37	51,108
	Other	0.39	0.12	0.22	0.31	0.31	53,343	0.55	0.25	0.42	0.69	0.66	58,177
Urban Rural:	Rural	0.35	0.10	0.18	0.22	0.22	34,916	0.49	0.20	0.34	0.68	0.54	45,825
	Urban	0.42	0.14	0.27	0.33	0.33	102,606	0.53	0.23	0.40	0.70	0.64	130,219

Author's own estimates from NLSS (1996) data

When we analyse the inequality in the development regions of Nepal, we find that the Farwestern region has recorded the highest levels of inequality in income distribution, followed by the Central, Western, Eastern, and Midwestern regions. Inequality of household expenditure is higher in the Central region followed by the Western, Farwestern, Midwestern, and Eastern regions. Inequality of income distribution in the Farwestern region is extremely high, but the level of the household income is relatively low. For example the Gini coefficient recorded 0.58 point and the mean level of income is only RS 51,636 per year, which is slightly higher compared with the Eastern and Midwestern regions. It is one of the poorest regions of Nepal because the level of income is low; additionally the level of income inequality is very high. As a result, the major part of the families has a low level of income and their expenditure on consumption goods is also low. Provided that few rich families save and that many families are poor in this region, inequality of consumption is not high. Although the Midwestern families have the lowest level of consumption, many families in the Farwestern region are poorer than the Midwestern families because the distribution of family consumption is worse in this region. The family income and family consumption both in the Central region are almost double compared with the families of Midwestern region.

Households' income in the Hill and *Terai* regions is very unequally distributed. The Gini coefficient is above 0.50 for both regions. The level of income per household is almost double for the *Terai* region compared with the Mountain region. The disparity of mean income between the Hill and Mountain regions is even higher.

We saw above a higher regional disparity of family income than family consumption, similarly in each of the ethnic groups, households' income inequality is also higher than households' consumption based inequality. The Gini index ranges from 0.32 to 0.63 for income distribution; while it ranges from 0.28 to 0.51 for consumption distribution. As we saw in chapter three, wealth distribution is more equally distributed in the untouchable ethnic groups[62], but we have also found that their distribution of income and expenditure to be less concentrated. They are not only a lower caste in society, but they are also poor in terms of wealth and their

[62] The untouchable castes are *Damai*, *Sarki* and *Kami*.

mean income and mean consumption are very low. Similarly the Muslim, *Tharu*, *Yadav*/*Ahir* are found to have somewhat equal levels of consumption, and their level of consumption is similarly low. Nevertheless, income is relatively highly concentrated in these ethnic groups. *Newar*, *Bramin*, *Chetri*, and *Gurung* seem to have high level of income and they tend to consume according to their income level. We also found in the last chapter that their household wealth is high; thus they are economically better off than other ethnic groups in Nepal.

The same results are valid for the religious groups of Nepal with respect to the distribution of household income and expenditure. The level of inequality for household income is higher than the household consumption based inequality. The Gini coefficient of income distribution for the Buddhist families accounts for 0.61; which is the highest score among the religion groups. . The mean level of income for the Buddhist families tends to be high but this disparity does not seem so high between the families of various religion groups. We will examine in next section whether this is really true by analysing the inequality decomposition in terms of population sub groups. Family consumption is relatively better distributed than family income. The level of consumption for the Muslims measured as a religious group exactly matches the level of consumption of Muslims measured as an ethnic group. This is because Muslim ethnicity corresponds exactly with the Muslim religious group in the sample. Though Muslims have a relatively high-income level, they consume less and the inequality of consumption is low. The data indicates Muslim families are high savers.

We have also examined income and consumption distribution in rural Nepal for 1996 and 2001. The information is available for the HCSRN (2001) in development and ecological regions of rural Nepal; therefore, we have disaggregated rural Nepal into two areas: the development regions and the ecological regions. We have estimated the inequality and the level of income and consumption. Because of the different measurements, income inequality is not directly comparable between 2001 and 1996 for rural Nepal. Our analysis therefore focuses on household consumption distribution. The inequality of the household expenditure distribution has increased between these two periods for all regions. The level of consumption has increased in absolute values for the families between 1996 and 2001 but we have not adjusted for inflation

between these two periods so the quantity is not directly comparable. However, the distribution in all ecological regions and development regions has worsened.

4.4 The Decomposition of Inequality by Population Subgroups

So far we have examined the differences in household expenditure between the population subgroups (section 4.3). We have found that particular social, demographic, and regional characteristics may explain part of the inequality at an average level of expenditure as well as in the structure of household expenditure. We have also compared the inequality among different population subgroups by using the Gini, Theil and Atkinson indexes. This does not say much about the extent to which inequality contributes to overall inequality. From a policy point of view, it is interesting to note that overall inequality is attributable to inequality between population subgroups as well as to the inequality within them. To investigate these issues we use the methods of inequality decomposition by population subgroups. A number of authors have extensively presented the methods of decomposition of inequality by population subgroups[63]. For our analysis we use three indexes, *i.e.*, the Gini index and two Theil indexes. We have chosen a decomposition methodology for the Gini index proposed by Yao (1999) and the two Theil indexes by Shorrocks (1980).

4.4.1 *Decomposition of the Gini coefficient*

The Gini coefficient may be decomposed into three components if the population is divided into a finite number of classes. For example, the population can be divided into rural and urban sub-groups. Of course, a population can be divided into as many classes as possible by any other social or geographical or economic criteria. Even each sub-population can be divided into a number of smaller population classes by household characteristics.

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[63] See Rao (1969), Pyatt (1976) Bourguignon (1979), Cowell (1980), Shorrocks (1980 and 1984), and Yao (1999).

4.4.2 *The models for the Gini decomposition*

Let G be the Gini coefficient for the entire population taken into consideration. It can be decomposed into three components – within class or group, between class or group and overlapped as shown in the following equation.

$$G = G_{within} + G_{between} + G_{overlapped} \tag{4.1}$$

Where,

$$G_{within} = \sum_{g=1}^{K} p_g y_g G_g \tag{4.2}$$

There are three components on the right hand side of the equation 4.1. The term Gini within (G_{within}) is the weighted sum of within population group – Gini coefficient for the g^{th} group is G_g and the weight is given by the product of the population share in total population denoted by p_g and income share in total income denoted by y_g for the g^{th} group.

$p_g = P_g/P < 1$, where P_g is the number of population in g^{th} group and P is the overall population.

$y_g = Y_g/Y < 1$, where Y_g is income of g^{th} group and Y is the overall income.

Since p_g and y_g both are less than 1, their product will be smaller; thus the weights assigned to G_g will be small. The inequality between groups is shown in the equation below.

$$G_{between} = \sum_{g=1}^{K} P_g \left(2Q_g - y_g\right) \quad \text{with } Q_g = \sum_{g=1}^{K} y_g \tag{4.3}$$

K denotes the number of population subgroups, p_g, and y_g are respectively the population share in total population and income share in total income for the g^{th} term

($g=1,2,...,K$). The explanation for equation 4.3 is akin to that of the equation to derive the Gini (see appendix 2A). The only difference here is the definitions of P_g and Y_g. To derive $G_{between}$ all the elements in the equation 4.3 must be sorted in ascending order of group mean incomes μ_g, such as $\mu_1 < \mu_2 < .... < \mu_K$.

The third component is the overlapped component, which is a residual. The value of the overlapped component is zero if the poorest person of the richer group has higher income than the richest person of the poorer group. In other words $G_{overlapped}$ is a component of G when the richest person in any low-income group is not better off than the poorest person in richest group; then the overlapped value is zero.

$$G_{overlapped} = G - G_{within} - G_{between} \tag{4.4}$$

4.4.3 *The decomposition of the Theil indexes*

The Theil index is additively decomposable because it can also be written as a weighted sum of the group inequality indices plus a between-group inequality term based on mean incomes and group size. The Theil index expressed in equation 2.6 can be decomposed as equation 4.5:

$$T_1 = T(y;n) = \frac{1}{n}\sum_i \frac{y_i}{\mu} Log\left(\frac{y_i}{\mu}\right) = \underbrace{\sum_{g=1}^{G} p_g m_g T_g^1}_{within} + \underbrace{\sum_{g=1}^{G} p_g m_g Log\left(\frac{\mu_g}{\mu}\right)}_{between} \tag{4.5}$$

where p_g is the ratio of the population sub-group to total population; and m_g is the ratio of the mean income of the population sub-group to mean aggregate income.

The derivation of equation 4.5 is presented in appendix 4A at the end of this chapter. Equation 4.5 indicates that, apart from the value of inequality within sub-groups T_g, inequality depends on the mean income levels and population sizes. The generalised entropy family, particularly the Theil index T, satisfies the axioms of symmetry, population replication

(population homogeneity, replication invariance), mean independence (invariance to relative changes, scale invariance, homogeneity), the Dalton-Pigou principle of transfers (strong principle of transfers) and additive decomposability. The last property implies that an overall inequality measure may be additively decomposed into its subgroups' distinct inequality measures as it has been shown in equation 4.5 above.

Indices other than those belonging to the Theil family do not satisfy what Cowell (1998) labels the 'accountant's approach' to decomposition, meaning that the weighted within-group inequality term together with the "between-group" inequality term add to unity; a very useful property in our context.

Instead of calculating the T_1 index, an alternative would be to calculate the T_0 index, which can additively be decomposed as follows:

$$T_0 = T(y;n) = \underbrace{\sum_{g=1}^{G} p_g T_g^0}_{within} + \underbrace{\sum_{g=1}^{G} p_g Log\left(\frac{\mu}{\mu_g}\right)}_{between} \tag{4.6}$$

The derivation of equation 4.6 is given in appendix 4A.

4.5 Main Finding of the Decomposition by Population Subgroups

4.5.1 *The decomposition analysis for the inequality of expenditure, income and wealth in 1996*

We have analysed the inequality decomposition for 1996 by disaggregating the Nepalese population by five methods. We disaggregate the total population by (i) development regions of the country, (ii) ecological regions of the country, (iii) urban and rural population, (iv) ethnic population groups and (v) religion groups for this study. T_0, T_1 and the Gini coefficients are used to analyse the decomposition of inequality; but the difficulties relative to the interpretation of the overlapped or residual component of the Gini coefficient is irreparable. We cannot give any meaningful economic sense for this component. Therefore we focus our

interpretation of the decomposition results only on T_0 and T_1, which do not produce the overlapped component.

We begin with decomposition of family expenditure for 1996. We also analyse the *per capita* expenditure as it stands better measure and understands the well-being of the people rather than household expenditure. This is because the size of household expenditure behaviour depends also on the number of people resides. Saying a family is better off than another on the basis of high expenditure may be erroneous, because the families may differ in their size and composition. In fact, large families consume more than small families. Thus although the small family is better off than the large one, the total expenditure may be less than that of the large family. Therefore we cannot compare two families directly without considering the number of people living in them. The comparisons of our result will be primarily based on the inequality calculated from *per capita* expenditure. The results are shown in Table 4.5 for the inequality decomposition of expenditure.

Table 4.4 The inequality decomposition of consumption

Decomposed by (R. = Regions)	Theil Index (1)			Theil Index (0)			Gini Index			
	Total	**Within**	**Between**	**Total**	**Within**	**Between**	**Within**	**Between**	**Residual**	**Total**
	Household based consumption									
Development R.	0.401	0.363	0.038	0.357	0.317	0.040	0.149	0.125	0.171	0.445
	100	**90.60**	**9.40**	**100**	**88.92**	**11.08**	**33.45**	**28.12**	**38.43**	**100**
Ecological R.	0.401	0.361	0.041	0.357	0.315	0.042	0.140	0.197	0.108	0.445
	100	**89.89**	**10.11**	**100**	**88.23**	**11.77**	**31.44**	**44.18**	**24.39**	**100**
Ethnic groups	0.401	0.329	0.072	0.357	0.289	0.067	0.200	0.050	0.191	0.441
	100	**81.96**	**18.04**	**100**	**81.15**	**18.85**	**45.29**	**11.42**	**43.29**	**100**
Religion groups	0.401	0.391	0.010	0.357	0.347	0.010	0.048	0.327	0.070	0.445
	100	**97.41**	**2.59**	**100**	**97.26**	**2.74**	**10.70**	**73.54**	**15.76**	**100**
Urban rural	0.401	0.271	0.130	0.357	0.242	0.115	0.229	0.193	0.022	0.445
	100	**67.51**	**32.49**	**100**	**67.85**	**32.15**	**51.50**	**43.45**	**5.05**	**100**
	Per capita based consumption									
Development R.	0.416	0.364	0.052	0.355	0.298	0.057	0.173	0.127	0.149	0.449
	100	**87.46**	**12.54**	**100**	**83.96**	**16.04**	**38.47**	**28.35**	**33.17**	**100**
Ecological R.	0.416	0.358	0.058	0.355	0.294	0.061	0.169	0.196	0.083	0.449
	100	**86.03**	**13.97**	**100**	**82.76**	**17.24**	**37.72**	**43.70**	**18.58**	**100**
Ethnic groups	0.416	0.333	0.083	0.355	0.275	0.080	0.220	0.050	0.176	0.447
	100	**80.06**	**19.94**	**100**	**77.56**	**22.44**	**49.35**	**11.30**	**39.36**	**100**
Religion groups	0.416	0.399	0.018	0.355	0.338	0.017	0.063	0.327	0.060	0.450
	100	**95.73**	**4.27**	**100**	**95.14**	**4.86**	**13.99**	**72.70**	**13.31**	**100**
Urban rural	0.416	0.261	0.155	0.355	0.219	0.136	0.252	0.182	0.016	0.449
	100	**62.70**	**37.30**	**100**	**61.61**	**38.39**	**56.01**	**40.43**	**3.56**	**100**

Author's own estimates from NLSS (1996) data

The results are interesting. The within groups index dominates the between group on whichever partition criteria is used for T_0 and T_1. The within group index for household distribution is slightly higher than *per capita* distribution in terms of size inequality. The between inequality term ranges from 3 percent to 32 percent of total expenditure inequality

relative to the undertaken partitions in this study. The results do not vary for either *T(0)* and *T(1)*. It ranges from 5 percent to 38 percent of total inequality when we use the *per capita* expenditure. Thus the between term does not exceed more than two fifths of the aggregate inequality. When the households/individuals are partitioned by religion groups, inequality between them is very low. The results are consistent for both measures T_0 and T_1. The between term for the decomposition of urban and rural expenditure explains a high value as we expect since the urban expenditure are almost three times higher. The between inequality for the religious groups has very small weight. Considering the level of mean expenditure for four religion groups, we note that the differences are very high. For example the Muslims are the poorest among the religion groups and have a low level of expenditure. Buddhist families' expenditure is twice higher than Muslim families. From the standpoints of mean differences the between term should have accounted for a high inequality. The mean of each group assigns a weight to population proportion in order to calculate the between term. Given that Hindu population covers 87 percent of the sample, the value of between inequalities is highly influenced by their large population share. This is the reason why the between term for religion groups is very small.

The results of the inequality decomposition for development regions, ecological belts and ethnic groups are very interesting. The between inequality term accounts for 11 percent and 12 percent in the aggregate inequality for development regions and ecological belts respectively, when we use the household expenditure. It is even higher for the individual expenditure.

The distributional issue in the Nepalese ethnic/caste groups has a very important aspect. We saw in the last chapter that some of the ethnic groups (especially lower castes) are among the least fortunate people of Nepal. This is because they are not only lower by caste but also by wealth holdings; although it may be argued that the two elements are inter-linked. Furthermore, their expenditures on consumption (food, non-food, housing etc) are very low. The decomposition analysis however reveals a very original and exciting result concerning the inequality of ethnic and caste groups of Nepal. The between term explains around 18-19 percent of total inequality for household expenditure. It explains more than 22 percent of it when we use

per capita expenditure data for T_0. This inequality is due to the higher difference of the mean consumption between these groups.

In Chapter Three, we examined the inequality of wealth distribution for all possible disaggregations of the Nepalese family. Here we further examine it by decomposing wealth inequality. Table 4.6 displays the results, which reveal that particular regional characteristics, religion and ethnicity may in particular, explain part of the differences and inequalities in wealth holdings.

Table 4.5 The inequality decomposition of wealth by population subgroups for Nepal (1996)

	Theil Index(0)			**Theil Index(1)**		
1995	**Within**	**Between**	**Total**	**Within**	**Between**	**Total**
Development regions	1.57	0.17	1.74	1.26	0.15	1.41
	90.47	**9.53**	**100.00**	**89.55**	**10.45**	**100.00**
Ecological regions	1.57	0.17	1.74	1.27	0.14	1.41
	90.24	**9.76**	**100.00**	**89.85**	**10.15**	**100.00**
Urban rural Nepal	1.45	0.29	1.74	1.08	0.33	1.41
	83.13	**16.87**	**100.00**	**76.52**	**23.48**	**100.00**
Religion	1.71	0.03	1.74	1.38	0.03	1.41
	98.11	**1.89**	**100.00**	**97.76**	**2.24**	**100.00**
Caste/Ethnicity	1.51	0.23	1.74	1.19	0.22	1.41
	86.59	**13.41**	**100.00**	**84.48**	**15.52**	**100.00**
1996	**Within**	**Between**	**Total**	**Within**	**Between**	**Total**
Development regions	1.44	0.16	1.60	1.23	0.14	1.38
	89.86	**10.14**	**100.00**	**89.51**	**10.49**	**100.00**
Ecological regions	1.42	0.17	1.60	1.23	0.15	1.38
	89.09	**10.91**	**100.00**	**89.25**	**10.75**	**100.00**
Urban rural Nepal	1.30	0.30	1.60	1.04	0.34	1.38
	81.41	**18.59**	**100.00**	**75.63**	**24.37**	**100.00**
Religion	1.57	0.03	1.60	1.35	0.03	1.38
	98.01	**1.99**	**100.00**	**97.80**	**2.20**	**100.00**
Caste/Ethnicity	1.36	0.24	1.60	1.15	0.22	1.38
	85.27	**14.73**	**100.00**	**83.87**	**16.13**	**100.00**

Author's own estimates from NLSS (1996) data

Although we compared the inequality in wealth distribution between the population subgroups in chapter three, we could not say how much of each groups' inequality contributes to overall inequality of wealth. This issue will be investigated in this section. Table 4.6 shows that the 'between inequality' term contributes only a small to wealth distribution as compared to the within term.

We have analysed the decomposition of wealth inequality for 1995 and 1996. the between component consists of around 2 percent in total inequality when we decompose the population by religion. For other decomposition method, this component varies from 9.53 percent to around 17 percent of the Theil index (0) and it varies from 10 percent to 23.48 percent of the Theil index (1). Thus the Theil index (1) records higher percentage of between inequality term than the Theil index (0). The total inequality has decreased in 1996 compared with previous year. The reduction of inequality is solely due to within term. The between term remained almost constant and hence its percentage share in total inequality has increased. The absolute values of wealth inequality vary for T(1) and T(0), the relative values (the percentage) of wealth inequality are consistent for all decomposition methods. As in the analysis of expenditure, we find that the between term is higher for the ethnic decomposition as well as the urban/rural decomposition. The between inequality term for the development and ecological regions is relatively high. The between inequality term accounts for around 2 percent when population is decomposed by religion. This suggests that wealth inequality can be reduced among the religion groups only by reducing inequality in each group.

We have also examined the decomposition of income inequality and we provide the results in Table 4.7 below.

Table 4.6 The inequality decomposition of income by population subgroups for Nepal (1996)

	Theil Index (1)			Theil Index (0)			Gini Index			
Decomposed by	**Total**	**Within**	**Between**	**Total**	**Within**	**Between**	**Within**	**Between**	**Residual**	**Total**
	Household based income									
Development R.	0.812	0.783	0.029	0.670	0.640	0.029	0.129	0.151	0.268	0.548
	100	**96.42**	**3.58**	**100**	**95.63**	**4.37**	**23.58**	**27.60**	**48.82**	**100**
Ecological R.	0.812	0.786	0.026	0.670	0.639	0.030	0.102	0.242	0.204	0.548
	100	**96.80**	**3.20**	**100**	**95.48**	**4.52**	**18.67**	**44.15**	**37.18**	**100**
Ethnic groups	0.812	0.737	0.074	0.670	0.597	0.073	0.201	0.066	0.278	0.545
	100	**90.83**	**9.17**	**100**	**89.16**	**10.84**	**36.94**	**12.06**	**51.00**	**100**
Religion groups	0.812	0.805	0.006	0.670	0.664	0.006	0.036	0.408	0.104	0.549
	100	**99.20**	**0.80**	**100**	**99.09**	**0.91**	**6.61**	**74.45**	**18.94**	**100**
Urban rural	0.812	0.690	0.121	0.670	0.563	0.107	0.221	0.266	0.061	0.548
	100	**85.04**	**14.96**	**100**	**84.02**	**15.98**	**40.30**	**48.53**	**11.16**	**100**
	Per capita based income									
Development R.	0.820	0.783	0.037	0.645	0.606	0.038	0.146	0.152	0.250	0.548
	100	**95.52**	**4.48**	**100**	**94.04**	**5.96**	**26.69**	**27.69**	**45.63**	**100**
Ecological R.	0.820	0.781	0.038	0.645	0.602	0.043	0.135	0.244	0.168	0.548
	100	**95.33**	**4.67**	**100**	**93.39**	**6.61**	**24.71**	**44.57**	**30.72**	**100**
Ethnic groups	0.820	0.737	0.082	0.645	0.563	0.082	0.217	0.065	0.263	0.545
	100	**89.95**	**10.05**	**100**	**87.33**	**12.67**	**39.88**	**11.94**	**48.18**	**100**
Religion groups	0.820	0.804	0.015	0.645	0.630	0.015	0.060	0.399	0.089	0.548
	100	**98.12**	**1.88**	**100**	**97.72**	**2.28**	**10.89**	**72.83**	**16.29**	**100**
Urban rural	0.820	0.678	0.141	0.645	0.520	0.124	0.240	0.254	0.054	0.548
	100	**82.74**	**17.26**	**100**	**80.72**	**19.28**	**43.72**	**46.44**	**9.83**	**100**
Development R.	1.342	1.200	0.142	1.359	1.199	0.159	0.280	0.226	0.220	0.727
	100	**89.42**	**10.58**	**100**	**88.26**	**11.74**	**38.56**	**31.16**	**30.29**	**100**

Author's own estimates from NLSS (1996) data

The results of income inequality decomposition show that the bulk of inequality is due to the differences within the population groups rather than to disparities among groups. The

exceptions to this pattern emerge when population is grouped according to ethnicity as well as rural and urban residences. Around 10 percent of the aggregate inequality is accounted by the between term when the population is disaggregated by the ethnicity of the country. Similarly around 15 percent of the aggregate inequality is accounted by this term for T(1) index when we use urban and rural population. It is higher by 2 percent points for *per capita* based inequality.

Thus we saw above that the within and between inequality of income, wealth and consumption distributions follow the same pattern according to the decomposition method of the Nepalese population, *i.e.*, the between inequality index for ethnic groups decomposition and urban rural decomposition is remarkably high; while the decomposition by religion is almost insignificant. From the policy perspective it is important to know the inequality within and between components. For example, the between component of the inequality index of 10 percent for the decomposition of the development region suggests that any regional policy can reduce the inequality up to 10 percent maximum of the aggregate inequality. In other words if the regional inequality is eliminated by equalising the mean income for all regions, overall income inequality will be reduced by 10 percent. If the between inequality is zero, any policy not targeted at reducing inequality within each region would not be effective. If the policy perspective were concerned at reducing the inequality of Nepal, the distribution over ethnic groups would be the most interesting target. A sustainable policy to upgrade the least fortunate ethnic groups of the country would be an important instrument for reducing overall inequality in the country.

4.5.2 *The decomposition analysis of the inequality for rural Nepal 1996 and 2001*

Table 4.8 shows the results of the inequality decomposition of rural Nepal. We have analysed the inequality by two types of data: household and individual. In Table 4.8 “rural households” indicate the decomposition based on household data; and “individual” is for the decomposition based on *per capita* data. The household-based analysis shows an increase in inequality between 1996 and 2001; while the *per capita* based shows a decrease in inequality between these two periods. The decomposition of inequality for rural Nepal shows that only a small part of overall inequality is attributable to inequality between regions. The overall

inequality has decreased between 1996 and 2001 for the rural Nepal by 1.73 basis point (b.p.[64]) for T_0 and 0.93 b.p. for T_1 (see Table 4.8). When we decomposed the inequality by development regions, the within components were 0.17 and 0.19 respectively for T_0 and T_1. The total decrease for T_0 comes from the reduction of within component by 1.02 b.p. and of between component by 0.71 b.p. Although it seems that the larger decrease is due to within component, in percentage terms the within component has decreased only by 6 percent against a 34 percent decrease of between component. Similarly, we observe the same trend for T_1, which means that a higher percentage of inequality is due to the reduction of between components. Thus, an improvement of expenditure distribution in rural Nepal between 1996 and 2001 is primarily due to the improvements of between development region inequalities. Similarly, when we decompose the rural household by ecological belt, the between inequality term seems to be almost eliminated. The reduction of inequality is completely due to the within components of regional inequality. By these experiences we may conclude that the inequality of expenditure between the regions (both by development regions and ecological belts) has improved between 1996 and 2001. In the last five years, it seems the rural regional policies have been quite effective. However, in our analysis of the inequality decomposition, only a small part of overall inequality could be attributed to the overall inequality between regions.

[64] 1 basis point corresponds to 0.01 index value. From this point onward, we write only b.p. for basis point.

Table 4.8:The inequality decomposition by population subgroups for rural Nepal 1996 and 2001
(Within-group and between group inequality)

	T_0			T_1			Gini			
	Within	**Between**	**Total**	**Within**	**Between**	**Total**	**Within**	**Between**	**Residual**	**Total**
Rural households 1996										
Development regions	0.2069	0.0104	0.2172	0.2140	0.0099	0.2239	0.0734	0.0785	0.1982	0.3500
	95.23%	**4.77%**	**100.00%**	**95.59%**	**4.41%**	**100.00%**	**20.96%**	**22.42%**	**56.62%**	**100.00%**
Ecological regions	0.2166	0.0006	0.2172	0.2233	0.0006	0.2239	0.0174	0.1331	0.1995	0.3500
	99.72%	**0.28%**	**100.00%**	**99.73%**	**0.27%**	**100.00%**	**4.96%**	**38.03%**	**57.01%**	**100.00%**
Rural households 2001										
Development regions	0.3182	0.0069	0.3251	0.3270	0.0065	0.3335	0.0591	0.0986	0.2530	0.4107
	97.88%	**2.12%**	**100.00%**	**98.04%**	**1.96%**	**100.00%**	**14.39%**	**24.01%**	**61.60%**	**100.00%**
Ecological regions	0.3240	0.0011	0.3251	0.3324	0.0011	0.3335	0.0236	0.1731	0.214	0.4107
	96.66%	**0.34%**	**100.00%**	**99.67%**	**0.33%**	**100.00%**	**5.75%**	**42.15%**	**52.10%**	**100.00%**
Individual (rural) 1996										
Development regions	0.1699	0.0204	0.1903	0.1904	0.0187	0.2091	0.0898	0.0750	0.1686	0.3333
	89.27%	**10.73%**	**100.00%**	**91.07%**	**8.93%**	**100.00%**	**26.94%**	**22.49%**	**50.57%**	**100.00%**
Ecological regions	0.1862	0.0041	0.1903	0.2050	0.0041	0.2091	0.0470	0.1232	0.1631	0.3333
	97.84%	**2.16%**	**100.00%**	**98.05%**	**1.95%**	**100.00%**	**14.10%**	**36.96%**	**48.94%**	**100.00%**
Individual (rural) 2001										
Development regions	0.1597	0.0133	0.1730	0.1874	0.0124	0.1998	0.0814	0.0950	0.2157	0.3922
	92.31%	**7.69%**	**100.00%**	**93.80%**	**6.20%**	**100.00%**	**20.76%**	**24.23%**	**55.01%**	**100.00%**
Ecological regions	0.1729	0.0001	0.1730	0.1998	0.0000	0.1998	0.0038	0.1629	0.2255	0.3922
	99.98%	**0.02%**	**100.00%**	**99.99%**	**0.01%**	**100.00%**	**0.96%**	**41.53%**	**57.51%**	**100.00%**

Author's own estimates from NLSS (1996) and HCSRN (2001) data

So far as the contribution of the between groups inequality is concerned, the relevant estimates range from 2.16 percent to 10.69 percent of total inequality in 1996 and from 0.02 to 7.69 in 2001 with respect to the overall inequality for the decomposition of development regions. The estimates are also low for the decomposition of ecological regions (see Table 3.8). Almost all inequality is attributable to within inequality. Hence the policy implications are clear, *i.e.*, they must be targeted at within each group. Although the regional inequality may eventually be eliminated (by redistribution processes from the richer regions to the poor regions), the aggregate inequality will not change to a great extent. This means the regional policy would have little to do.

4.6 Decomposition by Income Components

Income can be decomposed by its various sources; and their influence on the inequality index can be studied. Shorrocks (1982) investigates the theoretical feasibility of a decomposition in K income factors of the form:

$I(\boldsymbol{Y}) = \sum_k S_k(I)$, where S_k is the fraction of the inequality index referred to the income factor *k*.

For example, let $\boldsymbol{Y} = (y_1, ..., y_n)$ be the individual income of the population of size *n*. Let us divide this income by *K* sources such that $\boldsymbol{Y} = \sum_k \boldsymbol{Y}_k = \left(\sum_k y_{1k}, \cdots, \sum_k y_{nk} \right)$. $\boldsymbol{Y}_k$ is the vector of incomes by source *k*. If we write the Theil index as $T(Y) = \frac{1}{n} \sum_i \left(\frac{y_i}{\mu} \right) \log \left(\frac{y_i}{\mu} \right)$ we can decompose Y_i in K sources of income, and we write $Y_i = \sum_{k=1}^{K} y_{ik}$. The Theil index takes the form:

$$T(Y) = \frac{1}{n\mu} \sum_i \log \left(\frac{y_i}{\mu} \right) \sum_{k=1}^{K} y_{ik} = \sum_{k=1}^{K} \frac{1}{n\mu} \sum_i \log \left(\frac{y_i}{\mu} \right) y_{ik} .$$

In this case $S_k = \frac{1}{n\mu}\sum_i \log\left(\frac{y_i}{\mu}\right) y_{ik}$ is called the pseudo-Theil index, an index related to the source *k*; and we speak of the natural factor decomposition for the Theil index because it has been made directly from its definition. Such decompositions can be made for all the indices we have used in this study, and for a single index there are still a number of different decompositions. We can divide S_k by the index in order to get the rate s_k of the inequality index, relative to source *k*, *i.e.* $s_k = \frac{S_k}{I(Y)}$. In our example the rate would be $s_k = \frac{\sum_i \log\left(\frac{y_i}{\mu}\right) y_{ik}}{\sum_i \log\left(\frac{y_i}{\mu}\right) y_i}$.

For the purpose of our study it is not necessary to go through all the theoretical details of the decomposition; however we will highlight the most important results and implications.

The following assumptions, the first concerning the index *I(Y)* and the others concerning the fraction S_k allow to establish a first important result.

Assumption 1

I(Y) is continuous and symmetric and *I(Y)* = 0 if and only if $Y' = (\mu, \cdots, \mu)$, where μ is the average income. This last condition states that the index has zero value when every individual has the same income.

Assumption 2

$S_k(Y)$ is continuous in Y_k and if we apply any permutation of the vector $(Y_1, \cdots, Y_K)$, the fraction S_k, referred to the income source *k* before permutation, does not change in value if we calculate it after permutation of Y.

Assumption 3

S_k doesn't change if we aggregate or divide the other sources of income.

With these assumptions Shorrocks proves that the fraction S_k can be written as a weighted sum of the individual incomes from source *k*. That means $S_k = w(\boldsymbol{Y}) \cdot \boldsymbol{Y}_k = \sum_i w_i(\boldsymbol{Y}) \cdot y_{ik}$, where ***w(Y)*** has to satisfy the condition: $I(\boldsymbol{Y}) = \boldsymbol{w}(\boldsymbol{Y}) \cdot \boldsymbol{Y}$. In the example presented above for the natural decomposition of the Theil index, the weight for the individual *I* is equal to $w_i(\boldsymbol{Y}) = \frac{1}{n\mu} \sum_i \log\left(\frac{y_i}{\mu}\right)$.

With the assumptions expounded above the vector of weights ***w*** is not unique. Moreover S_k has a functional form such that the ratio $s_k = \frac{S_k}{I(Y)}$ is independent of the index chosen and is valid for any inequality index that satisfies assumption 1. The s_k are indicated in the literature 'decomposition rules'; we shall use the same terminology when we refer to them.

At this point Shorrocks tries to find more restriction on S_k in order to find a unique decomposition.

Assumption 4

If we change the order of the individual incomes, i.e. we make a permutation of the vector *Y* and then we calculate S_k, we find the same value similar to the original vector *Y*. If there is an income source with the property $Y_k' = (\mu_k, \cdots, \mu_k)$, which means that every individual has the same income source, and the fraction S_k must be equal to zero.

Assumption 5

The last assumption shows that if total income is made up of only two sources, the first being the permutation of the other, then the fractions *S* of both income sources must be equal.

There exists only one decomposition that satisfies these two last restrictions, and it is:

$S_k = \frac{\mathrm{cov}(\boldsymbol{Y_k}, \boldsymbol{Y})}{\sigma^2(\boldsymbol{Y})} I(\boldsymbol{Y}) = s_k I(\boldsymbol{Y})$, *i.e.* the natural decomposition of the variance.

Note that s_k is unique and independent of the index that we have chosen for calculating the inequality. Independence is a very important property, since we don't have to make any further assumption on the method used to calculate the inequality of the aggregate income.

In a further study, Shorrocks (1983) compares different decompositions on an empirical basis, and concludes that the decomposition based on the covariance is acceptable for discussing the influence of each factor on the inequality index. He compares this decomposition with the factor share of every source of income, which is given by $\frac{\mu_k}{\mu}$, the mean income from factor k divided by the mean aggregate income. The idea behind this comparison is that if the rule s_k is much higher than the corresponding factor share, then that source of income contributes in a large proportion to the inequality of distribution. Therefore we use these two ratios for exploring the effect of the various income sources on the inequality indices reported in this study.

4.7 The Decomposition of Inequality by Income Sources and Components of Expenditure

Here we analyse the decomposition of inequality by factor components for income and wealth sources in Nepal. Following Shorrocks (1982) we have calculated the decomposition according to: (a) the Theil Decomposition (T/D) rule, (b) the Variance Decomposition (V/D) rule and (c) the Factor Share (F/S) rule.[65] The F/S rule is the share of the k^{th} component of (average) wealth or income to (average) total wealth or income. The measure does not show any effect on the inequality measurement. We will use it later to compare with the T/D and V/D rules of every component of income or wealth. The T/D rule and V/D rule show how each component of income or wealth behaves in total inequality. Any component with negative value indicates that the component contributes a negative inequality in the Theil index or Variance. This means the component tends to reduce total inequality.

[65] The theoretical methods on these rules are discussed in the previous section of this chapter.

We begin with the factor decomposition of wealth in Nepal for 1996.[66] In Table 4.9 we have reported the results on the decomposition of wealth by its sources for 1995 and 1996 in Nepal. We have analysed the whole Nepal, Rural Nepal and Urban Nepal.

Table 4.7 Factor contribution as percentage total wealth inequality in Nepal for 1995 and 1996

	All 1995			Rural 1995			Urban 1995		
	F/S rule	**V/D rule**	**T/D rule**	**F/S rule**	**V/D rule**	**T/D rule**	**F/S rule**	**V/D rule**	**T/D rule**
Dwelling	38.41	34.58	40.19	19.85	10.58	10.48	51.69	38.43	39.78
Landholding	42.02	39.45	33.72	65.87	66.72	65.96	25.28	34.53	31.05
Enterprise	3.68	2.56	3.47	2.34	2.01	2.61	4.63	2.40	2.38
Farm Assets	0.27	0.07	0.09	0.61	0.35	0.58	0.04	0.01	-0.02
Inventory	1.41	1.05	1.32	0.50	0.63	0.52	2.06	1.01	0.78
Livestock	1.85	-0.03	-1.28	4.29	0.19	-1.45	0.14	0.01	-0.10
Lending	0.52	0.32	0.30	0.66	0.28	0.38	0.42	0.32	0.29
Other Assets	14.53	22.56	21.29	9.69	19.85	18.43	18.00	23.65	20.79
Borrowings	-2.74	-0.56	1.43	-3.90	-0.60	3.62	-2.44	-0.32	7.56
Total wealth	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	All 1996			**Rural 1996**			**Urban 1996**		
	F/S rule	**V/D rule**	**T/D rule**	**F/S rule**	**V/D rule**	**T/D rule**	**F/S rule**	**V/D rule**	**T/D rule**
Dwelling	36.89	34.41	39.52	19.19	10.60	10.26	49.43	38.10	39.46
Landholding	39.85	37.25	31.83	63.57	65.70	64.63	23.40	32.39	29.33
Enterprise	3.90	2.96	3.90	2.34	2.48	2.95	5.02	2.74	2.29
Farm Assets	0.27	0.07	0.09	0.61	0.38	0.60	0.03	0.01	-0.02
Inventory	4.12	2.02	1.87	3.50	1.13	0.77	4.59	1.89	0.02
Livestock	1.91	-0.03	-1.38	4.43	0.20	-1.64	0.16	0.01	-0.12
Lending	0.48	0.32	0.28	0.65	0.32	0.40	0.36	0.33	0.28
Other Assets	15.25	23.61	22.77	9.54	19.67	18.56	19.26	24.98	22.91
Borrowings	-2.72	-0.60	1.67	-3.96	-0.47	4.82	-2.38	-0.40	7.72
Total wealth	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Author's own estimates from NLSS (1996) data

[66] The sources of wealth are described in detail in chapter 3.

In Nepal the dwelling, landholding and other assets represent a higher proportion of the aggregate household wealth; and the dominant positive influences on inequality relate to the same components. For example, the dwelling accounts for around 40 percent of the Theil index and 35 percent of the Variance. The T/D rule shows that the highest part of inequality is due to dwelling; while the V/D rule shows that it is due to land holding, that contributes more that 37 percent of the variance. We find that all the components of wealth (except for the value of livestock) have a positive impact on total inequality. On the contrary livestock has negatively contributed to total inequality for both T/D and V/D.

In the rural wealth decomposition analysis, we find that landholding covers more than 60 percent of total wealth. It is a fair estimate since the Nepalese rural economy is an agrarian-based society; and land is the most important capital. More than 65 percent for V/D rule and around 60 percent for T/D rule of total inequality is caused by this component of wealth. Dwelling and other assets have relatively high shares in total wealth; they also contribute to the higher factor share in total inequality of rural Nepal. Only the livestock contributes to a 'negatively' in total inequality for the T/D rule; while for the V/D rule it has an insignificant positive value.

In the urban wealth distribution, dwellings are the main component of wealth followed by landholdings, other assets etc. Farm assets and livestock have a negative value for the T/D rule; while for the V/D rule they are almost irrelevant. The remaining of the components of wealth in urban Nepal have a positive effect in total inequality. Livestock seems to reduce wealth inequality in Nepalese wealth distribution, reflecting the fact that the livestock is negatively correlated to total wealth. It reduces more than one percent point the Theil index (for wealth distribution in Nepal). As for wealth, this study identifies seven different sources of income in Nepal for 1996 (both urban and rural) and 2001 (only rural). Using the decomposition rules (the T/D, V/D and F/S rule), the analysis is summarised in Table 4.10 below for Nepal (1996).

Table 4.8 Percentage factor contributions to the inequality index of income in Nepal (1996)

	All Income 1996			Rural income 1996			Urban income 1996		
	F/S rule	**T/D rule**	**V/D rule**	**F/S rule**	**T/D rule**	**V/D rule**	**F/S rule**	**T/D rule**	**V/D rule**
Housing	13.22	13.12	8.79	6.67	2.08	1.55	21.83	14.25	12.09
Enterprise	17.71	29.68	24.50	8.77	12.09	8.61	29.45	39.39	34.31
Property rent	2.89	9.28	11.69	0.42	0.91	0.49	6.14	17.67	19.77
Remittances	7.23	10.37	11.26	7.13	7.07	3.53	7.36	15.64	17.00
Other income	2.73	2.70	1.49	1.76	0.80	0.25	4.00	3.19	2.05
Wage income	19.75	0.17	2.25	18.28	-4.57	0.81	21.68	-4.61	1.49
Farm income	36.46	34.69	40.02	56.96	81.61	84.76	9.54	14.46	13.30
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Author's own estimates from NLSS (1996) data

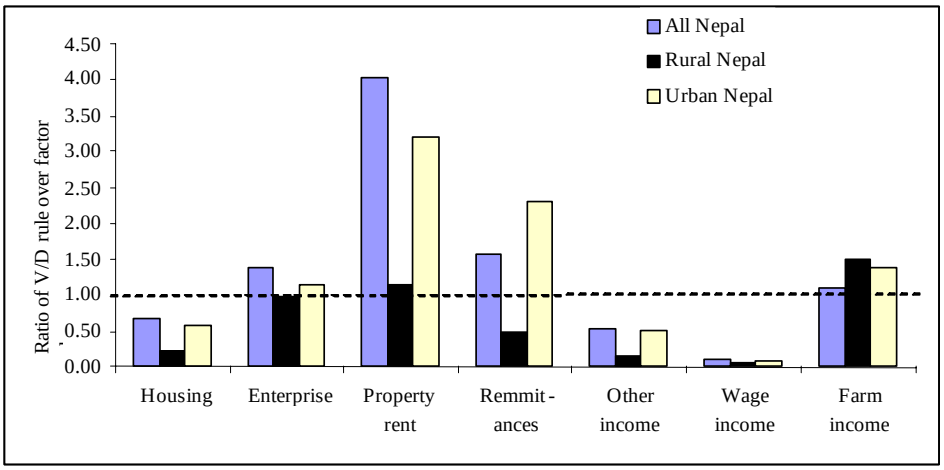
The highest share in income of Nepal for 1996 comes from farm income. Wage income, rent of owner occupied house (Housing) and income from firms (Enterprise) contribute above 10 percent of total income. We find that all components have a positive impact on total inequality for both T/D and V/D. In the rural income distribution, the farm income share is almost 57 percent; and more than 80 percent of the aggregate inequality measure is explained by this component. Wage income has a negative impact on the rural inequality of income distribution; while the remaining part of the components has a positive value. In the urban income distribution, the share of farm income accounts for only around 10 percent. Enterprise income, wage income and owner occupied house rent, have a share above 20 percent each in total income. The highest share of the total inequality comes from the earnings from enterprises. As in the rural income distribution, only wage income has a negative impact in the total inequality of income. This is why in most societies wage-income is the least concentrated of all other kinds of income.

We have shown, through, the V/D and T/D rules, how the income obtained from various sources influences individually the inequality indexes. We focus now on the ratios between the V/D rule and the F/S, and between the T/D rule and the F/S, which will provide an

idea of which sources have an increasing or a reducing behaviour on the overall inequality of income and wealth. A ratio above one indicates that the component has a big impact on income or wealth distribution, causing an increase in inequality higher than we could expect if we only knew the factor share. For example, if the factor share for farm income is 10 percent and a V/D or T/D rule is 15 percent, this will generate a ratio 1.5. In this case, if farm income increases by one unit, then inequality index will increase by 1.5 units suggesting that a higher share of the increased farm income goes to the upper class of income groups. On the contrary a ratio below unity suggests that the higher proportion of changes in any component accrues to the poor income groups. Needless to say, a negative ratio of any component would imply a gain for the poor income groups so reducing total inequality. Using this method we have estimated the ratio for all sources of income and wealth. The results are sketched in the following graphs (Figg. 4.1 – 4.4).

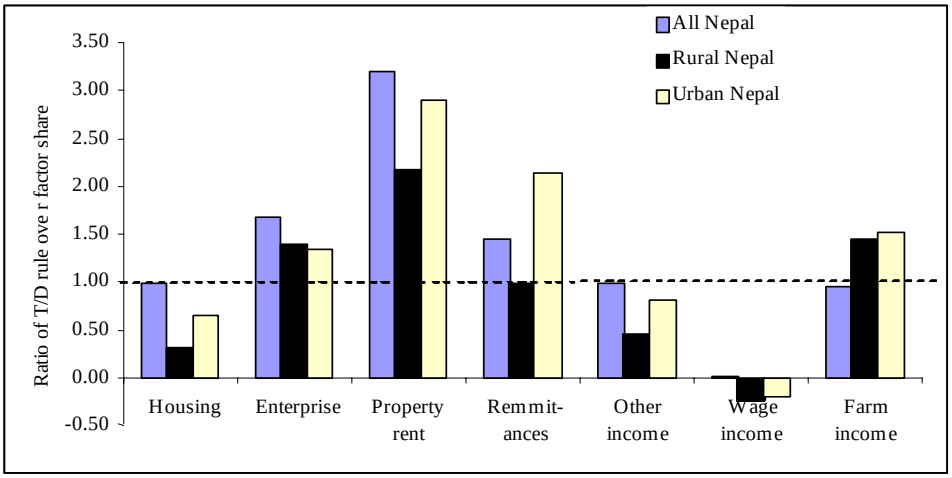
In Fig. 4.1 and Fig. 4.2 we have presented the results, *i.e.* the ratios of the variation decomposition rule and the Theil decomposition rule respectively over the factor share of income distribution. A positive inequality ratio higher than one shows that the higher part of the income accrues to the rich income groups; and hence elevates total inequality. The line below unity shows that the higher share of the variation in income accrues to the low income groups. Hence the level of inequality decreases in relative terms as the share of a particular component rises.

Figure 4.1 Graphical representation of the ratio of variance decomposition rule over factor share for income distribution in Nepal (1996)



Author's own estimates from NLSS (1996) data

Figure 4.2 Graphical representation of the ratio of Theil decomposition rule over factor share for income distribution in Nepal (1996)

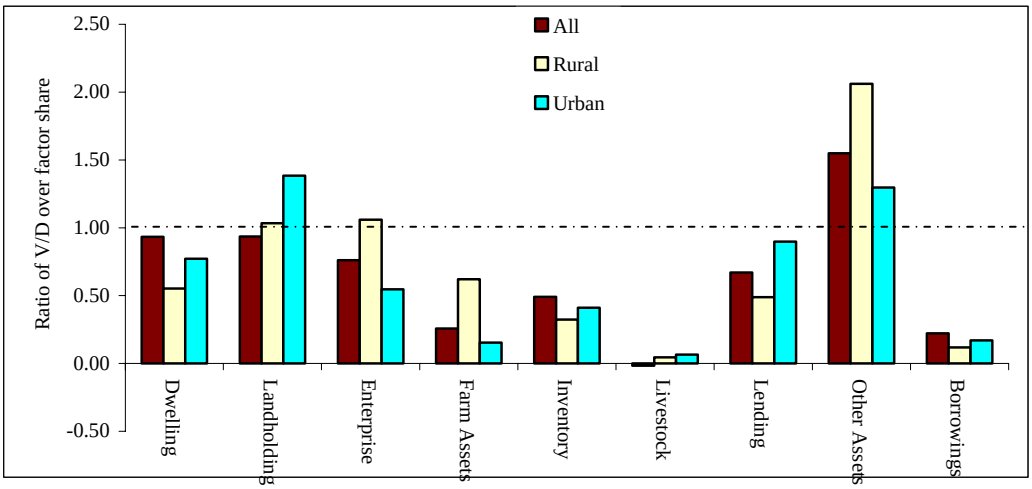


Author's own estimates from NLSS (1996) data

From the above figures it is clear that property has a big impact on the overall income distribution. Property rent goes mostly to the high-income groups because properties are normally accumulated by the wealthiest members of society with the means to accumulate capital. Remittances are also a disequilibrating factor in Nepal. Remittances represent income sent by the migrant back home. Remittances received in rural areas reduce total inequality, suggesting that it contributes to the rural poor income groups. Thus the impact of remittances upon income inequality for rural households is favourable. In urban Nepal it is an unfavourable factor of income distribution. It is reasonable to expect that urban migrant's remittances increase total inequality because urban people who migrate to foreign countries are basically well educated and can compete in the international labour market. The low-income groups have limited access to higher education; and hence the urban remittances accrue mainly to the higher income groups. Income from enterprise in rural and urban Nepal slightly increases total inequality according to the ratio between the T/D and F/S; but it is almost constant in rural Nepal according to the ratio between V/D and F/S. Farm income also raises income inequality both in rural and urban Nepal. It implies that households of upper income classes primarily receive a higher income from farming. Wage income, housing and other income benefit the lower income groups of both rural and urban sectors. Both methods support this result.

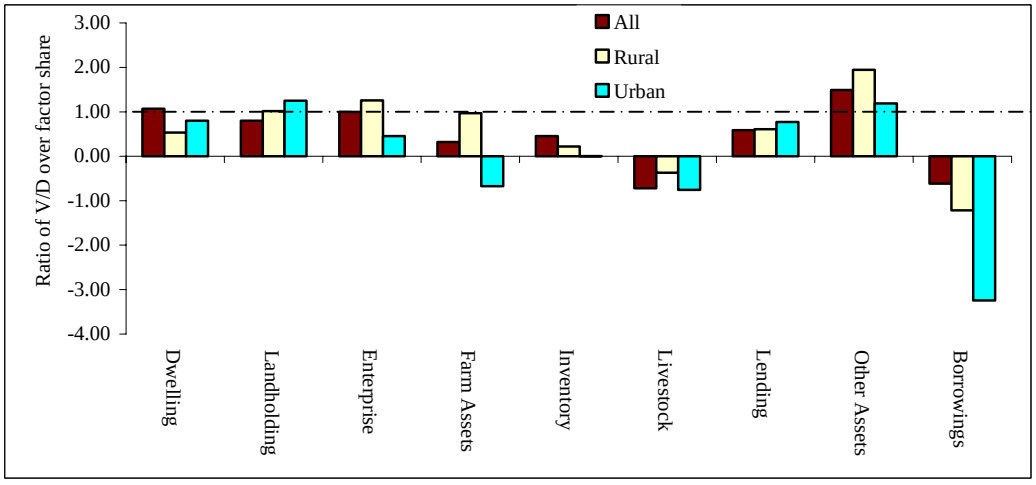
Fig. 4.3 and Fig. 4.4 plot the ratios of the variation decomposition rule and the Theil decomposition rule respectively for the factor share for wealth distribution in Nepal.

Figure 4.3 Graphical representation of the ratio of variance decomposition rule over factor share for wealth distribution in Nepal (1996)



Author's own estimates from NLSS (1996) data

Figure 4.4 Graphical representation of the ratio of Theil decomposition rule over factor share for wealth distribution in Nepal (1996)



Author's own estimates from NLSS (1996) data

Fig. 4.3 shows that 'other assets'[67] have a strong influence on wealth inequality. This is consistent also with Fig. 4.4. It is understandable and reasonable since rich people can possess the extra assets; and an increase of this component favours naturally the upper class wealth holders. These results are consistent for both rural and urban sectors. Landholding in rural Nepal seems to contribute to a higher inequality than in the case of urban Nepal. It is not surprising, since the rural economy is agriculturally based and land is the most important capital for production. Naturally, wealthier families hold more land and an increase in land value favours the wealthier families. Thus it raises the inequality of wealth distribution. An increase in the value of enterprises boosts wealth inequality in rural Nepal; while the opposite is true in urban Nepal. In rural Nepal, only rich families are entrepreneurs; thus the value of the enterprise favours these upper classes; and aggregate wealth inequality in rural Nepal. The rest of the components of wealth tends to reduce aggregate wealth inequality. Borrowing is negatively correlated with total inequality.

4.8 Conclusion

The analysis of inequality by population subgroups is considered an important tool for understanding and explaining wealth, income and expenditure distributions in Nepal. This type of analysis has a very important role for policy decisions because it can help to evaluate and implement efficient policy interventions in dealing with regional inequality. It is further important for policy interventions dealing with socio-economic groups in a country like Nepal, where the caste system and religion have a complicated structure. Expenditure inequalities of various population subgroups of Nepal were looked first. Afterwards, we investigated income and wealth inequality. Subgroups were partitioned by various characteristics of Nepalese society. Although in several instances the differences in mean consumption expenditure, income and wealth of the subgroups are considerable, the results of the decomposition analysis show that the bulk of inequality is due to the differences within population subgroups, rather than to

[67] See Chapter three for the definition of 'other wealth'.

disparities between groups. Hence it would be preferable for policy makers (in order to reduce aggregate inequality) to rely on general policies such as taxation, transfer payments and so on; rather than applying regional policies. Exceptions to this pattern emerge when the population is grouped by caste and ethnicity. In this case, a remarkable proportion of aggregate inequality has been explained through between groups component. A sound policy regarding ethnic groups, as well as rural and urban areas, would help to establish a less unequal society in Nepal. This information may prove quite important for understanding and explaining certain differences between population subgroups. Therefore policy makers may be helped in identifying priorities and in designing the intervention strategy pertaining to the regional and socio-cultural aspects.

Applying the methodology proposed by Shorrocks (1983), we have analysed the inequality decomposition by sources for wealth and income. First of all we have shown that dwelling, landholding, and other assets have a very significant impact on overall inequality of wealth in Nepal. Landholding for rural Nepal contributes to more than 50 percent of total wealth inequality; while dwelling contributes to large part of wealth inequality for urban Nepal. Similarly the empirical results for the decomposition by income sources have demonstrated that incomes from farm, enterprises, and wage were the major elements of total income inequality. In rural Nepal, farm income has generated four-fifths of total inequality; but the share of this component is less than 60 percent. This suggests that any increase in farm income would enrich the upper class of rural society. This would also be the consequence of higher inequality in land distribution. We have also proven that several sources of income and wealth have a negative impact on overall inequality, which means that they have a redistributing effect. However, their equalising influence is relatively small due to their low share in total income. It is noteworthy that wage income has a negative impact on total inequality in both rural and urban Nepal.

Appendix 4A

The Theil indexes are defined as:[68]

$$T_1 = T(y;n) = \frac{1}{n}\sum_i \frac{y_i}{\mu} Log\left(\frac{y_i}{\mu}\right) \text{ and } T_0 = T(y;n) = \frac{1}{n}\sum_i Log\left(\frac{y_i}{\mu}\right)$$

Where $y = (y_1, \cdots, y_n)$ is an income vector and μ is the mean income of *y*. We divide *y* into *G* subgroups and hence the g^{th} subgroup has n_g individuals. The vector y is now $y = \left(y^1, ..., y^G\right)$ and $y^g = \left(y_1^g, ..., y_{n_g}^g\right)$ with $\sum_{g=1}^{G} n_g = n$.

Let us define $a_i = \frac{y_i}{\mu} Log\left(\frac{y_i}{\mu}\right)$ for T_1 and respectively $a_i = Log\left(\frac{\mu}{y_i}\right)$ for T_0, then $T(y;n) = \frac{1}{n}\sum_i a_i$.

We divide the vector $a = (a_1, \cdots, a_n)$ in subgroups as we have done with *y*.

$$a = (a_1, \cdots, a_n) = \left(a^1, ..., a^G\right) = \left[\left(a_1^1, ..., a_{n_1}^1\right), ..., \left(a_1^g, ..., a_{n_g}^g\right), ..., \left(a_1^G, ..., a_{n_G}^G\right)\right].$$

The Theil index may be written as:

$$T(y;n) = \frac{1}{n}\sum_i a_i = \frac{1}{n}\left[\left(a_1^1 + ... + a_{n_1}^1\right) + ... + \left(a_1^g + ... + a_{n_g}^g\right) + ... + \left(a_1^G + ... + a_{n_G}^G\right)\right] =$$

$$= \frac{1}{n}\left(\sum_{i=1}^{n_1} a_i^1 + ... + \sum_{i=1}^{n_g} a_i^g + ... + \sum_{i=1}^{n_G} a_i^G\right) = \frac{1}{n}\sum_{g=1}^{G}\sum_{i=1}^{n_g} a_i^g$$

[68] See the appendix 2B of chapter 2.

For the Theil index T_1:

$$a_i^g = \frac{y_i^g}{\mu} Log\left(\frac{y_i^g}{\mu}\right)$$

$$T(y;n) = \frac{1}{n}\sum_{g=1}^{G}\sum_{i=1}^{n_g} a_i^g = \frac{1}{n}\sum_{g=1}^{G}\sum_{i=1}^{n_g} \frac{y_i^g}{\mu} Log\left(\frac{y_i^g}{\mu}\right) = \frac{1}{n}\sum_{g=1}^{G}\sum_{i=1}^{n_g} \frac{y_i^g}{\mu}\left[Log\left(y_i^g\right) - Log\left(\mu\right)\right] =$$

$$= \frac{1}{n}\sum_{g=1}^{G}\sum_{i=1}^{n_g} \frac{y_i^g}{\mu}\left[Log\left(y_i^g\right) - Log\left(\mu_g\right) + Log\left(\mu_g\right) - Log\left(\mu\right)\right] =$$

$$= \frac{1}{n}\sum_{g=1}^{G}\sum_{i=1}^{n_g} \frac{y_i^g}{\mu}\left[Log\left(y_i^g\right) - Log\left(\mu_g\right)\right] + \frac{1}{n}\sum_{g=1}^{G}\sum_{i=1}^{n_g} \frac{y_i^g}{\mu}\left[Log\left(\mu_g\right) - Log\left(\mu\right)\right] =$$

$$= \frac{1}{n\mu}\sum_{g=1}^{G}\sum_{i=1}^{n_g} y_i^g\left[Log\left(\frac{y_i^g}{\mu_g}\right)\right] + \frac{1}{n\mu}\sum_{g=1}^{G}\sum_{i=1}^{n_g} y_i^g\left[Log\left(\frac{\mu_g}{\mu}\right)\right] =$$

$$= \frac{1}{n\mu}\sum_{g=1}^{G}\mu_g\sum_{i=1}^{n_g}\frac{y_i^g}{\mu_g} Log\left(\frac{y_i^g}{\mu_g}\right) + \frac{1}{n\mu}\sum_{g=1}^{G} Log\left(\frac{\mu_g}{\mu}\right)\sum_{i=1}^{n_g} y_i^g =$$

$$= \sum_{g=1}^{G}\frac{\mu_g n_g}{n\mu}\frac{1}{n_g}\sum_{i=1}^{n_g}\frac{y_i^g}{\mu_g} Log\left(\frac{y_i^g}{\mu_g}\right) + \frac{1}{n\mu}\sum_{g=1}^{G} Log\left(\frac{\mu_g}{\mu}\right) n_g\mu_g =$$

$$= \sum_{g=1}^{G}\left(\frac{\mu_g n_g}{n\mu}\right) T\left(y^g;\mu_g\right) + \sum_{g=1}^{G}\left(\frac{\mu_g n_g}{n\mu}\right) Log\left(\frac{\mu_g}{\mu}\right) =$$

$$= \sum_{g=1}^{G}\frac{\mu_g n_g}{n\mu}\left[T\left(y^g;n_g\right) + Log\left(\frac{\mu_g}{\mu}\right)\right] =$$

$$= \sum_{g=1}^{G}\frac{\mu_g n_g}{n\mu} T\left(y^g;n_g\right) + \sum_{g=1}^{G}\frac{\mu_g n_g}{n\mu} Log\left(\frac{\mu_g}{\mu}\right)$$

$$= \sum_{g=1}^{G}\frac{\mu_g n_g}{n\mu} T_g^1 + \sum_{g=1}^{G}\frac{\mu_g n_g}{n\mu} Log\left(\frac{\mu_g}{\mu}\right)$$

$$= \underbrace{\sum_{g=1}^{G} p_g m_g T_g^1}_{within} + \underbrace{\sum_{g=1}^{G} p_g m_g Log\left(\frac{\mu_g}{\mu}\right)}_{between} = T_1$$

For the Theil index T_0:

$$a_i^g = Log\left(\frac{\mu}{y_i^g}\right)$$

$$T(y;n) = \frac{1}{n}\sum_{g=1}^{G}\sum_{i=1}^{n_g} a_i^g = \frac{1}{n}\sum_{g=1}^{G}\sum_{i=1}^{n_g} Log\left(\frac{\mu}{y_i^g}\right) = \frac{1}{n}\sum_{g=1}^{G}\sum_{i=1}^{n_g}\left[Log(\mu) - Log\left(y_i^g\right)\right] =$$

$$= \frac{1}{n}\sum_{g=1}^{G}\sum_{i=1}^{n_g}\left[Log(\mu) - Log\left(\mu_g\right) + Log\left(\mu_g\right) - Log\left(y_i^g\right)\right] =$$

$$= \frac{1}{n}\sum_{g=1}^{G}\sum_{i=1}^{n_g}\left[Log\left(\mu_g\right) - Log\left(y_i^g\right)\right] + \frac{1}{n}\sum_{g=1}^{G}\sum_{i=1}^{n_g}\left[Log(\mu\ ) - Log\left(\mu_g\right)\right] =$$

$$= \frac{1}{n}\sum_{g=1}^{G}\sum_{i=1}^{n_g}\left[Log\left(\frac{\mu_g}{y_i^g}\right)\right] + \frac{1}{n}\sum_{g=1}^{G}\sum_{i=1}^{n_g}\left[Log\left(\frac{\mu}{\mu_g}\right)\right] =$$

$$= \frac{n_g}{n}\sum_{g=1}^{G}\frac{1}{n_g}\sum_{i=1}^{n_g}\left[Log\left(\frac{\mu_g}{y_i^g}\right)\right] + \frac{1}{n}\sum_{g=1}^{G} n_g Log\left(\frac{\mu}{\mu_g}\right) =$$

$$= \sum_{g=1}^{G}\frac{\mu n_g}{n} T\left(y^g;n_g\right) + \sum_{g=1}^{G}\frac{n_g}{n} Log\left(\frac{\mu}{\mu_g}\right)$$

$$= \sum_{g=1}^{G}\frac{n_g}{n} T_g^0 + \sum_{g=1}^{G}\frac{n_g}{n} Log\left(\frac{\mu}{\mu_g}\right)$$

$$= \underbrace{\sum_{g=1}^{G} p_g T_g^0}_{within} + \underbrace{\sum_{g=1}^{G} p_g Log\left(\frac{\mu}{\mu_g}\right)}_{between} = T_0$$

Chapter 5

Income Inequality and Economic Development

5.1 Introduction

Inequality is profoundly influenced by institutional factors such as social norms and attitudes, broad economic changes, governmental activities and so on. Economists have long been interested in the relationship between the distribution of income and the rate of economic growth. Two propositions on this theme have dominated the literature. The first, associated with the work of Simon Kuznets, asserts that the degree of inequality varies systematically with the level of income per head. He puts forward a model in which inequality is initially rising as incomes begin to rise and then, beyond some point, decreasing as income per head continues to grow (Kuznets, 1955). The second proposition, associated with Arthur Okun, is interpreted as a trade off between equality and efficiency. Income redistribution is a costly effort to reduce inequality because the policies required to accomplish it generally produce a misallocation of resources. Policy interventions intended to reduce inequality in income distribution may have a high cost in terms of a lower average income (Okun, 1975). Thus, Kuznets identifies, in the long run, that policy interventions are unnecessary, while the Okun proposition indicates that in the short run, the redistribution policies are harmful. Brought together, these two propositions have been used to argue against public policies intended to create a less unequal society.

The belief in a trade-off between equity and growth, in both developed and developing economies, is widely accepted. Recent evidence,[69] however, indicates not only that the two are compatible but that they are mutually reinforcing. Traditional analyses of the relationship between inequality in income distribution and growth have focused on the relationship between income inequality and the growth of GNP. In this chapter we will examine the relationship between inequality in income distribution and GDP *per capita*, including the arguments discussed in Kuznets (1955).

5.2 Growth and Inequality – A Brief History of the Theories of Growth and Distribution

In this section we examine the empirical evidence that has been gathered to date on the relationship between growth and inequality. We begin with a review of the evidence on income inequality and economic growth. The macro-economic distribution of income was central to the thinking of classical economists such as David Ricardo and Karl Marx. 'The participants in the process of production are grouped by Ricardo into three classes: landlords who provide land, capitalists who provide capital and workers who provide labour' (Pasinetti 1974, chapter 1). Atkinson[70] quotes Ricardo as arguing that political economy should be an enquiry into the laws that determine the division of industrial income amongst the classes who concur in its formation.

The Harrod-Domar model developed in the l930s and 1940s attempted to analyze the relation between investment, employment, and growth. Harrod in particular recognized the dynamic effect of a higher employment rate on capital, using income and savings as the crucial link between the two. There is a direct relationship between the capital stock and output; and investment is the engine for the economic growth. Any new capital stock as a form of investment brings about corresponding growth in the economy. Let k and s be the capital output

[69] For example, see Persson and Tabellini (1994) and Alesina and Rodrik (1994).

[70] Atkinson (1997)

ratio (K/Y) and saving output ratio (S/Y) respectively. In this model the saving rate is fixed and total investment is determined by entrepreneurs' expectations. Now we can write:

$S = sY$ (I)

$I = \Delta K$ (II) where K is the level of capital stock.

$k = K/Y$ or $\Delta K/\Delta Y$ (III), capital output ratio is fixed.

From equations II and III we derive,

$I = \Delta K = k\,\Delta Y$ (IV)

In equilibrium, total saving is equal to total investment I = S, which follows with a manipulation of equation I and IV:

$sY = k\,\Delta Y$

$\rightarrow \Delta Y/Y$ (growth rate) $= s/k$ (V)

The growth of economy ($\Delta Y/Y$) is a simplified version of the Harrod-Domar growth theory, which states that growth is linked to the national saving ratio and the capital output ratio k. In this model it is clear that the growth rate (if considered endogenous) is positively related to the saving ratio[71] and inversely related to the capital output ratio. The Harrod-Domar growth model is very simple and the logic behind the model is that in order to grow, economies must save and invest.

The growth theory of the 1950's saw distribution as playing a crucial role. The capital-labour ratio in Kaldor (1956, 1957) was driven to its steady state equilibrium value by different saving rates of different socio-economic groups (capitalists and workers). If K/L rises above its equilibrium value, the wage-to-profits ratio should also rise. With savings from wages assumed to be lower than that of profits, this would lead to a decline in the rate of capital accumulation, driving total savings and K/L back down towards full employment equilibrium.

One possible answer to the Harrod-Domar, *i.e.* the assumption of a flexible aggregate saving ratio, was primarily adopted by the neo-Keynesian or Cambridge school. Of course there are many ways in which one can give flexibility to s; but the one which has played the major role is the hypothesis of a two-class society (namely workers and capitalists), each with different

[71] A higher saving rate leads to a higher growth rate of the model, if the capital/output ratio is constant.

constant marginal propensity to save. In this way there always exists a distribution of income between the two classes, which produces precisely that saving ratio that will equal the value *g(K/Y)*, so satisfying the Harrod-Domar equilibrium condition.

The motivations for this approach are to be found in the following considerations which have emerged with the elaboration of successive 'generations' of post-Keynesian models of profit determination and income distribution:

- The assumption of a uniform rate of saving for the whole economic system ignores all possible differences in saving- and consumption- behaviour among different classes of income-receivers, or categories of income, or even different sectors of the economy.
- The problem of aggregating savings might give rise to particular and unknown difficulties, so that it may be safer to consider it in a disaggregate way, as the post-Keynesian model precisely does.
- Thirdly, this assumption also receives empirical support from the observed high rates of saving out of corporate profits and lower rates out of labour income; see, for instance, Burmeister and Taubman (1969), Kaldor (1966), and Murfin (1980).[72]
- The nature itself of the savings differs from class to class: for instance Kregel (1973, ch. 11) justifies the distinction not so much on considerations of class position in this sense, but

[72] By using UK quarterly data for the period 1963-76, Murfin (1980,p. 21) concludes that 'the suggestion appears to be that "workers" marginal propensity to consume is circa 0.85, while that of "capitalists" around a quarter. This later estimate is almost exactly that obtained by Kalecki for the USA 1929-40 by a very different methodology.' Note that Murfin defines workers as wage-income recipients, and capitalists as non-wage-income recipients, and acknowledges that there might be some overlapping. Kaldor (1966, pp. 312-14) notes that national income accounting procedures typically include in personal saving the saving of unincorporated business enterprises; and when allowance is made for investment by these enterprises, together with personal investment in housing, to obtain a measure of personal saving available for lending to other sectors, the figures show that the latter is about one per cent of personal disposable income, *i.e.* of workers' income. On the other hand, always for Kaldor, corporate gross saving out of after-tax profits is estimated at some 70 per cent, so that the assumption $s_c > s_w$, crucial for the post-Keynesian model, turns out to be reasonable.

on a difference between the form of income as such, that is, between 'quasi-contractual incomes' (like wages, fixed interest, and rent) and 'residual incomes' (like corporate profits). It is worth noting that for Kaldor (1961, pp. 194-5) residual incomes are much more uncertain than contractual incomes and subject to fluctuations.

- Finally, it may be argued (as Kaldor, 1961, pp. 194-5 has done) that the need to generate internal finance in order to carry out active investment dictates a high saving propensity from profits. This requirement will be even stronger in a life-cycle model on a steady-state growth path, where the capitalist's saving ratio has to allow for (a) life-cycle wealth accumulation and (b) gradual accumulation of inter-generational assets in order to let the capitalists' wealth stock grow at the same rate as that of the population. It has been repeatedly pointed out that without this condition (*i.e.* that the capitalist's propensity to save is higher than that of the worker) the system would not be stable at full employment or near full employment. This does not, of course, directly support the validity of the hypothesis of a differentiated (and constant) saving propensity; but it is an important part of the mechanism through which, in the post-Keynesian model, total saving is brought into line with the exogenously given investment.

As Kaldor (1956, p. 95) points out, the condition that the capitalists' propensity to save is higher than that of the other class(es) is necessary but not sufficient for the stability of the model. Another necessary condition for its stability is that the effect of the change in profit margins on saving exceeds the corresponding effect on investment, otherwise equilibrium would be unstable even if the capitalists' propensity to save were higher than that of the other class(es). This latter condition does not arise in the context of the traditional Kaldor-Pasinetti model, where investment is assumed to be completely autonomous, *i.e.* of full-employment level; it is however important in all of Kaldor's and Joan Robinson's models, at least where P/Y exerts a positive influence on the level of aggregate demand and hence on investment. Later on it has become more common to restate the requirement as (see *e.g.* Pasinetti, 1962): $s_w < I/Y$ and $s_c > I/Y$. the first condition ensures that the dynamic equilibrium will not have a null or negative share of profits; while the second one excludes the case of a dynamic equilibrium with a null or negative share of wages. As Pasinetti (1962, p. 269) points out, if the first condition were not

satisfied, the system would enter a situation of chronic inflation. 'As a matter of fact the latter limit becomes operative much before s_c even approaches the value *I/Y*, because there is a minimum level below which the wage-rate cannot be compressed' (Pasinetti, 1962, p. 269).

By commenting upon the properties of his own model Pasinetti (1962, p. 277) concludes that 'in a system where full employment investments are actually carried out, and prices are flexible with respect to wages, the only condition for stability is $s_c > 0$, a condition which is certainly and abundantly satisfied even outside the limits in which the mathematical model has an economic meaning'.

In the late 1950s and early 1970s by considering a full-employment long-run equilibrium growth model with a capitalists' class (whose income is derived entirely from capital) and a workers' class (whose income is derived from wages and accumulated savings), both with constant marginal propensities to save, the Cambridge economists were in a position to (a) provide a solution to the Harrod-Domar dilemma (by specifying an aggregate saving ratio *s* which equals *g(K/Y)*, where *g* and *K/Y* are both exogenously given), (b) determine the long-run equilibrium value of the rate of profits, the distribution of income between profits and wages, and the distribution of disposable income between the two classes, (c) allow the existence of an income residual, namely wages, consistent with the assumption of a relationship between the savings of that class of individuals (the capitalists) who are in the position to control the process of production and the patterns of capital accumulation, and (d) give some insight into the process of accumulation of capital by specifying the equilibrium capital shares of the two classes.

There was yet another strand of growth or development theories in 1950's in which distribution played an important role. This was based on the path-breaking works of Arthur Lewis (1954) and Simon Kuznets (1955). Lewis's model of growth with unlimited supplies of labour was fundamentally different from Kaldor's and Solow's, in that it was driven by a movement of a factor of production (labour) from low productivity sectors to a higher productivity one. Kuznets's (1955) contribution owed much to the observation that if inequality rose between these two sectors in a more substantial way than that within each sector, then inequality would first rise – as people moved across – and then fall, as most of them found

themselves in the new sectors, until the economy reached a point where factor movement was equalised across sectors. This is the stylised Kuznets 'inverted-U' curve.

But growth theory branched out in the neoclassical direction, thanks to another paper written in 1956 by Robert Solow. Unlike Kaldor's, Solow's model did not require a distributional mechanism to generate a stable growth path. Instead, it relied on a production function *f(K, L)* with a completely flexible *K/Y* ratio, implying perfect substitutability of the factors of production. That displayed constant returns to scale and had diminishing returns to each factor. It was therefore concave with respect to the capital-labour ratio. Given the assumption of a constant and exogenous population growth rate, and certain conditions on *f(k)*, this led to a unique capital-labour ratio, which was universally stable (in the sense that the system converges to it from any other ratio). Because it relies on a neo-classical production function, this seminal model became known as the neo-classical growth theory (Solow/Swan model). It generated an important literature in the 1960's, which sought to address two perceived shortcomings of Solow's basic model. Arrow (1962), Uzawa (1965) and others tried to bring technical progress and new ideas into the picture, and to explain their links to growth. Cass (1965), building on earlier work by Ramsey (1928), replaced Solow's exogenous, arbitrary savings rate with an inter-temporal consumption, a path chosen so as to fully optimise explicit inter-temporal preferences.

These are interesting and often complex theoretical issues. Romer (1986) and Lucas (1988) developed the models of the 1960's; in their models positive steady-state growth *per capita* income is driven by 'endogenous' technical progress or by human capital accumulation, this had become something of an established tradition. But for a critique of the 'endogenous' theories of growth see Pasinetti (2000).

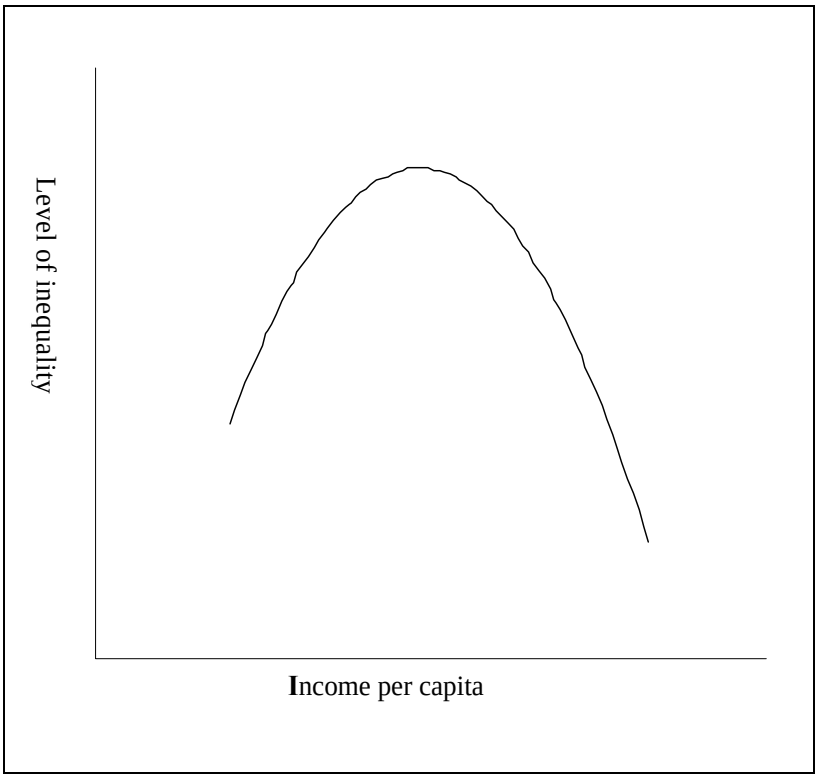
5.2.1 *The effect of growth on distribution*

Despite the reliance of modern growth theory on 'representative' agents, societies are patently not homogeneous, whether in incomes, wealth, or many other dimensions. When we say that incomes for a certain population grow by *x%*, we are in fact referring to the growth rate of the mean of income distribution across that population. Aggregate growth statistics, however

useful, refer only to the evolution of the distribution's first moment, ignoring changes in the rest of the distribution.

The well-established view on linkages between growth and income distribution is often referred as to the Kuznets' hypothesis. This postulates that growth (from the low-income levels associated with predominantly agrarian societies) would first lead to an increase, then a 'plateau', and then to a decrease in income inequality. This is captured diagrammatically in the Fig. 5.1 below.

Figure 5.1: The Stylised Kuznets Curve



Author's own estimate

The empirical evidence for this came from Kuznets's investigation of a time-series of inequality indicators for England, West Germany, and the United States. In the 1950's, these

were basically the only countries for which sufficiently long-time series was available and by that time inequality was indeed falling in all three countries, after having risen earlier. Given the data available at that time, it was impossible to reject this hypothesis. In fact, the Kuznets curve became one of the stylised facts of the study of income distribution. Only recently tests of the hypothesis based on much larger data sets (both across countries and over time for individual countries) have often contested it.

5.2.2 *Empirical evidence: Kuznets' hypothesis*

The Kuznets' inverted U-shaped relationship between income inequality and the level of income influenced the economic theory for four decades. In the early 1990s, however, economists began to doubt the concept of relationship between the level of income *per capita* and the degree of inequality. Several studies in the early 1990s have claimed that there was no inverse relationship between growth and income equality during the intial stages of development. On the contrary, initial inequality in the distribution of income was harmful to growth. Simon Kuznets' conclusion was reached by examining the historical experience of developed countries and a very small sample of developing countries for which data were available. Several empirical works are done with large and cross-sectional data to test the Kuznets' proposition regarding the relationship between growth and income equality. Felix Paukert (1973), using cross-sectional data for 56 countries concluded that the data support the hypothesis "with economic development income inequality tends to increase, then becomes stable and then decrease" (page 120).

Another well-known empirical study is by Ahluwalia (1976), who used cross-country data for 60 countries. He chose the income shares of various percentile groups as dependent variables to test the relationship against the level of GNP. He found that, when *per capita* income increases, the share in national income for the lower income groups first declines and then rises, while the opposite is true for the richest groups. His results are statistically significant; and he was convinced enough by the data of the existence of an inverted U-shaped relationship between inequality of income and level of *per capita* GNP. In his empirical test, Ahluwalia was convinced to call the Kuznets' proposition as it a "stylised fact".

These studies, in the 1970s and 1980s, relied on a small quantity and poor quality data set. Deininger and Squire (1996a) have specified three basic criteria for high quality data as we have already discussed in chapter two:

- the data must come from nationally representative household surveys;
- all sources of income (or uses of expenditure) must be included (and not, for example, wage income only);
- the survey must be representative of the country's entire population and results must not be based on extrapolations from information gathered only from specific subgroups (*e.g.*, it should not be a survey of the urban population only).

5.2.3 *The recent empirical studies*

The recent economic reform in transition economies of Eastern Europe and Central Asia may have changed the nature of Kuznets' law. Looking at a sample of 64 changes in mean income and inequality, or 'spells' between 1981 and 1994,[73] Ravallion and Chen find a significant negative correlation between economic growth and change in inequality. In other words, the sample suggests that growth reduces inequality, rather than increasing it. It may be reasonable to conclude that the negative link between growth and inequality detected in this study was brought about by the rather specific circumstances of transition in Eastern Europe and Central Asia, where negative growth and increasing inequality have both prevailed since 1990.

In the 1990s, the classical view that distribution (one aspect of which is measured by inequality indices) is not only an outcome, but in fact plays a central role in determining other aspects of the economic performance. Recently, the proposition that initial inequality seemed to be associated with lower growth rates was put forward by Person and Tabellini (1994) and Alesina and Rodrik (1994). Using the data sets available to them, both studies found that inequality variables had significantly negative coefficients in growth regressions. Deninger and Squire (1998) also found that the negative coefficient on initial income inequality in their growth

[73] Ravallion and Chen (1997).

regressions becomes insignificant only when a variable for asset inequality (the Gini coefficient for land ownership) is introduced.

Person and Tabellini (1994) were probably the first to find the econometric evidence on the negative relationship between initial income inequality and the economic growth. They used historical data for nine developed countries and cross-sectional data for 56 countries. They focus on the median voter and conclude that a strong negative relation between income inequality at the start of the period and growth in the subsequent period for both samples (Person and Tabellini, 1994). That is, high *ex-ante* inequality is associated with *ex-post* slow growth of output and incomes. A similar type of econometric models is tested by Alesina and Rodrik (1994) for two periods, specifically, 1960-85 and 1970-85. The results indicate that income inequality is negatively correlated with subsequent growth (Alesina and Rodrik, 1994, p. 481). George Clark runs similar regressions using various income inequality measures and then performs a sensitivity analysis to test the robustness of the negative relationship between income inequality and growth. His results confirm a robust and negative relationship between inequality and growth (Clark, 1995, p. 422).

Thus, the recent studies using better data come to a different conclusion regarding the relationship between inequality and income growth compared to studies done in the past. However, even the data used in most recent studies are still far from perfect. Deininger and Squire doubt about the quality of income distribution data used by Person and Tabellini. Indeed they proved that Person and Tabellini (1994) result, on the negative relation between growth and income inequality, does not hold when only the high quality data are used. Deininger and Squire are also critical of the data used in Alesina and Rodrik (1994).

Deininger and Squire (1996) use a new data set on income distribution to re-examine the relationship between growth and inequality. They collected as many observations of income distribution as they could from both primary and reliable secondary sources and obtained a total of 2,600. After applying their criteria for quality data outlined above, they were left with 682 high quality observations, which is substantially more than those contained in the data sets used

in previous studies. Not only do they have more cross-sectional observations; they also have a significantly greater number of time series observations for each country. This is crucial because the empirical testing of the Kuznets hypothesis in the past used cross-sectional data to try to draw conclusions about what is, in reality, a longitudinal relationship. According to Deininger and Squire (1996b), our data indeed provide little support for an inverted-U relationship between levels of income and inequality when tested on a country-by-country basis, with no support for the existence of a Kuznets curve in about 90 per cent of the countries investigated.

When they run the standard growth regression used in the past but with their high quality data, Deininger and Squire's results appear, at first, to corroborate those of Persson and Tabellini, Alesina and Rodrik, and Perotti, in showing that initial inequality has a negative effect on future growth. This effect, however, is no longer significant when regional dummies are introduced into the regression. Although their results do not confirm that there is an inverse relationship between initial income inequality and growth, they do confirm that initial income inequality is not positively correlated with growth. Thus the idea that income redistribution is incompatible with growth receives no support from the cross-section evidence; and the view that inequality is a precondition for growth is increasingly untenable.

5.3 A Case Study of Income Distribution and Development from the Low Income Countries

We have collected data for 27 low and middle income countries and we categorise them into four groups based on the level of GDP (PPP) *per capita*[74]. In the first group, the poorest countries have a GDP *per capita* of $0-600. We assume that countries that have passed the first phase of development have GDP *per capita* of $601-1200. We also suppose that countries that have GDP *per capita* of $1201-1500 and above $1500 have passed the second and third phases of development respectively (see Table 5.1).

[74] From here onward, we write only GDP *per capita* to indicate GDP *per capita* in Purchasing Power Parity (dollars) term in this section.

Table 5.1 Percentage quintile shares of income in selected low-income countries for 1980-98 (29 low-income countries with 81 observations)

Summary statistics	1st quintile	2nd quintile	3rd quintile	4th quintile	5th quintile	Average GDP (PPP)
0-600	7.26	11.24	15.31	21.15	45.04	472
601-1200	6.58	10.63	14.98	21.47	46.35	887
1201-1500	6.70	10.92	15.29	21.57	45.52	1,370
Above 1500	7.27	11.13	15.24	21.27	45.10	2,170
Mean	6.79	10.79	15.08	21.32	46.04	--
Standard Deviation	2.15	2.36	1.99	1.45	7.05	--
Max Value	10.11	14.29	20.10	24.57	63.44	--
Min Value	1.07	2.03	9.80	17.32	30.89	--

Source: Author's own estimates from the World Bank and Deninger & Squire data

In Table 5.1 we give the summary statistics of a sample for 27 less developed countries, including 68 observations. We have gathered only the high quality data from the Deininger and Squire (1996) database for these countries. The average share of the first poorest quintile is 6.79 percent. Sierra Leone has the lowest quintile share with 1.07 percent of national income in 1989/90 and the Kyrgyz Republic has the highest share of the lowest quintile. On the other hand, the richest quintile has the mean share of total income, *i.e.* 46.04 percent. Sierra Leone has the highest share for the richest quintile; while the Yemen Republic has the lowest income share for the richest quintile in 1998.

In the sample of the families that include the lowest 20 percent – the bottom quintile – countries with up to $600 *per capita* earn an average of 7.26 percent of national income. As income rises, the share of the lowest quintile decreases, up to a certain threshold, according to the Kuznets' hypothesis. In our sample, countries that advance to the first level of development enter into the income level of $601-1200. The share of the poorest twenty quintile at this stage decreases from 7.26 percent to 6.58 percent. As income rises above $1200, entering the second phase of development, the poorest quintile begins to gain from the growth of income. It is clear that growth, in terms of level of GDP *per capita*, occurs in the model through a trickle down

process, which reduces the inequality of income distribution; or in other words, the share of the poor groups increases. The trickle down effect in our sample is noted after some growth of income. For example, the poorest quintile share of any country increases as soon it passes the first phase of development.

Similarly in our sample, the second and third quintiles decrease at first and then increases in the process of development. As GDP *per capita* rises above $600 up to $1200, the share of the second and third quintile in national income decreases from 11.24 per cent to 10.63 per cent and from 15.31 per cent to 14.98 per cent respectively. In the later stage of development, as income goes up, the income share of the third and forth quintiles rises.

Surprisingly the income share of the two richest quintiles increases at the initial phase of development. The countries with GDP *per capita* of $600-1200 have higher shares of income for rich families. In another stage of development, when income rises above $1200, the fourth quintile share of income increases still, while the share of the richest quintile begins to fall. Moreover, further development leads to a decrease in the income share for fourth quintile and an increase for the fifth quintile in the income share. This implies that the richest families, with a level of income above $1200, end up earning a lower share of GDP.

The statistical decline of the poorest three quintiles in the beginning phase of development did not occur in absolute GDP *per capita* term. In our sample, the countries with income range of $0-600 GDP *per capita* show a higher average income share in the poorest three quintiles than the countries with an income range of $601-1200. But in terms of dollar income (absolute value), countries with an income range of $601-1200 and higher have a greater level of income than the countries with an income range of $0-600 GDP *per capita* referring to the poorest three quintiles (see Table 5.2).

Table 5.2: Average per capita money income of quintiles in the national income for low income countries (US $ in PPP terms)

Income range	**1st quintile**	**2nd quintile**	**3rd quintile**	**4th quintile**	**5th quintile**
Mean income (0-600)	171	266	362	500	1064
Mean income(601-1200)	292	471	665	953	2056
Mean income (1201-1500)	459	748	1047	1477	3118
Mean income (above 1500)	789	1207	1653	2307	4892

Author's own estimates from the World Bank, PTW and Deninger & Squire data

Thus, as the countries with the lowest GDP *per capita* move towards the level of income to $601-1200, the share of the lowest three quintiles declines, but these quintile shares however do not lose in absolute term. The first three quintiles with the level $ 0-600 in GDP *per capita* have a mean income of $ 171, $ 266, and $ 362 respectively. During the progression of the income level (*i.e.* from $0-600 to $601-1200) their average amount of income increases despite the decrease in the share of income of the poorest three quintiles.[75] These quintiles have a higher average income than the first three quintiles of the countries with an income range of only $0-600. In this respect, we may say that although income of the poor in absolute terms has increased, its distribution worsens in this phase with respect to the income share of the poor. The richest two quintiles experienced an increase in terms of dollars and in terms of income share. In the income level of $601-1,200, these two wealthy quintiles have income shares of 21.47% and 46.35% with a mean income of $953 and $2,056 respectively. Thus, in the initial development process, the wealthiest two quintiles have gained in terms of both income share and in absolute (dollar) terms. We may conclude that in the first phase of development (given that the shares of income of the poorest quintile have decreased) the distribution of income does worsen.

[75] That is, the shares of lowest three quintiles move from 7.26%, 11.24% and 15.31% to 6.58%, 10.63% and 14.98% of total income respectively.

In the second phase of development,[76] the mean incomes of the first three quintiles are likewise gaining somewhat in their quintile share of income (see Table 5.1). In this stage, the fourth quintile has also marginally increased its share of income from 21.47% to 21.57%. Only the share of the richest quintile has declined. Despite the reduction in the share of income, the mean income has grown from $ 2,056 to $3,118. Consequently, all four lower quintiles gain their shares of income at the expense of the richest quintile share, which indicates that the income distribution has slightly improved.

In addition, the third stage of development (*i.e.* the last phase in our sample) with mean income above $1,500, only the two poorest quintile shares have experienced further gains in income share. They increased both their share of total income and the level of income (see Tables 5.1 and 5.2). The losers are the three richer quintiles: although all mean income levels have raised, they experienced a decline in their share of income. It is obvious that an increase in income share of the poor quintiles and a decrease in income share of the rich quintiles will improve the distribution of income. Hence, income inequality has further declined in the process of development.

A number of conclusions may be drawn from the analyses above. Perhaps the most obvious is that, in general, all income groups rise and fall together. When upper-income groups prosper, so do middle-income and lower-income groups. Conversely, when high incomes stagnate or decline, so do income-earners of all other categories. Critics of income inequality often state or imply that the prosperity of upper-income groups takes place at the expense of other groups and vice-versa. This leads us to tentatively conclude that the Kuznets' hypothesis is valid for certain countries. . In the next section we will test this relation with statistical tools.

5.4 Testing Kuznets' Hypothesis

The myth of the Kuznets' inverted U-curve hypothesis persisted for long time, mainly because it seems to be rational and, at a more intuitive level, seems to satisfy our natural desire

[76] When income level reaches $1200-1500.

for social justice. We shall test the Kuznet's hypothesis using a cross-sectional approach. The cross sectional approach relies on two very strong assumptions. First, a complete homogeneity across countries - all countries in the sample behave in the same way; at least as far as income inequality is concerned in its relation to GDP *per capita*. Secondly, dynamics are ignore in the sense that the above relationship is assumed to be unaffected by business cycles, or any other time dependent factors. Most of the empirical studies have tested Kuznets' hypothesis by estimating a simple non-linear regression model of the form

$$I_{it}^{k} = \alpha^{k} + \beta_1^{k} Y_{it}^{k} + \beta_2^{k} (Y_{it}^{k})^2 + \varepsilon_{it}^{k} \tag{5.1}$$

Where α is the constant term of the model and β_1 and β_2 are the slopes of the parameters, β_1 and β_2 might be expected to carry positive and negative signs respectively. I_{it}^{k} is a measure of income inequality for a given i^{th} country and t^{th} year in the sample.[77] The superscript k denotes the number of inequality indexes used in this study. Y_{it} is the *per capita* GDP in Purchasing Power Parity term (PPP) as a proxy of the level of development for t^{th} year in i^{th} country. To capture the U-shape, we have added the square term of Y_{it}^{k} in the equation. ε_{it}^{k} is the usual disturbance term.

If the beta parameters turned out to be significant with the right signs, the U-curve hypothesis would be confirmed by the data. For simplicity of our analysis we omit the subscripts and the superscript in equation 5.1 and, hence, we can rewrite it as follows:

$$I = \alpha + \beta_1 Y + \beta_2 Y^2 + \varepsilon \tag{5.2}$$

---

[77] $i = 1,2,\ldots,N$ are the number of countries and $t = 1,2,\ldots$ are the number of years in the sample. The $t=1$ denotes that the observation belongs to the initial year of i^{th} country. Similarly, $t=2$ denotes for the second observation (the years may not be consecutive depending on the available income distribution data) and so on.

Since the equation above is a second-degree polynomial function, it captures the Kuznets' hypothesis, *i.e.*, the graph of the relationship between *I* and *Y* is U-shaped (parabola). The parabola opens either upward or downward, depending on whether the sign of β_2 is positive or negative.

Given that the Kuznets' hypothesis is an inverted U-curve, we discuss only the case of $\beta_2<0$. We can find the maximum level of the inequality that could occur in the equation 5.2 by fixing the first derivative as equal to zero, *i.e.*

$$\frac{dI}{dY} = \beta_1 + 2\beta_2 Y = 0$$
$$\therefore Y^* = -\left(\beta_1 \big/ 2\beta_2\right) \tag{5.3}$$

Equation 5.3 shows that the maximum of *I* occurs at Y^*. The second derivative of the equation 5.2 guarantees that the inequality is a minimum or maximum, depending on the sign of the second derivative. If β_2 is greater than zero ($\beta_2 > 0$), the second derivative of equation 5.2 is positive. It guarantees that *I* reaches its minimum at Y^* in the equation 5.3. On the contrary, if β_2 is smaller than zero ($\beta_2 < 0$), the second derivative is negative, which guarantees that *I* reaches its maximum at Y^* in equation 5.3. This is the case of Kuznets' hypothesis that we consider in our study. Given that our hypothesis β_2 is smaller than zero, the equation 5.2 can generate two possible phenomena depending on the sign of β_1. First, if β_1 is smaller than zero (given that β_2 is smaller than zero), the maximum of *I* occurs at $Y^* = -(\beta_1/2\ \beta_2) < 0$. Hence the given condition generates the negative *Y* when the level of inequality reaches the highest level. This occurs when the coefficients both β_1 and β_2 are negative. In our study it is not realistic that the level of development (GDP=*Y*) becomes negative. Second, if β_1 is greater than zero (given that β_2 is smaller than zero), the maximum of *I* occurs at $Y^* = -(\beta_1/2\ \beta_2) > 0$. In second case, we see all the conditions are satisfied for Kuznets' hypothesis. Thus the Kuznets' hypothesis takes ($\beta_1 > 0$) and ($\beta_2 < 0$).

Then we also examine the Kuznets curve further by incorporating the mechanisms discussed in Kuznets (1955). Our model takes the following functional form:

$$I_{it}^{k} = \alpha^{k} + \beta_{1}^{k} Y_{it}^{k} + \beta_{2}^{k} (Y_{it}^{k})^{2} + \lambda^{k} X_{it}^{k} + \mu_{it}^{k} \tag{5.4}$$

where λ^{k} is a row vector of coefficients and X_{it}^{k} is a column vector for variables of our interest. These variables are the proxies of mechanisms discussed in the Kuznets (1955). We describe these mechanisms below:

5.4.1 *A trade-off between income inequality and growth*

A higher growth rate is likely to be associated with more unequal distribution because people or families with a high income save at a higher rate and accumulate more capital and, thus, receive a higher proportion of wealth income. Hence, a higher growth rate brings a higher income inequality. In terms of the Kuznets' paradigm and of an associated dualistic economy framework, a higher growth rate implies a faster movement along the income trajectory. Thus, we expect that the higher growth rate is positively associated with income inequality.

5.4.2 *A trade-off between income inequality and the demographic transition*

A rapid population growth produces a larger cohort of young and typically low paid workers. This variable is expected to increase inequality because the growth of the population causes a higher supply of labourers and in turn lowers the level of income. We particularly expect that this variable will increase inequality by inflating the bottom income groups. Thus, there will be a positive association between inequality and population growth in the model.

5.4.3 *A trade off between income inequality and education*

Economists believe that the spread of education is associated with a reduction in inequality. An increase in the number of people with advanced educational credentials should increase the competition for positions and in turn reduce wage inequality between the educated

and uneducated (Timbergen, 1975). Ahluwalia (1976) and many others have found that the spread of education has a strong negative effect on income inequality. Maddison (1982) recognised that an economy experiencing economic growth has a shift in its employment characteristics with a move from a large agricultural sector into a more industrialised pattern and then into the services oriented sectors. This experiment can only be carried out when the population has a basic level of education. It attempts to measure the effects of the level of schooling (for working age people) on income distribution.

5.4.4 *A trade off between income inequality and labour force shift*

Kuznets (1955) focuses on the movement of persons from agriculture and rural sectors to industrial and urban sectors, respectively, during the process of economic development. The persons who shift from agriculture to industry and rural to urban areas experience a rise in *per capita* income. Thus, this shift raises the economy's overall degree of inequality. Barro (2000, pp.8-9) argues that the dominant effect initially is the expansion in size of small and relatively rich group of persons in the industrial and urban sectors. Consequently, at the early stages of development, the relation between the level of the *per capita* product and the extent of inequality tends to be positive. He further argues that as the size of the agricultural sector diminishes, the main effect on inequality from the continuing urbanisation is that many of the poor agricultural workers are enabled to join the relatively rich industrial sector. The decrease in size of the labour force tends to increase the relative wage in this sector.

Additionally, Kuznets (1955) argues that income inequality in a developing society is typically higher in urban centres (with the diversity of social conditions ranging from the destitute to wealthy industrialists) than in rural areas. His assumption, the rural/urban contrast, predicts a positive association between income inequality and urbanisation. The main explanation of the U-shape relationship between inequality and development stresses the effects of labour force shifts between the traditional agricultural and modern sectors. His main argument is the impact of rural to urban migration flow on the distribution of incomes during the development process. These two effects of labour shifts are captured in the inequality model by

the population growth rate, urbanisation population percentage, and the percentage of agriculture value added in GDP.

As the industrialisation and urbanisation processes occur, and the economy develops, many technological innovations initially tend to raise inequality. The dominant force here is that this sector requires highly educated people[78]. Very few people take advantage in this sector in less developed economies initially. Thus, few become richer and the distribution of income becomes more unequal. In developed countries more people move into this favoured sector and more people take advantage of high technology. What we would like to argue in this respect is that the higher the level of education a country has, the more people enter into modern sectors where income is higher than elsewhere.[79] Thus, as a result, the inequality of income distribution tends to fall in developed countries.

5.5 Our Empirical Results

The Quadratic Model of income inequality is specified in equation 5.1. The relative strengths of support for the inverted U-curve hypothesis may be gauged by examining the sign and significance of the estimated parameters in equations 5.1. There is strong support for the U-curve hypothesis if the estimated coefficients of the quadratic terms in the transformed development indicator are significant, and opposite in sign. In the case of the inequality indexes, the coefficients of the linear term (Y) should be positive and that of the quadratic term (Y^2),

[78] We intend that highly-educated people have a high level of education.

[79] In less developed countries, given the lower education level, few people take advantage of technological change. Hence inequality in these countries is higher compared with developed countries. For example in our full sample, the mean education level for the countries with GDP (PPP) *per capita* above $ 10,000 has an average schooling (measure of average years of secondary schooling for people over 25 years) of 3.13 years. For other countries it is 1.16 years. The average level of income inequality (measured by the Gini index) is 32.44 percent for the high-income countries; while for the less income countries is 44.25 percent. We find in 1993 evidence (through sample data) that the developed countries have a high level of education and a low inequality.

negative. If the sign conditions are satisfied, but the estimated coefficients are insignificant, the support for the U-curve is considered to be weak.

5.5.1 *The results from the case study of Nepal*

We have collected data for 72 districts across five geographical areas and estimated the inequality measurements for these districts. The data for the inequality measurements are estimated from the NLSS (1996). The independent variables are also based at district level. The average literacy rate is used as a proxy for the education. The data is taken from the 'Human Development Report (HDR) 1998' for Nepal. The demographic data – the population growth rate and the rate of urban population as a proxy for urbanisation are estimated from the 'Nepal Population Report 2002' chapter 9. The remaining variables are estimated from the NLSS survey (1996). We have used three inequality indexes as the dependent variables. The estimation of equation 5.1 is reported in Table 5.3 below.

Table 5.3: Income inequality and economic development (Sample of 72 districts in Nepal for 1996)

Variables	Coefficient	Std Error	t	R^2	N
Dependent variable: Gini Index					
(Constant)	0.1532*	0.0385	3.98	0.54	72
GDP Per capita	0.0022*	0.0004	6.23		
GDP Per capita square	-2.66E-06*	6.28E-07	-4.23		
Dependent variable: Theil Index					
(Constant)	-0.3440*	0.1271	-2.71	0.47	72
GDP Per capita	0.0064*	0.0012	5.37		
GDP Per capita square	-7.51E-06*	2.07E-06	-3.62		
Dependent variable: Atkinson Index					
(Constant)	-0.0599	0.0367	-1.63	0.50	72
GDP Per capita	0.0019*	0.0003	5.58		
GDP Per capita square	-2.23E-06*	5.99E-07	-3.72		

Author's own estimates from NLSS (1996) and HDR (1998) data

*Notes: Students t-ratios are in parentheses. ***, **, and * indicate significance at 10%, 5% and 1% levels*

As expected, we obtain the same sign and significant t-statistics. The estimated coefficients are significant at 99% confidence level for all inequality measures. Having found a significant confirmation of Kuznets's hypothesis above, we now analyse the combined effects of variables as we described in equation 5.4. The estimations are reported in Table 5.4 below.

Table 5.4: The sample regressions for Nepal
(Dependent variables: Gini Index, Atkinson Index, and Theil Index)

Variables	**Gini Index**	**Theil Index**	**Atkinson Index**
Constant	-0.0310 *(-0.39)*	-0.7456* *(-3.33)*	-0.2033* *(-2.94)*
GDP per capita	0.0014* *(3.47)*	0.0032* *(2.74)*	0.0010* *(2.73)*
Square of GDP per capita	-1.39E-06** *(-2.15)*	-1.51E-06 *(-0.82)*	-6.95E-07 *(-1.23)*
Personal saving	0.0013* *(2.79)*	0.0046* *(3.39)*	0.0014* *(3.36)*
Consumption income ratio	0.0016** *(2.23)*	0.0043** *(2.13)*	0.0014** *(2.31)*
Growth rate of population	0.0207*** *(1.77)*	0.0604*** *(1.82)*	0.0191*** *(1.86)*
No of urban population	-4.53E-07** *(-2.26)*	-1.11E-06*** *(-1.95)*	-4.26E-07** *(-2.42)*
Adult literacy rate	0.0026** *(2.02)*	0.0077** *(2.06)*	0.0023** *(2.01)*
Initial level of personal wealth	-2.30E-05*** *(-1.69)*	-1.44E-04* *(-3.74)*	-2.89E-05** *(-2.43)*
R^2	0.70	0.74	0.72
N	72	72	72

Author's estimates from NLSS (1996), Nepal Population Report (2002) and HDR (1998) data

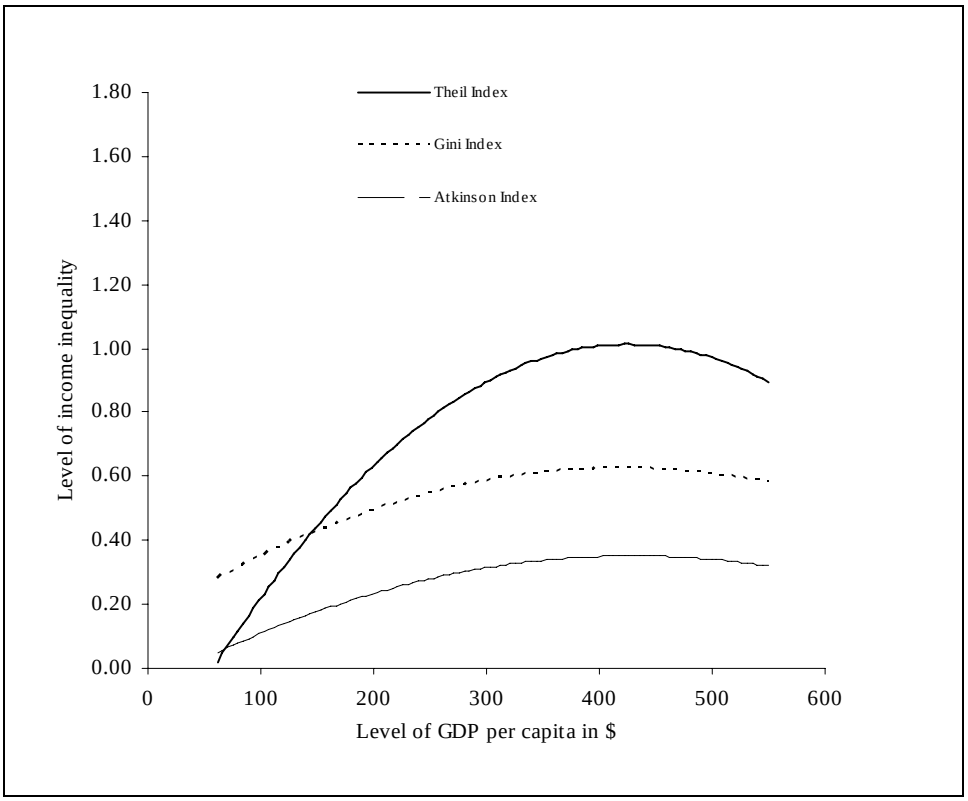
*Notes: Students t-ratios are in parentheses. ***, **, and * indicate significance at 10%, 5% and 1% levels*

The inverted U-curve seems to be consistent – taking all other variables as constant. The GDP *per capita* and its square have positive and negative significant signs respectively.

When we use the Theil and Atkinson indexes as dependent variables, the quadratic relationship of inequality over *per capita* income becomes insignificant while the Gini index is consistent with the hypothesis. As expected, the urbanisation and population growth have significant negative and positive significant signs respectively. This suggests that as urbanisation increases, inequality in Nepal decreases. On the other hand, the population growth rate has an increasing impact on income inequality. The literacy rate has a positive effect on income inequality, suggesting that higher literacy rate worsens income distribution. We also tested the equation, adding the square of adult literacy. The coefficient is negative and significant. It seems that the literacy rate increases at the beginning income inequality, but later it tends to diminish it.

We have depicted the results of equation 5.1 in Fig. 5.2, providing a graphical representation of the Kuznets' curve. The vertical axis shows the level of inequality and the horizontal axis plots the level of development in terms of GDP (PPP) *per capita*. The estimated curves are the inequality measurements against the GDP (PPP) *per capita* and its square. All curves confirm Kuznets' hypothesis.

Figure 5.2: Estimated Kuznets curves in quadratic regression model for Nepal



Author's own estimates

5.5.2 *The results from the case study of the South Asian nations*

We have presented the results of the equation 5.1 for the South Asian nations in Table 5.5 below. We have used the available data for the 1980s and the 1990s in five South Asian nations.[80] Instead of using only one inequality index, we have applied five measures to examine Kuznets's hypothesis. The first three indexes explain the variation of the whole distribution of income,[81] while the rest are the poorest 60 percent and the richest 20 percent shares of income

[80] The countries are Bangladesh, India, Nepal, Pakistan and Sri Lanka.

[81] They are the Gini index, the Theil index and Atkinson indexes with $\varepsilon = 0.5$.

groups. We later analyse two groups of the distribution in order to see how they are affected by the given variables in the Kuznets' hypothesis. The shares of the poorer income groups, for example, are expected to decrease at the initial stage of development. In the later stage they regain their share of income according to Kuznets. This hypothesis is based on the assumption that if the poor classes lose their share of income, the distribution of income will worsen. Thus β_1 and β_2 are expected to be negative and positive respectively. On the contrary, the share of the top quintile is expected to initially increase; and later it decreases. Thus, β_1 and β_2 are expected to be positive and negative respectively. Table 5.5 summarises these arguments for the case study of five South Asian nations.

Table 5.5: Income inequality and economic development (Sample of the South Asian nations)

Dependent variables	**Constant**	**Log GDP (PPP) per capita**	**Sq. of log GDP (PPP) per capita**	**R^2**	**F- test**	**N**
Log Gini	-3.45*** *(-1.97)*	3.13* *(2.691)*	-0.49** *(-2.56)*	52.62	11.66	24
Log Theil	-10.35** *(-2.57)*	7.10* *(2.66)*	-1.12** *(-2.53)*	51.30	11.06	24
Atkinson ε=0.5	-9.37** *(-2.54)*	6.50* *(2.66)*	-1.02** *(-2.53)*	51.76	11.27	24
Poorest 60%	4.26* *(3.94)*	-1.70** *(-2.36)*	0.27** *(2.24)*	47.62	9.55	24
Richest 20%	-1.70 *(-1.42)*	2.10** *(2.64)*	-0.33** *(-2.52)*	50.40	10.67	24

Author's own estimates

*Notes: Students t-ratios are in parentheses. ***, **, and * indicate significance at 10%, 5% and 1% levels*

We find Kuznets' hypothesis strongly significant. The t-ratios show that β_1 and β_2 are significant at less than three percent levels for all dependent variables. The coefficients β_1 and β_2

for the poorest 60 percent among the income groups are negative and positive respectively. This means that in the initial stage of the development, poor people lose their income share of national income. On the contrary, β_1 and β_2 are positive and negative for the richest 20 percent. The t-ratios are significant at less than 3 percent.

We now return to the results obtained with the complete specifications of the model in equation 5.5. The estimated results are presented in Table 5.6. Income inequality largely depends on income *per capita* with the inverted U-shaped curve. It also depends positively on economic growth, population growth, and the log of percentage of agriculture in GDP and negatively on the log of average years of schooling and the log of urbanization[82]. Evidence from the South Asian nations shows little relation between income inequality and the rates of GDP growth, the agricultural value added, and the level of secondary education. We dropped two variables from the model, the agriculture growth rate and growth rate of the economy, because the estimated coefficients of these variables are not significant statistically, though the expected signs are true. The results obtained by dropping these two variables improved.

The Kuznets curve is strongly significant (significant at less than two percent probability level). The variable population growth is positively significant while the urbanisation is negatively significant at 5 percent probability level both. This suggests that a higher population growth worsens income distribution; whereas the higher rate of urbanisation improves it.

Thus, in the context of the South Asian nations, we have found the elements that may explain country differences in income distribution; *i.e.* the three variables – the GDP *per capita* and its square, the population growth rate, and the percentage of urbanisation of the country. These three variables are significant in all regression equations. The effect of GDP *per capita* variables (representing the inverted U-curve) on income inequality is quite substantial and is not different from that obtained with equation 5.1. The explaining power of the model falls when the GDP growth rate, secondary schooling, and the agriculture share of GDP are included in the model.

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[82] Urbanisation is measured by the percentage of urban people.

Table 5.6 The sample regressions for South Asian nations

Variable	Log Atkinson Index		Log Gini Index		Log Theil Index		Log of Poor 60%		Log of Rich 20%	
	1	2	1	2	1	2	1	2	1	2
Constant	-6.845**	-7.106*	-2.306***	-2.431**	-7.481**	-7.765*	3.669*	3.742*	-0.860	-0.938
	(-2.63)	(-2.97)	(-1.82)	(-2.10)	(-2.69)	(-3.00)	(4.72)	(5.24)	(-1.07)	(-1.23)
Log of GDP(PPP)	4.621**	4.941*	2.286**	2.432*	4.959**	5.323*	-1.258**	-1.344*	1.470**	1.576*
	(2.54)	(3.10)	(2.58)	(3.16)	(2.55)	(3.09)	(-2.31)	(-2.83)	(2.62)	(3.10)
Log of GDP(PPP)^2	-0.666**	-0.731*	-0.333**	-0.362*	-0.710**	-0.786*	0.181***	0.199**	-0.209**	-0.233*
	(-2.24)	(-2.80)	(-2.30)	(-2.87)	(-2.23)	(-2.78)	(2.04)	(2.55)	(-2.28)	(-2.80)
Log Urbanisation	-0.290***	-0.307**	-0.136***	-0.141**	-0.318***	-0.340**	0.089***	0.091**	-0.099**	-0.105*
	(-1.81)	(-2.60)	(-1.74)	(-2.48)	(-1.85)	(-2.67)	(1.85)	(2.59)	(-2.00)	(-2.80)
Population Growth	0.088**	0.078**	0.039***	0.034**	0.100**	0.088**	-0.024***	-0.021**	0.031**	0.027*
	(2.09)	(2.27)	(1.89)	(2.07)	(2.23)	(2.37)	(-1.91)	(-2.03)	(2.42)	(2.46)
Log Agriculture	0.034	-	0.017	-	0.032	-	-0.008	-	0.005	-
	(0.14)	-	(0.15)	-	(0.13)	-	(-0.12)	-	(0.07)	-
Log of Schooling	-0.090	-	-0.035	-	-0.115	-	0.022	-	-0.040	-
	(-1.02)	-	(-0.81)	-	(-1.23)	-	(0.84)	-	(-1.47)	-
Growth	0.003	-	0.002	-	0.002	-	-0.001	-	0.001	-
	(0.34)	-	(0.43)	-	(0.29)	-	(-0.51)	-	(0.32)	-
R-squared	0.72	0.69	0.71	0.69	0.72	0.69	0.68	0.65	0.74	0.69
Adj R-squared	0.59	0.62	0.58	0.62	0.60	0.63	0.54	0.58	0.62	0.63
S.E. of regression	0.05	0.05	0.03	0.02	0.06	0.06	0.02	0.02	0.02	0.02
F-statistic	5.76	10.58	5.52	10.36	6.02	10.69	4.85	8.95	6.41	10.82
Prob(F-statistic)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N	24	24	24	24	24	24	24	24	24	24

Author's own calculations

*Notes: Students t-ratios are in parentheses. ***, ** and * indicate significance at 10%, 5% and 1% levels. Dependent variables: Log Atkinson Index, Log Gini Index and Log Theil Index, Log of the poorest three quintiles share and the richest quintile share*

5.5.3 *The results from the case study of the world (ca 1988 and 1993)*

We have tested Kuznets' hypothesis for a worldwide study using the Milanovic data set on income distribution.[83] Milanovic (1999) confined his research to the issues of income distribution. We use his data to test, in an original way, Kuznets' hypothesis. For this reason, we have classified our sample into three different groups according to the available data on income distribution. In the first group we examine Kuznets' hypothesis circa 1988 by using three inequality measurements as dependent variables. All tests support Kuznets' hypothesis (β_1 positive and β_2 negative). The t-ratios, F-ratios, and R^2 are relatively high. For example, all t-statistics are significant at 1 percent probability level except for the intercept (see Table 5.7). In the second groups we examine the inverted U-curve for circa 1993. The hypothesis is consistent. Finally we examine both periods together. Not surprisingly, the test statistics are significant. Since the inequality measurements are calculated from two different types of data, *i.e.*, some data are based on income and others are based on expenditure, we have introduced a dummy variable for income and expenditure. A dummy variable will be equal to one if the inequality measurements are calculated from income data, and to zero if the inequality measurements are calculated from expenditure data. We do so because the distribution of income is generally more unequal than the distribution of expenditure for various economic reasons.[84] Including the dummy variable, the results slightly improve and the dummy variable is statistically significant. The results are reported in Table 5.7 below.

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[83] We refer to the data appendix for detailed information on data.

[84] For example, the rich save more than the poor. Also, the poor may borrow for expenditure purposes. Thus, expenditure of the poor may be higher than their income and expenditure of rich may be lower than their income. This leads to the inequality of income higher than the inequality of expenditure. This aspect may also be explained through Keynes's "psychological law", where $C_t = C^* + c\ Y_t$.

Table 5.7: Estimate of cross-country income inequality (log) regression Quadratic models in log GDP (PPP) per capita.

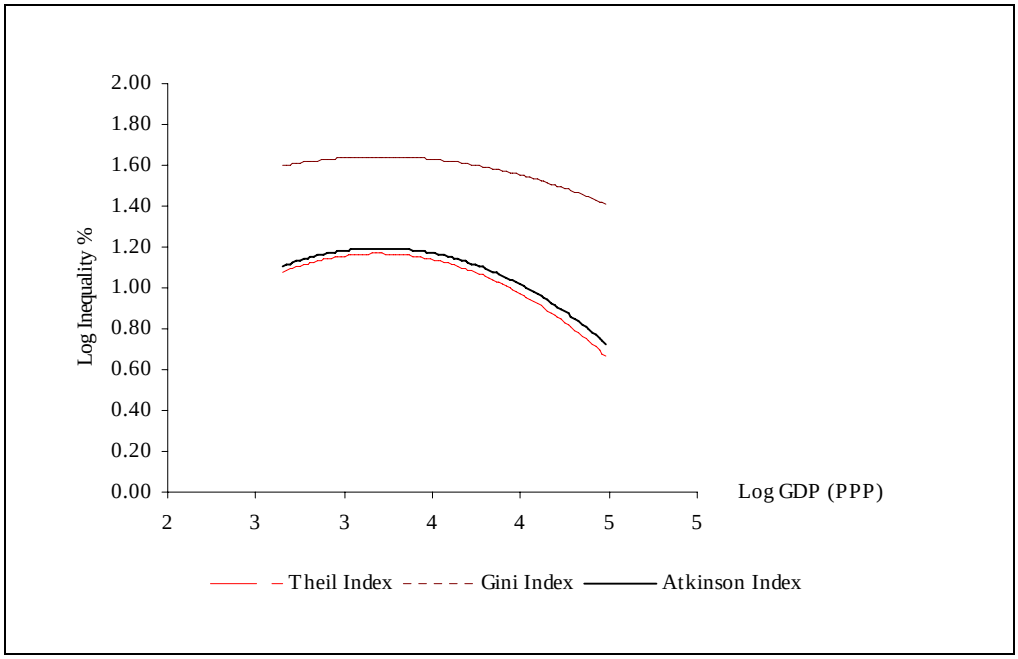
Dependent variables	C	LY	$(LY)^2$	I/E	R2	F	N
World Sample (ca 1988)							
Log Gini	-0.76	1.48*	-0.22*	--	42.16	18.59	54
	(-0.79)	*(2.75)*	*(-3.05)*				
Log Theil	-3.95***	3.14*	-0.48*	--	42.59	18.92	54
	(-1.92)	*(2.74)*	*(-3.04)*				
Atkinson e=0,5	-3.68***	2.99*	-0.46*	--	40.19	17.14	54
	(-1.81)	*(2.65)*	*(-2.93)*				
World Sample (ca 1993)							
Log Gini	0.51	0.71**	-0.11**	--	0.22	11.79	87
	(0.81)	*(1.99)*	*(-2.27)*				
Log Theil	-1.16	1.46***	-0.23**	--	0.22	12.11	87
	(-0.85)	*(1.92)*	*(-2.21)*				
Atkinson e=0,5	-1.07	1.41***	-0.22**	--	0.21	11.10	87
	(-0.82)	*(1.94)*	*(-2.21)*				
World Sample (ca 1988 and 1993)							
Log Gini	0.17	0.92*	-0.14*	--	28.72	27.80	141
	(0.33)	*(3.10)*	*(-3.51)*				
Log Theil	-1.90***	1.92*	-0.30*	--	29.16	28.40	141
	(-1.67)	*(3.03)*	*(-3.45)*				
Atkinson ε=0,5	-1.77	1.85*	-0.29*	--	27.39	26.03	141
	(-1.61)	*(3.02)*	*(-3.41)*				
World Sample with dummy (ca 1988 and 1993)							
Log Gini	0.51	0.76*	-0.13*	0.07	32.81	22.30	141
	(0.96)	*(2.59)*	*(-3.21)*	*(2.89)*			
Log Theil	-1.16	1.57*	-0.27*	0.15	33.49	22.99	141
	(-1.02)	*(2.50)*	*(-3.13)*	*(2.98)*			
Atkinson ε=0,5	-1.06	1.51*	-0.26*	0.15	31.78	21.27	141
	(-0.97)	*(2.49)*	*(-3.10)*	*(2.97)*			

Author's own estimates from Milanosevic (1999), PWT, and Barro-Lee data sets

*Notes: Students t-ratios are in parentheses. ***, ** , and * indicate significance at 10%, 5% and 1% levels LY= log of GDP (PPP) and I/E = Income expenditure dummy*

It is apparent from these results that all equations satisfy their respective sign conditions for an inverted U-curve hypothesis. Focusing on the results for the full sample, it may be seen that the inequality equations provide strong support. The results for the inequality indexes corresponding to the sub-sample of South Asian nations are similar to those based on the full sample. We have depicted these results in Fig. 5.3.

Figure 5.3: Estimated Kuznets curves in quadratic regression model



Author's own estimates

We examined equation 5.4 further for the full sample of the world for circa 1988 and 1993. Similar to the cases of Nepal and the South Asian nations, the GDP *per capita* and its square are significant with the signs required by the hypothesis. We found that the shift of population from the low-income rural sector to the high-income urban sector is negatively correlated with the inequality of income. It is negatively significant in the experiment of Nepal and the South Asian nations. We also found that changes in education inversely affect income

inequality, like in the case of the South Asian nations. This implies that an increase in secondary schooling has an equalising effect on income distribution. Evidence from the full sample also shows little relationship between income inequality and the rate of GDP growth. The Kuznets' inverted U-curve – whereby inequality first rises and later decreases during the process of economic development – has a clear empirical regularity. The results do not change if we include various other variables; they are reported in Table 5.8 below.

Table 5.8: Full sample regression from the world (ca 1988 and 1993)

Variable	**Log Atkinson Index**		**Log Gini Index**		**Log Theil Index**	
	1	**2**	**1**	**2**	**1**	**2**
C	-2.21E+00***	-2.22E+00***	-8.16E-02	-9.72E-02	-2.40E+00***	*-2.44E+00****
	(-1.72)	*(-1.75)*	*(-0.13)*	*(-0.16)*	*(-1.82)*	*(-1.86)*
Log GDP (PPP)	1.57E+00**	1.57E+00**	7.97E-01**	8.10E-01**	1.66E+00**	1.68E+00**
	(2.17)	*(2.21)*	*(2.31)*	*(2.39)*	*(2.22)*	*(2.30)*
Log GDP $(PPP)^2$	-2.27E-01**	-2.28E-01**	-1.15E-01*	-1.17E-01*	-2.41E-01**	*-2.45E-01**
	(-2.35)	*(-2.41)*	*(-2.50)*	*(-2.59)*	*(-2.42)*	*(-2.51)*
Population growth	9.91E-02*	9.91E-02*	4.98E-02*	5.00E-02*	1.05E-01*	1.06E-01*
	(4.05)	*(4.08)*	*(4.28)*	*(4.32)*	*(4.18)*	*(4.22)*
Log of schooling	-2.06E-01**	-2.04E-01**	-1.03E-01**	-9.98E-02**	-2.10E-01**	*-2.04E-01***
	(-1.89)	*(-1.93)*	*(-1.98)*	*(-1.98)*	*(-1.87)*	*(-1.88)*
Log Urbanisation	3.09E-01**	3.08E-01**	1.45E-01**	1.42E-01**	3.06E-01**	3.00E-01**
	(2.36)	*(2.41)*	*(2.33)*	*(2.35)*	*(2.27)*	*(2.28)*
GROWTH	2.31E-04	--	5.21E-04	--	1.13E-03	--
	(0.05)	--	*(0.23)*	--	*(0.24)*	--
R-squared	0.45	0.45	0.47	0.47	0.47	0.47
Adjusted R-squared	0.42	0.43	0.44	0.45	0.44	0.44
S.E. of regression	0.18	0.18	0.09	0.09	0.18	0.18
F-statistic	15.03	18.2	16.38	19.81	16.19	19.58
Prob (F-statistic)	0	0	0	0	0	0
N	117	117	117	117	117	117

Author's own estimates from Milanosevic (1999), PWT, and Barro-Lee data sets

*Notes: Students t-ratios are in parentheses. ***, **, and * indicate significance at 10%, 5% and 1% levels. Dependent variables: Log Atkinson Index, Log Gini Index, and Log Theil Index.*

5.6 Conclusion

In this chapter an exploratory examination has been made of the relationship between economic development and inequality of income distribution in five South Asian nations during the last two decades; with an additional worldwide study on 54 countries in 1988 and 87 countries in 1993.

The variables have a significant effect on income inequality predicted by the model. The result of all equations guarantees the validity of the inverted U-curve. The GDP growth rate is positively correlated with income inequality; but it is insignificant in both experiments (the South Asian nations and the full sample).

We have found that the Kuznets pattern is valid for the inequality of income in the process of development. There is a strong confirmation of a statistically significant relationship between income inequality and GDP *per capita* (and its square). This relationship generates the famous inverted U-shaped pattern – the inequality first rises and then decreases while GDP *per capita* increases. The agriculture value added on GDP has a positive effect but is not significant. This is observed in the five South Asian nations experiment. There is strong case for the implications of the demographic pressure on income inequality. A high growth rate of population is likely to generate greater inequality. This suggests that initially at least a large proportion of the work force growth remains in low-income employment. The average secondary schooling is negatively correlated. It is not significant in the experiment with regard to the South Asian nations (perhaps because the short-run and long-rung effects are different) but is strongly significant in the experiment on the full sample.

Chapter 6

Concluding remarks

6.1 Methodology used in this study and future perspectives

This final chapter contains a summarised version of the main topics covered by this study. To begin with, we examine the underlying intellectual foundations that sustain the legitimacy of this study and that motivated this entire thesis. Secondly, we look at the methodologies used to obtain such results, by trying to describe as briefly as possible the technical tools that helped us achieve a quantitative resolution to our questions. Thereafter we offer a somewhat more qualitative insight into the problem, and posit some economic explanations about the results yielded by our calculations. Finally, we will suggest some possibilities for further research.

Nepal is one of the poorest countries in the world and among those with the lowest *per capita* income. Poverty can be a motivating factor for policy makers, inciting them to try new ways of improving the living standard of the Nepalese people. Even though there is widespread agreement that something should be done, the problem lies in finding the most effective solutions to Nepal's problems and in the ability to measure the impact of those solutions, thereby assessing the efficacy of future actions. A valid approach should pay close attention to the income and wealth allocated among the population. After all, tensions and confrontations do arise in a society where there are few rich people, and in which a large part of the population lives below the poverty line.

This research has intended to review the methods for measuring income, wealth, or expenditure inequality, and to apply these measures specifically to data from Nepal; and then compare these new results to those achieved by applying the same measures to other South Asian nations. South Asian nations tend to be more directly comparable to Nepal because of their geographical proximity to our country, and their similarity in economic, political and social features. To the best of the author's knowledge, such an extensive study has never been undertaken for Nepal. The research programme for this study has been carried out in the following way:

An analysis of the income distribution in Nepal was compared with four other countries of South Asia: Bangladesh, India, Pakistan, and Sri Lanka. The main source of data from 1980 to 1994 is the Deninger and Squire study (1996); and after 1994 the main source of data is the World Development Report, 1998 (World Bank). Data on personal or household income and consumption are drawn from nationally representative household surveys and they are assembled in quintiles, *i.e.* the bottom 20% of the population has the lowest income, the second lowest 20% share has the second lowest income and so on. With the sample extracted in this way we can draw a Lorenz curve, which becomes the primary indicator of inequality in our study. Based on the Lorenz curve, a list of inequality indices (the Gini coefficient, Kuznets index, Theil index, Champernowne index, Atkinson indexes and Variance of Logarithms) have been used to deepen our insight into the data. For a more detailed explanation of these indices, we refer the reader to Chapter Two.

The index values summarised above have been calculated for Nepal and the other South Asian nations; then collected and analysed in comparison with each other in order to supplement the picture of income inequality in Nepal in comparison to its neighbours.

An analysis of the wealth distribution in Nepal was conducted at household level. The purpose of this analysis was to uncover the least fortunate groups of the population and to see in overview how the wealth of Nepalese families is structured, with a view to finding some exhaustive reasons for Nepalese poverty. The sample was extracted from data collected in the NLSS (Nepal Living Standard Survey, 1996). It consists of different components of wealth; dwellings, land-holdings, enterprises, farming assets, durable goods, inventory, livestock,

lending, and other assets. The latter component comprises fixed assets such as land, building, and other real assets; which are not generally reported in the landholdings and dwellings surveys. This section also includes the values of saving accounts, fixed deposits, treasury bills, stocks, shares, employee providence fund, pension and so on. Wealth is therefore defined as the total assets of a household, identified by the various elements stated above, minus borrowings.

The population has been divided according to different criteria such as

Urban/rural areas

1. Ecological regions: *Terai*, rural Hill, urban Hill, Mountain
2. Development regions: *Eastern*, Central, Western, and Far-western
3. Religion groups: *Hindu*, *Buddhists*, *Muslims*, Others
4. Ethnic groups or Castes: *Bramin*, *Chetry*, *Newar*, *Gurung*, *Rai*, *Magar*, *Limbu*, *Tamang*, *Tharu*, *Yadav*/*Ahir*, *Muslim*, *Sarki*, *Kami*, *D*amai, and Others.

The concentration of wealth for the population subgroups given above was studied by using different percentiles - top 5%, top 10%, top 20%, top 40%, bottom 60% etc. Additionally the concentration indexes refined in Chapter Two (the Gini coefficient, Theil index and Atkinson index) have also been used to expand the analysis. The results were examined by paying full attention to the most important criterion. This was done so that the potential policy interventions suggested by the data as being necessary to fight the worst of Nepal's poverty issues could be better understood.

The decomposition of income or wealth by population subgroups and by source of income and wealth allows us to present a realistic estimate of the regional or social dimensions of the distribution of resources in Nepal. It also allows us to examine the influence of every single source of income and wealth in total inequality. This study was based on data extracted from two household surveys of Nepal: the Nepal Living Standard Survey (NLSS, 1996) and the Household Consumption Survey of Rural Nepal (HCSRN 2001). The first sample was based on a national representative household survey, while the latter was based only on a survey of the rural area. The extracted data was divided into two categories: income and wealth. Each of these categories was divided further by its sources.

The first step was to calculate the Gini coefficient, Theil index, and Atkinson index of income, expenditure, and wealth for each group of the population in order to evaluate the overall situation. Using this method, we found that particular social, demographic, and regional characteristics may explain part of the inequality observed in the data; but do not tell us much about the extent to which particular population groups contribute to overall inequality. To go deeper into this issue, we extended our analysis using a decomposition method for population sub-groups in order to identify those groups of the population playing an important role in improving or worsening the distribution of wealth, income, and expenditure. The Gini coefficient and Theil index are used in an innovative way to explore this issue. To explain, we made the same divisions in the population (between geographical and social, as before) and we decomposed these indices into two parts: the 'within-groups', and the 'between-groups'. Finally, we examined the inequality of income and wealth by decomposing each at their source. Following the methods described by Shorrocks (1982), we used the Theil Decomposition rule and the Variance Decomposition rule. We compared them with the factor share of each income source - which is the average income for a specific source - and divided it by the average of total income.

The validity of the Kuznets U-shaped relationship between inequality and GDP and other macroeconomic factors is tested first with data from Nepal, then from South Asian countries and lastly from the entire world. The first sample was tested for Nepal across 72 districts in 1996. We extended our examination of the above hypothesis by using the cross-country data for the sample of the SAARC nations and for the world. Explanations of the Kuznets process relate to the nature of structural change. Early growth of income inequality may be concentrated in the modern industrial sector because employment in the urban modern sector is limited; but wages and productivity are high - as in the Lewis two sector theory of development. In this regard, Kuznets (1955) has discussed some mechanisms in which economic development often focuses on the rapid evolution of industrialisation. The economic measures of development have been often supplemented by literacy, schooling, health, urbanization, etc. We also examine the Kuznets curve further by incorporating these mechanisms into the simple quadratic equation in order to capture

(5) a trade-off between income inequality and growth,
(6) a trade-off between income inequality and the demographic transition,
(7) a trade off between income inequality and education, and
(8) a trade-off between income inequality and labour force shift.

To a large extent, the findings of this study are quite informative and provide a very clear picture of change in the levels of income and wealth inequality in the last two decades. The findings of this study provide empirical evidence that policy-oriented indicators should be accompanied in the analysis to target useful interventions towards the reduction of the level of economic inequality. However, researcher should make further efforts to understand the causes of income and wealth inequality. More explicit theoretical frameworks should guide the analysis of future studies. To accomplish this goal these frameworks should incorporate the concepts and the underlying assumptions of other more rigorous disciplines. Although this future research programme was somewhat addressed in this study, much remains to be done. For instance the inclusive results of the political factors influencing social inequality need to be empirically further explored.

This thesis focuses on detailed analysis of income and wealth inequality in Nepal. The lack of more comparable overtime data has limited the study of the dynamic patterns. We have incorporated the analysis of wealth inequality for 1995 and 1996 from living standard survey data. The Statistical Bureau of Nepal has collected the data for 2003/4 recently. The new data may extend this study to explore some dynamic implications of wealth inequality.

The choice of the objectives depends on political judgements about views on fairness and equality of economic opportunities. Further work might look more closely at different aspects of income and wealth inequalities, and on the factors affecting the economically as well as socially less fortunate groups of Nepalese society.

6.2 On some empirical results obtained

From the comparison of Nepalese income inequality with other SAARC countries we conclude that in the 1980s income was more equally distributed in Nepal compared with other

SAARC countries. The pattern of income distribution has rapidly approached the highest level of the inequality in Nepal during the 1990s. Though some countries experienced a worsening inequality and others experienced an improvement in income distribution, in general income inequality seems somewhat to converge across SAARC countries between the 1980s and 1990s. It may be the result of the progressive abolition of old-fashion frontiers; or it may be due to other factors. However, SAARC "revolution" does not provide a precise notion in terms of income distribution.

The analysis of wealth distribution leads us to draw following conclusions.

(a) Wealth inequality in Nepal is higher compared to most industrial countries. Of course, wealth distribution is not directly comparable, because of the different compositions of wealth, different methods of valuation, different unit values, different periods etc. The inequality of Nepalese family wealth is to a large extent driven by the unequal distribution of land. Furthermore, social values and norms, as well as historical factors, have played an important role.

(b) Wealth distribution of urban household is more egalitarian than of rural household.

(c) When the Nepalese households are classified according to the development regions, we find that the family wealth of the Far-western region was more equally distributed than the family wealth of the other regions for both 1995 and 1996.

(d) When the Nepalese households are classified by ecological regions of the country, we find that the household wealth of the Mountain region is more equally distributed than the household wealth of other regions.

(e) When the Nepalese families are classified by the ethnic groups, we find that wealth of *Limbu*, *Muslim*, *Yadav/Ahir*, and lower castes families are poor in terms of wealth holdings and their distribution of wealth is more equally distributed.

(f) When the Nepalese families are classified by religion, the Muslim household wealth is found to be distributed equally than other religion groups.

In the decomposition analysis, first of all we have shown that dwelling, landholding, and other assets have a very significant impact on overall inequality of wealth in Nepal. Landholding for rural Nepal contributes to more than a half of total wealth inequality; while

dwelling contributes to a large part of wealth inequality for urban Nepal. Similarly the empirical decomposition by income sources demonstrates that incomes from farm, enterprises, and wage are the major elements of total income inequality. In rural Nepal, farm income has generated four fifth of total inequality; but the share of this component is less than 60 percent. This suggests that any increase in farm income will enrich the upper class of rural society. This is in fact the consequence of higher inequality in land distribution. We have also proven that several sources of income and wealth have a negative impact on overall inequality, which means that they have a sort of redistributive effect.

From our model of Kuznets' hypotheses we obtained the following results. The result of all equations guarantees the validity of the inverted U-curve. The GDP growth rate is positively correlated with income inequality; but it is insignificant in both experiments (the South Asian nations and the full sample). There is a strong confirmation of a statistically significant relationship between income inequality and GDP per capita and its square. The agriculture value added on GDP has a positive effect. High growth rate of population is likely to generate greater inequality of income; while the education is negatively correlated in our empirical experiment.

6.3 Epilogue

This study on the causes and consequences of economic inequalities in Nepal has shown that a large number of variables are at stake. We would like to point out that historical, social, and institutional constraints are bound to make such a research programme much more complicated than a similar one concerning a so-called advanced country. We trust that this is the most important message that our painstaking task has managed to convey.

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