A Study of Linkage between Fiscal Decentralization and Poverty Reduction in Nepal

A Thesis Submitted
to
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By
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Under the Guidance and Supervision of
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It is certified that Dil Nath Fuel, a research scholar in Economics, the University of Burdwan, Burdwan, West Bengal has duly completed his research work under my supervision. Sri Fuel is keen on submitting his thesis entitled "A STUDY OF LINKAGE BETWEEN FISCAL DECENTRALIZATION AND POVERTY REDUCTION IN NEPAL". I have approved his thesis and permitted him to submit it to the University of Burdwan for the PhD degree in Economics.

Further it is certified that, neither this thesis nor any part thereof was submitted to this or any other university in the country or abroad for the degree of PhD or any other. However, it may also be noted that Dil Nath Fuel has delivered two seminar lectures on his research work in partial fulfillment of the requirement for the submission of the PhD thesis and complied with all relevant conditions specified in the regulations of the University of Burdwan.

Maniklal Adhikary
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Subject</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preface</td>
<td>viii-xi</td>
</tr>
<tr>
<td>List of Acronyms</td>
<td>xii-xiv</td>
</tr>
<tr>
<td>Operational Definitions of the Terms</td>
<td>xv-xx</td>
</tr>
</tbody>
</table>

## Chapter One 1-45

**Fiscal Decentralization: A Strategy to Fight Poverty**

1.1. Introduction 1

1.2. Socioeconomic Profile of Nepal 3
   - 1.2.1. General Information 4
   - 1.2.2. Social Condition 4
   - 1.2.3. Economic Condition 5
   - 1.2.4. Political System 6
   - 1.2.5. Current Local Governance System in Nepal 6
     - 1.2.5.1. The Village Development Committee 7
     - 1.2.5.2. The Municipality 8
     - 1.2.5.3. The District Development Committee 9

1.3. Statement of the Problem 10

1.4. Concept of Fiscal Decentralization and Poverty 11
   - 1.4.1. Fiscal Decentralization 11
   - 1.4.2. Decentralization Process in Nepal 17
   - 1.4.3. Poverty 19
   - 1.4.4. Poverty Trend in Nepal 21

1.5. The Analytical Foundations of Measurement of Poverty and Income Inequality 22
   - 1.5.1. Defining Poverty 22
   - 1.5.2. Measuring Income Poverty and Income Inequality 23
Chapter Two 46-117

Review of Literature

2.1. Introduction 46
2.2. Studies Related to Fiscal Decentralization 46
2.3. Nepalese Literature on Decentralization and Fiscal Decentralization 64
2.4. Literature on Poverty in Nepal and Elsewhere 76
2.5. Studies on Municipal Level Fiscal Decentralization 81
2.6. Study on Poverty Reduction through Fiscal Decentralization 92
2.7. Literature related to the Effect of Public Spending on Socioeconomic Development 107
2.8. Conclusion 115
Chapter Three

Econometric Models, Methodology and Data

3.1. Introduction
3.2. Some Important Observations about the Data
   3.2.1. Summary Statistics
   3.2.2. Graphical Exposition
   3.2.3. Overall Trend of the Variables and Indicators
3.3. Description of the Structural Shift
   3.3.1. CUSUM and CUSUMSQ Test for Structural Shift
   3.3.2. Chow Test for Structural Break
3.4. Spline Function Analysis
3.5. Testing of Stationarity or Unit Root
   3.5.1. The Augmented Dickey-Fuller (ADF) Test
   3.5.2. The Correlogram Analysis
3.6. Solution to the Unit Root
3.7. Regression Analysis
   3.7.1. Specification of the Econometric Model
   3.7.2. Specification of the Estimable Model
3.8. Methodology of Data Collection
   3.8.1. Nature and Sources of Data
   3.8.2. Management and Processing of Data
   3.8.3. Classification of the Municipalities
3.9. Empirical Estimation Process
3.10. Specification, Definition and Measurement of the Variables
   3.10.1. Variables for the National Level Study
   3.10.2. Variables for the Municipal Level Study
3.11. The Hypothesis Framework
   3.11.1. Testable hypotheses at National Level
   3.11.2. Testable hypotheses at Municipal Level Analysis
3.12. Conclusion
Chapter Four  148-195
Fiscal Decentralization and Poverty
Empirical Evidences of the Whole Country

4.1. Introduction  148
4.2. Profile of Selected Socio-Economic-Demographic Indicators
   in Nepal during 1983-2010  149
4.3. Profile of Poverty and Related Issues in Nepal before and after
   Fiscal Decentralization  157
   4.3.1. Indicators of Poverty in Entire Nepal  158
4.4. Structural Shift and Trend in Poverty in Nepal  162
   4.4.1. Location of Time Period/Year of Structural Shifts: CUSUM
          and CUSUMSQ Tests and Chow Test  162
   4.4.2. Structural Shift and Trend in Poverty in Nepal  168
   4.4.3. Test of Stationarity by Correlogram Analysis  174
   4.4.4. Test of Unit Root by Augmented Dickey-Fuller Test  182
   4.4.5. Trend and Structural Shifts in Poverty
          (Growth Rate of the Variables) in Nepal due to
          Fiscal Decentralization  186
4.5. Conclusion  194
Chapter Five
Fiscal Decentralization and Poverty
Empirical Evidences in the Different Municipalities

5.1. Introduction

5.2. Incidence of Poverty and Fiscal Indicators in
All 58 Municipalities of Nepal

5.2.1. Descriptive Statistics on Incidence of Poverty and Fiscal
Indicators in All 58 Municipalities of Nepal

5.2.2. Incidence of Poverty in All 58 Municipalities of Nepal

5.2.3. Fiscal Indicators in All 58 Municipalities of Nepal

5.3. Incidence of Poverty and Fiscal Indicators in 28 Municipalities
in the Hill Areas of Nepal

5.3.1. Descriptive Statistics on Incidence of Poverty and Fiscal
Indicators in All 28 Municipalities in the Hill Areas of Nepal

5.3.2. Incidence of Poverty in 28 Hilly Municipalities of Nepal

5.3.3. Fiscal Indicators in 28 Hilly Municipalities of Nepal

5.4. Incidence of Poverty and Fiscal Indicators in 30 Tarain
Municipalities of Nepal

5.4.1. Descriptive Statistics on Incidence of Poverty and Fiscal
Indicators in 30 Tarain Municipalities of Nepal

5.4.2. Incidence of Poverty in 30 Tarain Municipalities of Nepal

5.4.3. Fiscal Indicators in 30 Tarain Municipalities of Nepal

5.5. Incidence of Poverty and Fiscal Indicators in 34 Municipalities
in the Eastern Region of Nepal

5.5.1. Descriptive Statistics on Incidence of Poverty and Fiscal
Indicators in 34 Municipalities in the Eastern Region of Nepal

5.5.2. Incidence of Poverty in 34 Municipalities in the Eastern
Region of Nepal

5.5.3. Fiscal Indicators in 34 Municipalities in the Eastern
Regions of Nepal

5.6. Incidence of Poverty and Fiscal Indicators in 24 Municipalities in the Western Regions of Nepal

5.6.1. Descriptive Statistics on Incidence of Poverty and Fiscal Indicators in 24 Municipalities in the Western Regions of Nepal

5.6.2. Incidence of Poverty in 24 Municipalities in the Western Regions of Nepal

5.6.3. Fiscal Indicators in 24 Municipalities in the Western Regions of Nepal

5.7. Incidence of Poverty and Fiscal Indicators in 29 Old Municipalities in Nepal

5.7.1. Descriptive Statistics on Incidence of Poverty and Fiscal Indicators in 29 Old Municipalities in Nepal

5.7.2. Incidence of Poverty in 29 Old Municipalities in Nepal

5.7.3. Fiscal Indicators in 29 Old Municipalities in Nepal

5.8. Incidence of Poverty and Fiscal Indicators in 29 New Municipalities in Nepal

5.8.1. Descriptive Statistics on Incidence of Poverty and Fiscal Indicators in 29 New Municipalities in Nepal

5.8.2. Incidence of Poverty in 29 New Municipalities in Nepal

5.8.3. Fiscal Indicators in 29 New Municipalities in Nepal

5.9. Impact of Fiscal Decentralization on Poverty in Nepal: Regression Analysis

5.9.1. Effect of Fiscal Decentralization on the Incidence of Poverty in All 58 Municipalities

5.9.2. Effect of Fiscal Decentralization on the Incidence of Poverty in All 28 Municipalities in the Hill Areas of Nepal

5.9.3. Effect of Fiscal Decentralization on the Incidence of Poverty in All 30 Municipalities in the Terai Areas of Nepal

5.9.4. Effect of Fiscal Decentralization on the Incidence of Poverty in All 34 Municipalities in the Eastern Nepal
5.9.5. Effect of Fiscal Decentralization on the Incidence of Poverty in All 24 Municipalities in the Western Nepal 238
5.9.6. Effect of Fiscal Decentralization on the Incidence of Poverty in All 29 Old Municipalities in Nepal 240
5.9.7. Effect of Fiscal Decentralization on the Incidence of Poverty in All 29 New Municipalities in Nepal 242
5.10. Conclusion 244

Chapter Six 247-259
Summary and Policy Prescriptions

6.1. Introduction 247
6.2. Summary of the Empirical Findings 248
6.3. Policy Prescriptions 253
  6.3.1. Specific Policy Prescriptions 254
  6.3.2. General Policy Prescriptions 256
6.4. Conclusion 258

Appendices 260-271
Bibliography 272-305
Preface

This study entitled ‘A Study of Linkage between Fiscal Decentralization and Poverty Reduction in Nepal’ is my doctoral thesis in Economics submitted to the University of Burdwan, Burdwan, West Bengal, India. The aim of this study is to examine the local governments’ effort to reduce poverty through fiscal decentralization, especially poverty inherent to the municipalities in Nepal.

This thesis is divided into six chapters. In the first chapter, we present fiscal decentralization as a strategy to fight poverty. In this chapter, we also consider the brief socio-economic and political profile of Nepal. Then we review the existing literature on fiscal decentralization, poverty reduction, municipal finance, impact of government spending on the economy and the linkage between these issues in the second chapter. The third chapter deals with the econometric model, methodology and data adopted for this empirical study. The empirical evidences on the impact of fiscal decentralization on poverty measures in Nepal are outline in the fourth chapter. In fifth chapter we deal with a detailed analysis and the empirical evidences on fiscal decentralization and poverty condition in the municipalities of Nepal. Finally, the sixth chapter offers the summary and conclusions of the study. Here we also suggest a set of policy prescriptions on the basis of the findings of our study.

In course of my research, I received generous support and encouragement from a large number of individuals and institutions in Nepal, India and abroad. I am very grateful to these academics, intellectuals, experts, practitioners, government employees, academic institutions, government agencies and national and international organizations.

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Finally, I would like to point out that I have tried to give a shape of this thesis with the best of my knowledge and efforts. Despite my sincere attempt to prepare this thesis carefully, there may be some mistakes for which none but me is solely accountable.

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List of Acronyms

AC-Autocorrelation
ACF-Autocorrelation Function
ADDCN-Association of District Development Committees in Nepal
ADF-Augmented Dickey-Fuller
AUTO-Tax Autonomy
BOT-Built Operate and Transfer
CASH-Productivity of Principal Cash Crops
CBA-Cost of Basic Needs Approach
CBS- Central Bureau of Statistics
CGE-Computable General Equilibrium
CUSUM-Cumulative Sum
CUSUMSQ-Cumulative Sum of Squares
CV-Coefficient of Variation
D W-Durbin-Watson
DANIDA- Danish International Development Assistance
DASU- Decentralization Advisory Support Unit
DDC-District Development Committee
D-Fiscal Decentralization Dummy
DÜI-German Overseas Institute
EMIS-Educational Management and Information System
EXPC-Expenditure Per Capita
FOOD-Productivity of Principal Food Crops
FY-Fiscal Year (mid July to mid July of the next year)
GDP-Gross Domestic Product
GFS-Government Finance Statistics
GINI-Gini Coefficient or Income Inequality or Deviation from equality
GIS-Geographic Information System
GIZ or GTZ- German Technical Cooperation
GMT-Greenwich Mean Time
GoN-Government of Nepal
GP-Gram Panchayat
HDI-Human Development Index
HLDCCDWC- High-level Decentralization Coordination Committee, Decentralization Working Committee
HMG/N- His Majesty’s Government, Nepal (Government of Nepal)
IMF-International Monetary Fund
IMR-Infant Mortality Rate
INGOs-International Non-governmental Organizations
LAFC-Local Authorities Fiscal Commission
LAs- Local Authorities (DDCs, VDCs, Municipalities)
LBFC-Local Bodies Fiscal Commission
LBs-Local Bodies (DDCs, VDCs, Municipalities)
LDO-Local Development Officer
LDTA-Local Development Training Academy
LEX-Average Life Expectancy
LGCDP-Local Governance and Community Development Programme
LGs- Local Governments (DDCs, VDCs and Municipalities)
LIs- Local Institutions (DDCs, VDCs and Municipalities)
LIT-Adult Literacy Rate
LSGA- Local Self Governance Act, 1999
LSGR- Local Self Governance Regulations, 1999
MDGs-Millennium Development Goals
MoF- Ministry of Finance
MoLD- Ministry of Local Development
MoLI-Ministry of Law and Justice
MuAN-Municipal Association of Nepal
n d-Undated
NAVIN-National Association of Village Development Committees in Nepal
NGOs- Non-governmental Organizations
NIRD-National Institute of Rural Development
NLSS- Nepal Living Standard Survey
NPC- National Planning Commission
NPR or NRs-Nepali Currency
NRB- Nepal Rastra Bank (The Central Bank of Nepal)
OECD-Organisation for Economic Co-operation and Development
OLS-Ordinary Least Squares
OSR-Own Source of Revenue Per Capita
PACF-Partial Autocorrelation Function
PAC-Partial Autocorrelation
POVGAP- Poverty Gap or Depth of Poverty
POVIN-Incidence of Poverty or Poverty Head-Count Ratio
POVSPG-Squared Poverty Gap or Severity of Poverty
PPP-Public Private Partnership
PRIs-Panchayat Raj Institutions
S D-Standard Deviation
S E-Standard Error
SAE-Small Area Estimation
SCH-Mean Years of Schooling
SERV-Service Provider Indicator
SIZE-Relative Size
SLILG- Sri Lanka Institute of Local Government
SOC-Social Programme Indicator
SSA-Sub-Saharan Africa
SWOT-Strengths, Weaknesses, Opportunities and Threats
TDF- Town Development Fund
TFP-Total Factor Productivity
UDLE-Urban Development through Local Effort
UNDP-the United Nations Development Programme
VDC-Village Development Committee (Village Panchayat in Panchayat Era)
VIMB-Vertical Imbalance
WBI-World Bank Institute
WB-the World Bank
XAG-Expenditure on Agriculture
XED-Expenditure on Education
XHLT-Expenditure on Health
Operational Definitions of the Terms

**Access:** The possible way of approaching or participating to the local governance as well as in the local developmental process for the local people.

**Accountability:** It describes the relationship between local government and local people. It consists of two key elements, namely, answerability and enforceability. Accountability is often conceived as operating along two dimensions, the vertical and the horizontal. The vertical relationship between people and the state can be either formal (through electoral system) or informal (through lobbying and public advocacy by associations). The horizontal relationship involves one public authority scrutinizing the activities of another, for instance, legislative oversight of executive agencies or the capacities of specialized authorities.

**Allocative Efficiency:** The selection of factor inputs which minimises the cost of producing goods and services to satisfy given wants, subject to resource and technological constraints. This allocation includes efficiency of both production and distribution. Setting out the conditions for efficiency, including the appropriate set of prices, has been the concern of Welfare Economics. Recognition of the existence of indivisibilities and externalities has necessitated departures from the approach of Neoclassical Economics.

**Capacity Building:** Capacity indicates the ultimate limit to which an individual could perform any function given optimum opportunity, training and environment.

**Central Government:** It connotes the Government of Nepal in Nepalese context. It furthermore refers to the Ministry of Local Development and other Ministries in aggregate or as individual. In the period of Monarchism it was termed as His Majesty’s Government (HMG) of Nepal. The word centre is also used for the same.

**Citizen:** The person who resides in the jurisdiction of municipality or in the country has been taken as the citizen. Citizenship is the legal status defined by each state. However, rights and obligations are nowadays ascribed equally. So, in our study ‘people’ and ‘citizen’ are interchangeably used as the same notion.

**Correspondence Principle:** The public function should be allocated to the different layers of the government on the basis of their performance capacity and as per the national importance of the service. The “correspondence principle”, Oates (1972) has argued that the jurisdiction determining the level of provision of each public good should include
precisely the set of individuals that consume it. Correspondence principle implies that the assignment of functions such as national security and defense to the center and garbage collection and fire protection to the local level.

**Cost Efficiency:** The local government can organise its services to reflect local cost conditions; organisational structures and pay scales dictated from the centre cannot do that. Thus the local government can get the benefit by cost efficiency in service delivery.

**Decentralization:** Decentralization is the devolution of authority and responsibility for public functions from central to local level governments and or to private and or nongovernmental organizations. Decentralization is an inherently political process. It can improve the efficiency and accountability of service delivery and governance. The word ‘decentralization’ came into usage since 1820.

**Developing Countries:** The logic of “under developed countries (UDCs)” or “least developed countries (LDCs)” are different than the meaning of developing countries (DCs) in development economics. However, we use UDCs, LDCs and DCs interchangeably to denote the status of economic development of Nepal.

**Economic Efficiency:** Economic efficiency is often taken to mean those resources or inputs that should be used as to produce an output in the cheapest possible way. The economically efficient input combination is the one that yields a specified output level at the least possible cost.

**Effectiveness:** Effectiveness refers to the successful policy of local government in terms of control corruption, peoples’ participation in decision making process, better information about local issue, service delivery in low cost and, access, control and mobilization of local resources in their area.

**Empowerment:** It refers to the transformative potentials of the people to achieve positive changes in their lives by asserting their rights. The empowerment could be achieved by collective action so that the women, children or weaker section of the society could be able to solve their problems. It means empowerment is an expansion of assets and capabilities which make constructive alteration in their lives.

**Expenditure:** The expenditure is the utilization of revenue on the delivery of municipal services to the people, administration and management of municipal governments.
**Fiscal Centralization:** Fiscal centralization has been defined as the share of the tax collected through local government moved out to the higher level of government. It is the approach of control over local fiscal autonomy and is also called ‘discretionary centralization’. The word ‘centralization’ came into existence at the first in France in 1794 as the post French Revolution.

**Fiscal Decentralization:** It is the division of assignment of public expenditure and revenue between levels (centre, district and local) of government and the discretion is devolved to district and local government to determine their budgets by levying taxes with assuring the central grants and borrowing power. For purpose of our study ‘fiscal decentralization’ and ‘decentralization’ has been used as the same sense.

**Governance:** It refers to the governing system of the country. It is the approach in which power is exercised in the management of a country’s economic and social resources for development. Moreover, it is the system of intergovernmental relations.

**Horizontal Imbalance:** There is inequality between the local governments. Some regions have more resources than they need while others have inadequate resources. Thus, horizontal imbalance indicates the disparities in between the same level of local governments. The per capita revenue bases and per capita spending needs are varies in the same level of local governments refers the situation of horizontal imbalance. Horizontal equalization can be achieved through formula based grants system to the local governments.

**Incentives:** Incentives refer to the factors and forces that stimulate or motivate one to action. When local government raises its own revenue from local taxes, it has a strong incentive to encourage local economic growth.

**Intergovernmental Relationship:** The relations between the central government and governments of constituent units or between governments of constituent units, for the purpose of policy coordination and arrangements on shared programmes and resolution of disputes refer intergovernmental relationship. In this study fiscal decentralization and intergovernmental fiscal relation have been used interchangeably.

**Leviathan Hypothesis:** Total government intrusion or unwanted involvement into the economy should be the smaller, *ceteris paribus*, the greater the extent to which taxes and expenditures are decentralized, the more homogeneous, are the smaller units, the smaller the jurisdictions, and the lower the net locational rents.
Local (Fiscal) Autonomy: The state of low level of central intervention to the local governments in the local affairs. If the local government has higher proportion of own sources of revenue then it is relatively more autonomous to perform its functions.

Local Bodies (LBs): As stated by the Local Self Governance Act, 1999 the local bodies refer to the Village Development Committees, Municipalities and District Development Committees in Nepal. Moreover, these are also known as local authorities or local institutions or subnational governments. However, in this study local government or subnational government or municipal government are used interchangeably.

Local Governance: It comprises a set of institutions, systems, mechanism and processes, through which every citizen and their groups of a country can articulate their interests and needs, mediate their differences and exercise their rights and obligation at the local level. It includes local peoples’ participation in socio, economic and political spheres for their development, partnership and coordination among the key actors at the local level, capacity enhancement of the local actors across all sectors, multiple flows of information and institutions with transparency and accountability with pro-poor orientation.

Local Taxation: It refers to the taxes which are retained by the local government from their jurisdiction area they are collected and are subject to some degree of variation by local government.

Municipal Finance: Municipal finance refers to the overall financial matter regarding to sources of revenue and expenditure of municipalities.

Non-Governmental Organizations (NGOs): It refers to the non-profit making organizations created by a group of like-minded people or civil society members with the purpose of social development or social welfare. The NGOs are welfare oriented, politically neutral and democratic in character.

Own Source of Revenue: Own source of revenue comprises; local taxes, fees and fines, property rental and other revenues of the municipality.

Participation: The involvement of beneficiaries in local level decision making process. This involvement is to decide on development projects, its management and to the sharing of benefits of the outcomes of the projects.
**Policy Decentralization:** It is the decentralization of policy autonomy to the subnational government. It is concerned with the legal right of central government to override the decisions and policies of subnational governments.

**Poverty:** The person who is unable to consume daily minimum food (2,220 kilocalorie for the year 2010-11 in Nepal) and other nonfood (housing, cloths, education etc.) items is called poor. In the price of 2010-11, the yearly average expenditure on basic food for healthy and active life is NPR 11,929 and an average nonfood item is 7,332 for an individual is required. Thus, the national poverty line (regionally adjusted) for Nepal is NPR 19,261 per person per year. In this study poverty has been considered on the Cost of Basic Needs Approach (CBA). However, poverty is a multidimensional concept. Therefore, the terminologies like state of deprivation, voicelessness, powerlessness, social exclusion, future uncertainty and vulnerability have been also used in the notion of poverty.

**Principle of Subsidiarity or Subsidiary Principle:** This principle argues that the decision should always be taken at the lowest possible level or closest to where they will have their effect. For the provision of local public goods and services, the local governments are capable to provide those goods and services more effectively rather than central government. In fiscal decentralization system the assignment of expenditure is based on the Subsidiary Principle.

**Public Goods or Services:** Those goods or services that cannot be sold effectively in the marketplace. Public goods or services that are characterized by shared consumption and non-exclusion. These goods have non-rival and non-excludable characteristics. As a result, government usually provides these goods or services.

**Resource Mobilization:** It includes the recognition of resources, establishment and improvement of resource base; collection, allocation and management of resources as per the needs and aspiration of the local people.

**Responsiveness:** The local government is more responsive to local choices and local needs: it can focus resources on the services that are most valued by the local community; top-down, one-size-fits-all, policies set by the central government cannot do that.

**Revenue:** The revenue refers to the money that the municipal governments receive as taxes, non taxes, revenue received from income generating activities, revenue sharing and grants from the higher level of the governments.
**Sustainability:** The sufficient access to revenue creates the sustainability of the municipality. It means sufficient access to resource generation and its mobilization, the local government is assured to perform their function as per their spirit in the future.

**Transparency:** It is the situation where the public authority gives proper information regarding to the matter of public concern to the stakeholders on time, as confined by the prevailing laws.

**Urban Area:** The total geographical area covered by the municipalities in Nepal. Total urban area of Nepal is 3,276.37 square kilometers and is 2.23 percent of the total land area of the country.

**Vertical Imbalance:** It is the expenditure and revenue responsibilities and amounts which are unequally divided between different levels of government. The disparity is created between the cost of services devolved to local government and the potential yield of its own source of revenue can be minimized by vertical equalization.
Chapter One

Fiscal Decentralization: A Strategy to Fight Poverty

1.1. Introduction
Over the last two decades, the responsibility of the state around the world has been organized in favour of administrative reform, decentralization of power, poverty reduction and transformation in local governance. The people centered development concept has been emerged very rapidly. In this changing scenario, steps are now being taken to devolve the power and authority of the centre to the regional and local units of governments to ensure and create opportunities for common people’s participation in the state governance (Adhikari, 2006). The concept of development has converted into such evolutions as: sustainability, bottom-up process, gender equity, social inclusion, localization and participatory decision making process. These have been the rhetoric terms in the social science paradigms and national discourses (Pradhan, 2006). All these conceptual evolutions are conceived as the course for people’s welfare.

If we view back into the formation of the state, democracy, which is conscious about the basic human values and one of the essential preconditions for any democratic state, was the corporate body of the civil society. The basic human desirability of the civil society under the state is political participation, accountability, free press, social justice and basic human rights (Chandhoke, 1995). In this perspective, Kumar (2000) argues that democracy begins with excellent objectives in human governance with undeniable intensions to impart freedom from injustice and social exclusion. The democratic political system of a country provides opportunities to the people so that they could decide on their own lives themselves. At the same time, such a political system is also responsible to create the premise where decentralization and development could flourish together (Dahal et al., 1999).

The main purpose of any democratic system is to ensure the maximum welfare of the people. This system makes the government closer to the people and governs the people for the sake of the people. One of the powerful and effective means of this system is
decentralization. From this means people get the opportunity of maximum involvement in the system (LAFC, 2000). Decentralization can improve the efficiency, accountability and effectiveness in service delivery and governance. Countries throughout the world are embracing decentralization as a way of empowering citizens through their local governments (Kelly, 2010). The local government offers best opportunity to the people by adopting local knowledge, interest and enthusiasm to put up with on the solution of their problems. The activities of the local government are stimulated with consistent financial resources. The resource generation at the local level is done by using its own resource, grants and revenue sharing with the central government and borrowing as per necessity.

The practice of fiscal decentralization began in the 1990s. Ever since then there has been a worldwide increasing interest in the fiscally decentralized system. Fiscal decentralization or devolution of fiscal responsibilities to the lower levels of the government has focused on good governance (World Bank, 2000; Ebel and Yilmaz, 2001). Fiscal decentralization refers to the degree of independent decision making power in the provision of public services at different levels of the government (Oates, 1972). Fiscal decentralization, however, is not only a question of transferring resources to the different levels of the local government. Moreover, it is also extent to which the local governments are empowered? About how much authority and control they exercise over the use and management of devolved financial resources is important. These are measured in terms of control over the following factors (UNDP, 2005).

1. The provision of the basket of local services for which they are responsible.
2. The level of local taxes and revenues in base, rates and collection.
3. The grant resources with which they finance the delivery of local public services.

The debate on the issue of poverty gradually evolved after the 1980s. It is important to note that in a developing country like Nepal, poverty is a deeply entrenched and complex phenomenon (Lamichhane and Shrestha, 2009). It is not only the lack of resources; it is risk, uncertainty about the future, vulnerability, powerlessness, lack of voice, representation and freedom (Boex et al., 2006). It is the state of “relative deprivation” (World Bank, 2001). It is now widely acknowledged that poverty encompasses not only the material well-being, but also inferior outcomes in access to service and exclusion (CBS, 2006).
It is an accepted wisdom that poverty is a multidimensional and complex concept. Then it is obviously clear that poverty reduction cannot be achieved by any single remedial measure like fiscal decentralization but it requires the combination of policies designed for country specific conditions (Steiner, 2005). Fiscal decentralisation by itself is not enough to truly empower local communities and to achieve pro-poor outcomes (UNDP, 2005). There is no clear, automatic, relationship between fiscal decentralization and poverty reduction. The empirical studies on the relationship between fiscal decentralization and poverty reduction have not been satisfactory and a return to the literature on decentralization’s primary effects may be a more useful way to think about the relationship between economic development and decentralization. From this point of view, the design of fiscal decentralization becomes the key factor to determining whether the policies will lead to pro-poor development or simply become a theoretical discussion in the international development community (Jütting et al., 2004). In spite of these facts, it is accepted that poverty in underdeveloped countries like Nepal is a local phenomenon and the local government can play the role for poverty reduction. Based on the explanation above, in this study, we are interested in analyzing the effect of fiscal decentralization on poverty reduction in Nepal.

This chapter is organized as follows. In section 1.2, socio economic profile of Nepal along with its subsections namely general information, social condition, economic condition, the political system of the country and current governance system have been presented. The statement of the problem is in section 1.3. The concept of fiscal decentralization and poverty is presented in section 1.4. Section 1.5 is devoted to the analytical foundation on the measurement of poverty and income inequality. The analytical foundation on the measurement of fiscal decentralization has been offered in section 1.6. In section 1.7, we search the theoretical linkage on reducing poverty under decentralization with positive and negative lesson learnt in the past. In sections 1.8 and 1.9, the rationale and significance of study have been considered. In section 1.10, the objectives of the study have been outlined. Section 1.11 offered a brief overview of the dissertation and section 1.12 concludes the chapter.

1.2. Socioeconomic Profile of Nepal
Nepal can be called an epitome of the world and can be considered a very interesting case for study. We have chosen Nepal as a study area to contribute to the new dimension in the
empirical study of fiscal decentralization and poverty. Our entire empirical estimation is based on the data obtained from Nepal. The brief introduction of the study area is useful to conceptualize the research issue. At this point we need to assess the socioeconomic profile of the country in brief as outlined below.

1.2.1. General Information
Nepal is a landlocked Himalayan country perched between the People’s Republic of China to the north and the Democratic Republic of India to the south, east and west. It is located in between 80°4’ to 88°12’ eastern longitudes and between 26°22’ to 30°27’ northern latitudes. Nepal is 5:45 hours ahead of Greenwich Mean Time (GMT). Nepal lies within a subtropical monsoon climate zone. Nepal’s major river systems are Koshi, Gandaki and Karnali, which are the major tributaries of the Ganga in northern India. It is rectangular in shape having an average length (east to west) of 885 kilometers and a breadth (north to south) of 193 kilometers. The total area of the country is 147,181 square kilometers and the nearest sea is 110 kilometers away from the eastern extremity. The topography of the country ranges from the upland mountain in the north, elevated flatlands and hills in the middle and plains in the south. These geographical regions respectively occupy 35 percent, 42 percent and 23 percent of the total land area of the country.

Here, 83 percent of the total population resides in the rural area. The urban population residing in 58 municipalities constitutes 17 percent of the total population. The area occupied by the total municipalities is 3,276.37 square kilometers. It means 17 percent of the total population resides in 2.23 percent of the total land area of the country. The population density of urban area is 1381 persons per square kilometer. According to the report of the Population Census 2011, the total population is 26,494,504 and the annual growth rate of population is 1.35 percent. The sex ratio (number of males per 100 females) is 94.2. The population density of the country is 180 persons per square kilometre (CBS, 2011a; CBS, 2011c). Kathmandu is the capital city and is situated about the middle part of the country.

1.2.2. Social Condition
Nepal is a multi-ethnic and multi-lingual country composed of a number of groups and castes. Nepali is the official language. There are 126 caste and ethnic communities and 123 languages and dialects are spoken in Nepal. Religiously, the population consists of
Hindus (81.3 percent), Buddhists (9.0 percent), Islams (4.4 percent), Kirats (3.1 percent), Christians (1.4 percent) and others (0.8 percent). Nepali is the mother tongue of the largest number (44.6 percent) of the people. Some other mother tongues are Maithili (11.7 percent), Bhojpuri (6.0 percent), Tharu (5.8 percent), Tamang (5.1 percent), Newar (3.2 percent), Bajjika (3.0 percent), Magar (3.0), Doteli (3.0 percent), Urdu (2.6 percent) and other languages. The upper castes- Brahmin, Chhettri and Thakuri occupy 30.91 percent of the total population. Some other castes are Magar, Tharu, Tamang Newar, Kami, Muslim, Yadav, Rai, Gurung, Damai, Dholi, Limbu, Thakuri, Sarki, Teli, Chamar, Harijan, Ram and Koiri (CBS, 2011c). The figures show that the Nepalese society is highly diversified in its socio and cultural setup.

Overall literacy rate (for population aged 5 years and above) is 65.9 percent in Nepal. The male and female literacy rate is 75.1 percent and 57.4 percent respectively. The value of human development index (HDI) is 0.463 (UNDP, 2013). Some kind of disability constitutes the 1.94 percent of the total population. Only 38.17 percent of the total population have toilet facility in their houses (CBS, 2011c). Agriculture is the main occupation of the people for their livelihood and is least modernized. Agriculture sector provides employment opportunity to the 66 percent of the total population.

1.2.3. Economic Condition
Nepal is one of the least developed countries in the world. The recent survey shows that 25.16 percent of the total population lies below the absolute poverty line (CBS, 2011b). The economy is mainly based on agriculture, which contributes 39 percent to GDP (MoF, 2011). The per capita GDP at the current price stands NPR 46,615 (US$ 642) for the year 2010-11. The economic growth rate is 3.47 percent for the same year. The Gini coefficient value, which indicates the inequality in income distribution, is 0.328. According to the Nepal Labour Force Survey II, there are only 2.1 percent unemployed labours in the country (CBS, 2011a). Labour force is increasing by 400,000 annually in the labour market. Remittance is the largest foreign exchange earner and it exceeds the sum of tourism, foreign aid and exports earnings in the recent years (Shrestha, 2008). The remittance solely contributes 23.6 percent in GDP in Nepal (MOF, 2011). Agriculture contributes 13 percent of the total foreign trade of the country.
1.2.4. Political System
Nepal is a sovereign and independent nation. It has been following the principles of *Panchasila*, United Nations Charter, non-alignment and peace as basic tenets. The political system of the country is unitary in nature; however, it is declared constitutionally that it will be a federal state. It was the only Hindu Kingdom in the world with constitutional monarchy before 2008. Since the year 2008, it has been recognized as a secular republic state. The country is divided into 5 development regions. There are total 14 zones under these development regions. These zones consist of 75 administrative districts. Each district is further divided into smaller units, called village development committees (VDCs) and municipalities. Altogether there are 3,915 VDCs and 58 municipalities nationwide.

1.2.5. Current Local Governance System in Nepal
Since the year 1999, the local governance system of Nepal has been operating as per the provisions of LSGA and its subsequent regulations. The prevailing law mainly recognizes the following basic principles for the local governance in Nepal.

1. Capacity and institutional development principle.
   The main theme of this principle which conceives LSGA is concerned for devolution of power, responsibilities, means and resources to the LBs for their capacity strengthening and organizational development. The principle further recognizes that the central government’s support needs in order to develop the institutional mechanisms and functional structures of the LBs so that they are capable of bearing roles and responsibilities for local self-governance. The notion of this principle is to utilize local effort and the central government’s support for the institutional development and capacity building in local level.

2. Assignment principle.
   It is frequently discussed in fiscal decentralization literature. The basis for fiscal power assigned to the LBs such as to collect and mobilize means and resources required to carry out functions, duties and responsibilities corresponding to the accountability conferred under the law.

3. Democratization principle.
   This principle aims to develop democratic processes within the environment of LBs. It guides the LBs towards establishing the civil society based democratic
process, practices on transparency, public accountability and people’s participation while carrying out the devolved functions to them.

(4) Local leadership development principle.

The axiom of this principle is to provide a space for the development of local leadership through the arrangement of the set of effective mechanisms then making the LBs accountable to their constituents.

On the basis of abovementioned principles, nowadays Nepal has a two tier local governance system. The first tier, the district level local government is called DDC and the second lower or local tier is VDC or municipality. The structure and working procedure of these local governments are briefly stated in the sub-sections below.

1.2.5.1. The Village Development Committee

The village is a cluster of settlements in the rural area. The Village Development Committee (VDC) is the lowest level of the local government unit for the village. There are 3,915 such VDCs in Nepal. The term ‘VDC’ is commonly used to refer both to the geographical area and the executive VDC committee of the elected and nominated VDC officials. It has an elected executive and an elected council for five years. The geographical area of VDC is divided into nine wards. Each ward elects a five-member ward committee consisting of one ward chairperson, one woman member, and three ward members. These elected ward committees form the village council composed of 45 elected members and six members representing disadvantaged groups and women nominated by the council. The executive committee consists of a directly elected chairperson and a deputy chairperson from the whole VDC, nine ward chairpersons elected each from the nine wards, and two members (one must be a woman) nominated by the executive from the village council (within six nominated members) representing disadvantaged groups and women.

The executive of the VDC meets at least once a month. The village council meets twice a year for the approval of the annual program and budget, and the tax proposals submitted by the executive. The council also monitors the activities carried out by the executive. The LSGA has been devolved local level power, functions (clauses 25, 26, 28, 33 and chapter 8 of part 2) and taxing authority (chapter 7 of part 2). In addition, the central government provides annual grant to these VDCs. The village secretary, the administrative in-charge of
the VDC, is deputed by the central government (MoLD). This government employee acts as a member-secretary of the VDC executive and a key member of the local government. There is, however, a lack of staff and a poor revenue structure in the VDC. The cost of service delivery is higher due to the scattered settlements and inaccessibility. The effectiveness of service delivery in the village is poor.

1.2.5.2. The Municipality

The municipality is also the lowest level of the local government for urban and semi-urban areas. This varies from small towns to metropolitan. In total, there are fifty eight municipalities in Nepal. The capital city, Kathmandu is a Municipal Corporation. Four other big cities are Sub-municipal Corporations and the remaining fifty three are municipalities. The geographical area of a municipality is also divided into wards. The number of wards varies according to the size of the municipality, the bigger the municipality the higher is the number of the wards. The minimum number of the wards is nine. As a result, the size of the municipal executive committee and municipal council members also differ. Each ward elects a five-member ward committee consisting of one ward chairperson, one woman member, and three ward members. The committee is valid for five years. The municipal council composed of all elected members and six to twenty nominated members by the council representing disadvantaged groups and women. The executive committee consists of a directly elected mayor and a deputy mayor from the whole municipality, a chairperson elected from each ward, and two members (one must be a woman) nominated by the executive (among the nominated members) representing disadvantaged groups and women. The MoLD deputes the municipal secretary, the executive officer, who is the in-charge of the day-to-day operation and also the member-secretary of the executive.

The municipal council is the most powerful body for the municipality. It approves the annual budget, sets policies, approves the tax proposals and supervises the expenditures of the municipality. The council meets twice a year for the approval of the annual program and budget, and the tax proposals submitted by the executive. The council also monitors the activities carried out by the executive. Many sector and service related functions (clauses 93, 94, 96, 101 and chapters 6, 9 and 10 of part 3) and revenue raising authorities (chapters 7 and 8 of part 3) have been devolved to the municipalities by the LSGA. The municipalities vary in their revenue base and tax administration capacity. As a result, their
service delivery capacity and the scope of service delivery also vary. The municipalities have their own sources of revenue, central grants and some borrowing powers. They are better equipped with staff and equipment in comparison to the VDCs. In general, they are more independent in their conduct of local affairs because of their fiscal independence.

1.2.5.3. The District Development Committee
In total there are 75 districts in Nepal. The district level local government is called DDC. It lies between the centre and the lowest level of the government, the VDCs and the municipalities. The election of the DDC is indirect. The tenure of the DDC executive is also for five years. An electorate collage comprising all elected executives and councils of VDCs and municipalities within the district elects the executive committee. The whole electorate body elects the district president and vice president, while the electorate bodies from the respective Ilakas (areas, more like a sub-districts) elects the executive members (Ilaka Members). The number of an Ilaka within the district ranges from nine to seventeen. The executive committee is composed of the district president, vice-president, Ilaka members and two members: one must be a woman (among six nominated members), nominated by the executive from the disadvantaged and women. The district president heads the DDC, while the district secretary (Local Development Officer-LDO) takes charge of the day to day operation, management and administration as well as the member-secretary of the DDC executive.

The DDC has a legislative body, called the District Council. It is the apex body in the district government. The council consist of the president and vice-president of the DDC, all executive members of the DDC, all chair persons and deputy chair-persons of VDCs, mayors and deputy mayors, member of the parliament within the district and nominated members by the council from disadvantaged groups and women form the district council. It approves the district periodic plan and the annual budget of the DDC. The DDC is devolved with almost all district level development and service related responsibilities (clauses 188,189 and chapter 7 of part 4) and revenue-raising powers (chapter 6 of part 4). It gets grants, funds from revenue sharing and specific project support financed by the central government. The line ministries of the central government and non-governmental organizations (NGOs) provide major services in the district through the DDC. The DDCs are also varying in their fiscal capacities like the VDCs and municipalities.
1.3. Statement of the Problem

The public finance literature in general accepts the Musgravian division of public functions into allocation, distribution and stabilization functions. Musgrave (1959) argues that the first function ought to be assigned to the lower level governments for efficient allocation of resources while other two ought to be in the domain of the central government for an equitable distribution of income and a stable macroeconomic environment. Since then, the role and responsibilities of local governments were visibly recognized.

Since the second half of the 1960s to the first half of the 1970s the emerging countries introduced the decentralized scheme for better development and management. Before that the centralized planning system designed by the second world countries had not worked satisfactorily due to the delayed in project approval, delay disbursement of fund and lack of coordination. The “one size fits all” system of the approach could not adequately respond to the development needs and challenges posed by the different communities. Then it was realized that decentralization was a partial solution (Pant, 2000).

Decentralization of the governance system in Nepal began in 1960s. Since then the processes had undergone considerable changes over time. The post 1990s may be considered as the landmark in the development of the decentralization process in the country. The Constitution of the Kingdom of Nepal, 1991, has incorporated decentralization into the directive principle of the state policy, stating “decentralization should be the means for ensuring optimum participation of people in governance and hence enjoy the benefit of democracy”. A more systematic attempt was followed after the promulgation of the Local Self Governance Act, 1999 (LSGA). This is the turning point towards fiscal decentralization devolving power to the local governments. Moving a step forward at present, the Interim Constitution of Nepal, 2007, proposes for restructuring the state to promote and institutionalize an inclusive, democratic and progressive local governance system, maximizing people’s participation based on decentralisation, devolution of power and the equitable distribution of resources to the local bodies. However, since 2002, there has been no elected local body in Nepal. More than a decade has elapsed after fiscal decentralization in Nepal. However, till date there has been no any study on the effects of fiscal decentralization to the wellbeing of the people.
Poverty in Nepal is a multidimensional socio-economic issue as the hurdle in the course of economic development. It is fundamentally a rural and widely spreading phenomenon. It not only is the matter of income and consumption but also is the state of low achievements in education and health, vulnerability and exposure to risk, and lack of voice and empowerment (ADB, 2002). In Nepal, poverty reduction has been an overriding concern in the periodic planning in the country. It has been clearly stated as a development objective only since the Sixth Plan (1981 to 1985). Continuing this goal, after the Ninth Plan (1998 to 2002), poverty alleviation has been adopted as its sole objective. According to the government’s study, in this period, poverty has been declining gradually. In this backdrop, the question raises ‘whether fiscal decentralization stimulates poverty reduction in Nepal’. Thus, there is need for carrying out an empirical study for a better understanding of the potential effects of fiscal decentralization on poverty in Nepal.

1.4. Concept of Fiscal Decentralization and Poverty
An important objective of the present study is to look into the linkage of fiscal decentralization with poverty reduction outcomes in Nepal. For the motivation in the study, this section presents a brief concept of fiscal decentralization and poverty.

1.4.1. Fiscal Decentralization
Decentralization is the process of transferring the responsibility and functions from the central government to the subnational (local) governments (Pant, 2000). It means decentralization is the real transfer of authority and responsibility where people involve absolutely in the governance of the country at the grass-root level. Decentralization is based on the following theoretical frameworks.

(1) Hayek’s idea of knowledge in society: Hayek (1945) concludes that there is a better access of local governments to the local preferences and costs through their local knowledge; however, the central government is incapable to carry out the same.

(2) Tiebout’s notion of inter-jurisdictional competition: Tiebout (1956) posits “vote with their feet” thereby implying that citizens would prefer to live in the areas which burden them with lower taxes and therefore they tend to move out of the areas with higher tax burdens.

(3) Oates’ notion of fiscal federalism: Oates (1972) emphasizes the appropriate assignment of taxes to the various levels of government to improve welfare.
Market Preserving Federalism: Following the traditional theories on federalism, it emphasises the larger benefits of decentralization. Certain forms of decentralization are more supportive of market development and economic prosperity. Furthermore, this theory lays emphasis on the significant role of the local governments for local revenues to drive local economic growth.

Decentralization is a multidimensional concept. In general, it consists of three different but interdependent dimensions (Rondinelli, 1981), namely, political, administrative (institutional) and fiscal. Politically, it devolves the power, authorities, functions and resources in a responsible manner to the lower (local) layers of representative structures. Institutionally, it involves creating a legal framework to perform the assigned roles by the popular institutions created at the local levels. Fiscal decentralization involves the devolution of fiscal responsibilities (revenue raising, resource allocation and responsibilities for expenditure) to the lower levels of the government. Steiner (2005) considered economic or market decentralization by privatization as the fourth dimension of decentralization. It is the shift of responsibility for functions from public to private sector. This may appear in the form of privatization and deregulation. In this form of decentralization, the government performing functions and responsibilities should be transferred primarily or exclusively to the business groups, community, cooperatives, private voluntary associations and non-governmental organizations.

There are three major forms of administrative decentralization, popularly known as “3Ds” (Rondinelli and Nellis, 1986). In a nutshell these are stated below.

1. Deconcentration: The redistribution of decision making among the different levels within the central government.
2. Delegation: It is the transfer of responsibilities and power from the central government to semi-autonomous organizations not wholly controlled by the central government.
3. Devolution: The assignment of responsibilities and power from the central government to the independent local governments is termed as devolution.
The complete devolution of power should be considered in a package of combining functions, finances, functionaries and freedom to the local governments (Venkatakrishan, 2007). This package is popularly called “Four Fs” as delineated below.

1. Functions: The clearly defined roles, responsibilities, rights and accountabilities of the local government and other stakeholders are termed as function.
2. Funds: It is the assignment of finance as revenue (tax and non-tax) flexibility, revenue sharing, fiscal transfers and borrowing to the local government and other stakeholders.
3. Functionaries: The functionaries are personnel, logistics, equipments, capacity, mechanisms, systems and procedures that required for the local governments.
4. Freedom: The fourth F is also considered as freedom or autonomy for the local governments to perform their functions as defined by the Constitution and laws.

At its early days, the practice of decentralization mainly concentrated on its political and administrative aspects. As a result, the achievements were weaker. It is a well accepted fact that decentralization is inherently a political process, although, without financial power it has no meaning at all (Kelly, 2010). In practice, it is impossible to consider a meaningful fiscal decentralization process without the presence of effective levels of political and administrative decentralization. Therefore, throughout this study we use the terms ‘decentralization’ and ‘fiscal decentralization’ interchangeably.

Fiscal decentralization comprises the financial aspect of devolution to the regional and local government. Currently the other two fashionable terms “fiscal federalism” and “central-local (or intergovernmental) financial relations” are often used by American and European writers respectively (Davey, 2003). Fiscal decentralization covers a broad policy area. It can be considered in terms of four basic building blocks or pillars or elements (Shrestha, 2002; UNDP, 2005), as follows.

1. The expenditure assignment responsibility to different government levels: It is the functions and expenditure responsibilities declared for the each level of the government. The functional assignment is based on the subsidiary principle. The clear expenditure responsibilities are essential for a well designed intergovernmental system. It is the first step in designing an intergovernmental fiscal system. For successful decentralization, there should be matched in
expenditure responsibilities with the objective of service assignment. It means “finance should follow the function”. There is no single and best assignment principle. The commonly accepted is the expenditure should be compatible with the associated services to the local government.

(2) The revenue sources assignment to different government levels: It concerns with the tax and non-tax revenue sources will be made available to subnational governments in order to meet their responsibilities. Obviously, an important determinant of the assignment of revenue sources to the subnational government in accountable and equitable manner. So, the local government can deliver services to the citizen. The local governments’ financial resources shall be commensurate with the mandatory tasks by the constitution and laws. The local government shall derive own financial resources from local taxes and charges within the limit of statute. They have the power to determine the local tax rate, tax base and tax administration. They are also assured additional financial resources by revenue sharing in the company of central government.

(3) Intergovernmental fiscal transfers: In addition the assigning revenue sources, the central government provides the regional and local governments with additional resources through a system of intergovernmental fiscal transfer or grants. It is also called subventions or donations or subsidies. In every intergovernmental fiscal transfer have two dimensions. First is the vertical dimension, the distribution of revenues between the central and local government. The second is the horizontal dimension, the allocation of transfers among the recipient units or local governments. The grants are necessary to narrow down the vertical as well as horizontal fiscal gaps or imbalances in the intergovernmental fiscal relation. The economic rationales behind fiscal transfer are to reduce fiscal gap, decrease fiscal inequality, minimize fiscal inefficiency, maintain interstate spillover and keep up fiscal harmonization. The grants are of two types; specific (conditional, categorical and earmarked) and general or unconditional block grant. The design of intergovernmental fiscal transfer is country specific and is specified by the laws.

(4) Sub-national debt or local borrowing: The local governments can borrow in a variety of ways to finance revenue shortfalls. Loans are generally taken for the large and long term capital investments in the local projects. It helps to mismatch in expenditure and tax flows of the local government. It is the means to foster political accountability. However, the ability to repay the capital and interest clearly needs a
careful calculation. For borrowing, it normally requires a mandatory prior approval of the central government.

In addition to the aforesaid elements of fiscal decentralization the accounting system and accountability are important component of the entire fiscal management of the local government (Kandel, 2004).

To make more comprehensible, the following table 1.4.1 could be used for presenting the relationship among the dimensions of decentralization.

<table>
<thead>
<tr>
<th>Forms Types</th>
<th>Privatization</th>
<th>Delegation</th>
<th>Deconcentration</th>
<th>Devolution</th>
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<tbody>
<tr>
<td>Economic</td>
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<td>Administrative</td>
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<td>Fiscal</td>
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†Source: Steiner (2005).

The transfer of the certain functions from the public to the private sector implies economic decentralization. Privatization is the popular model of economic decentralization. In administrative decentralization, the delegation and deconcentration of power is considered. The devolution of power is the most far-reaching form of decentralization containing in political, administrative and fiscal decentralization. Finally, fiscal decentralization is the devolution of functions with assigning adequate resources to perform the functions.

Bahl (1999) points out seven key elements of the fiscal decentralization system. These elements must be present for the fiscally decentralized local governance and are more important than others. These elements are called the necessary conditions. The following are the necessary conditions.

(1) Elected local council.
(2) Locally appointed chief officers.
(3) Significant local government discretion to raise revenue.
(4) Significant local government expenditure responsibilities.
(5) Budget autonomy.
(6) Hard budget constraints.
(7) Transparency.

The status of autonomy in the fiscally decentralized system also differs from place to place. The following factors which affect the level of autonomy on the sub-national government have been stated as desirable conditions for fiscal decentralization.

(1) Freedom from excessive central expenditure mandates.
(2) Unconditional transfers from the higher level governments.
(3) Sufficient borrowing powers.

There are numerous benefits of fiscal decentralization (Ebel and Yilmaz, 2001; Smoke, 2001). Some of its benefits are it improves local service delivery, enhances government accountability to local citizens, helps to move the government closer to the people, broadens the tax base and allows for alternative service delivery in social services. On the other hand, it has some inherent negative effects (Prud’homme, 1995). Some of its negative effects are that it may harm macroeconomic stability, decreases accountability and transparency, there is possibility of a dominating role of the local elites, and so targeted population can’t get the proper benefits. Similarly, Sewell (1996) criticizes the aspects on Prud’homme’s view on decentralization with some country specific examples. He suggests that sub-national governments are suitable to perform some types of interregional redistribution. The welfare functions are the exclusive duties of the sub-national governments. The sub-national fiscal activities act as automatic stabilizers, because they are recurrent and not very flexible. The central fiscal policy is not only the instrument for economic stability.

The illustration above shows that different types of decentralization have different characteristics, policy implications and conditions for its success. Therefore, these should be distinguished. However, the aspects of decentralization are so integrated that delinking one from the other will make the decentralization process incomplete and non-functioning (LDTA, 2002). So, for the successful decentralization reform the combination of all these dimensions are required.
1.4.2. Decentralization Process in Nepal

Nepalese society has been socially organized for many years. During the Lichchhavi (225 to 899) and Malla (1201 to 1768) periods of Nepalese history, a number of local institutions called Panchali (Village Assembly and Village Panchayat) were set up and lots of developmental work was achieved. This gives an idea that our ancestors knew that more power is given to the local people for developing local areas since the long time (Pant, 2000). The traditional social organizations like Guthi, Samaj or other ethnic organizations and social associations had played significant roles in the society. However, decentralization seems to have been inspired more by the wish fulfillment of the rulers rather than public services and utilities (Adhikari, 2006).

The formal practice of decentralization in Nepal is almost five decades old. Perhaps it is the oldest decentralization process in South Asia. Public participation in governance gradually started after the establishment of democracy in 1950 (Shrestha, 2002). National Planning Commission was established in 1956. The multi-party democratic system was replaced by the so called partyless Panchayat System in 1960 through a royal takeover. The panchayat system was brought up with the concept of decentralization but by nature it was a centralized one. It was a monocratic system framed with democratic norms by the name of decentralization. After two years of the Panchayat System, the statutory local government institutions were created formally by promulgating Decentralization Act, 1962. The Administrative Reform Commissions of 1968 and 1975 had recommended the adoption of decentralization in different forms. In this era, the significant expenditure and revenue authorities were provided to the local governments by Decentralization Act, 1981 and Decentralization Rules, 1984. In the Panchayat System, the acts and rules were revised and improved to some extent by law reform (LDTA, 2002). Thus, there was low rate of progress due to the political intervention created by the central authority of the Panchayati rulers.
<table>
<thead>
<tr>
<th>Year</th>
<th>Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950</td>
<td>Installation of democratic political system for the first time in Nepal.</td>
</tr>
<tr>
<td>1956</td>
<td>Implementation of the first periodic planning at national level.</td>
</tr>
<tr>
<td>1960</td>
<td>Establishment of partyless <em>Panchayat</em> system by destroying multiparty system through royal takeover.</td>
</tr>
<tr>
<td>1965</td>
<td>Announcement of Administrative Decentralization Scheme.</td>
</tr>
<tr>
<td>1967</td>
<td>Formation of Decentralization Steering Committee at national level.</td>
</tr>
<tr>
<td>1971</td>
<td>Promulgation of Local Administration Act.</td>
</tr>
<tr>
<td>1974</td>
<td>Promulgation of District Administrative Scheme.</td>
</tr>
<tr>
<td>1980</td>
<td>Establishment of Ministry of Local Development.</td>
</tr>
<tr>
<td>1981</td>
<td>Formation of Decentralization Sub-committee at national level.</td>
</tr>
<tr>
<td>1984</td>
<td>Promulgation and implementation of Decentralization Rules and Regulation.</td>
</tr>
<tr>
<td>1990</td>
<td>Restoration of multiparty democracy a second time.</td>
</tr>
<tr>
<td>1991</td>
<td>Promulgation of new constitution formed by the people for the first time.</td>
</tr>
<tr>
<td>1992</td>
<td>Local Bodies’ Acts (three different acts) were promulgated in place of former acts.</td>
</tr>
<tr>
<td>1999</td>
<td>Promulgation of Local Self Governance Act (LSGA) and Local Self Governance By-laws: The turning point in the fiscal decentralization.</td>
</tr>
<tr>
<td>2006</td>
<td>Joint People’s Movement (popularly known as <em>Janaandolan II</em>).</td>
</tr>
<tr>
<td>2007</td>
<td>Promulgation of Interim Constitution of Nepal.</td>
</tr>
</tbody>
</table>

†Source: Chhetri (2001) and LGCDP (2008).

The popular movement of 1990 restored the multi-party democracy in Nepal. Thereafter, decentralization became the main agenda for the local governance. Consequently, the District Development Committee (DDC), Municipality and Village Development Committee (VDC) acts were passed in 1992. But these laws were criticized mainly due to the lack of fiscal power to the local governments. In response to these concerns, the High Level Decentralization Committee and High Level Working Task Force were formed.
under the chairmanship of the then Prime Minister of Nepal in 1996. On the basis of reports by these committees, Local Self Governance Act, 1999 (LSGA) and Local Self Governance Regulations, 1999 (LSGR) were promulgated (LAFC, 2000). Since 2007, the financial regulation of LBs has been managed under Local Bodies Financial (Administration) Regulation, 2007 (LBFAR). These prevailing laws are the integral form to move local governance in Nepal. The information about political and legal changes regarding to decentralization practice in Nepal are presented in table 1.4.2.

After the joint people’s movement in 2006, it was guaranteed by the state that the political system of the country would be based on universally accepted fundamental human rights, a competitive multiparty democratic system, constitutional checks and balances, independent judiciary, periodic elections, participation by civil society, press freedom, people’s right to information, transparency and accountability in the activities of political parties, people’s participation and the concepts of impartial, competent, and fair administration (LGCDP, 2008).

The Interim Constitution of Nepal, 2007 has ensured the future direction to the social, political and economic transformation of Nepal. It guarantees social justice and affirmative action for women, dalits, indigenous groups, the Madhesi community, and other excluded or disadvantaged groups. It also proposes that the future restructuring of the state would be to promote and institutionalise an inclusive, democratic and progressive local governance system, maximising people's participation based on decentralisation, devolution of power and the equitable distribution of resources to the local bodies (MoLJ, 2007). Then onwards, the restructuring of the state has been going on through decentralization initiative and subsequently gaining momentum on localization in the governance system.

1.4.3. Poverty
Poverty is a multidimensional concept. Poverty reduction is the main goal of economic development. The preliminary literature considered poverty as a condition of low income and the inability to satisfy basic needs since the 1970s. Later this thinking on what constitutes poverty has evolved and broadened the aspects of human wellbeing. During the 1980s and 1990s, the concept of poverty gradually evolved the minimum level of subsistence (money-metric measures) to the notion of relative deprivation (non-money-metric measures), which includes: primary education, basic health, vulnerability, voice,
empowerment and participation (Boex et al., 2006). It is the state of the lack of income, food, safe drinking water, shelter, job opportunities and physical asset bases such as livestock and land. It is also about being at risk, uncertainty about the future, powerlessness and representation or freedom (World Bank, 2001).

Poverty can be viewed in absolute and relative terms. Absolute poverty refers to the subsistence below from a socially acceptable minimum standard of basic needs. The absolute poverty line set at the figure of US$1 per day (in 1985 purchasing power parity of US$). It is also called the incidence of extreme poverty. The people below this line are the absolute poor and are a problem for developing countries (Maxwell, 1999). The relative poverty compares the status of population from the bottom to the upper strata. For example, the income of a person is more than the next one, and then it is to say that the first person is relatively rich where as the second is relatively poor.

With the poverty problem looming across the world, the Millennium Summit in September 2000; the 147 heads of the State and Government adopted the Millennium Declaration and affirmed their commitment towards sustainable development and alleviating poverty in the world. The Millennium Development Goals (MDGs) are stated below.

1. Eradicate extreme poverty and hunger.
2. Achieve universal primary education.
3. Promote gender inequality and empower women.
4. Reduce child mortality.
5. Improve maternal health.
7. Ensure environmental sustainability. And,
8. Develop a global partnership for development.

The first seven goals are related to different dimensions of poverty and the eighth one is allied to the strategy to achieve these seven goals (UN, 2003). These goals comprise a total of 18 targets and 48 measuring indicators. The concept of MDGs is the new aspect of poverty in the world. The government of Nepal committed to achieve the targets of the MDGs (CBS, 2010; UN, 2003). The quantitative target on poverty reduction, as per
committed to achieve MDGs, the population below poverty line will be lowered and would be in 21 percent by the year 2015 in Nepal.

Nepal has been experiencing poverty and is one of the least developed countries in the world. There is lack of basic infrastructure in the country. In turn, a wide variation in poverty incidence across the geographical region and it severely suffered in rural area of the country. Some causes of poverty in Nepalese context are poor governance, low economic growth, feudalistic land system, lower social spending, lack of employment opportunities and access to choices, geographical disintegration, under employment, higher population growth rate and unequal income distribution system. As a consequence, the recent effects of poverty in Nepal are seems in the form of, Maoist conflict, social fragmentation, crisis in nationalism, insecurity, constitutional deadlock and mass migration.

1.4.4. Poverty Trend in Nepal

Poverty in Nepal is more a creation than a state of being. It is a chronic problem. However, it is considered at the government level only after the 1960s. First of all, poverty was defined and quantified in 1976-77. National Planning Commission (NPC) of Nepal conducted the national survey on employment, income and consumption pattern in 1976-77. This survey estimated that 32.9 percent of the total populations lay below the absolute poverty line. Then Nepal Rastra Bank (NRB), the central bank of Nepal, conducted research entitled ‘Multiple Household Survey’ in 1984 on the basis of an ecological belt and reported 43.1 percent population in rural areas and 39.2 percent in the urban areas to have below the poverty line. After that, the survey conducted by the World Bank (WB) and United Nations Development Programme (UNDP) in 1992 estimated that 70 percent of the total population was living below the poverty line (ADB, 2002). The important conclusion of the research was that the nature of poverty is a rural phenomenon in Nepal. A more orderly study on poverty was started after 1995 in the country. The WB studied on poverty in 1995 and a report was published in 1997. The report estimated that 53.1 percent of the total population lay below the poverty line. Continuing the previous survey, the WB again estimated that 42 percent of the total population in the study year was below the defined poverty line. Meanwhile, the Central Bureau of Statistics (CBS) Nepal conducted National Living Standard Survey (NLSS I) in 1995-96 and estimated the poverty headcount rate as 41.76 percent of the total population (CBS, 2006). Second time
CBS Nepal conducted National Living Standard Survey (NLSS II) in 2003-04 and calculated the poverty headcount rate as being 30.85 percent. The result of the recent National Living Standard Survey (NLSS III) conducted in 2010-11, by the same showed 25.16 percent as the poverty headcount rate in Nepal (CBS, 2011b). These studies depict that the absolute poverty level in Nepal has been gradually decreasing over time.

1.5. The Analytical Foundations of Measurement of Poverty and Income Inequality
In this section at first we define poverty and then method of measurement of income poverty. The brief concept of economic inequality and its measurement should also be presented. Small area estimation method and cost of basic needs methods for measuring poverty are offered at the last.

1.5.1. Defining Poverty
Poverty means different understanding to different people at different period of time and place. Low income, low consumption, limited access to education and health care, voicelessness, powerlessness, vulnerability, deprivation and exposure to risk are considered equally important aspect of poverty. Nevertheless, our main focus is to individual’s access to basic local service delivery in education, health, agriculture are taken as a reference of well being. These services shall be provided by the local government by means of involvement of local citizen with hearing their voices at local level.

Given this information, the poverty can be classified into two broad categories: income or consumption (moneymetric) poverty and physical qualities of life (non-income or non-moneymetric) poverty. The latter one concept has been developed more recently and fashionable. The most commonly used measurements of non income based poverty are: Human Development Index-HDI (UNDP, 1990), Gender Development Index-GDI (Anand and Sen, 1996), Human Poverty Index-HPI (Anand and Sen, 1996; UNDP, 1997) and Gender Empowerment Measure-GEM (UNDP, 1995; UNDP, 1999). Even though we agree about this measure of poverty, lacking of adequate cross country information concerning to these measures we are forced to follow the income or consumption based poverty measures for our further process. For this study, poverty is considered as the daily average calorie consumption that required for the subsistence to a person and is expressed in monetary term.
1.5.2. Measuring Income Poverty and Income Inequality

The economic literature generally concerned on money metric poverty based on an assumption about the income or consumption’s minimum threshold required for individuals or households of the country. The basic income poverty indices are incidence of poverty, poverty gap and squared poverty gap. The concise concepts about these measurements are presented below.

(1) Incidence of Poverty (POVIN): The individual whose per capita income does not cover the cost of minimum specified calorie intake (minimum threshold) is considered as the person is lies below the poverty line. It shows the head count ratio of poverty. In this study, we use the terminology ‘incidence of poverty’ and ‘poverty incidence’ to denote the same meaning. It is simply written as follows.

\[ \text{POVIN} = \frac{Q}{N} \]  

(1.5.2A)

Where POVIN is the incidence of poverty, 
Q is the number of poor whose per capita does not cover the cost of minimum specified calorie intake, and 
N is the total population.

(2) Poverty Gap (POVGAP): Poverty gap is the sum of the distance between the selected threshold and the level of income or consumption of each individual, divided by the total population. It thus represents the resources need to bring all poor individuals up to a poverty line. It is also called the depth of poverty. It is written as follows.

\[ \text{POVGAP} = \frac{1}{N} \sum_{i=1}^{Q} \frac{Z - \mu_i}{Z}; \text{ for } \mu_i < Z \]  

(1.5.2B)

Where POVGAP is poverty gap, 
\( \mu_i \) is the income of the \( i^{th} \) poor person, and 
Z is the poverty line.

The POVGAP can be expressed in terms of the poverty incidence as,

\[ \text{POVGAP} = \text{POVIN} \times W; \text{ Where, } W = \frac{Z - \mu^*}{Z} \]  

is the income gap of the poor and 
\( \mu^* \) is the mean income among the poor.

(3) Squared Poverty Gap (POVSG): The severity of poverty is computed by adding up the square of the distance between the minimum threshold and the level of income
or consumption of each individual and then divided by the population. Thus it measures the average squared distance below the threshold, thereby giving more weight to the poor. It is also called the severity of poverty. It is obtained by squaring POVGAP as stated below.

\[
POVSG = \frac{1}{N} \sum_{i=1}^{Q} \left( \frac{Z-Y_i}{Z} \right)^2
\]

(1.5.2C)

Where \(Y_i\) is the income of \(i^{th}\) individual ranked in increasing value of income,

\(Q\) is the number of poor in the total population \(N\), and

the squared \((2\) or \(a\)) is the aversion for poverty.

Foster, Greer and Thorbecke-FGT (1984) have been presented these three measures: incidence, intensity and severity of poverty as FGT index of poverty. The index is mentioned below.

\[
P_\alpha = \frac{1}{N} \sum_{i=1}^{Q} \left( \frac{Z-Y_i}{Z} \right)^\alpha
\]

(1.5.2D)

Where \(\alpha\) is the aversion for poverty.

When \(\alpha = 0\), \(P_\alpha\) is the poverty incidence (POVIN).

When \(\alpha = 1\), \(P_\alpha\) is the poverty gap (POVGAP).

When \(\alpha = 2\), \(P_\alpha\) is the squared poverty gap (POVSPG).

\(i\) is the position of poor person from the poverty line,

\(Z\) is the poverty line, and

\(Y_i\) is the income of the \(i^{th}\) individual.

The Watt’s Poverty Index (1968) and Sen’s Poverty Index (1976) are other income measures of poverty. However, we employ incidence of poverty, poverty gap and squared poverty gap which are the traditional measures of the poverty. In our empirical estimation, among these measures, only the incidence of poverty should be used as a dependent variable.

Another variable of interest is the inequality of income among the population and is measured in terms of Gini coefficient (GINI). Gini (1912) developed this measure of income inequality of the society. The Gini coefficient is a measure of inequality of a distribution. Gini coefficient is defined as the mean of absolute differences between all
pairs of individuals for some measure. The minimum value is 0 when all measurements are equal and the theoretical maximum is 1 for an infinitely large set of observations where all measurements but one has a value of 0, which is the ultimate inequality. It is calculated with the help of Brown (1994) formula as pointed out below.

\[
GINI = \left| 1 - \sum_{k=1}^{n} (X_k - X_{k-1})(Y_k + Y_{k-1}) \right|
\]  

(1.5.2E)

Where \( GINI \) is Gini coefficient

- \( X_k \) is cumulated proportion of the population variable, for \( k = 0, ..., n \), with \( X_0 = 0 \) and \( X_n = 1 \).
- \( Y_k \) is cumulated proportion of the income variable, for \( k = 0, ..., n \), with \( Y_0 = 0 \) and \( Y_n = 1 \).

Lorenz (1905) has presented the income inequalities graphically by means of diagram called Lorenz curve. The Lorenz curve measures the actual distribution of income. The greater the curvature of the Lorenz Curve, the greater is the degree of income inequality. Consider the figure 1.5.2, the cumulative percentage value of population is presented in horizontal axis, that is, at point B zero and at point C hundred. The cumulative percentage of income is in vertical axis taking zero at point B and at the upmost point is hundred. The BD is perfect line of equality which makes an angle of \( 45^\circ \) to the horizontal and vertical axes. By joining the respective points we get Lorenz curve as shown in the figure 1.5.2. If the area between the line of perfect equality and Lorenz curve is A and the area underneath the Lorenz curve is B, then the Gini coefficient is \( A/(A+B) \). This ratio is expressed as a percentage or as the numerical equivalent of that percentage, which is always a number between 0 and 1.
In our study, we use GINI as a measure of income inequality for the national level estimation of the country. It clearly demonstrates how income has changed for poor to rich. It could be used to indicate the distribution of income has been changed over the period of time. Besides GINI measure there are other measures of inequalities. These are Atkinson class of inequality measure proposed by Atkinson (1970) and Theil’s inequality measure by Theil (1967). However, GINI is the popular measure of income inequality.

1.5.3. The Small Area Estimation Method of Measuring Poverty
Small area estimation (SAE) method has been applied in more than 60 countries for measuring poverty. This is a statistical technique that estimates poverty for small areas by combining survey data with other data sources such as the population census (Ghosh and Rao, 1994; Rao, 2003; Elbers, Lanjouw and Lanjouw, 2002, 2003). The method combines household survey data and census data at the unit record level, making it possible to estimate reliable poverty indicators at local level. In Nepal, by using this methodology estimation of poverty has been estimated by Central Bureau of Statistics (CBS), Nepal in collaboration with the World Bank since two decades. It has been incorporating new methodological refinements aimed at improving modeling in the methodology. It makes practically possible to estimate poverty up to VDC or municipal level in Nepal. Poverty estimates is done by using regression at the domain level where survey data is available and applying this function to the census or geographic information system (GIS) variables which were common. The domain could be used at any level where the survey is representative. However, the national (single) regression modeling has been done using the regional variables. Here, we present the SAE methodology of measuring poverty in brief as follows (CBS, WFP and WB, 2006; Gaihre, 2010).

Figure 1.5.2. Geometrical Presentation of Lorenz Curve and Gini Coefficient
Stage 1: Beta or Consumption Modeling

The first stage estimation involves modeling per capita household consumption at the lowest geographic level for which the survey is representative. In this stage, a cross-section regression model of (logarithmic) per capita household consumption is developed and estimated on a set of variables in the household survey dataset, provided these explanatory variables also exist in the census data. The consumption model in this estimation is stated below.

\[ \ln y_{ch} = X_{ch} \beta + u_{ch} = X_{ch} \beta + \eta_c + \epsilon_{ch} \]  

(1.5A)

Where

- \( c \) is the subscript for the cluster,
- \( h \) is the subscript for the household,
- \( \ln y_{ch} \) is the log per capita household consumption expenditure,
- \( X_{ch} \) is the set of explanatory variables in the household,
- \( \beta \) is the estimated regression coefficients giving the effects of \( X \) variables on \( y \), and
- \( u_{ch} \) is the disturbance (residual) term which is the sum of common (cluster) component \( \eta_c \) and idiosyncratic (household) component \( \epsilon_{ch} \).

Explicit treatment of location or cluster effect in the consumption model is important. Not accounting for them would not only bias the point estimates of poverty or inequality indicator but also inflate the standard errors, a measure of precision of the estimates. Many of the unobserved neighborhood and geographic effects not measured by household level variables are possibly captured by the inclusion of location variables in the model.

Stage 2: Alpha or Household Error Modeling

Elbers, Lanjouw and Lanjouw (2002, 2003) have proposed the following logistic model of the variance of \( \epsilon_{ch} \) conditional on \( z_{ch} \), bounding the prediction between zero and a maximum, \( A \), set equal to \( (1.05) \times \max \{ e_{ch}^2 \} \). It could be used to estimate a logistic model with free bounds; however, imposing bounds yields similar estimates of parameter \( \alpha \).

\[ \ln \left( \frac{e_{ch}^2}{A - e_{ch}^2} \right) = z_{ch} \hat{\alpha} + r_{ch} \]  

(1.5B)
The heteroscedasticity (non constant variance of household specific error $\varepsilon_{ch}$ across households) helps correctly to specify the error term and involves finding a restricted number of variables ($z$) that best explain the variation in this error term.

**Stage 3: Simulation and Bootstrapping**

The second stage uses the information from zero stage (data matching) and first stage (regression). This stage applies estimated parameters from alpha and beta models and empirical distributions of cluster errors and household residuals to survey variables to generate predicted consumption for each household selected in survey.

Once the Beta model was set from the survey dataset, the coefficients of the $X_s$ are taken out and applied to the values of corresponding variables in the survey data set. There are 100 simulations for each household using bootstrapping of the survey coefficients. They are made to estimate the $y$ (log of per capita consumption). The predicted consumption model for each bootstrap simulation $R$ is mentioned below.

$$\hat{y}_{ch}^R = \exp X_{ch} \tilde{\beta}^R + \tilde{\eta}_c^R + \tilde{\epsilon}_{ch}^R$$  

(1.5.3C)

Where

- $\hat{y}_{ch}^R$ is the simulated value of consumption for household $h$ in cluster $c$,
- $X_{ch}$ is the survey household characteristics,
- $\tilde{\beta}^R$ is the coefficients drawn from the multivariate normal distribution described by the first stage parameter estimates,
- $\tilde{\eta}_c^R$ is the cluster level residuals drawn from the empirical distribution of $\tilde{\eta}_c$, and
- $\tilde{\epsilon}_{ch}^R$ is the household level residuals drawn from the empirical distribution of $\tilde{\epsilon}_{ch}$.

For each simulation $R$, a set of $\tilde{\beta}$ and $\tilde{\alpha}$ coefficients are drawn from multivariate normal distribution while making use of first stage parameter estimates and their associated variance covariance matrices. Once $\tilde{\alpha}^R$ is drawn, variance of household residuals $\sigma_{\tilde{\epsilon}_{ch}}^R$ is estimated for each survey household. Next, location (cluster) and household error terms are drawn. Location error $\hat{\eta}_c^R$ is drawn from the empirical distribution of $\hat{\eta}_c$ while $\hat{\epsilon}_{ch}^R$ is
computed based on the parameters drawn from the empirical distribution of $\hat{e}_{ch}$ and computed survey household error variance $\sigma^2_{e,ch}$.

For the estimation of poverty as mentioned above we use cost of basic needs (CBN) approach developed by the World Bank for measuring poverty line in Nepal. In general, developing countries prefer consumption than to prefer income as an indicator of welfare for the following reasons.

(1) Consumption is a better picture of well-being than income that precisely allows access to consumption.

(2) It can carry on the capacity of households to meet their basic needs like access to water, health, decent housing.

(3) It is much more stable in time than income, precisely in rural areas.

(4) It measures more easily than income.

The consumption comprises food and non-food items which are kept in a single basket. As for the nutritive energy (in kilocalorie per capita), the line of poverty is defined as the total spending in consumption by an individual that can be expected to make when s/he is adequately fed in his living area. The person below this defined line is termed as absolute poor.

1.6. Analytical Foundation of Measurement of Fiscal Decentralization

In this subsection we briefly define fiscal decentralization and the prevailing method of measurement of fiscal decentralization. We select the particular measures of fiscal decentralization which would be used throughout the analysis of our study.

1.6.1. Defining Fiscal Decentralization

We noted at the outset of this study that fiscal decentralization brings expenditure functions closer to revenue sources may induced debt and expenditure management by the subnational governments and boosts transparency and accountability in subnational budgets. This is concerned with the design of constitutional and legal framework in decision making among the various layers of governments. It is an effective tool for increasing efficiency in the public sector. It is the set of policies and processes which reallocates functions and finances across the government levels but ultimately a political
process. The practice of fiscal decentralization is country specific and has been taken as a means but not the end.

As the means of state reformation procedure, the issue of fiscal decentralization is now being widely discussed in all countries rich or poor, big or small, unitary or federal, transitional and conflict affected. Nepal, a poor unitary country has been affected by internal conflicts that have repercussions for local governance and peace building. On the other side, the country has long journey on decentralization. Now a day, it has been trying to address the issue of conflict through fiscal decentralization. Fiscal decentralization has been increasingly demanded by the people for the efficient and equitable provision of public service delivery in local level.

An appropriate point for the treatise on fiscal decentralization is that it is based on the consideration of “subsidiarity” or “subsidiary principle”. This principle is often guiding in expenditure assignment and it states that the responsibility for the provision of goods and services should be placed at the lowest local level of government that is able to deliver the goods and services in efficient manner. In other words, the subnational government is compatible with its jurisdiction for the service in the number of ways as follows.

(1) Distance between the local government or policy makers and the communities they serve is smaller; so the policy makers are better informed about the preferences and needs of the people.

(2) The better the efficiently sized subnational jurisdictions, the greater the potential for allocative efficiency due to a better match between the local mixes of goods and services as per the local needs and preferences.

(3) The local residents are better informed about the actions of their governments due to closer proximity to them and they can get the quality services. The local governments are more accountable to local voters compared to central government, so they must be motivated to better services.

(4) There might be a competition among the subnational governments for the better service delivery to their jurisdictions.

(5) It could be linked with cost and benefit relation because the local taxpayers are more willing to pay fees, service charges and local taxes for receiving public services.
These set of ways the local people would be approached to better living standard in fiscal decentralization. That is why it can act as an engine of economic development in the country.

In wrapping up, fiscal decentralization is the intrinsic dimension of decentralization. It is the mechanism of sharing fiscal resources with matching the assigned responsibilities among the tiers of governments. Hence, its main four components are: expenditure assignments, revenue assignments, intergovernmental fiscal transfer and subnational borrowing. It comprises policy, legal, administrative, institutional, political and operational framework. This is the means of inclusive local democracy and is the better options of service delivery. In one hand, it empowers the people and participate them in local development planning; and in other hand it makes local government accountable to the local citizens. As a consequence, the properly designed fiscal decentralization system could be the device to improve the quality of life of the local people.

1.6.2. Measuring Fiscal Decentralization
The International Monetary Fund (IMF) provides the set of cross sectional time series data of revenue and expenditure at national and subnational levels called Government Finance Statitistics (GFS). It has been widely used for measuring fiscal decentralization and is the best data source for cross country analysis. Only a few years data of Nepal is available in GFS. The subnational level data of Nepal is not available in GFS and other popular data sources. The GFS data is normally prepared by the Ministry of Finance of each IMF member country based on regularly prepared government accounting data and is collected based on each government’s standard accounting period. So, we use Economic Survey of Nepal (Volume 2) of the fiscal year 2010-11 published by Ministry of Finance, Nepal and other publications by the different agencies of Nepal Government for the national level data. For the subnational (municipal) data, we use ‘Detailed Revenue and Expenditure Breakdown with Budget and Key Financial Indicators of 58 Municipalities’ of different years jointly published by Ministry of Local Development (MoLD), Nepal and German Technical Cooperation (GIZ)/Urban Development through Local Effort (UDLE), Nepal. We also use the official dataset of GIZ/UDLE for the municipal data of Nepal. The detailed of data source is given in section 3.8, chapter three. As discussed above, the data required for developing different measures of fiscal decentralization is scarce for Nepal.
Measuring fiscal decentralization is very important to determine the relationship between fiscal decentralization and poverty. But the term “fiscal decentralization” is not sufficiently clear in the field of economics. As fiscal decentralization is multidimensional, there are many aspects of countries’ fiscal affair that can be more or less decentralized. The main problem in measuring fiscal decentralization is a problem with the conceptualizing the country specific context of decentralization practice. There is no agreed upon methodology for measuring cross country fiscal decentralization. The few set of measures cannot capture the entire notion of fiscal decentralization. However, we know that the key characteristics of fiscal decentralization are the degree of autonomy and accountability that subnational governments have over revenue raising and spending decisions. The autonomy is the discretionary power of spending of the local government whereas the accountability refers to their answerability to the citizen. These are the right and duties of the local government and are taken as a beauty of decentralization. Thus, for this study, we mainly follow these two bases in measuring fiscal decentralization.

The most commonly used two measures of fiscal decentralization are revenue and expenditure decentralization. The revenue decentralization is to measure the actual degree of autonomy over the revenue of municipality. It is the ratio of own source of revenue to the total revenue. The expenditure decentralization is to measure the quality of service delivery to the citizen. There is the fiscal gap in between revenue and expenditure of the municipality and is called vertical imbalance. It is measured as the share of grants to the total amount of revenue of the municipality. Own source of revenue is the sum of total local taxes, fees and fines, property rental and other revenues in per capita term. The measure of service delivery is expressed in number of municipal personnel to the proportion of municipal population. The relative size of the municipal government is the relative share of municipal expenditure to the budget disbursed through local development ministry for all local governments. The level of social welfare done by the municipality for the targeted class of population is measured as the share of the sum of respective headings on the total size of the municipal expenditure. The detailed of indicators are presented in section 3.10, chapter three. There might be more other measures on fiscal decentralization. However, we selected few of them to fulfill the objectives on the basis of national circumstances and availability of reliable and valid information.
1.7. Theoretical Linkage on Fiscal Decentralization and Poverty Reduction

The purpose of this section is to outline the relationship between fiscal decentralization and poverty in Nepal. After having defined poverty and fiscal decentralization, the question is arises where the linkage between these two issues are present. Given that, poverty is multifaceted, complex and country specific socio economic problem, whereas, the issue of fiscal decentralization is associated to the devolution of fiscal power assignment and expenditure responsibilities to the local government from the national government. It is clear that the poverty is mainly a local phenomenon in underdeveloped countries like Nepal. So, it might be possible to solve the local problem by the local government if it has sufficient resources and organizational capabilities. On the other hand, having the multiple causes of poverty, it could not be reduced by a single effort and a set of policy. Looking at the past studies, there is no any clear cut connection in between fiscal decentralization and poverty. Therefore, we want to consider our further effort to study on the linkages of fiscal decentralization and poverty reduction in Nepal.

The poor people in developing countries expense most of their income in food and non food items. They cannot expense their income in basic education and health care. It means they cannot afford these services from the private service provider. Naturally, they do not concern to the health care and basic health facilities. This makes them more poor than the before. When most necessary, they compelled to go to get the public services on health care and basic education from the nearer point where they are. At this moment, if these services are provided by the local government that could be better. Because, the local government itself has more information about the local condition. It can provide these services to the targeted people in low cost and timely than the central government. On the other hand, the experimentation on the execution of pro-poor policies are also easier at the local level, allowing discovering through diversity what works, much more quickly and cheaply than relying on top-down direction from the central government. The properly empowered local government is likely to attract better quality candidates into local politics, improving the overall direction and management of public services. In this way, the efficient and effective service delivery is possible in local level which affects the quality of life of the local people. To provide these basic services, the local government must have sufficient fiscal resources and institutional capabilities. The required resources and institutional capabilities could be ensured through fiscal decentralization. This might be the potential way of local poverty reduction through fiscal decentralization.
1.7.1. The Direct and Indirect Linkages

Fiscal decentralization is the main dimension of decentralization and it is an integral part of governance system. It is the key issue on state restructuring process in Nepal. It has been adopted as the alternative model for economic and social development of the country (Khanal, 2007). It could be justified by the following approaches of decentralization.

1. Welfare Approach: The welfare is the social security provided by the state with the citizen’s right and freedom. The people is autonomous and the judges of the government. A modern state therefore, emphasize in people’s participation in all the decisions that affect their life.

2. Antipoverty Approach: Decentralization is effective for service delivery in local level. The local poor gets power and they use their own knowledge and skills as per the local necessities. They mobilize the local resources for their betterment.

3. Efficiency Approach: Since the time of Musgravian division of public functions, the allocation function is for the local government. It increases allocative efficiency is in the service delivery. Due to the proximity to the local people, local government is able to ensure more efficient service delivery by reducing monitoring cost.

4. Empowerment Approach: Empowerment sustains decentralization. Defining right of participation to determine their choices and influence to gain control over the local resources empowers the people.

On the basis of aforementioned approaches, we can state that there is an association between fiscal decentralization and well being of the people.

Now we want to consider the avenues through which fiscal decentralization may reduce poverty. As we defined poverty is the deprivation from the basic services like education, health and agriculture; then the expenditure on these infrastructure and social sector that respond to local governments are likely to more effective for well being of the people. This is the direct linkage between fiscal decentralization and poverty reduction. Fiscal decentralization can be conducive to poverty reduction mainly because local governments are assumed to have better information and higher incentives than the central government in priority setting, designing and implementing plan and policies that respond to local needs and preferences (Steiner, 2005). As the indirect way, fiscal decentralization affects generation and redistribution of income to the voiceless and vulnerable local poor by their
own participation. After all they empowered and can get benefit from the targeted
programmes.

The rationale behind decentralized fiscal system is to assure basic services like basic
education, health care services, agricultural extension and capital infrastructure to the
people. These are suitable for local government. The basic education helps knowledge,
skills, values and attitudes that increase productivity and employability. The local
government is closer to flow the health related information and can interact between health
service provider and clients. It helps to achieve the goal of health policy of the country.
The main occupation of the majority of people in underdeveloping countries is agriculture.
The subsidies in agricultural inputs, credit facilities, irrigation and market access for the
product could be link to local government. It increases productivity. The economic and
capital infrastructures like local transportation network, water, sewerage and sanitation
scheme, operation of local markets and irrigation projects should be devolved to the local
government, can lead to efficient service and production.

With regard to its contribution to enhancing security and reducing vulnerability, fiscal
decentralisation has the potential to affect poverty in two distinct ways. First, local
government has an institutional machinery to promote political stability and national unity,
as it allows for autonomy for potential conflict groups and brings them into a formal, rule-
bound process. Second, by using quasi-judiciary power to the local level, it resolves
neighbourhood and communal conflicts, including disputes over natural resources. From
side to side both of these ways, it protects the people by decreasing people’s vulnerability
to political instability and local-level conflicts.

The core components of fiscal decentralization are also responsible to alleviate poverty
(Boex et al., 2006). There are basically four main components of fiscal decentralization,
namely, expenditure assignment, revenue assignment, intergovernmental grant and
subnational borrowing. Local autonomy and accountability has been taken as other two
components. It has been already linked up the expenditure pattern of local government to
poverty alleviation programmes. The assignment of revenues to local governments is a
complex job. Generally, it constitutes their own source of tax and non tax revenue,
revenue-sharing and an intergovernmental fiscal transfer as conditional and non
conditional grants. In this respect, it is important to recognize that how the local
expenditure is financed so as to affect poverty. The local taxes may bring accountability of
subnational government to their constituency and the taxpayer. The local service is
depends upon the local revenue. By strengthening the awareness in the local citizens who
are also the taxpayer, the qualitative service should be given. Simultaneously, the basic
service should be provided to the ill-being deprived people. The basic service should be
provided by charging token cost or as free. This redistributive policy is the concept of the
welfare approach of the state. The assuring of intergovernmental fiscal transfer as a grant
is supportive to assure the pro-poor public functions that are delivered by local
government. The design of intergovernmental grants should be done in pro-poor manner.
Access to credit enhances local governments to ability to undertake investments in public
infrastructure to meet the demand for it. This is must for the urban local government. They
have solvency to repay the loans. The effective regulation of debt financing has potential
benefits with respect to local transparency and accountability. Therefore, the each
component of fiscal decentralization is could be an inherent part in reducing poverty at
local level.

1.7.2. The Positive and Negative Effects of Fiscal Decentralization on Poverty
Reduction
Here, we point out some studies and country specific lesson learnt on the effect of fiscal
decentralization to poverty reduction. These include both positive and negative impact on
poverty outcomes through fiscal decentralization.

First, decentralization is most important and appropriate strategies that will reduce the
levels of deprivation and vulnerability of the poor (Bird, Litvack and Rao, 1995). Sewell
(1996) pointed that decentralization is highly successful in social security and welfare.
Decentralisation will improve the efficient provision of services, the quality of governance,
economic development and efforts to alleviate poverty (Smoke, 2000). von Braun and
Grote (2000) suggest that political decentralization has indeed substantial and positive
effects for the poor. Vijayanand (2001) concludes that the decentralization initiative should
be geared towards alleviating poverty. Vedeld (2003) pointed out that decentralization
positively impacts on empowerment, responsiveness, social capacity, human capability
and economic gains for the women and disadvantaged groups by which it reduces social
inequality. Iimi (2004) found that there is a significant positive relationship between per
capita growth rate and fiscal decentralization. Kauzya (2009) pointed that the
decentralization policies occupy a big place for poverty reduction and for achieving the
Millennium Development Goals (MDGs). It should act as community mobiliser, leader, resource mobiliser and coordinator for participatory development process.

On the other hand, Prud’homme (1995) highlighted the negative effect of decentralization as “it increases disparities”. Decentralization can work against poverty reduction due to the local elite capture upon the power and resources (Vedeld, 2003). Crook (2003) suggested that decentralization is unlikely to lead to more pro-poor outcomes without a serious effort to strengthen and broaden accountability mechanisms at both local and national levels. Dethier (2004) investigated that decentralization by itself is not a sufficient condition to reduce poverty. McCarten and Vyasulu (2004) reviewed the lessons of democratic decentralization and its impact on poverty reduction in Madhya Pradesh (MP) of India. The decentralization practice in MP has failed to reduce poverty and has been taken as the good unsuccessful example in this area of literature. The governments at both central and local levels are vulnerable to anti-poor policy biases owing to political capture; centralized delivery systems are additionally prone to the bureaucratic corruption, owing to problem in monitoring bureaucratic performance (Bardhan and Mookherjee, 2005). Steiner (2005) pointed out a number of possible risks for realizing the poverty reducing potential of decentralization. It shows that decentralization cannot only influence poverty by assigning expenditure responsibilities to the lower levels of government but also by assigning tax raising power.

Ravallion (2009) in his empirical analysis examined the impact of decentralization on poverty alleviation programme and concluded that the impact on income poverty was quantitatively small. The overall cross-city income gradient in the programme spending is negative, albeit small and statistically insignificant. Hankla (2008) explored that the correctly designed local institutions can improve governance and avoid most of the potential drawbacks of the poorly structured systems. It provides quality services at the lowest cost and should discourage corruption and promote responsiveness to the community.

However, fiscal decentralization shows even more ambivalent effects on poverty reduction. Jütting et al. (2004) conducted a study of 19 countries; only one-third revealed that decentralization has actually led to improve poverty reduction. The remaining countries are relative failures to alleviate poverty through decentralization programmes.
According to this study, Nepal is lies in the category of ‘somewhat negative countries’ with very little impact on poverty. Boex et al. (2006) pointed that fiscal decentralization has potential to effect political stability, public service performance, equity and macroeconomic stability though there is not a consistently positive or negative relationship between decentralization reform and poverty reduction. The effects of fiscal decentralization on poverty reduction could not be mentioned in a positive or negative category only. In conclusion, the literature regarding to the experiences of those countries show that only a properly designed decentralized political system is capable of reducing poverty.

1.8. Rationale of the Present Study
The literature of Economics lays a greater interest on decentralization as a development policy strategy. In theory, decision making at the local level increases efficiency, enhances responsibility, creates ownership, and reduces information and transaction costs associated with the provision of public goods and services. In order to be able to perform the functions and to make the decisions on public goods and services, the local institutions must have political and fiscal power through devolution. By getting this authority, they are able to raise enough revenues from the local economy and then to determine how to and to whom to spend those resources. The resources are mainly used for the strengthening local people particularly the poor one. The public policies on allocation of resources implemented through local government, to reduce poverty one of them will serve to decrease poverty to other. The information stated above tends to give an intuition for the empirical study on decentralization and local level poverty has been essential.

Despite the obvious importance, the exact linkage between fiscal decentralization and poverty reduction is relatively little known. Few empirical studies have analyzed the impact of decentralization on poverty reduction efforts. However, these studies are limited to the developed countries. Some of the studies are based on the cross-country information, where the proper literature and data are available. We get limited number of empirical study on the impact of fiscal decentralization in developing countries like Nepal. The traditional public finance literature dealing with fiscal decentralization has not focused any attention on the study of the linkage between fiscal decentralization and poverty in developing countries. In fact, the relationship between fiscal decentralization and poverty is not straightforward and easy to understand. The existing literature on public finance has
long viewed poverty reduction policy as mainly a redistributive matter and is exclusively addressed by the central government. On the other hand, the literature on this domain mentions fiscal decentralization with the concept of efficiency and largely ignores poverty reduction. However, the recent trend in development activities and programmes has now embraced the view that poverty is a local phenomenon and the poverty reduction policies require the involvement of the local government. Meanwhile, the concept of poverty has changed and its non money-metric dimension has been on the frontline of the academia. This new dimension of poverty is inherently linked with fiscal decentralization. Hence, fiscal decentralization is seen as a policy with the great potential for improving public service delivery and contributing to an achievement towards poverty reduction.

The main point here is that even more than a decade has been over after the enactment of Local Self Governance Act, 1999 (LSGA) in Nepal, the impact of LSGA on the socio-economic development in the country has not been empirically estimated. This leads to raise two questions here. First, is the structural change has been taken place by the promulgation of LSGA in Nepal? Second, if the structural change had been happened, what was the time point of structural break? We attempt to search the answer of these questions in the present study. The methodology followed for the analysis in our study is quite innovative which might be unlocked the area of study on other more issues regarding to the impact of fiscal decentralization in Nepal.

1.9. Significance of the Present Study
Fiscal decentralization is an ongoing international phenomenon as a governance reformation agenda. As the rising interest of localization in a political system, the functions, roles and responsibilities of the local governments have been increasing worldwide. The significance of successful outcomes regarding fiscal decentralization has given rise to the public finance experts who have attempted to formulate empirical studies. Nepal has been practiced the various dimensions of decentralization for the last six decades. On the other hand, poverty has been a humanitarian socio-economic agenda in the developing countries. Nepal has been adopting poverty reduction as a policy strategy for the economic development. Therefore, Nepal would be an interesting case study area for the international community. Nobody would deny that poverty reduction through fiscal decentralization is a very important issue in the context of economic development of the country. Keeping this fact in mind, it is our obligation to think deeply, understand
correctly, analyze the point objectively and obtain the appropriate policy prescriptions for the future course of action aptly.

There has been limited empirical work quantifying the effect of fiscal decentralization. The available study shows the empirical study has not done in the outcomes of fiscal decentralization in Nepal. This research is an extension of current knowledge regarding fiscal decentralization and poverty. In this regard, this study tries to fulfill this gap of knowledge. Present study empirically tested on the structural change by implementation of fiscal decentralization and added the literature on the existing subject matter and gives a new insight in this field. This study might be helpful to the academics, bureaucrats, scholars, policy makers, citizens and researchers. The findings of the study are supplements for policy makers in pro-poor fiscal decentralization reforms and the surplus knowledge for different stakeholders in general and policy researchers in particular.

1.10. Objectives of the Present Study
The overall objective of this study is to explore the impact of fiscal decentralization on poverty reduction in Nepal. The overall objective can be fragmented into four extensive specific objectives, as stated below.

- We shall assess the state of socio, economic and demographic status of the country, Nepal.
- We shall estimate the trend and structural shift in the poverty measures due to fiscal decentralization in Nepal.
- We shall examine the status of fiscal decentralization and the incidence of poverty inside the entire municipalities in Nepal.
- We shall analyze the impact of fiscal decentralization on poverty reduction into the municipalities in Nepal.

The clear and concise outlines of the objectives make us to follow the right track to accomplish the study. The lucid plan for the future work to fulfill the aim of the study is with us. Now, we describe each of these objectives by presenting the outlines for analysis as mentioned below.
We know that education, health and agriculture are the basic services and are the important factors for poverty reduction in the country. In this connection, our first objective is concerned with the educational, agricultural and health related national level aggregate information of the country in the period 1982-83 to 2009-10. The mean years of schooling in the group of 25 years and older population and adult literacy rate expressed in the percentage of 15 years and above population shows the scenario of education of the country over the time period. The infant mortality rate (per 1,000 live births) and the average life expectancy (in years) are the health indicators for indicating the health outcomes. The productivity expressed in per unit land area of the principal food crops (paddy, maize, wheat, barley and millet) and principal cash crops (sugarcane, oil seeds, tobacco, potato and jute) are covered the picture of agricultural status of the country. The expenditure by the national government on education, health and agriculture are the foundation for the respective sectors. We shall observe the overall average descriptive figure of these indicators of the entire period. We shall compare the same indicators in the period of before (1982-83 to 1998-99) and after (1999-00 to 2009-10) fiscal decentralization in Nepal. We shall see the trend of same indicators for the entire period.

The second point of our study is to deal with the money metric-consumption based poverty and economic inequality in the country over the period of 28 years since the fiscal year 1982-83 to 2009-10 in Nepal. We shall overview the profile of the poverty measures, namely, incidence of poverty, depth of poverty, severity of poverty and income inequality in the study period. The incidence of poverty or head count poverty ratio refers to the individual whose per capita income does not cover the cost of minimum specified calorie intake (minimum threshold) is considered as the person is below the poverty line. Poverty gap is the sum of the distance between the selected threshold and the level of income or consumption of each individual, divided by the total population. It thus represents the resources need to bring all poor individuals up to a poverty line. It is also called the depth of poverty or intensity of poverty. Severity of poverty or squared poverty gap is computed by adding up the square of the distance between the minimum threshold and the level of income or consumption of each individual and then divided by the population. Thus it measures the average squared distance below the threshold, thereby giving more weight to the poor. The inequality of income among the population and is measured in terms of Gini coefficient (GINI). The Gini coefficient is a measure of inequality of a distribution. Thus, it is also called the deviation from the perfect income equality and is defined as the mean
of absolute differences between all pairs of individuals. The minimum value of GINI is zero when perfect income equality and is one for perfect income inequality.

The overall state of poverty measures shall be outlined for the entire period. The state of these indicators shall also be compared in the regime of before and after fiscal decentralization in Nepal. We shall examine the trend of the same variables in different diagram. This effort reveals the comparative status of poverty in both the regimes and overall trend of the same indicators in the entire period.

Thereafter we shall locate the time point of structural shift due to fiscal decentralization and trend in the incidence of poverty, depth of poverty, severity of poverty and deviation from the economic equality. The trend and structural shifts in the growth rate of poverty measures shall be estimated. This shows the impact of poverty through fiscal decentralization in Nepal.

This study is completely based on time series data on poverty measures in Nepal. Thus we shall test the stationarity of data. The tests of stationarity help to find the characteristics of deterministic systems and time-invariant property of a random process. The stationarity test shall solve the practical problems involving in random process. The data of these indicators are available by small area estimation technique shall be used for the estimation per capita consumption expenditure by using census and survey data of various time periods.

The third objective deals with the status of fiscal decentralization in the municipalities of Nepal. It has already been stated at the outset of this study that there are two layers of the local government in Nepal. The first layer is DDC which acts as an intermediary between the centre and the lowest local level government. The second or lowest level of the local government is the VDC and municipality. For this reason it would be logical to study the status of fiscal decentralization in the DDC, VDC and municipalities in Nepal. However, while collecting the data it had been observed that the detailed fiscal and social information of the VDC and the DDC of the country was not available. To collect the information manually for the 75 DDCs’ and 3915 VDCs’ in time series form was beyond our capacity. Nevertheless, the information regarding the municipalities had been maintained by German Technical Cooperation (GIZ)/Urban Development through Local
Effort (UDLE) since the fiscal year (FY) 1982-83. We use this dataset to deal the status of fiscal decentralization in Nepal. The municipalities in Nepal are basically small semi-rural towns and are surrounded by VDCs and most of them are district headquarters. As such, the municipality is the subordinate of DDC and an inherent part of VDC. So, the studies of the municipalities indicate the representative component of study on local governments in Nepal. For these reasons, we have confined our study to the all municipalities in Nepal.

It is important to note again that the year of enactment of LSGA (the year 1999) has been accepted as the turning point towards fiscal decentralization in Nepal. Therefore, the main focus of this objective is to carry out a comparative study of fiscal decentralization indicators before and after the promulgation of LSGA in Nepal. We shall explore an issue of fiscal decentralization in the municipalities in Nepal by the specification of the related indicators which represent the different aspects of fiscal decentralization. The indicators shall be selected to denote the central-local size, revenue decentralization, expenditure decentralization, intergovernmental grants and the level of service provided by the municipalities. We shall consider the relative size, tax autonomy, own source of revenue per capita, vertical imbalance, social programme indicator, expenditure per capita and service provide indicator for the entire time periods of each municipality. These are fiscal decentralization indicators. The incidence of poverty shall be considered as a gauge of poverty in the municipality. We shall categorize the total 58 municipalities of Nepal into seven categories, namely, total, hilly, terrain, eastern, western, old and new. We shall manage the dataset for each category of the municipalities.

We shall reflect on the trend of incidence of poverty in each category of the municipalities over the time period 1982-83 to 2009-10. It shall systematize to get the status of poverty within the municipalities in Nepal. Next we shall study on the fiscal indicators of all categories of the municipalities in Nepal. It is essential to distinguish the level of variable over the range in the considered period for the study. The diagrammatic presentation of the fiscal decentralization variable makes us easier to find out the state of fiscal decentralization in the different point of time.

Finally, under the fourth objective this study reflects on the theoretical model on ‘the effect of fiscal decentralization on poverty’ in Nepal. We shall find out the linkage between fiscal decentralization and poverty reduction in Nepal. In this regard, the incidence of poverty
shall be a dependent variable which is explained by the four explanatory variables, namely, relative size, tax autonomy, social expenditure and fiscal decentralization dummy. We shall find the association between fiscal decentralization and poverty in the all categories of the municipalities.

1.11. Overview of the Dissertation
So far in this chapter we have been discussing the introductory components of our study. The rest of dissertation has been organized as follows. In chapter two, we present a brief survey of literature on fiscal decentralization, Nepalese practice on fiscal decentralization, poverty in Nepal, municipal finance, impact of government spending on poverty and interaction of fiscal decentralization along with poverty reduction outcomes. The chapter three describes the conceptual outline with econometric models, methodology and data for the study. We present the empirical estimation and analysis on the impact of fiscal decentralization on poverty measures in Nepal in chapter four. The chapter five deals with the effect of fiscal decentralization on the incidence of poverty in the municipalities of Nepal. Finally, the chapter six offers the findings and policy prescriptions of the study.

1.12. Conclusion
In this chapter, we have stated and rationalized the problem of our study. We know that Nepal has a six decade long journey on the decentralization practice; however, there is a lack of empirical study in the effect of fiscal decentralization on poverty. The past studies have relied only on the descriptive studies with review on anecdotal evidences of the country. Thus, this study tries to fulfill the aforementioned gap by empirical study to some extent. In this chapter, we have presented the specific objectives of the exposition, the brief context of Nepal and the historical facts with the lesson learned regarding decentralization practice of the country. We briefly presented the social, economic and political condition of the country. It is the fact that a landlocked country Nepal is sandwiched between two Asian giants China and India having two dissimilar political systems. This is an important factor for structuring the fiscally decentralized political system in Nepal.

At the outset of this chapter we have discussed on the definition and concept of fiscal decentralization and poverty. It depicts that fiscal decentralization is inherently a political process. It is capable to improve the efficiency and accountability of service delivery and governance at the local level. On the other hand, poverty is a multidimensional socio-
economic problem. It is widespread and mainly a rural phenomenon in Nepal. There is no clear-cut relation between fiscal decentralization and poverty reduction outcomes. This problem can be reduced by raising the voice of the people through local governance. Decentralization increases people’s participation in decision making process for the public goods and services. The properly designed decentralized political system could only be capable of reducing poverty.

We have also reviewed the current two tier local governance system in Nepal. The upper layer is the DDC and it acts as a conductor between central government and local layer, municipality and VDC. It has been considered that the municipalities are financially well-built than the VDCs in Nepal. Our present study will be mainly based on municipal level information. The promulgation of Local Self Governance Act, 1999 is the step dash in fiscal decentralization system in Nepal. There might be a structural break in poverty measures at the time point in the promulgation of Local Self Governance Act, 1999. Therefore, the present study is very relevant to formulate future policy for the state reconstruction and is not only an issue of academic research.

To conceptualize the issue, we have considered the analytical foundation of measurement of fiscal decentralization, poverty and income inequality. This leads us to visualize the theoretical linkage between fiscal decentralization and poverty reduction. Fiscal decentralization can uphold the living condition of people in direct and indirect ways. There are positive and negative impact of fiscal decentralization on poverty reduction and income inequality. However, it is successful attempt to provide effective and efficient service delivery in the local level. We shall survey the essential literature for our study in chapter two.
Chapter Two
Review of Literature

2.1. Introduction
This chapter attempts to present a general overview of some existing concepts and theoretical understanding related to the study. There are innumerable studies on fiscal decentralization and its impact on the various dimensions of economic development. However, the subject matter of our research does not require an exhaustive study on fiscal decentralization practices. While going for the review, it has been kept carefully into mind that only such works get highlighted which have direct or indirect relevance on the purpose and perspective of our study. Therefore, we have selected the specific and relevant studies concerning fiscal decentralization in connection with poverty.

We have classified the existing literature for the literature review on the basis of their scope and nature. Although, it is not an easy assignment to review a topic wise literature in sequential order. This chapter has been organized as follows. Let us begin as the section 2.2, the review of the existing literature on the aspect of fiscal decentralization. In this section, some studies on the concept and practices of fiscal decentralization have been discussed. The survey of Nepal related literature on fiscal decentralization has been presented in section 2.3. Section 2.4 devoted to the literatures on poverty in Nepal and elsewhere. Review of literature on municipal level fiscal decentralization is offered in section 2.5. Section 2.6 includes the studies on fiscal decentralization and poverty. The literature on the impact of public spending has been given in section 2.7. Ultimately, section 2.8 concludes this chapter.

2.2. Studies Related to Fiscal Decentralization
In this section we are going to present the conceptual foundations and practice of fiscal decentralization. Some of the important studies in this regard are presented below.
Tiebout (1956) looked at the gains from decentralization. His investigation made invalid the Musgrave-Samuelson’s view for federal expenditure. Musgrave and Samuelson explicitly assume that expenditures are handling at the central government level, because, some services only could be able to provide by the local government. However, Tiebout opines fiscal federalism could be an optimal fiscal arrangement for the provision of public services. Tiebout assumes that individuals (consumers or and voters) are fully mobile and will move to that community where their preference patterns, which are set, are best satisfied. The individuals have full knowledge of differences among revenue and expenditures patterns and to react to these differences. Ultimately, they choose better option to live, where the preferences meet by paying relatively low tax burden. This is termed as “voting by feet”. This migration of individuals creates competition to levy low tax and to provide better services among the same layer of subnational governments. This is inter-jurisdictional competition provides incentives for innovation and increases efficiency in the production of public services. This welfare gain of fiscal federalism is due to economies of scale in the subnational government.

Musgrave (1959) defined and classified the economic functions of the government. The three functions of the government are stabilization, distribution and allocation. The first two functions are belongs to the central government while the third is lies on the domain of local government. The brief of the division of public functions are goes as follows.

(1) Providing economic stability is to soothe the economy at high levels of output and employment without creating excessive pressure on inflation. It is a part of the central government by monetary and fiscal instruments. It lies in the domain of the central government for the reason that it requires the creation of money. If the incentive is given to local government to print money, creating massive inflationary pressure. Next, the countercyclical budgetary measures are difficult for the local government because of the openness of their economies. However, the regional government sector can impact the aggregate demand. The regional government surpluses may counterbalance national level deficits.

(2) Distribution of income and resources for the equalizing income between regions and people. It establishes the safety-net. It is the function of central government, by means of applying transfer programmes. The distribution function goes to the centre, since, due to the extreme mobility of population and capital as a result of openness of local government economies and remarkable income redistribution
programmes, would provide incentives for higher income households to migrate out and lower-income households to migrate in. Although, for the distribution function, the funding from the central government but administration through the regional or local governments should be made.

(3) Efficient allocation of resources is to provide certain public goods and create the right regulations. The responsibilities are to allow the local government or private sector to allocate resources in a non-distortionary manner. The allocation function is to be done by the central and the local governments through production and provision of public goods. Due to market failures, both the central and the local governments should be involved depending on the local or central nature of the public good. Assuming no externalities, the local public good provision by the local government will increase national welfare.

Musgravian characterization of economic roles of government is the intellectual basis of fiscal decentralization.

Brennan and Buchanan (1980) affirmed that, “total government intrusion into the economy should be smaller, ceteris paribus, the greater the extent to which taxes and expenditures are decentralized, the more homogenous, are the smaller units, the smaller the jurisdictions, and the lower the net locational rents.” In the fiscal federalism literature, the theory is known as the Leviathan hypothesis. Brennan and Buchanan generalized beyond the local level, arguing that all forms of government acted as “Leviathans.” It means behavior of the government is more likely to mirror that of private firms rather than more compassionate behavior. This model indicates that the government as a revenue-maximizer in much the same way private firms is profit-maximizer. Therefore, fiscal decentralization is necessary to balance the central government’s monopoly and to create the competition among the different layers of government. On the other hand, the unending debate about consolidation of the local governments also suggests that fiscal decentralization can increase the size of the government through duplication and overlap of services. However, the view articulated by Brennan and Buchanan is innovative work to relate fiscal decentralization on the size of government.

Marlow (1988) set up that fiscal decentralization have a negative impact on the growth of aggregate total public expenditure comprises the expenditures at the federal, state and
local levels. Time-series data in the period 1946 to 1985 of federal, state and local levels of the United States was used for the study. The time period was transitory level related to the federal spending by the cause of World War II. The ordinary least squares method (OLS) method has been used to estimate the result. It tested the Leviathan Hypothesis. The study shows fiscal decentralization appears to be a viable means of controlling the total governmental activity The paper should be considered as an initial attempt at econometric modeling of the decentralization and government size over time.

Bienen, Kapur, Parks and Riedinger (1990) highlighted the remarkable context of decentralization practice in Nepal. There is low level of information, communication and transportation system in the local level governance in Nepal. It is notable situation for the success of decentralization programmes. The country is highly centralized politically. The decentralization exercise is only for the local elites to rule over the citizens and to defeat the oppositions. It is unable to increase peoples’ participation and promoting efficient service delivery. The study further pointed that there are complications in setting priorities, planning and implementing programs at the district and subdistrict (village and municipal) levels. The local level programmes are captured by local elite. Furthermore, decentralization has been creating a burden in the system of informational flows between the center and the marginal areas. In conclusion, the reformation in decentralization system of the country should be done in the future for the efficient service delivery in the subnational level.

Prud’homme (1995) highlighted some drawbacks in the designing of decentralization programmes. He examined the negative effects of decentralization from the view point of redistribution, stabilization and allocative functions of the government. He elaborated these issues as follows.

(1) Decentralization can increase disparities: The attempts by the local governments to redress income disparities are likely to be unfair. The poor in better-off regions enjoyed better facilities than the same in deprived regions. The reason is that, if a region adopts redistributive income policies by imposing high taxes on the rich and assisting high benefits to the poor, the rich will tend to leave for more lightly taxed areas and the poor will tend to move from lower benefit areas. Thus, the generous area will soon be unable to sustain its policy.
(2) Decentralization can jeopardize economic stability: The decentralized system makes it difficult to implement the macroeconomic policies (monetary and fiscal) which are very powerful instruments for stabilizing the national economy of a country. The sub-national government runs the fiscal policy counter to those of the central government because the local policies are affected by local politics. For example, expenditure increases immediately before local elections to aid the people, then and there revenue will be increased after election by imposing through taxes. The functions of the local government have been increasing day by day. The local governments will not be able to perform their functions without the central grant (a discretionary amount from the centre) and it creates uncertainty. If the local government tries to borrow from banks to fulfill the mismatches between revenue and expenditure, then permission from the centre is mandatory. On the other hand, if they get loan there is an equal chance to stimulate the price instability and inflation.

(3) Decentralization can undermine efficiency: Decentralization is popular to enhance allocative efficiency. On the other hand, the local bureaucracies are less efficient than the central ones. Decentralization focuses only on the demand efficiency and ignores the supply efficiency. However, there is different income, tastes and preferences of the local people and they will express their preferences by votes. The locally elected person (the mayor) is expected to satisfy the preferences of their voters. Here the difficulties are that the local bureaucracy (poorly motivated and low qualified) wants to pursue their own agenda rather than that of the elected principal, and not obey the order. The allocative efficiency gain of fragile and small unit’s budget and work are likely to be rather small. The decentralization literatures say nothing about production efficiency. Local bureaucrats are less efficient than those of the centre. On the whole, by the contraction role of the central government, the potential progress of service under decentralization is slower.

Corruption is widespread at the local than at the national level. The pay-off to authorities as informal taxes, contributions, gifts and donations will rise with the decentralization process, though it is hard to assess and measure. At the local level in Zaire, it has been estimated that the informal taxes are at least eight times more than the formal taxes. Such a situation is not always beneficial from an efficiency view point and will be dangerous. In
conclusion, some activities related to local services, maintenance, operation and regulation should be suitable to decentralize. Monitoring and auditing functions are best suited to the central government. In his study, the decentralizability (the sum of externality, chargeability and technicity) were calculated for selected local public services and these functions were recommended for devolution. The services like primary education, the central, regional and local governments must simultaneously involve for providing better services. The centralization-decentralization dichotomy or relationship is effective on the basis of their expertise, performance and independence. In general, decentralization is certainly practical in some circumstances but it cannot always be a panacea or universal cure all. It refers to both a state and a process. To minimize the negative effects of decentralization, there must be the wide assessment on the questions: what are the functions to decentralize, in which sectors, and in which regions for better understanding of its dangers? The benefits of decentralization are not as obvious as the theory of fiscal federalism suggests. Decentralization can harm rather than heal.

Sewell (1996) in his study criticized the aspects on Prud’homme’s view on decentralization. He suggests that sub-national governments are suitable to perform some types of interregional redistribution. The functions like health care, education and welfare are the exclusive duties to the sub-national governments in Switzerland. These institutions also levy taxes on personal income and wealth. On the other hand, in unitary countries the distributional programme is also the responsibility of the sub-national governments. In Denmark, for example, the local government collects more than a half of the general government expenditures and is more effective in social security and welfare. So, decentralization is not only the mother of segregation. In most of the countries of transitional economy, the factor mobility or migration is higher because of lack of housing, which can be solved by local redistributitional programmes. These programmes are most effective by means of the local governments than their counterparts.

From the study of Sewell (1996) we see that the net fiscal benefits (the benefit taxpayers receive from public services minus their tax payments) from the sub-national governments activities had increased to their residents. This would not be possible for the central government. The central fiscal policy is not only the instrument for economic stability. The sub-national fiscal activities work as automatic stabilizers, because they are recurrent and not very flexible. In case of economies of scale, decentralization is important for local
government functions. The principle of user cost recovery for local infrastructures and utility services is rationale and efficient for the local governments. All over the world, the local governments provide infrastructures, environmental services (like water, sewers and garbage collection) and utility services (including road and public transports). The study highlights that the local governments alone are responsible for about a half of all government capital formation in Organization for Economic Cooperation and Development (OECD) member countries. It concludes that some inherent defects of decentralization are the problems of international financial institutions but these should not be taken as “Dangers of Decentralization”.

Bird and Vaillancourt (1998) suggested the approaches of decentralization. The approaches of decentralization are “top down” and “bottom up”. Generally, the bottom up decentralization approach emphasized on political values to improve governance in the sense of local responsiveness and political participation. Here the local governments are relatively free from the dictate of the central government. This approach tells efficient and equitable service delivery through better information lead to a greater participation, hence improved political stability. Moreover, the bottom up decentralization results in better resource mobilization, greater accountability and more responsive and responsible government. On the other hand, the top down approach of decentralization refers to shift deficits downwards, or to achieve the allocative goal more efficiently or even to increase the level of national welfare by delegating autonomy to the local governments. This approach is better to achieve the central government goals. Again the study adds, the bottom up approach is good in the countries where heterogeneity is higher among the different territorial units whereas the top down approach is more suitable for the developing countries.

Bahl (1999) a leading academician in the field of fiscal decentralization, tried to rationalize fiscal decentralization as a policy strategy for the local government on its development policy agenda. He recommended twelve implementation rules as the strategy guidelines of the backbone of fiscal decentralization as mentioned bellow.

1. Fiscal decentralization should be viewed as a comprehensive system.
2. Finance follows function.
3. There must be a strong central ability to monitor and evaluate decentralization.
4. One inter-governmental system does not fit the urban and rural poor.
(5) Fiscal decentralization requires significant local government taxing powers.
(6) The central government must keep the fiscal decentralization rules that they make.
(7) Keep it simple.
(8) The design of the inter-national transfer system should match the objectives of the decentralization reform.
(9) Fiscal decentralization should be considered at all three levels of the government.
(10) The hard budget constraint should be imposed.
(11) There must be a champion for fiscal decentralization.
(12) Finally, he outlined that there must be the champions who understand the cost and benefits of establishing fiscal decentralization programmes. There are three types of champions.
   a. Potentially strong supporters: the people and their representatives, the president, the Parliament or Congress, urban local governments and external donors.
   b. Potentially weak supporters: ministry of finance, ministry of economy and line ministries.
   c. Ambivalent supporters: ministry of local government and weaker local governments.
These champions have their own level of roles and responsibilities to create a successful decentralization process.

Castles (1999) work put the cross-national average data of 21 OECD countries for the years 1973, 1983 and 1992 into the analysis to examine the relationship between decentralization and the post-war political economy. The study highlighted that there has been a very little study on the impact of decentralization on the functioning of the economy and a very few academic analysis on the links between political and fiscal and macroeconomic outcomes. In this fact the study explored that fiscal centralization is significantly associated with a weaker record of post-war economic growth and with poorer inflation outcomes. That is fiscal centralization appear to have controlled post-war inflationary pressures and gone along with the higher rates of post-war economic growth. However, no evidence is found to link fiscal decentralization with post-war labour market performance. The political decentralization does not have any significant effect on
macroeconomic outcomes. The study concludes that federalism and other decentralized constitutional arrangements prevent the effect of war in socially protective state.

Stein (1999) explored the link between fiscal decentralization and the government size in Latin America. Latin America has had a long tradition of centralization. However, since early 1990s, the countries of Latin America have been going through significant process of political and fiscal decentralization. The study tested ‘Leviathan Hypothesis’ using ordinary least squares regression on the average cross-section (1990 to 1995) data of 20 countries from Latin America. The study found that decentralization tend to be larger government size, however, the arrangements that are more likely to lead to soft budget constraints seem to be associated with larger size. The size could be minimized by limiting the degree of vertical fiscal imbalance, by assigning viable revenue bases to the lower level by reducing discretionality in intergovernmental transfer and by restricting the degree of borrowing autonomy of subnational governments. In wrapping up, decentralization is likely to improve on resource allocation by bringing fiscal decisions closer to citizen’s preferences.

Tanzi (2000) acknowledged that decentralization might be necessary from a political point of view; however, there are some possible negative effects of decentralization. Such as, it increases corruption, possess excessive regulation, creates difficulties in introducing competent tax restructuring and hampers macroeconomic stability. He pointed some apprehensive results on the effect of decentralization could be summarized as follows.

1. Small countries should be more successful than the large countries in satisfying social needs of their population.

2. The citizens of a country wish on public activity even when the private alternative is available.

3. The existence of more layers of jurisdictions, each level pursue its own objectives not just through taxes and public spending, but also through regulations and possible to increase in destruction of regulations.

4. Decentralization may limit the internal market rather than enhancement the same.

5. The corruption is more widespread, in fact, at the local level than at the national level.
(6) It is difficult to assign precise expenditure responsibilities; as a consequence, responsibilities often overlap. Transfers create moral hazards to the accountability of the local governments.

(7) The assignment of taxes is difficult by the cause of administrative considerations, economies of scale in tax administration, access to information and tax competition.

(8) The local governments follow soft budgets and can borrow easily, would be the cause of macroeconomic instability.

(9) The local governments rarely generate and provide good data on a timely basis could be difficult to achieve fiscal transparency.

(10) Decentralized setting creates regional disparities leads to dispute on natural resources might be the cause of political instability.

(11) Despite of aforementioned challenges, decentralization may generate larger public employment because of the need to have public administration in more layers than in the centralized structure.

Rao (2000) analyzed fiscal decentralization in a three-tier federal framework in India. After a brief discussion on the evolution of Indian federalism and description of the prevailing system, the paper brings out anomalies in assignment between the centre and the states and the states and the local bodies. A critical analysis of intergovernmental transfers brings out the efficiency and equity implications of intergovernmental transfers. The paper has some important findings. The inclusion of the third tier brings out the true picture of fiscal deficits. The structural deficits in the country are due to fiscal mismanagement at both central and local levels. Despite the imbalance of a hard budget constraint at the state level, the status has found ways to soften the constraints. Although the transfer system has an equalizing impact, it has disincentives for fiscal management. The constitutional sanction has enabled the institution of the local governments, but they do not play much role in providing public service, much less in rising sources.

Ping (2000) performed a research entitled “Fiscal Decentralization in Chinese Economic Reform” highlighting the relation of economic progress with fiscal decentralization practices of the country. The goal of the paper is to give a brief summary of fiscal decentralization in China. The study is mainly paying an attention on the following four issues.
(1) The changing relationship between the central government and the local governments.

(2) The incentives for the local governments in decentralization.

(3) The amount of incentives changed after the implementation of the new tax system.

(4) The effects of the prevailing new tax arrangement.

After 1990s, fiscal decentralization has been a critical component of economic reform in China. The decentralization includes sires of fiscal arrangements, which not only involved the devolution of the government authority from the central government to the lower-tier government, but also introduced fiscal incentives for the local governments. At the same time, the assignment of fiscal responsibility between the central government and the local governments has been rearranged. As a result, the share ratio of fiscal revenue between the local governments versus the central government has been increased greatly in China.

Martinez-Vazquez and McNab (2001) defined fiscal decentralization as an effective tool to increase efficiency in the public sector. The study is based on intuition, case studies and the evidence from the individual country studies. The indirect channel through which fiscal decentralization affect positively on the economic growth of a country are, economic efficiency, regional distribution of resources and macroeconomic stability. It increases consumers’ and producers’ efficiency both. The study also highlights the geographical aspect of fiscal decentralization in the case of transitional and developing countries. In those countries, fiscal decentralization has not been taken as the geographical deconcentration of the central government bureaucracy and service delivery. Less focusing on geographical deconcentration may create the macroeconomic instability in the country. However, in fiscally decentralized system, there is an attempt to produce more and geographically balanced distribution is to be done by channeling resources from richer areas to the poor ones. Geographically balanced distribution of resources is not done in the centralized system. In centralized system, the distribution of public resources is allocated in favour of politically important jurisdictions over the jurisdictions with greater needs but less political importance.

Smoke (2001) examined the origins, conceptual foundations and practice of fiscal decentralization in developing countries. First, the study considers why it has been so
prominent historically in developing countries and why this trend has been reversing. It
summarizes the conventional fiscal decentralization theory and considers its relevance to
the developing countries. Then it reviews some popular claims made for and against fiscal
decentralization and considers the available empirical evidence. It also outlines some key
elements of this matter as it is being promoted in selected countries including some of the
problems being faced and success being realized. The paper concludes with some
observations of how to think about designing more appropriate and effective fiscal
decentralization in the developing countries.

Ebel and Yilmaz (2002) presented new measures of fiscal decentralization and developed
the relationship between fiscal decentralization and economic outcomes as
macroeconomic stability, economic growth and size of public sector. After reviewing
earlier literature they advised that decentralization is difficult to measure. The prior studies
which were depended on Government Finance Statistics (GFS) from the International
Monetary Fund (IMF) are not providing a full idea of fiscal decentralization. Ebel and
Yilmaz then use a new data set for the selected countries in Central and Eastern Europe
developed by the Organization for Economic Cooperation and Development (OECD) and
the Fiscal Decentralization Initiative (FDI) of the Local Government Initiative (LGI) in
Budapest, Hungary. The main characteristic of the new data set is the coverage of local
government autonomy in the degree of revenue raising decisions. They initiated that when
properly measured to reflect the degree of autonomy in local revenue raising decisions,
fiscal decentralization has positive impact on growth in GDP per capita and negative
impact on public sector size suggesting that the public sector’s expenditure share of GDP
decreases with the increase in subnational tax autonomy. The study provides a new
approaching in the measurement of fiscal decentralization variable and in the estimation of
impact of fiscal decentralization to the dimensions of economy.

Jimoh (2003) studied on the effect of decentralization on poverty in Nigerian case
spanning over the period 1960 to 1999. He estimated poverty equation by using
explanatory variables as the real GDP, the total number of population, the number of
states, the number of local governments, the expenditure concentration ratio, the revenue
concentration ratio and the measure of fiscal autonomy ratio. The regression analysis
suggested that more decentralized governance, especially in terms of increased local
governments and increased transfer of revenues to the lower tiers of government would
stimulate economic activities and (or) economic growth. The major determinants of the prevalence of poverty in Nigeria are economic and population growth. It recommended that the efforts be made to increase the revenue collection powers of lower tiers of government as well as increase their rights to revenues and more weight is to be given to derivation in the horizontal allocation of government revenues.

Davey (2003) noted that fiscal decentralization is inevitably a dynamic process. Although the local governments’ responsibilities and resources may be fixed in law, demands on their services and the value of their revenues respond to social and economic changes over which the lower levels of government have little control. It is essential to maintain channels of consultation between the national government and the local government associations so that adjustments can be made in a timely and equitable way, usually through the equalization formulae. It concludes that fiscal decentralization sets the framework of expenditures, revenues and legal discretion within which regional and local governments operate.

The World Bank (2004) performed a study to review the panchayat finances and to identify the issue for the improvement in the fiscal decentralization system in India. This study is important in the theme because it was conducted a decade after the two Constitutional amendments: seventy third (rural decentralization) and seventy fourth (urban decentralization) in India, in 1992. These amendments were based on a decentralized, participatory and democratic approach to governance. The study considered two states: Karnataka and Kerala for the case study, because these states are generally thought to be more advanced than others in implementing rural fiscal decentralization and are relevant to the rest of the states. It has suggested some guidelines that might be used to structure the decentralization programme as indicated by the following sequence of reform options.

(1) Develop a fiscal decentralization plan that includes all necessary components and should be based on the objectives which the government has set.
(2) Begin investing and upgrading the capacity of the state government to lead and monitor the reform programme. Investment should be increased also for the capacity development of the local governments to implement the programme.
(3) Clarify expenditure assignments.
(4) Improve the local governments’ finance mobilization through structural reform.
(5) Restructure the transfer system to realize equalization objectives and to allow the local governments more autonomy and discretion in the use of funds according to their own priority setting the planning mechanism jointly by improving the local government capacity.

(6) Fix the financial reporting system of the local governance.

Dafflon (2004) explored the concept of fiscal decentralization by its three fundamental issues. First it assumed that sub-national levels of government will be major providers of public services. Second, in an open complexity interrelated and mobile society, there are important spillovers of costs and benefits from the fiscal operations of particular sub-central units. Third, the distribution of revenue-raising capacities among states (regional) and a local unit is often uneven, which necessitates some kind of compensation between the levels of government (vertical) or among themselves (horizontal). Consequently, the study prescribed to address four issues, namely, the distribution of competencies, public revenues between governments, fiscal equalization and budget responsibility.

The seminal work of Oates (2005) has been taken as the turning point in the era of fiscal decentralization theories. It has been considered as the evolution of second generation model in fiscal decentralization. The first generation model is based on the views of Musgrave (1959) and Oates (1972); and it focuses on the allocative efficiency gains of fiscal decentralization which assumes that the local governments act in the best interest of their respective jurisdictions. On the other hand, the second generation fiscal decentralization model is based on the view of Oates (2005) and it considers political and economic realities simultaneously in the designing of fiscal decentralization. It focuses mainly on the political behavior of local governments’ officials. It assumes that the local governments may not act on their best interest in respective jurisdictions.

Further, Oates (2006) attempted a study on the theory and practice of fiscal decentralization. First it has reviewed the basic theory of fiscal decentralization and presented the several loose ends to the original argument that opens up some fascinating and important issues. Second it has opened up some of new literature on fiscal discipline in a multi-level government. The study focused on some basic and destructive forces that can undermine the economic performance of a relatively decentralized public sector. He revisited on his own “Decentralization Theorem (1972)” and it’s motivation. It discusses
on measuring the welfare gains from fiscal decentralization, fiscal institutions and decentralization. It concludes a self sustaining system to promote competition among jurisdictions limit the capacity of the centre and undermine the efficient operation of markets.

Lkhagvadorj (2007) reviewed the theoretical foundation of fiscal decentralisation and a status quo analysis of the intergovernmental relations in Mongolia. As we know like Nepal, Mongolia is a landlocked and underdeveloped country. Since 1990, Mongolia has been started the transformation towards market economy and democratic system. In 1992, Mongolia has decentralized the political system and has been going ahead to empower the local level governments. After that it has implemented policy efforts to improve governance and to enhance economic growth. Mongolia is currently acknowledged as one of the “rapid reformers” in the group of the transition economies. Mongolia is a unitary state with the central government and the three levels of sub-national governments. First or intermediate level is province and is subdivided into regions called soum (rural districts). The soum is further divided into local governments consists of communities, which are bag (rural sub-districts) and horoo (urban sub-districts). Mongolia has a very fragmented governmental structure and extremely small size of jurisdictions, which does not allow economies of scale and benefits.

Furthermore, Lkhagvadorj (2007) examined the current fiscal autonomy in Mongolia focusing on four main areas of intergovernmental fiscal relations. The capital expenditure responsibilities and investment decisions are made at the central level and maintenance, operation of facilities are organised at the local level; which creates the breach lead to inefficient service delivery. The own revenues of the local government consist of local taxes and shared taxes. The local taxes have very small in magnitude. The intergovernmental fiscal transfer system is not transparent, follows no clear rules and tends to provide revenue discouragement to the local governments. The local governments must have to have approval from the central government for borrowing and only the aimag governors have a right to borrow. However, long and medium term borrowing is restricted. The study concludes that the local governments in Mongolia are still far away from the political, administrative and fiscal autonomy. Eventually, the study recommended for the implementation of expenditure assignment and revenue assignment policy for the local government in Mongolia immediately.
Uchimura and Jütting (2007) analyzed the effect of fiscal decentralization on health outcomes in China, using a panel data set of twenty-six provinces for seven years 1995 to 2001. The fixed-effect model was used. The dependent variable is health outcome and is measured by provincial infant mortality rates per thousand live births (IMR). The explanatory variables are fiscal decentralization and socioeconomic factors as the control variables of the provinces. Furthermore, fiscal decentralization has been defined by two factors as stated below.

1. Vertical balance, which is measured by the ratio of aggregate counties’ expenditure to the aggregate counties’ own fiscal revenues.
2. Ratio of county expenditure to total provincial expenditure, which is measured by the ratio of counties’ expenditures to the total provincial fiscal expenditure.

The control variables used for the study are as follows.

1. Economic level, which is measured by the provincial per capita GDP.
2. Rural-urban ratio, which is measured by the ratio of rural population to the urban population in the province.
3. Fertility rate, which is measured by the number of births to the average population in the province (times 1,000) in percentage.
4. Education level, which is defined by the ratio of number of illiterate population to the total population, aged 15 and over in percentage.
5. The provincial government size, which is measured by the total provincial fiscal expenditure relative to the provincial GDP.

The study showed that the counties under more fiscally decentralized provinces have lower IMR (health outcome) compared to those counties in which the provincial government retains the main expenditure power. The study supports the common understanding that fiscal decentralization can enhance more efficient production of local public goods, if the local government has its own fiscal capacity.

Tranchant (2010) accessed the impact of decentralization experience of North-East India where the local minorities and the local majorities react in opposite ways under Indian decentralized governance system. Assam is the example where the ethnic movement has been nested extremely. The case inferred that the solution of one problem (the Nagas for instance) would generate a new series of vicious claims from other groups. To solve
Naga’s problem, some parts of Assam have been carved out and declared as autonomous state Nagaland and Mizoram. After the modification of the administrative boundaries of the state the majority and minority status of all groups were also changed further leaded to another revolt (for example the Bodos, Bangladeshi Muslims and Assamese Hindus). The decentralization in India gave rise to complicated dynamics of ethnic peace and violence, largely due to the demographic characteristics and spatial distribution of ethnic groups. These kinds of dynamics have been unobserved in the quantitative analyses of fiscal decentralization.

The paper empirically examined also the impact of fiscal decentralization on ethnic revolt by using the panel dataset of ethnic local majorities and minorities across the world on the period 1985 to 2001. The result of the study showed that fiscal decentralization does not promote secessionism although it reduces revolt of local majorities. However, fiscal decentralization energises the revolt of local minorities. Fiscal decentralization is capable to reduce communal violence for both local majorities and minorities. In conclusion, the aforementioned heterogeneous impact of fiscal decentralization implies the relevancy relying on fiscal decentralization to manage the ethnic violence. Nepal is as well ethnically diverse and plagued by endemic ethnic conflicts within state, mostly since a decade. The state has been accommodating to resolve the ethnic conflict by sharing authority to access ethnic groups in the governance system. The available cross-country estimation too shows the decentralization is effective means to mitigate ethnic conflict. Therefore, the inferences drawn from the studies on heterogeneous impact of fiscal decentralization lying on local minorities and majorities should be useful to formulate future state policy in Nepal as well as for the academic discourse.

Vo (2010) exclusively concentrated on the theoretical developments of fiscal federalism. In his paper more attention has been given to the seminal contributions of first generation and second generation fiscal decentralization theories. Oates’s decentralization theorem 1972 is called first generation theory of fiscal decentralization and it has been taken as the foundation for generation theory in fiscal decentralization literature. The theorem produced a trade-off between centralisation and decentralisation. The principle of subsidiarity is a simple summary of first generation theory. The investigation of first generation theorists are associated with fiscal federalism as the process of fiscal decentralization for the improvement in the overall degree of public sector responsiveness
to a public demand and, ultimately, to an improvement in the economic efficiency of public fiscal activities by better linking resource allocation as per public preferences. The second generation theory of fiscal decentralization has begun to emerge Oates’ (2005) by sketching on ideas from the theory of firm, the economics of information, the principal-agent problem and the theory of the contract. Moreover, the power and functions of the government are not only associated to the tiers of the government, but also to the polycentric character of the government. The diverse centres of the government respond to demand for public services in a manner that is integrated within the market economy. In this changing view on fiscal decentralization the traditional measures are not enough sufficient to capture the notion of fiscal decentralization. Therefore, the empirical testing of these theories requires a sound measure of fiscal decentralization which might reflect the important features of second generation theory too.

Iqbal, ud Din and Ghani (2013) analysed the impact of fiscal decentralisation on economic growth in Pakistan. It examined the complementarities between fiscal decentralisation and democratic institutions in promoting economic growth. The empirical study followed Iimi (2005) endogenous growth model amplified with the measures of fiscal decentralisation and democratic institutions. The time series data of Pakistan covering the period 1972 to 2010 has been used for the estimation of results. Three different measures of fiscal decentralisation are used to capture the dimensions of fiscal decentralization. The study found that revenue decentralisation promotes economic growth while expenditure decentralisation slows down economic growth. The composite measure of decentralisation positively effect to economic growth forwarding those simultaneous decentralisation strengths each other to promote economic growth. It indicates that the revenue generation responsibility is capable to increase per capita income of the country. However, by the cause of low institutional quality, lack of human capital and physical infrastructures, less accountability, corruption and local elite capture creates negative association between expenditure decentralization and economic growth. As such, democratic institutions and self-governing local governments only play a significant role for promoting economic growth in the course of fiscal decentralisation.

Ding (n d) estimated the effect of fiscal decentralization on economic growth in China in the period 1994 to 2002. The study is based on a simple model of endogenous growth using public spending panel data set of 30 provinces in the period 1994 to 2002 by the
different levels of the government in China. His paper empirically estimated the contribution of fiscal decentralization on economic growth. The study corroborate that fiscal decentralization can increase economic efficiency. The result corroborates the theoretical concept of fiscal decentralization. It explored that openness and fixed asset investment are the key driving forces for the economic growth in China. The paper is also important because it is the first attempt to examine the impact of ‘fiscal reform 1994’ on the economic growth of China.

2.3. Nepalese Literature on Decentralization and Fiscal Decentralization

In this section we are going to present the Nepal related literature on decentralization and fiscal decentralization. Some of the important literature in this regard is presented below.

Bista (1991) portrayed the Nepalese development practice as “Nepalization” which too indicates the historical process of decentralization in Nepal that has been going on for centuries. The country has been integrating various groups of people in a unified structure, organizing them in a vertical hierarchical caste system, and of synchronizing the different folk cultures, languages and lifestyles. The centralized political system, which has been following the principle “one size fits all”, does not address the wants of the heterogeneous and diverse society, especially the poor and excluded groups. In the mechanism of this system, peoples’ participation, their empowerment, decentralization and good governance is far from the common people and they are compelled to remain as mute spectators. Then in such a case some negative results are achieved from the development initiatives. Finally, his recommendation was to reform the political system towards decentralized local system for the betterment of deprived local people in Nepal.

The High Level Decentralization Coordination Committee (1996) wished for the new shape of decentralization for Nepal. The study consists of a review of current position, appropriateness, problems and suggestions for improvement in the prevailing local governance system. It has also assessed the rights, scope, organizational structure and process of formation, phase-wise management, plan formulation, implementation, monitoring and evaluation of the local government. It recommended the separate strategy, capacity enhancement and financial provision for the local bodies. It suggested for drafting a new law for the local governments to enable them to collect financial resources in the form of tax, private tax, grant and loan sharing of revenue, budget, account keeping, auditing, and right to auction. This committee strongly recommended for the establishment

64
of an autonomous permanent local finance commission and a separate powerful commission for the allocation of natural and water resources.

Shrestha (1996) vividly described the decentralization efforts and its implementation scenario in Nepal, since the inception of the Panchayat system (1960) when the time of the democratic stage starts at the global level. He mentions that the Panchayat System as such, by its nature and its power structure, was not pleasant to implement the decentralization scheme in its real sense. Though it adopted decentralization to achieve two objectives (1) as an instrument of political slogan with rhetoric and cosmetic values to satisfy peoples’ aspiration of exercising powers and uplift their socioeconomic status through the local development, and (2) to please the donor agencies for mobilizing foreign support and aids in boosting up for the regime so as to run the Panchayat System smoothly. Hence, under this regime, the development roles of the local government were practically squeezed, although theoretically the local governments were assigned multidimensional functions and powers to it. Decentralization worked out as a political myth primarily to expand the existence of the Panchayat System rather than to touch the true spirit of the grass root people. Finally, he agrees on the fact that though there were weaknesses in the Panchayati decentralization, it at least gave a legal and institutional framework, which could be the good base of building a new structure in the future.

Kelly (1999) focused on the revenue allocation component of Nepal which is necessary for successful decentralization in the developing countries. It briefly reviewed the Musgravian functions of the state which are allocation, stabilization and distribution. It discusses the theory and practices of revenue allocation in the different tiers of the government in Nepal. The local governments could be functioned effectively only when the resource mobilization at the local level with independent revenue sources operate in. The independent tax bases will need to be complemented by an improved central-local transfer system of revenue sharing. Especially the rural local governments of Nepal have very limited potential revenue bases. Thus, the horizontal and vertical imbalances have been increasing gradually. He concludes that these imbalances could be addressed and minimized by continuously providing the substantial resources granted by the central government to the local governments.
MoLJ (1999) promulgated the Local Self Governance Act, 1999 (LSGA) and devolved the authority, responsibility and functions from the central governmental agencies to the local governments such as VDC, municipality and DDC. It is the most comprehensive enactment that Nepal ever made in this regard. This law has integrated provisions of decentralized “Local Self-Governance System”. The clause 3 of the LSGA deals with the principles and policies of the Act. In accordance to which, the government through this law wanted to pursue the following principles and policies for development of the local self-governance system.

(1) Devolution of such powers, responsibilities and means and resources as are required to make the LBs capable and efficient in local self-governance,

(2) Building and development of institutional mechanism and functional structure in LBs capable of considering local people and bearing responsibilities,

(3) Devolution of powers to collect and mobilise such means and resources as are required to discharge the functions, duties, responsibility and accountability conferred to the LBs,

(4) Having the LBs oriented towards establishing civil society based on democratic processes, transparent practices, public accountability and people’s participation in carrying out the functions devolved on them,

(5) For the purpose of developing local leadership, arrangement of an effective mechanism to make the LB accountable to the people in its own areas, and

(6) Encouraging the private sector to participate in local self-governance in the task of providing basic services for sustainable development.

The act has clearly stated the financial provision for the local bodies relating to their source of income, mode of expenditure, maintenance of the accounting system, auditing and transparency. It contains separate chapters relating to financial provisions for each level of the local bodies providing some “resource of their own”. The local bodies have the authority to levy and collect taxes, service charges, fees and borrowings up to the limit specified by the laws. Besides these, the act has made provisions for revenue transfer and sharing between the central government and the local bodies as well as among the local bodies. The details of financial administration are regulated by a separate “Local Authority (Financial Administration) Regulation, 1999” [at present, Local Authority (Financial administration) Regulation, 2007]. Under this Act, The Government of Nepal has the right to set up a powerful Local Bodies Fiscal Commission, by including the representatives of national associations of the local bodies.
The main features and provisions of LSGA are stated below.

1. LSGA is the integrated law for creating and operating all the levels of local bodies (LBs), following the principles and policies of local self governance.

2. It created the Decentralization Implementation and Monitoring Committee (DIMC) under the leadership of the Prime Minister as the key policy-making body on decentralization.

3. It clearly stated the devolved working responsibilities, duties, quasi-judicial authority and power of the LBs.

4. It provisioned compulsory participatory bottom-up planning, periodic planning and resource mapping for all LBs.

5. There is a provision of high level Local Body Fiscal Commission.

6. It devolved power to the LBs for working with NGOs, Community Organizations, User Groups and Private Sectors.

7. It provisioned for revenue sharing between the local and central government and among LBs.

8. It made mandatory to address all the local level functions of each and every agencies under the single umbrella of the LBs.

9. It defined the relation between central government and the LBs.

10. It made mandatory participation of local down-trodden people, disadvantaged groups, women (must be 20 percent), ethnic communities and indigenous people in the executive body and the council of LBs.

11. It has been making accountable and transparent LBs through provisions such as councils and various committees, including audit committee.

DASU (2000) conducted the study on the effectiveness of the ongoing local level programmes after implementing LSGA and LSGR in Nepal. The study aimed at evaluating the loopholes circumscribing the scope of strengthening decentralized development process. The study is based on empirical data generated from the field survey. It is an assessment of the effectiveness of LSGA and LSGR, and ongoing programmers implemented by VDCs, DDCs and the line agencies along with their institutional capability to implement. It examined the level of adherence with respect to the accountability, transparency, people's participation and the empowerment process from the lessons of past experiences. This study constructed an equation based formula to
allocate the grants from the centre to the local bodies, and recommended to apply the formula based inter governmental fiscal transfer system in Nepal.

The study report of LAFC (2000) is a milestone in the field of fiscal decentralization in Nepal. This report assessed the theoretical background of fiscal decentralization and international practices, legal background of fiscal decentralization and the challenges of fiscal decentralization in the context of Nepal. It included the appraisal of the financial condition and fiscal authority of local bodies, resource allocation, account system and accountability with suggestive measures. It suggested the central government about policy measures, transformation of responsibility, managerial capacity building, institutional reforms, controlling, and monitoring and evaluation measures to be implemented for the local bodies.

LDTA (2002) performed a study by linking decentralization with poverty reduction in Nepal. The study reviewed the decentralization process in Nepal by using strengths, weaknesses, opportunities and threats (SWOT) analysis of decentralization experience, related acts and regulations with the suggestive measures to empower local authorities, decentralized plan and the views on the local governments. It further analyzed the role of decentralization in poverty reduction by using the revenue sharing system followed in some selected countries and the existing revenue sharing system in Nepal. It identified the gap between fiscal needs and capacity of the local government, fiscal capacities of the local government and the determination of fiscal needs of the local governments. The transfers on equal per capita basis were derived by using indicators in combination with equalizing their weights and this formula was recommended for policy measures. The study concluded highlighting the poverty dimension in Nepal and linking poverty reduction with decentralization. It recommended to enhance the partnership among different agencies for fostering decentralization, implementing the decentralization plan as envisioned by LSGA, the local resource based local governments; accountability and transparency in governance are needed for poverty reduction in Nepal.

Gurung (2002) proposed the reorganization of current 75 districts into 40 for the constitutional reform and to economize the administrative cost since there was a limit to enhance the district resources. It mentions that only 11 out of 75 districts can meet their administrative costs and the rest entirely depend on the centre. Furthermore his
recommendation is to reduce the number of administrative districts to 25, one-third of them today. Reducing the number of districts would enlarge their area of coverage and reduce administrative cost by one-third, which means creating a wider revenue base. The districts can function as autonomous body only if the centre adopts the policy of fiscal decentralization to have an adequate resource base. This would require devolution of roles and functions to the local governments instead of the expansion of the central administration that has discouraged the local initiatives and capacity. He further stressed that the development in bureaucracy, roads, telecommunication and airport facilities will vastly narrow down the travelling time and geographical space for providing service delivery to the people. He however remained silent about the number of present VDCs, municipalities, wards and its service delivery system.

Bohara (2003) argues that decentralized institutional framework should be of three tiers namely central, regional and local having their own domain and jurisdiction instead of two so that empowering the people in real sense can take place. According to him decentralization not only means allocating budget in a more equitable manner, but also about building the local and regional level institutions so that they could be instrumental in tapping economic potentials. He recommends that the central government must be responsible for defense, central bank, monetary policy, fiscal policy, income tax and foreign policy. The five regional governments can take charge of health, education, roads, bridges and the other activities of the local development. The third or local tier should be fully responsible for the local development having the resources like property taxes, health posts, local pathways, animal shelters, entertainment fees and duties, sanitation fees, local traffic, parking fees, primary schools, local tourism etc. He further proposed for the regional assembly adopting all minorities, marginalized, disadvantaged and ethnic groups for inclusive governance in Nepal.

Kafle and Karkee (2004) in their study examined the impact of a decade long (1996 onwards) Maoist insurgency on the decentralization practice in Nepal. In that period, much of the information about the local bodies was destroyed. The main target of the movement was to destroy the local government offices, peoples’ elected representatives and employees. The VDC, municipality and DDC offices including other physical infrastructures were destroyed. Many official personnel and peoples’ elected representatives of the local bodies were killed. Since the year 2002, there have been no
elected councils and executives in the local bodies in Nepal. After this time these institutions have been functioning by the secretary (VDCs), the executive officer (municipalities) and the LDO (DDCs). The devolved and delegated powers to the local bodies including the power of the peoples’ elected representatives have been handed over to the central government’s employees. Delegating the sole responsibilities to the single employee at the local government has created the following implications.

1. The trend of participation of the local people in planning and monitoring workshops has decreased.
2. The DDC meetings are not finished on time. No serious discussion is held even on a very important agenda. Once agenda put by the LDO, the participants immediately and unanimously pass it.
3. There has been an information gap between the people and the local authorities.
4. A decreasing trend of accountability and responsiveness of the local government officials to the clients and people has been observed.

Furthermore, the study has depicted the following impacts of the then conflict on the decentralization system in Nepal.

1. The participation of the local people in planning and monitoring workshops had reduced.
2. The number of monitoring and supervision visits had lowered due to the fear of the Maoist cadres.
3. VDC office management businesses had not been maintained.
4. Local democratic exercises had been hindered.

In conclusion, the link between the people and the local authorities had been cut off. The citizens were passive and there was a lack of democratic exercise at the local level in Nepal that time. Although their study points out these findings, the context at present is different. Nepal is undergoing a rapid social and political change. The “Maoist Rebellions” are in the main stream of governance system.

Kandel (2004) wrote a book entitled “Theory of Fiscal Decentralization and the Restructuring of Nepal”. It can be taken as the first book on fiscal decentralization in Nepali language which discusses the aspects, practices, theories, lessons and pros and cons of fiscal decentralization for restructuring the political system of Nepal. There is a
thorough discussion on the theoretical aspects of fiscal decentralization, responsibilities and function of local governments, local tax system, inter-governmental grants, loans, institutional strengthening, decentralization practices in Nepal, the current situation of fiscal decentralization in the LBs in Nepal, the vision of restructuring the state and fiscal decentralization, weaknesses of fiscal decentralization with conclusions and recommendations. This is a successful attempt to flourish the fiscal decentralization issue in the Nepalese context. It recommends that fiscal decentralization would be the major tool for the ongoing state restructuring process of federalism in Nepal. No doubt the state restructuring for the federalism setup is a political process, however, for its progress fiscal decentralization would be the panacea for addressing the people’s aspirations for economic development.

Ligal et al. (2005) attempted a study on the current revenue assignment system and expenditure needs to local bodies in Nepal. They considered four districts, namely, Chitwan, Kavre-Palanchok, Syangja and Solukhumbu for the case study to estimate the expenditure of district development committees (DDCs) in Nepal. The study pointed the responsibilities allocated to the local bodies in three categories as pointed below.

1. Administrative function
2. Development function and
3. Devolved task.

The unit cost approach was used to estimate the cost of defined standard of services to the definite number of people within the jurisdiction of the local bodies. The estimation shows that the allocated district budget to health and education are less than the actual needs for the districts. Again, to analyze the field performance of the local bodies, altogether 14 DDCs, 10 municipalities and 40 VDCs were selected. The service delivery of district level offices on physical infrastructure, education, agriculture, livestock and health and their wings in municipality and in VDC were considered to compute the expenditure needs of such services. Through interaction meeting and consultation with service providers, it was found that the needs of resources are less than the actual needs. It concludes that the vertical imbalance between the centre and the local bodies has been decreasing gradually along with the fiscal transfer to the local governments in Nepal.
Adhikari (2006) investigated the current status of power and participation in district development planning in Nepal. Kavre-Palanchok (popularly known as Kavre) district, a district adjacent to the capital city was purposively selected for the research. The study is basically a qualitative which uses the tools for data collection, notably, documentary review, observation, daily diary, semi-structured interview, focus group discussion and multi-stakeholders workshop. Thus, it is a scholarly work and is the distinct effort in the area of decentralization in Nepal. He lucidly presented his findings as follows.

1. Decentralization as a means can have multiple effects.
2. It empowered and strengthened the local democracy.
3. The inclusive participatory planning promotes the local democracy.
4. Capacity is critical and most essential for local governance.
5. Absence of elected officials is adversely affecting the effectiveness of local governance in Nepal.
6. Limited fiscal decentralization and intra-party democracy hindrance decentralization.
7. Unclear accountability and the fugitive nature of officials affect local democracy.
8. Parallel like structures to the local governments hampers the decentralized local governance.
9. The institutional vibrancy and community’s loyalty is a positive factor for the local democratic governance.

Finally, the study suggested that decentralization is an integral package of political, administrative and fiscal elements which takes time to be internalized and to create positive effects on development in the country.

Another study conducted by ForestAction and HIMAWANTI (2008) indicates the shortcomings of decentralization in its domain of inclusionary practice in Nepal. The case study approach considering four cases from four different spheres of decentralisation had been followed in order to collect the information. A total 10 VDCs, 11 community forest user groups (CFUGs), 9 community schools and 10 farmers managed irrigations system (FMIS) were considered from six districts of the different geographical location of the country. The paper pointed that the LSGA ensured women representation in the ward level to the executive of each local body in Nepal. However, the participation of woman in the
local governance system is only for a tokenistic involvement and very less emphasis on qualitative representation. Woman’s participation appears to be only at the level of numeric representation since both men and women in terms of physical presence and attendance in the meetings and or assemblies and not necessarily for taking a role of influencing the decision making process. In general women appear to be reluctant to raise their voice in a mixed group while they appear to be more ready to articulate their voices in women’s groups only. The study shows that the policy provisions in relation to women’s inclusion in the decentralised spheres were found to be more instrumentalist and less transformative.

The study suggested that education to the women is necessary condition but not essentially a sufficient condition for effecting change in the structure in the Nepali social context. It is found that the educated women were as well unable and unwilling to challenge the prevailing conservative socio-cultural norms and values which hinder the process of gender justice. This study recommended for taking measures to redress persistent disparities by assuring women over redistribution of state-allocated and locally generated resources. The socio-cultural setup of the country should be converted as per the norms and values of decentralization and social inclusion to achieve the aim of LSGA in Nepal.

Sharma and Muwonge (2010) wrote an article entitled “Local Government and Service Delivery: In Retrospect and Prospect” considering the current crucial situation of the local bodies in Nepal. The paper presented the existing decentralization and service delivery system of Nepal very clearly. The study highlights that the service delivery by the centre and LBs is weak in the country. There is no constitutional backing up. So, decentralization in Nepal has been far from being a complete. The LBs have not been able to fully exercise the competencies as envisioned by LSGA, because the provisions of LSGA contradicted with 23 numbers of laws. The local bodies’ revenue base is weak and they have not fully utilized the bases given. The intergovernmental transfer system was not properly sequenced and it didn't coincide with accountability measures. The staffing policy is not commensurate with the policy of decentralization. The centrally guided local bodies have low autonomy for their operations. There is no elected executive since 2002, just after 3 years of the promulgation of LSGA, creating the incompletion in decentralization process. The sequencing of decentralization reforms will be the key challenges during this transitional period in Nepal. The main lesson is that political
economy and economic resource considerations will remain critical in the debate of what the federal structure in Nepal will be like. Addressing these challenges will require strong accountability relationships in the current political setup of the country.

Devkota (2010) analyzed the impact of fiscal decentralization on economic growth in GDP per capita in Nepal using an ordinary least squares (OLS) model over the period of fiscal year 1995-96 to 2009-10. The dependent variable is GDP per capita and the explanatory variables are inflation, population, openness and fiscal decentralization expressed as the ratio of total LBs’ expenditure to the government’s total expenditure. The empirical findings suggest that fiscal decentralization has a positive significant impact on GDP per capita. The paper is the first one which observes the effect of fiscal decentralization on economic growth by using an empirical model for Nepal.

Bhatta (2011) critically analyzed the risk around the fiscal transfer system, particularly block grants to the local governments in Nepal. The government of Nepal recently revised the fiscal transfer system to the local governments in the flagship Local Governance and Community Development Programme (LGCDP). After implementing LGCDP, the local governments have been obtaining the conditional grants on the basis of their performance indicated by the Minimum Condition (MC) and Performance Measures (PM) indicators. By reviewing the present constitutional and legal provision, the study presented the fiscal data of the local governments and then assured that there was no turning back on fiscal devolution and decentralization in Nepal. No doubt, the fiscal transfer or grant from the central government helps minimize the vertical imbalance and the effective service delivery is possible at the local level. It concludes that the fiduciary risk should be minimized by continual and timely reviews of MC/PMs, focusing on monitoring and evaluation, internalizing the sector-wise approach, enhancing accountability mechanisms, promoting capability to maintain portfolio management and political commitment in Nepal. The work has vividly overviewed the intergovernmental fiscal transfer pillar in the Nepalese context among the four pillars of fiscal decentralization.

Srivastava (2011) highlighted the issue of fiscal federalism as a major challenge to be addressed in the current transitional condition of politics and to move towards the democratic process in Nepal. He proposed the assignment of resources and responsibilities of the central, provincial and local tiers of the government on the basis of
the key fiscal indicators at present, regional and zonal diversities. To arrange the vertical and horizontal imbalances the design and institutional arrangements need to be put in place. These imbalances will need to be resolved by a mechanism of fiscal transfers. The cooperation and coordination between the centre and the provinces and among the provinces regarding the resources should be maintained continuously. For collection and compilation of data and to design the fiscal transfers for resource allocation mechanisms of inter-provincial and centre-province economic balance, he recommended for establishing the powerful Finance Commission and Natural Resource Commission. He concludes that the success of a federal system mainly depends on the efficient delivery of public services like education, health, infrastructures, security and more on regionally better balanced economic growth.

LBFC (2011) studied on current practices in the revenue assignment pillar of fiscal decentralization in Nepal. The main aim of the study was to build up the future policy on revenue assignment, revenue sharing and intergovernmental grants policies under the proposed three tiers governance-federal, provincial and local as proposed by the Constituent Assembly. The field level data was collected from 6 DDCs, 5 Municipalities and 12 VDCs as a representative sample by covering all ecological (Mountain, Hill and Terai) as well as all development regions (Eastern, Middle, Western, Mid-Western and Far-Western) of the country. The figure of revenue, expenditure, grants and borrowing for last three fiscal years (2007-08 to 2009-10) of the studied LBs were collected and the average was calculated.

The DDC’s most important source of revenue is the local tax and it occupies 56.4 percent of its total internal revenue. The DDC’s own source of revenue is 20 percent of its total revenue. The natural resource utilization taxes assigned to the DDC is overlaps with the jurisdiction of Ministry of Forests and Environment of the centre. The main sources of revenue of the municipalities are taxes (41.31 percent), and fees and fines (40.71 percent) of its internal revenue. The own source of revenue and expenditure ratio is 46 percent in the municipalities. The revenue assigned to municipalities is compatible with the theories of assigning taxes and charges to the local government, but not adequately linked with the expenditure assignment. The revenue assignment to VDC is clear in terms of what they are required to exercise. The DDC’s natural resources tax and the VDC’s natural resource utilization function are overlapping. The great source of revenue for the VDC is taxes and
it occupies 46.98 percent of the total internal revenue. The amount of its own source of revenue is only 12.20 percent of the total revenue. This shows that the VDCs are not utilizing their own source of revenue. So, they are not able to spend on most of the devolved sectors.

The overall data of the LBs shows that the central grant occupies 85 percent of their total expenditure in Nepal. It seems that the grants were allocated to the LBs on the basis of efficiency, adequacy, predictability and equity. However, the grants were increased without assessing their capacity of service delivery. The borrowing right to the LBs is very limited. The legal provisions are essentially adequate to allow for the local level borrowing. However, the DDCs and VDCs have limited abilities to borrow due to inadequate source of own revenue, lack of credit worthiness and financial records. Finally, it suggested that the revenue status of the LBs in Nepal is very weak. The revenue transition management plan as a part of the national transition management plan should be implemented for matching the national interest of federalization in Nepal.

2.4. Literature on Poverty in Nepal and Elsewhere

In this section we will present the poverty related studies associated with Nepal and other parts of the world. Some of the important studies in this regard are stated below.

ADB (2002) highlighted the issue on poverty by policy reduction strategy paper for the fiscal assistance to the government of Nepal. It analysed the causes and nature of poverty in Nepal especially highlighting poverty as a matter of social exclusion. For socially excluded groups, their poverty would be reduced by the infrastructural development with social mobilization awareness programmes for them. Such programmes in Nepal should be specially focussed on the oppressed castes (dalits), indigenous ethnic groups (janajatis), landless settlers (sukumbasis) and agricultural indentured labourers (kamaiyas) for the inclusionary development too. It concludes that the centrally driven programmes fail to address the multifaceted problems faced by the targeted groups. The main concerns are the lack of transparency, inadequate supervision and ineffective monitoring of the poverty reduction programmes in Nepal.

IDA and IMF (2003) jointly submitted the Poverty Reduction Strategy Paper (PRSP) to its member countries including Nepal. It has been prepared on the basis of an extensive
participation of the public sector and civil society. The paper is based on 38 percent head count poverty ratio (consumption based) which is obtained by simulation, not by field survey. The PRSP is widely acknowledged and the tenth five year plan (2002 to 2007) of the country was formulated within this paper framework. This paper also supports the causes of poverty in Nepal notably social exclusion, institutional weakness, failure of public service delivery and the causes of the Maoist insurgency too. It has highlighted that the Maoist insurgency is, in part, a reflection of inefficiency and corruption in the public sector and large persistent inequalities. It has recommended for developing a fiscal decentralization framework and holding the local governments accountable to service delivery so as to reduce poverty.

Acharya (2004) examined poverty in Nepal during the period of 1977 to 1997. Human and income poverty indices were estimated using UNDP and World Bank methods respectively. Head count ratio, poverty gap, severity of poverty and Gini indices for the years 1976-77, 1984-85 and 1996-97 were estimated by using POVCAL of the World Bank. According to this study, human poverty in Nepal is of some distinct features. So, for the estimation of human poverty, it required a minor modification of UNDP approach and proposed a human poverty index for Nepal (HPI-N). This study also computed the labour productivity index in agriculture, industry and service sectors for the period 1981-82 to 2001-02. The study revealed that human poverty in Nepal is more widening, deep and jig-jagged. However, income poverty was reduced during the period 1976-77 to 1984-85, and then increased afterwards. The study explored the causes and nature of poverty in Nepal. The economic, demographic, geographical and political origins are the main causes of poverty. The study concludes that income poverty is more volatile than human poverty in Nepal. The people of remote areas and occupational castes (Damai, Kami, Sarki) are poorer than the people of other castes and occupations.

CBS, WFP and WB (2006) jointly estimated the poverty calorie intake and malnutrition of Nepal by using small area estimation (SAE) method. The study defined the poverty as a cost of basic needs (CBN) and is measured in terms of per capita expenditure. In CBN approach of measuring poverty, the poverty line has been calculated to represent the level of per capita expenditure required to meet the basic needs of the members of a household, including food and non-food consumption. The prices vary among the geographical areas; poverty line can be calculated separately for different regions for which price information
is available. After that the per capita consumption in regional prices is converted to real per capita expenditure, and then a single poverty line applicable across the country is drawn. To calculate the poverty for 2003-04, the national poverty line has been calculated as NPR 7696 per year, in average 2003 Nepali rupees value. The population below national poverty line has been calculated by SAE method is 33.5 percent, where as the estimation done on the basis of Nepal Living Standard Survey 2003-04 (NLSS II) is 30.8 percent. Using this method, the poverty of districts, sub-districts (Ilakas), municipalities and VDCs have been estimated.

CBS (2006) performed an assessment of poverty in the period 1995-96 to 2003-04 as a joint endeavour with the World Bank, Department for International Development (DFID) and Asian Development Bank. By using the data set of Nepal Living Standard Survey 1995-96 (NLSS I) and Nepal Living Standard Survey 2003-04 (NLSS II) it overviewed growth and poverty, inequality and exclusion, employment and wages and the income source of the poor, impact on migration and remittances, potential of the agriculture sector, financial and physical infrastructure and education, and health and human capital with MDGs. There is a significant achievement in economic and human development in the study period showed that the incidence of poverty fell from 41.8 to 31.9 percent. This decline in poverty was driven by increases in remittances, higher agricultural wages, increased connectivity, urbanization and a decline in dependency ratio. The more important thing is that the achievement took place in a politically difficult and conflict-ridden environment. It recommended that to sustain this achievement, Nepal needs to resolve the political settlement and go with reform agenda. If the Maoist problem is not resolved it will threat the achievement on reducing poverty.

Maharjan and Joshi (2009) examined the income and consumption measures of poverty of Baitadi district, from rural Far-Western Hills of Nepal. The study is based on the NLSS II data set. Purposively selected 116 households through stratified random sampling in two village development committees, namely, Melauli and Patan of the district were used for the study. These VDCs are relatively remote villages devoid of transportation, communication, market, and other developmental services. The assessment was done separately for both income and consumption-poverty analyses using the measure of incidence, depth and severity of poverty. They found that education, occupation, gender of household head, and family size are the most important factors that affect income-poverty
as well as consumption-poverty (food insecurity). The caste and landholding size has a significant effect on food insecurity. The households with illiterate heads, heads engaged in labouring, female-heads, larger family sizes, occupational caste households, and small holding were suffering from both poverty types to a greater extent. The income-poverty measure shows the higher incidence, gap, and severity of poverty compared to food insecurity for all the variables considered for the study. The consumption poverty is very relevant to the case where the estimation of location specific income-poverty line demands an extra cost and efforts in Nepal.

Gaihre (2010) measured poverty of Nepal of the years 1995-96, 2003-04 and 2008-09. He elaborated also the technique of estimation of poverty in the absence of living standard survey. Since the survey is expensive in terms of time, money and human resources. The indirect technique with preceding Living Standard Measurement Survey (LSMS) and current comparative household survey could be done on borrowing strength from LSMS survey to the recent larger sample survey available. The poverty estimates derived from the indirect technique is formed acceptably small standard errors with the help of 100 simulation predictions. The poverty line was derived on the consumption expenditure of Cost of Basic Needs (CBN) approach. The derivation of poverty line comprises the food and non-food (including housing) poverty line where the food poverty line was based on basic caloric requirement of 2,124 kcal per capita per day. The poverty line was NPR 5,089 per person per year in 1995-96. This requirement was changed to 2,144 kcal per capita per day in Nepal Living Standards Survey 2003-04. The poverty line was updated by keeping the same benchmark of 1995-96 and adjusted national poverty line as NPR 7,696 per person per year for 2003-04. As a result, the prevalence of poverty is estimated 42 and 31 percent for the year 1995-96 and 2003-04 respectively.

Poverty and income inequality were estimated also by Gaihre (2010) applying indirect technique using Nepal Labour Force Survey 2008-09 (NLFS) and Nepal Living Standards Survey 2003-04 (NLSS II) dataset. The regression function was used to borrow the strength of NLSS II to NLFS with the help of common variables in those surveys to get a sense of the variables are capturing the same thing. The national poverty line and per capita consumption was taken as of 2003-04. The consumption modeling, household error modeling and simulation with bootstrapping procedures were applied. The poverty estimates of Nepal for 2008-09 remains at 25 percent with an annual fall of 2.4 percent
since the year 2003-04. However, the Gini Coefficient has increased from 0.41 to 0.46. The causes of jump down poverty during 2003-04 to 2008-09 might have been the increase in literacy, improve in housing amenities, flows of cash through remittance income from foreign service, farming offseason cash crops and employment in tourism sector.

Yameogo (2011) estimated poverty in Burkina Faso using cost of basic needs (CBN) method which method followed by other developing countries to measure poverty in the world. In this method, the technical choices that have been made in the elaboration of the poverty line, namely the composition of the food basket and the daily caloric needs were the subject of simulations. These simulations were made on the basis of information collected from representative sample of 8,500 households by Burkinabe survey on households living conditions 2003 and the general census of the populations and housing 1996, in order to test the sensibility of the line of poverty. The poverty line was estimated at 82,672 Burkinabe currencies per capita and per year in 2003. The result of the households’ expenses showed that the poverty incidence is 46.4 percent, denotes that 46.4 percent of the Burkinabe was poor. Among the total rural population of the country 52.3 percent were poor, whereas, 19.9 percent among the total urban Burkinabe were poor. The result corroborates that poverty is basically a rural phenomenon in underdeveloped countries. But the overall value of Gini coefficient of the country was 0.459, with indicating 0.401 for rural and 0.491 for urban area respectively shows that the inequalities in wealth are much higher in urban than in rural areas in Burkina Faso.

Acharya and Leon-Gonzalez (2012) put forth their argument in favour of careful approach towards the impact of remittance on poverty in Nepal. They used national living standard survey 1995-96 (NLSS I) and national living standard survey 2003-04 (NLSS II) dataset to estimate a household consumption function and estimated the impacts of remittance on poverty and inequality in Nepal. The unobserved effect model has been used. The study found that remittance has conditional impacts on both poverty and consumption inequality. Based on the national level poverty line and the remittance-dummy model, the effect of remittance on poverty incidence, poverty gap and squared poverty gap are about two-third larger in the year 2003-04 than the same of 1995-96 are found. The reason behind this result is the sharp increase in migration in all classes and especially to the increase in the proportion of migration in poor households. On the other hand, while
remittance-amount model was used, the highest impact was observed on squared poverty gap and the lowest on the incidence of poverty. The region-wise simulations showed that remittance has major impacts on poverty reduction in the regions that have higher levels of migration.

Furthermore, the remittances obtained from different sources have different effects on economic inequality. The remittance payment from India, which is much lesser in an average comparatively than the remittance acquired from the other countries, decreases economic inequality and has the major impact on poverty reduction in Nepal. This is due to the larger involvement of the poor in the Nepal-India migration course. The study furthermore shows that in the absence of domestic remittance the inequality would decrease in 1995-96 but not in 2003-04. However, in the absence of foreign remittance inequality would increase in both time periods.

2.5. Studies on Municipal Level Fiscal Decentralization

Grewal (1974) attempted to describe the essential features of fiscal federalism in India. The study described in detail on the formal and informal arrangement patterns of the local financial system. It examined the intergovernmental fiscal transfer, taxes and loan system of the federal India. The study indicated that after 1969 the organizational structure of present fiscal federalism in India is inefficient and irrational. As a result, heavy amount of resources are leftovers. On the other hand, the local governments are financially very weak to perform their day to day functions. The vertical fiscal imbalance and horizontal fiscal imbalance has been found by the lack of resources. So, the intergovernmental relationship is weaker in India. The study recommended to narrow down the fiscal gap of the local governments and to make assure for the resources. The organizational structure of the fiscal federal system should be restructured so as to promote the functions and efficient service delivery, especially in the local level.

Bahl and Linn (1992) argued that the issue of fiscal autonomy is vital even under highly centralized political system. Although the degree of autonomy varies within a country. The practice of the local governments in Kenya, China and the Philippines show that more fiscal autonomy has to be given to the municipalities than the rural local governments. The main role of the urban local government is to develop urban economy and to look after the living condition of urban populace. The common function of these governments are
abattoirs, fire protection, street cleaning, garbage collection, dumping site maintenance, lighting, cemeteries, libraries and minor disease prevention services. They have also full or partial responsibility for the physical infrastructure construction and maintenance. These include maintenance of streets, portable water supply, sewerage and drainage. In underdeveloped countries, primary and basic education services are frequently managed by the urban local government. However, basic health care and welfare services are rarely under the same.

Further Bahl and Linn (1992) pointed out the financing pattern of urban local governments. Revenue of the urban local government is of two types: local and external. Again local revenue is classified into three categories as pointed below.

1. Locally collected taxes.
2. User charges and benefit charges.
3. Locally raised revenue such as license fees, penalties, stamp duties and the like.

Similarly, the external sources of financing are transfers (grants and shared taxes) from the superior level of the government and by borrowing. The main objectives of local resource mobilization in developing countries are as follows.

1. To pull together and take what is known about the subject of urban public finance in developing countries.
2. To identify and analyze the problems of urban finance in developing countries.
3. To evaluate options for policy and reforms.

The study concludes that the urban local governments in developing countries regularly suffer from inappropriate allocation of resources, inefficient revenue system, weak public service delivery and dysfunctional governance system. The correction of mismatch between their responsibility to deliver the public services and the revenue assignment to them is attainable by assuring fiscal and managerial autonomy to the local urban governments in developing countries.

Mathur (1998) performed a comparative study on municipal revenue mobilization among the octroi states (Gujarat, Maharashtra and Punjab) and the non-octroi states (Andhra Pradesh, Assam and West Bengal) in India. He found that the volume of 65 percent to 85 percent of the states’ own revenue have been occupied by taxes and the remaining from non-tax sources. The share of taxes in own revenue is higher in octroi states as compared
to the same in non-octroi states. In the octroi state Gujarat, the own source of revenue of the municipalities are more than sufficient to meet their expenditure, so they able to create some surpluses. Likewise, the property tax is an important tax source of revenue for the municipalities of non-octroi states. The municipalities of both kinds of the state collect non tax revenue as user charges, licence fee, levies, other charges and income from municipal assets and investments.

However, there is significant gap between revenue and expenditure in the municipalities in India. The dependency on the state transfers as a grant in aid for the construction of municipal infrastructure and services are considerably seem higher in non-octroi states as compared to that of the octroi states. The study concluded that the assignment of local based tax is desirable because it is integrated with the local autonomy and an independent revenue source.

MuAN (2001) assessed the capacity building regarding to municipal resource mobilization in the Nepalese municipalities. The paper covered the common scenarios of all the municipalities regarding resource mobilization. The LSGA abolished octroi, the major single source of municipalities, but it is yet to be assured that the municipalities can mobilize their own source revenue in a sustainable way by using their taxing powers. It is obvious that the power to tax is essential for promoting sustainable and accountable local government. As stated the freedom of the municipality varies to the tax rates which strengthen the accountability as taxpayers can challenge municipalities about the cost of service provision. The revenue sharing between the central government and the municipalities should be defined inadequately. Only few high yielding sources of revenue could be assigned to the municipalities without creating national economic distortions. The study recommended that the central government should increase the local government share from nationally collected taxes through automatic revenue sharing schemes. Similarly grants are loosely linked with their respective purposes. So the grants should be designed as an incentive by linking it with the level of local tax effort.

In the case of expenditure assignment, the study pointed that the major expenditure responsibilities are being transferred to the municipalities as an effort of improving weaker delivery service. The access of the municipalities to the government and town development fund (TDF) for investment to the project is not encouraging by borrowing. The accounting system of the municipalities is based on cash accounting. The study
suggests for implementing financial improvement plan (FIP) module for positive change in revenue mobilization, expenditure planning, municipal asset management and institutional capacity building of the local governments. Revenue improvement action plan (RIAP) could be most desired and powerful package, which could really help the municipalities to stand them as financially autonomous local government. Financial improvement planning in the local government should be taken as a part of overall organizational reform and development process.

Khadka (2002) urged the municipalities in Nepal represent the local government in urban area of the country. The demand for public services is higher in urban areas due to the migrating rural people to the urban areas. The municipalities are in the position to administer their local dealings including the execution of fiscal affairs. The economic activities are concentrated in urban areas which directly allied for potential tax base. Hence the performances of municipalities are better in comparison to the rural local bodies in Nepal. On the basis of LSGA and LSGR, the municipalities have been executing taxes and non-taxes for the revenue. The tax includes land revenue, terrain tariff, integrated property tax, rent tax, professional tax, vehicle tax, entertainment tax, commercial video tax, advertisement tax and residence tax. The non-tax comprises user charges, regulatory fees, rental income and income from the sales of local resources. The municipal revenue system have been followed the cannons of taxation. The major cannons they have been followed are resource allocation, accountability, autonomy, non-mobile tax base, non-exportability, balance of local interest, responsiveness to local economic growth and revenue stability. Furthermore, the municipalities get grants from the Nepal government and respective District Development Committee (DDC) and loan from Town Development Fund (TDF) to carry out their functions efficiently. Despite of these strengths, the study pointed the lacking on the current municipal fiscal system. The shortcomings in the existing municipal fiscal system are lack of sustainable sources, low autonomy and accountability, unproductive organizational structure, traditional accounting system, political uncertainty, central interference and soft budget constraint are few of them. The study suggested that the local municipal government should have adequate fiscal autonomy in order to raise their revenue.

MuAN (2003) organized a study on the resource mobilization strategy of new municipality in Nepal. The study is based on newly formed Gulariya municipality of
Bardiya district, which is situated in mid-western development region of Nepal. The revenue of Gulariya municipality was mainly dependent on local taxes and grants. Local taxes occupied 37 percent to 69 percent of the total revenue sources. The study highlights the weaknesses and opportunities of new municipalities regarding to their revenue mobilization system. The limited resource base, higher expenditure, weak database, increasing administrative expenses, high dependency on local development fees, pathetic financial administration, lack of absorptive capacity, lack of transparency and responsibility, lack of reciprocity in between tax payers and municipality and lack of commitment in local leaders to generate revenue are the main challenges for new municipality Gulariya. Albeit, the people resides in the municipality are willing to pay taxes and service charges. They want to share cost of the services to the municipality for additional resources, is the best practices which is the lesson for other municipalities in Nepal. The study concludes with recommendation as, it needs to mobilize internal resources at the same time external resources too for making the municipality self dependent. It needs consent and commitment of all stakeholders. On the base of LSGA new taxes and charges should be implemented. It has to tie-up the taxes with services, cost based pricing, economise administrative cost and maximize capital expenses, follow participatory approach in budgeting, develop volunteerism and introduce open public hearing system in urban governance system.

Roberts and Kanaley (2006) reviewed urban finance management practice of the selected cities of Asian Countries. The study highlighted the significance of urban finance as a critical matter for urban growth and sustainable development. To obtain these achievements a heavy amount of financial resources, infrastructures, resource mobilization system are required. By ensuring fund to the urban local government and its effective use leads to better local service delivery for the urban populace. The study pointed that the revenue base of urban local governments in this continent are poor and heavily dependent on fiscal transfers from the central government. There has been centrally controlled urban financial management system in unitary governed nations, such as Indonesia, Vietnam and the Philippines. Conversely, there is greater decentralization and quite locally controlled urban finance system in federal countries, such as India and Malaysia. However, the excellent craze is most of the Asian countries are moving towards decentralized governance system. The provincial and the local governments of Asian countries are gradually having greater responsibility of financing, local development, local service
delivery and planning for local developmental works. The paper suggested for broadening the revenue base and to reform the fiscal management system of the urban local governments Asia.

Kamuzora (2006) examined the role of local entrepreneurs (who pay taxes to the local government or the municipal council) towards income poverty reduction in Tanzania. The descriptive and exploratory study is based on triangulation method. The triangulation method is a qualitative research procedure where case studies, focus group discussions (FGD) and participatory action research are used. For the sample survey, three councils namely Dodoma, Iringa and Morogoro were selected; and the officials of the government departments, the tax collectors and the entrepreneurs of the same locality were interviewed. In 1998, Tanzania decentralized more power to the autonomous Local Government Authorities (LGA) by devolution. The LGAs as the local governments use their autonomy to formulate by-laws as well as some rules that are targeting to the stakeholder in their areas of jurisdictions for participating them in economic development. Among the stakeholders, the entrepreneurs are more likely to contribute a huge amount of revenues because they create broad tax base. More taxable capacity and broad tax base increase revenue sources to the local governments. If the local governments have more revenues, they can be able to intensify service delivery then to poverty reduction. Next, Tanzania followed liberalised market system; as a result the invisible hands like the local entrepreneurs might play a big role in the development of the country. On the basis of these realizations the study was conducted.

However, the study found unmatched result than the abovementioned realizations. The municipal council did not address clearly the role of the local entrepreneurs in the local government; however, it showed the decentralization process left out entrepreneurs’ participation. Hence there was a missing link between the entrepreneurs, the tax collectors and the LGAs’ leaders. So, the high rate and broad based tax was unwilling in the municipal councils. Finally, there was requiring democratic local governance in Tanzania for the entrepreneurs where entrepreneurs are willing to participate in the entire economic development through their respective councils.

Shah (2006) performed a comparative study on the roles, responsibilities and fiscal situation of the local governments of selected developed and developing countries. He
pointed the local governments in developing countries typically follow the old model of local governance and simply provide a narrow range of local services. On the other hand, there is multiplicity role of the local government and relationship between the local and the central governments in the industrialized countries could be varied. For example, in Nordic countries, the local government serves as the primary agent of the people, whereas in Australia, the role of local government has nominal in local affairs. The major revenue sources of the local government in industrial countries are local income taxes, property taxes and fees, on the contrary, the same of the developing countries mainly depend on higher level transfers having nominal taxes, fees and charges. The local governments in China are responsible for social security and they have larger role in local economic development. The local expenditure is mainly for basic health and education in developing countries like Argentina, Brazil, Chile, Indonesia, Kazakhstan, Poland and Uganda. The local governments have constitutional status; therefore, they have the benefit of autonomy in taxing, spending and regulatory functions in industrially developed countries. Next side, the same have low autonomy, created by executive order of the central government or by the national legislation or by the provincial legislation in developing countries. However, the local governments have constitutional status in some developing countries like India, Brazil, Chile, South Africa and Uganda. The study recommended for obeying formula-based transferring approach for general purpose grants to the local governments. It also suggested that the local governments of developing countries should play a network facilitator role to enrich the quality of life of the local residents and the nation as well. The revenue base of the local government should be broadened. The local governments’ status should be guaranteed constitutionally so that they would be responsible to deliver better service in the local level with high accountability.

MoLD and UDLE (2007) stated that municipalities of Nepal have been devolved authority on collect taxes, fees, service charges, property rental and others as internal (own source) revenue. The amount of own source of revenue vary from the municipality to municipality. Only the overall local development fee (now it has been abolished) had covered 34 percent of the total revenue of the municipalities in the year 2005-06. The grant provided by the central government, loan and assistance by national agencies and international institutions counts 24.6 percent of the total municipal revenue in the year 2005-06. On the other hand, current expenditure of the municipality was increased by 3.94 percent per annum but capital expenditure was decreased by 26.66 percent annually. The
A critical fact is that some of the municipalities have utilized development grants even to meet their day to day regular expenditure.

In the study, MoLD and UDLE (2007) further remarked that the current municipal financial condition needs changes in Nepal. It requires exploring the possible and sustainable revenue sources to cope up with the financial pressure. Further, it needs to start the dialogue for the optimum resource utilization with the local stakeholders; like local businessman, local Chamber of Industries and Federation of Nepalese Chamber of Commerce and Industries.

MuAN (2007) indicated the most common needs of the municipalities in Nepal. An opinion survey was conducted to assess the common needs of the municipalities. The major common needs were financial support or fund, the construction and management of land field site for waste management, land for infrastructure development like bus-park, office building and modern means of communication and transportation were in the top priority. The survey also reveals that municipalities itself can develop and strengthen their resource base through the promotion of domestic and international tourism. At the end, the study highlights the resource constraint as the major needs and is a challenge to the municipalities in Nepal.

Nallathiga (2008) assessed the municipal public finance of the selected countries in the world. His determination is that the municipal governments in India became weak and are not able to fulfil the needs and aspirations of the local people. The 73rd and 74th Amendment of Indian Constitution in 1992 made the provision for ensuring local self governance through empowering local bodies. It is a significant landmark initiative at strengthening the local self governance system in India. There is explicit review on the local governments’ revenue source and its trend in Organisation for Economic Co-operation and Development (OECD) countries and India as well. Property tax is major local tax in Australia, Canada, Ireland, New Zealand, the United Kingdom and the United States. The local governments of Canada and the United Kingdom are more dependent on intergovernmental transfers. On the other hand, local income tax is the main source in Australia, Belgium, Luxemburg, Switzerland, Norway, Sweden, Denmark, Finland and Japan. Balanced local tax structure is in France, Spain Portugal and Italy. The property tax is a stable source of income in Australia, Canada and the United States. There is greater
importance of grants as a source of municipal revenue of all the OECD countries which covers 32 percent to 39 percent of the total revenue. In the case of India, municipal revenue includes taxes, shared revenues, fees and charges, loan, grants and nongovernment sources. The state governments of India provide grants and loans to the local bodies for the specific functions only. However, the Indian states also give equalizing grants to attempt fiscal imbalance between rich and poor municipalities.

The study depicts that there is a noticeable trend in OECD countries towards effective utilization of user charges and benefit taxes in the municipalities. The study refers to obey OECD practice on local finance for India. The study concludes that municipal revenue and expenditure are very small in amount (about 0.5 percent) comparing to western countries. The buoyant tax, for example the octroi, is smaller in amount in overall Indian urban local bodies. Therefore, the buoyant source of revenues should be preferred for the local bodies.

Tanzi (2008) put forth his argument in favour of careful approach on decentralization. He mentioned that the years between the end of World War II and 1950 were the “golden age” of the world federalist movement. He further added that the existence of federal nations, the economic justifications for fiscal federalism or decentralized arrangements provided by economists in recent decades were frequently based on the historical arrangements of the countries. When the countries are very large, for example, Russia, China, Brazil, India, Canada, Australia and the United States; the economy of the state or the local governments tends to be very large. Generally, the size imposes federal arrangements. The historical fact is that the big cities are often as independent political entities for thousands of years. The capital cities have always had some degree of economic or fiscal independence than the regions or provinces. Thus, they have always had some particular and traditional city-specific roles and responsibilities. These responsibilities were important for the protecting local people from enemies.

Later, when the municipalities became a part of the national entities, the above mentioned protective accountability was changed and became as the local government. The new functions were of an allocative and some of were redistributive kind. The allocative functions of municipalities included garbage collection, street cleaning, street lighting, sewerage, drinking water, municipal roads, regulation and control of local traffic. Some other more allocative functions are local economic activities, certification and licensing,
fiscal agency functions, maintaining rule and regulations, basic health services and the promotion of local, cultural celebrations. In addition to the above, there were redistributive nature related functions for the welfare of specific persons or families; such as the provision of public housing, rent controls and similar functions. The redistributive responsibilities were also to the combined duty with religious and charitable organizations. The municipalities had always conceded some tasks for the very poor including the senior citizens. The municipalities had better information on the immediate needs of individuals as compared to the national governments. Municipal officials were nearer to the persons in need at a time when travel was difficult and communications were limited. Historically, the municipalities competed with themselves in a variety of activities. Certainly the richer cities could provide better services than the poorer cities which created movements of poor people from one town to another town for lower cost public services. Tanzi (2008) called this epoch as a period of fiscal centralization rather than fiscal decentralization. After the late 1970s, the school of public choice has been developed. In the growing scepticism, the privatization movement was started in 1980s in the United Kingdom, then fiscal decentralization movement was started after 1990s. In conclusion, the municipality in the history is the base of fiscal decentralization. Tanzi’s reconsideration predicted that, the importance of municipalities would grow in the future world by means of global arrangements, with the passing over time.

Baral (2008) attempted to analyze the centre dominated fiscal decentralization effort in the municipalities of Nepal. Decentralization efforts of Nepal remained incomplete even after 9 years of the implementation of LSGA. The financial condition of the Nepalese local governments, particularly the small and newly formed (young) municipalities is vulnerable. The resources of these municipalities from local development fund (LDF) are going to shrink into a big amount in the near future as per the agreement of Nepal in World Trade Organization (WTO). However, there is no plan for substitution has been prescribed or recommended for it. It is argued that the proper execution of property based tax could substitute the LDF but there are many concerns and numerous barriers with such tax system. Since, it has limited scope to improve the financial wellbeing of those municipalities. The main obstacles are tax culture of the local people, weak institutional capabilities, absence of proper database, untrained human resource and uncontrolled corruption. The municipalities are free to get loan from credit market as per the LSGA, despite the fact that, there are very rare cases of getting such burrowing. The study
emphasized to reform the regulatory framework for borrowing. Considering good practices, the studies recommended to follow public private partnership (PPP) and built operate and transfer (BOT) models in the possible sectors for providing municipal services. The study concludes that, the municipalities of the western part of the country are relatively weaker to deliver basic urban services having low infrastructure, heavily influenced by urban poverty and are intensely polluted. Finally, there is still hope to have distinct comparative and competitive advantages for the municipalities by redesigning the state and its governance system.

LBFC (2009) empirically examined revenue and expenditure pattern of the municipalities in Nepal using five years panel data in the period 2002-03 to 2006-07. The average internal revenue (including local development fee-LDF) to the total revenue of all municipalities is 66.17 percent. The total contribution of LDF to the total internal revenue is 53.70 percent. The actual revenue without LDF is 12.47 percent only. The municipalities in Nepal have been receiving LDF from the central government as compensation after abolition octroi tax which shows that the municipalities are more dependent on LDF or central grants. However, with the entering World Trade Organization (WTO) arena as a member, Nepal has committed to omit the LDF within 2011 completely. The study pointed that it is very urgent to seek alternative sources of revenue for the municipalities instead of relying on LDF. Likewise, in an average 30.44 percent of the municipal budget has been spent on recurrent activities and 41.25 percent of the same in capital investment. The regression analysis of the study showed that the total revenue as a predictor for total expenditure is positive and statistically significant.

The study advised to seek the alternative means of LDF immediately. Some of the municipalities are excessively dependent on grants and they have not taken step towards mobilizing their vast potential resources. So, the excessive dependency on grants should be gradually minimized to these municipalities by exploring better and effective alternatives for them. The LSGA has devolved the full power to impose tax, but the municipalities did not use it perfectly. The study suggested that the specific guidelines are required to promote for imposing the viable taxes. The database of the municipality is a significant tool for revenue administration. Therefore, it is necessary to develop a system maintaining revenue related data and the Revenue Advisory Committee of the municipality must be mobilized.
Bahl, Sethi and Wallace (2009) evaluated the fiscal performance of the rural governments in West Bengal (WB), India. Comprehensive review has been done to evaluate the intergovernmental finance structure in the state. The rural governments or Panchayat Raj Institutions (PRIs) are the important part for implementing poverty alleviation programmes in the state. However, there is no accurate official record of fiscal activities of PRIs in the state. Therefore, the study is compelled to base on primary data collection through field survey. The Gram Panchayat (GP) has some taxing powers however; the blocks and the districts have not. In WB, 72 percent of the state population reside in rural areas although the rural local governments managed less than 17 percent of the state government expenditure. The GPs are “under-assigned” expenditure responsibilities which affects service delivery and the quality of life of the people of their jurisdictions. The Block governments are more occupied in delivering social services than are either districts or GPs. There is a large variation among the GPs in per capita spending levels. The GPs derived only about 6 percent of the total revenue from their own sources. It reveals the GPs are heavily dependent on the State government to get fiscal resources. About 94 percent of the total revenue of the GPs is obtained from grants and transfers. The state grant is mainly expense in salaries. The local governments have little discretion in terms of spending those grants.

The OLS regression estimation was carried out on the data obtained from more than 2000 GPs. The result shows that the spending levels of smaller local governments are greater and the effect of expenditure on poverty to the scheduled caste/scheduled tribe population is higher. The literacy rate is significant variable for higher levels revenue mobilization. The study recommended to apply formula based grants system. Furthermore, the study advised for preparing and implementing revenue sharing mechanism immediately. The expenditure assignment should be a priority reform concern for the state government and for the State Finance Commission. More fiscal autonomy should be given to the local governments by means of reforming the structure of local governments.

2.6. Study on Poverty Reduction through Fiscal Decentralization

This section reports about the studies on poverty reduction through fiscal decentralization. In this study, our main aim is to find out the linkage of these two concepts. Some of the important studies in this regard are stated below.
Bird, Litvack and Rao (1995) examined the key issues of intergovernmental fiscal relations in Vietnam’s poverty alleviation strategy. Decentralization has been viewed by donors, the governments and academics as one of the most important and appropriate strategies that will reduce the levels of deprivation and vulnerability of the poor. There are three ways, namely, broad based growth, economic development and safety nets in which decentralization is linked to poverty reduction. Since the poorer provinces are less able to mobilize additional local revenue to support services than the richer provinces, well designed fiscal transfers are needed for local spending in the poorer areas. It concludes that the central government must ensure capacity improving and a minimum social safety net in the country by designing intergovernmental transfer, which accordingly could enhance to reduce local poverty in Vietnam.

von Braun and Grote (2000) discussed the three basic types of decentralization—political, administrative and fiscal are interlinked and their effects for poverty reduction cannot be evaluated separately. This study analyzed the issues of (de-)centralization for the poor for four countries, namely China, India, Egypt and Ghana. The findings are mentioned below.

1. Political decentralization often benefits the poor.
2. Administrative decentralization alone does not add power and voice to the poor.
3. Fiscal decentralization shows even more ambivalent effects for poverty reduction.

Therefore, political and administrative decentralization should precede fiscal decentralization. Otherwise participation and accountability are not assured. The study suggests that political decentralization has indeed substantial and positive effects on the livelihood of the poor. Still some indications suggested that smaller units, for instance smaller countries can do better in terms of poverty reduction.

Bossuyt and Gould (2000) studied the linkage between decentralization and poverty reduction in three cases, namely, Ethiopia, Guinea and Mozambique focusing on the issue “contribution of decentralization to poverty reduction”. The study suggests that there are good reasons for such an explicit linkage. First, it agrees that poverty is closely linked to political factors such as access to power and resources and the accountable and transparent management of local affairs. A genuine devolution of resources and authority can create openings for local communities, traditional leaders, private sector operators and NGOs
become more fully involved in the local development process, and it leads to poverty reduction. In other words, a democratically-controlled local governance system is a precondition for poverty reduction. Second, much development potential remains dormant at the local level. An efficient local government can play a role as a catalyst and coordinator for using this potentiality. As such, poverty reduction by decentralization is the combined strategies of political empowerment, resource mobilization and enhanced service delivery in a coherent and balanced mix.

Vijayanand (2001) assessed the ongoing decentralization initiatives and its impact on poverty in Kerala, India. The special feature of Keralian decentralization experiment is clarity in vision. The state has moved ahead at a good pace with the transfer of functions and responsibilities with the authority to carry them out along with the human and financial resources. For better results, Kerala chose the participatory local level planning, known as the “people’s planning campaign”, which sets the agenda to guide along the right path. The experience of the first few years after decentralization has provided the basic minimum needs like housing, water supply, sanitation, connectivity and social security like pension. The experimental, pilot project on the anti-poverty programme of Mallapuram (a backward district in the state) was taken for the case study. The conclusion of the study is that in decentralization initiative, every step should be made in the process; every policy decision should be designed and every procedure should be prescribed and the attempts should be geared to the translation of the vision into practice. Then, poverty could be alleviating.

Gunatilaka (2001) assessed the implication of fiscal decentralization on reducing rural poverty through rural infrastructure, health and educational programmes in Sri Lanka. In the country, both public and non-government (NGO) sectors had been involved in implementing rural development programmes. The NGOs were engaged in social mobilization and microfinance programmes where the government works as the key player in rural infrastructure development programmes through its deconcentrated line ministries and statutory authorities of the central government. After devolution of power to Provincial Council in the year 1987, by thirteenth amendment of the constitution, the unitary state was transformed to the quasi-federal structure of the government. Then power and responsibilities relating to rural development were shared between the centre and provinces. It created overlaps of functions and lack of coordination, and this power sharing
was criticized since the province appears as a parallel structure to the centre. However, the local governments were responsible for providing the services such as rural access roads, market and garbage disposal. Nevertheless, the efficiency in providing services of the sub-national government depends on the capacities, accountabilities and transparencies in their functioning styles. It is obvious that the service of the local government mainly depends on its resource. After fiscal decentralization, there is an assurance of intergovernmental fiscal transfer help to fulfil the targeted resources. Thus the local governments are able to implement the pro-poor projects in disadvantaged areas within their jurisdiction. However, the lower quality services in rural areas and local elite capture in decision making process in some exceptional cases. The Sri Lankan experience of decentralization is a successful attempt to reduce poverty in rural areas. On the other hand, there is really a challenge to transfer the resource to the poor class due to heterogeneity in communities, complementary resource among the poor themselves, quasi-public nature of infrastructure assets, unequal power relation between the poor and local elites in the decision making process that exists in the under developed countries like Sri Lanka. Finally, the paper suggests that the formal theory of fiscal decentralization and poverty is still in primitive stage. So, further studies of the same in other countries and cross countries are essential to be conducted for clarifying the idea.

ICHRP (2002) theoretically attempted to link the concepts decentralization and poverty reduction. The study explored both sides (for and against) of decentralization as a policy and strategy in the poverty reduction process. Decentralization is viable to reduce poverty, because of a number of reasons. The reasons are outlined as follows.

1. Decentralization provides better opportunities for local residents to participate in decision-making.
2. It increases efficiency in delivery of public services, delegation of responsibility and avoids bottlenecks and bureaucracy.
3. It provides chances for poor households to participate in local institutions, and their concerns are recognized.
4. It leads to higher quality of public services because of local accountability and sensitivity to local needs.
5. It enhances social and economic developments which rely on local knowledge.
(6) It increases transparency, accountability, and the response-capacity of government institutions.

(7) It allows greater political representation for diverse political, ethnic, religious, and economic groups in decision-making.

(8) It increases political stability and national unity by allowing citizens to better control public programs at the local level.

On the contrary, the study highlights some intrinsic weaknesses of decentralization in the poverty reduction programmes. These weaknesses are stated below.

1. Decentralization undermines democracy by empowering the local elites, beyond the reach or concern of the central government.
2. It worsens service delivery in the absence of effective controls and oversight.
3. It biases poor at the state level.
4. It deteriorates the quality of services due to the lack of local capacity and insufficient funds.
5. It can offset the gains arising by corruption and inequalities among the regions.
6. It promises too much and overloads capacity of the local governments.
7. It creates new tensions or ignites dormant ethnic and religious rivalries.
8. It can weaken the states by increasing regional inequalities which leads to separatism or undermines national financial governance.

Theoretically, pros and cons of decentralization are lucidly presented in ICHRП (2002). We have got the thought to link decentralization and poverty from the ICHRП (2002) writing.

Vedeld (2003) explored the conditions under which the particular form of decentralization (democratic decentralization) is initiated and enabled to the extent that it promotes poverty reduction. The evidence reviewed relatively successful case studies from good practice countries in which some degree of poverty reduction has been observed by participation and accountability of the authorities. The case studies were done in India (namely West Bengal, Kerala, Karnataka and Madhya Pradesh), the Philippines, Brazil, Argentina, Bolivia, South Africa, Mali and Uganda. The qualitative assessment showed that the decentralization has a positive impact on empowerment, responsiveness, social capacity, human capability and economic gains for the women and disadvantaged groups by which
social inequality is reduced. On the other hand, decentralization can work against poverty reduction due to the local elite capture and corruption. To minimize these defects and for successful decentralization some minimum requirements are essential. These requirements are pointed below.

1. Strong central-state willingness to devolve power and resources,
2. A well developed civil society,
3. The organized political forces such as a party with strong social movement characteristics.

Moreover, the study is a successful attempt to investigate the issue of decentralization and poverty reduction in developing countries of different geographical locations, namely, Asia, Latin America and Sub-Saharan Africa.

Crook (2003) conducted a study on governments’ different political purposes and motives for introducing decentralization. The intentions were embodied in the structure and form of decentralization or, more subtly, were revealed in how the system functions after it is introduced. In the African cases, the “elite capture” of local power structures has been facilitated by the desire of the ruling elites to create and sustain power bases in the countryside. But South Africa is the exceptional one. The outcomes of decentralization policies are influenced by politics. The conclusion from these African cases is that decentralization has not empowered challenges to local elites who are resistant or indifferent to pro-poor policies. Thus, decentralization is unlikely to lead to more pro-poor outcomes without a serious effort to strengthen and broaden accountability mechanisms at both local and national levels.

Brixiova, Gemayel and Said (2003) examined the link between fiscal decentralization and poverty alleviation in Sudan, the largest country in Africa. The process of fiscal decentralization in Sudan started in 1995. Since then, the share of federal expenditures in total outlays was increasing at the expense of the share of the states. It has been operating a three tier (federal, state and local) federal system. The southern states of the country are highly affected by the civil war whereas the northern and eastern states are periodically hit by draughts. It is rich in natural resources like oil and gold. It is ethnically and religiously diversified. Except for a short period between 1972 and 1983, there is a widespread rural
and urban poverty. As such, Sudan is an interesting case for the study on the theme fiscal decentralization and poverty.

The study mainly focuses on trends in regional disparities in poverty and social service delivery from the perspectives of outlays on education, health and water. Despite a limited availability of data, the findings of the paper suggest that the total spending on the social sectors is still very low in Sudan. There is evidence of decentralization of spending only in health, but not in education. More crucially, decentralization has thus, not led to improve in social service delivery in Sudan. Some indicators such as infant mortality rate, malnutrition and adult illiteracy rate have improved over this period. These indicators were not changed smoothly in all states, either stagnated or even deteriorated in different states. This shows that the effect of fiscal decentralization in Sudan is mixed.

Jütting et al. (2004) conducted a survey of 19 countries. Only one-third of which revealed that decentralization actually leads to poverty reduction. In the majority of cases, decentralization had no good impact at all. Based on the result the four performance categories of decentralization’s impact on poverty were defined. These are (1) positive (2) somewhat positive (3) somewhat negative and (4) negative. Bolivia, the Philippines and India (West Bengal) are in the positive category, which indicates successful decentralization programmes with a significant positive impact on poverty. The countries China, South Africa, Mexico and Ghana are in somewhat positive category which shows relatively successful programmes with some positive impact on poverty reported. Relative failures of decentralization programmes with a very little impact on poverty reported are somewhat negative countries. These are Paraguay, Brazil, Nepal, Vietnam, Egypt, Sri Lanka, Ethiopia, Burkina Faso and Uganda. In Guinea, Malawi, India (Andhra Pradesh and Madhya Pradesh) the decentralization programmes failed and it shows negative or no overall positive impact on poverty reduction.

Iimi (2004) used the cross-country data obtained from 1997 through 2001 and empirically redressed the question of whether any forms of decentralization stimulate economic growth. The sample countries include 7 low income countries, 10 lower-middle income countries, 12 upper-middle income countries and 22 high income countries. It has been found that there is a significant positive relationship between per capita growth rate and
fiscal decentralization measured by the local share of expenditure to the total government expenditure.

Dethier (2004) reviewed the main issues arising from recent decentralization experiences around the world. The main issue of a decentralized project in the world is its designing so that it must increase the participation and empowerment of the local people. Decentralization can foster empowerment by reliance on local information for the decision making process, promotion of transparency, building the local capacity and increasing local participation. The projects that have been instrumental in reducing poverty and empowering poor people by sharing several institutional characteristics, like a good project design and good information and evaluation systems, accountable and capable local leaders, participation and involvement of the community must relate to decentralization. The study emphasized the condition that decentralization reduces poverty and it concludes that decentralization by itself is not a sufficient condition to reduce poverty.

McCarten and Vyasulu (2004) reviewed the lessons of democratic decentralization and its impact on poverty reduction in a semi-feudal state Madhya Pradesh (MP), India. Their study focuses particularly in two sectors: one is to improve access to school and the other is direct democracy promotion at the village level. After more than ten years of constitutional amendments to decentralization, the seat reservations on councils of panchayati raj institutions (PRIs- the rural local governments) have been ensured for disadvantaged sections of the society like women and scheduled caste persons. However, a downward accountability remains imperfect due to the local elite capture, lack of clear mandates, little transparency, low monitoring and high corruption. The sarpanchs (chairpersons of PRIs) were lower in qualification, so the centrally appointed secretaries were functionary. The role of local landlords, monopsonists, purchaser of crops, suppliers of agricultural credit or intermediaries dominated over ordinary village people in the decision making process. In many areas, the gram sabha (village assembly) exists on paper fulfilling the quorum by collecting signature of people from door to door. Despite this condition, the access to education was slightly increased. Though there is low participation of the poor, women and socially excluded persons. In local institutions, however, the involvement of user groups in developmental activities has increased. There are very limited power and responsibilities delegated to local institutions. No real decision
making responsibilities are assigned to the local governments. The PRIs act as an agent of the central government. Due to the lack of staff training, unclear division of functions, strong elite capture and limited resources the decentralization practice in MP has failed to reduce poverty and has been taken as the good unsuccessful example in this area of literature.

Bardhan and Mookherjee (2005) developed an analytical framework for appraising effects of delegating authority over the delivery of an antipoverty programme to local governments. This study examined the effects on accountability in government service delivery of decentralizing administration of an anti-poverty programme. The governments at both central and local levels are vulnerable to anti poor policy biases owing to political capture. The centralized delivery systems are additionally prone to bureaucratic corruption, owing to problem in monitoring bureaucratic performance. Decentralizing the delivery system promotes cost-effectiveness and improves intraregional targeting at low programme scales. However, the interregional targeting may deteriorate, as central grants to high poverty regions shrink, owing to high capture of the local governments by local elites in such regions.

Steiner (2005) concluded that decentralization plays roles in making strategies and policies for poverty eradication and derives economic and political impact channels. It shows that decentralization can only influence poverty by assigning expenditure responsibility to lower levels of government but also by assigning tax raising power to them. Steiner’s paper developed a link between decentralization and poverty reduction. It concludes by pointing out a number of possible risks such as lacking stakeholders’ commitment, low accountability, corrupt practices, elite capture and designing and implementation of the decentralization process. In the sum, even though there are some possible risks, it has been realized that there is poverty reducing potential in decentralization.

Jütting, Narayana and Corsi (2005) performed the rigorous review on peer reviewed documented literature on local governance programme of nine cases, namely Bolivia, India (Kerala, West Bengal and Madhya Pradesh), the Philippines, Ghana, South Africa, Uganda, Guinea. The main objective of their paper was to identify the determinants of the pro-poor decentralization process. Both poverty and decentralization are multifaceted concepts. Nevertheless, the linkage between these concepts might not be straight forward.
In keeping with the facts, the study motivated on two arguments, which are highly relevant to poverty reduction by the implementation of decentralization. These are as follows.

(1) Decentralization can lead to improved efficiency.
(2) It can lead to improved governance.

The achievements of decentralization to poverty outcomes of the cases were classified into four categories (the same as Jütting et al., 2004). The study concludes that the following factors are the determinants of pro-poor outcomes of decentralization policies.

Political factors
(1) Commitment.
(2) Internal policy coherence.
(3) Transparent and participative process.

Administrative factors
(1) Countering corruption.
(2) Capacity building.
(3) The role of the centre and the local.

Fiscal factors
(1) Stability of resources.
(2) Types of resources.

Important elements for successful poverty-focused decentralization in the local governments have real devolution of power and resources. On the other hand, commitment from the centre, support of the population and sound donor support could achieve and sustain the task.

UNDP (2005) developed a framework on linkages between fiscal decentralization and poverty reduction linking to the millennium development goals (MDGs). It contextualized fiscal decentralization reviewing the original experiences and practices in the case of Bangladesh, Bhutan, Nepal, Vietnam, Uganda, Mali, Senegal, Nigeria and Ethiopia. It highlights up on the general assumption that decentralization allows poor people’s voice themselves more clearly and information flows between the local policy makers and their constituents to improve accountability to the local people. It brings closer to the decision making about the provision of public goods and service delivery. It leads to pro-poor
services and outcomes, because, the local governments are best suitable to do local services and it has access to the financial resources which is essential to the local public service delivery. It quoted the “subsidiary principle” which suggests that the government functions should be assigned to the lowest level of government that is capable of efficiently undertaking the functions. On the basis of this principle, the responsibility for managing pro-poor priority sectors includes primary and secondary education, primary health care, agricultural extension, water and sanitation services, and local roads and infrastructures. In many countries, the local governments are responsible for reducing income poverty and improving food security.

Maskey (2005) explored the issue of poverty reduction through strengthening local governance in Nepal. The paper focuses on the challenges in human empowerment and security situation in Nepal. The study thoroughly reviewed the development and planning process, poverty reduction efforts, state of human development and poverty alleviating programmes of the current periodic plan of the country. The main findings as indicated by the study are stated below.

(1) Nepal is currently passing through political uncertainties.  
(2) There is economic hardship and backwardness in the country.  
(3) Economic growth rate has been drastically slowed down.  
(4) The governance quality in the centre and local is very low.  
(5) Overall quality of human resource is very poor.  
(6) Past efforts towards poverty reduction is failed due to antipoverty approaches and focusing on income and basic needs.  
(7) Poverty in Nepal is basically a rural phenomenon. Though it is in urban areas.  
(8) The disadvantaged groups (DAG) and occupational caste are poor with low occupational skills and having no land.  
(9) Agricultural sector in Nepal can’t absorb more employment.

The areas to be reformed are recommended as follows.  
(1) People empowerment approach should be forcefully adopted. For this, stress should be given to the capabilities, rights, freedoms and individual entitlements.  
(2) Emphasis should be given to rural credit for the rural poor.  
(3) Small farmers should be targeted.
(4) The linkage on rural agricultural sector and non-agricultural sector should be established.

(5) Growth and productivity of rural development and poverty reduction policy must seek to integrate.

The paper is descriptive in nature; however, it would be the ample of theoretical and practical input on the linkage of fiscal decentralization and poverty in Nepal which is the major objective of our study too.

Kandel (2006) considered decentralization as an effective tool of reducing rural poverty in Nepal with the strong support of the central government. The study is based on the expenditure pattern of 58 municipalities, 6 VDCs of Kathmandu district, 18 districts of Nepal and the central government expenditure on local development. Poverty is basically centered in rural areas, mountains, mid-western and far-western development regions of the country. The pattern of local governance in Nepal is less-poverty-alleviation friendly. The pattern of local government expenditure is, basically, not poverty alleviation oriented in terms of coverage, scale, design, spending method and transparency. However, it does not mean that the present expenditure pattern is completely not related to poverty reduction. If the central government wants to engage local bodies in alleviating poverty, it should be reoriented in the future. If done so, the local bodies can be helpful in poverty reduction. All the allocative functions should be devolved to the local bodies and the expenditures should be designed considering the poverty status in the district. He suggests for devolving basic services like education, health and agriculture to the local government. The local expenditure should be directed towards poverty reducing oriented infrastructures (like road, electricity, irrigation, telecommunication, agricultural research and extension) and services (education, health, agriculture, finance). The administrative cost should be reduced and the programme expenses should be increased at the local level. The geographical territory of the local government should be increased and they should be made economically and politically viable units for providing the local services. He concludes that the participation and empowerment of different communities like women, dalits, janajatis, Madhesis and other underprivileged groups at the local level policy formulation should be assured for reducing rural poverty in Nepal.
Boex, Heredia-Ortiz, Martinez-Vazquez, Timofeev and Yao (2006) conceptualized the argument of alleviating poverty through fiscal decentralization by reviewing its patterns around the world, especially focusing the cases of the ongoing reforming political process in developing and transitional countries. The study considered poverty in monetary and non-monetary aspects as “all poverty is local”. After gone through the countries’ successful cases on decentralization and poverty reduction, the theme is classified into four categories as pointed below.

1. Economic theory
2. Conceptual papers and descriptive case studies
3. Empirical studies and

The local government has a distinct advantage compared to the central authority for identifying the poor within their communities and understanding the needs due to their proximity to the people. Thus, the local governments are able to ensure more efficient service delivery through better information, closer oversight, monitoring, control and accountability. Well designed fiscal decentralization reforms can improve overall efficiency, economic growth and acts as an effective tool for poverty reduction, while poorly designed ones can harm economic growth and worsen poverty. In conclusion, fiscal decentralization has a potential to affect political stability, public service performance, equity and macroeconomic stability, though, there is neither a consistent positive or negative relationship between decentralization reform and poverty reduction.

Skira (2006) empirically examined the interaction between fiscal decentralization and poverty. The data of 204 countries for five years intervals from 1965 to 2000 and also the figure for 2004 were used for the study. Fiscal decentralization indicators, educational decentralization indicators and health decentralization indicators were calculated on the basis of expenditure on the respective headings. The explanatory variables: human development index (HDI), initial Gini coefficient, initial GDP per capita, and the control variables: population density, fertility (births per woman) and educational variable (percentage of primary school in the total population) were used to fit the models. The fixed effect regression at 1 percent depicted a stronger result of expenditure decentralization and poverty measures as compared to 5 percent in the random effect.
regression. The analysis shows that fiscal decentralization plays an important role in poverty reduction. On the other hand, the study devoted to examine the impact of fiscal decentralization on educational outputs. The random effect regressions with various educational outputs indicators show that fiscal decentralization improves educational outputs.

Hankla (2008) in his article “When is fiscal decentralization good for governance?” synthesized the practical lessons from theory and experience on the consequence of sub-national governments especially focusing on underdeveloped countries. Decentralization promotes quality governance by the following reasons.

1. It efficiently and reliably provides citizens with the public goods and services that they desire.
2. It reduces regional inequalities and separation.
3. It protects macroeconomic stability.

The correctly designed local institutions can improve governance and avoid most of the potential drawbacks of the poorly structured systems. Then it provides quality services at the lowest cost and should discourage corruption and promote responsiveness to the community. The final concern is that, in highly divided societies, decentralization contributes to the strengthening of regional identities, protects minorities and makes the safe country from separatist movements. However, having some minor defects and risks in the decentralized governance system in the developing countries are reforming their intergovernmental system to provide better services to their citizens.

Martinez-Vazquez and Timofeev (2008) played the pioneering role on the measurement and spatial perspective of fiscal decentralization for state rescaling. The panel data of developing and developed countries over the period 1990 to 2006 are used. It revisited the issue of measuring fiscal decentralization. Their paper pointed out the best approaches of measuring fiscal decentralization is ratios calculated for government revenues and expenditures respectively. On the expenditure side, fiscal decentralization is measured as a ratio of sub-national government spending to general government spending. Such ratio measures the relative responsibility of the local governments for the administration and delivery of public services. On the revenue side, fiscal decentralization can be measured as
a ratio of locally generated revenues to the general government revenues. This measure is the complement of the first one and it measures the relative power of the local government to discharge their functions independently. The study concludes as follows.

(1) For general government revenue the impact of revenue decentralization is more pronounced while for the government consumption the impact of expenditure decentralization is more pronounced.

(2) The decentralization of expenditure is associated with a larger government while decentralization of revenue is associated with a smaller government.

(3) The revenue decentralization is inversely related to the general government revenue while expenditure decentralization is positively associated with the general government consumption.

Ravallion (2009) performed a case study of Di Bio (an antipoverty programme) in China. The Di Bio programme was introduced in China in the year 1999, aiming at providing all urban households that are registered in a specified locality with a transfer payment sufficient to bring their incomes up to a predetermined poverty line. In the programme the national and provincial governments provided guidelines and co-financing, the selection of beneficiaries was under the municipal control. The empirical analysis of this programme was estimated by selecting 35 largest cities (a total sample of 76,000 households) in the year 2003-04. The main aim of this study was to explore the intercity differences in spending and other programme parameters and to examine the applications for the programme’s impacts on absolute income poverty. The finding is that a strong local resource effect is essentially neutralizing the programme’s ability to reach the poor municipalities. The scheme’s overall impact on income poverty was quantitatively small. The overall cross-city income gradient in the programme spending is negative, although small and statistically insignificant. The incomplete coverage and too low benefit level of the programme were more important reasons for the overall low impact on poverty. The better-off cities are able to support a higher poverty level people with higher participation rates at a given level of need. The poor living in relatively rich cities received more help from the programme than otherwise identical families in poor cities. The extent of this horizontal inequality suggests that it may create migration incentives to poor urban Chinese from poor cities to rich cities.
Kauzya (2009) asserted that in many African countries decentralization policy occupies a big place for poverty reduction and achieving the Millennium Development Goals (MDGs). The local governments effectively play a role to achieve MDGs and poverty reduction. The local governments play roles as: community mobiliser for the participatory development process, leadership, resource mobilization and coordination. But effective decentralization requires that local governments must have appropriate and adequate financial resources to execute their mandates. The challenge for developing countries, given their situation of extremely low incomes, is that of how to encourage the poor to participate in financing the services they need.

2.7. Literature related to the Effect of Public Spending on Socioeconomic Development

Toye and Jackson (1996) restated the major three prongs of antipoverty strategy mentioned in World Development Report 1990. These prongs are rekindling of economic growth via income distribution, changing in the composition of public expenditure and the provision of social safety nets through government schemes for the poor who are unable to enter the labour market. The second prong, the increasing share of total public expenditure that goes on education and health targeting to the poor in developing countries was the main concern of the study. The problems of large discrepancies between budget allocation and budget out-turn have been intensified in cash budgeting system. The effect of such budgeting system ultimately goes to conflict in between the policy at the macroeconomic level and at the microeconomic level. Yet again, the setting of public expenditure priorities is merely concerned with public use of scarce resources; this assignment could be resolved within conventional socio-political process. Thus, the public endorsement in the budget could be done by encouraging public debate about public expenditure priorities in the public as well as government stakeholders. At the same time, the local stakeholders and government parts could be jointly participated in monitoring and evaluation in the public spending projects. It helps to increase transparency. Next side, certain social expenditure has external benefit also. For example, the spending on education confer the educated directly by increasing wage which they obtain and may also contribute to the efficiency and the performance to the economy added by improving the mobility and adaptability of labour. Next, the externalities obtained by educating the girl, could improve in fertility behaviour, child care, public health and socio-cultural values of the community. In this
methodological and analytical approach, the poverty issue could be addressed by means of public expenditure in developing countries.

Poot (1999) assessed through a synthesis of 93 published articles in peer reviewed journals in the period prior to 1998 on the basis of empirical evidence concerning to the government policies on spending and economic growth of the country. Five policy areas have been considered for the study, \textit{viz}., general government consumption, tax rates, education and health expenditures, defence expenditure and public infrastructure expenditure. It was found that the most decisive results in the literature related to the positive impact of educational spending and health spending on growth. However, the public health care expenditure had a negative impact on the long-run growth rate. The impact of public infrastructure spending on growth appeared important. The impact of government consumption or government size on economic growth has been found insignificant in most of the cases. The tax-effect on growth has been less common in existing literature. Although the revision of past 9 studies, suggested that no studies have been found on higher tax rates to be associated with higher economic growth. The defence spending has been found harmful to growth, suggested a negative impact of greater defence spending. The shortcomings of the past studies in this subject area are highly aggregative nature of the research. Therefore, the study recommended for distinguishing between the impacts of different types of government spending to get the better link between existing theory and the empirical research.

Fan, Hazell and Thorat (2000) developed simultaneous equation model using state level data on the period 1970 to 1993 for examining the direct and indirect effect of government spending on rural poverty and productivity growth in India. The study pointed the direct contribution of government spending on rural poverty is by generating employment programme to the poor. There are larger indirect benefits to the rural poverty through government spending on rural infrastructure, agricultural research and development, health and education to the rural people. This spending encourages agricultural and nonagricultural growth, stimulating to better employment and income earning opportunities for the poor and avail cheaper food. The findings of the study showed that the government spending on productivity-promoting sectors such as, agricultural research and development, irrigation, rural infrastructures like rural road and electricity, and rural development programme for the rural poor have contributed to
agricultural productivity. Second, the government expenditure on road and research and development has largest impact on growth in agricultural productivity and poverty reduction. Third, the impact of government spending on education could substantially impact on rural poverty and productivity growth. Fourth, the government expenditure on Integrated Rural Development Programme, on health, on soil and water conservation, on rural community development have effectively helped to reduce rural poverty but its impact has been relatively lesser than the aforementioned first, second and third sectors.

Al-Faris (2002) examined the relationship between government expenditure and economic growth in Gulf Cooperation Council (GCC) Countries. Multivariate Cointegration methodology has been applied in the data obtained from GCC (Saudi Arabia, United Arab Emirates, Kuwait, Oman, Bahrain and Qatar) countries for the period 1970 to 1997. The study supports Wagner’s law. That is, it has been found that there is casual relationship in between public spending and national income in GCC countries. By the cause of suitable central role played by the government in those countries, there has been increasing position of economic growth as exemplified by public expenditure. However, the findings of the study did not support the relationship between economic growth and public expenditure is perceived to be inversed as defined by Keynes’ law. The negative response of Keynesian postulation might be due to high proportion of expenditure on defence, subsidies and politically motivated recruitment; which are comparatively low productive public expenditures. It shows in GCC countries there is long time lag in between social spending and economic development.

Fan and Rao (2003) conducted cross-country comparison on the effect of public expenditure on poverty and economic growth considering 43 developing countries across Asia, Africa and Latin America from 1980 through 1998. Our common belief is there should be positive impact of public expenditure on education, infrastructure, agriculture and defence towards poverty reduction of the country. After the structural adjustment programme, the government spending has been increased over time. However, the study found the different consequence of public spending in different sector and regions. The share of total government spending on agriculture, education and infrastructure in Africa; on agriculture and health in Asia; and on education and infrastructure in Latin America, all have been declined as a consequence of the adaptation of structural adjustment programme.
The effect of government spending on diverse sectors on economic growth has been also varied. In Africa, government spending on agriculture and health was predominantly strong in promoting economic growth. The investments in agriculture, education and defence had positive effects in Asia. But in Latin America, all types of government spending except health were statistically insignificant. As we know the growth in agricultural production is most crucial for poverty alleviation in rural areas. Thus the spending on agricultural domain like irrigation, education and roads all should contributed strongly to poverty reduction. The study partially corroborated the belief revealing the public agricultural expenditures in the course of research spending had a much better impact on productivity than the same through non-research spending. It suggested for reducing the spending in unproductive sectors such as in defence, subsidies in manure, in support of irrigation, for power and in favour of pesticides.

Fan, Xiaobo and Rao (2004) undertook a study to analyze the impact of public spending in Uganda. Public spending is mainly for correcting market failures and improving equity. The economic growth and equity by income distribution are the basic driving forces for poverty reduction in Uganda. The government polices had been played a vital role in promoting both economic growth and better income distribution. The government spending has been the most significant device used by Uganda to achieve these two goals. Having realization on the aforementioned facts the study used district level data for the years 1992, 1995 and 1999, thereafter estimated effects of different types of government expenditure on agricultural growth and rural poverty using simultaneous equations model. The increasing in agricultural productivity due to government spending in the rural area has been taken as the measure of reducing into poverty in Uganda.

The study revealed that the government spending on agricultural research and extension have enhanced agricultural production substantially, thus, having higher impact on poverty reduction. The government spending on rural and feeder roads too had significant impact on rural poverty reduction than the impact by high grade roads in Uganda. The impact of spending on education to poverty reduction ranked after the government spending on agricultural research and extension, and roads. The poverty reduction effects of public spending on infrastructure and education have been found higher in poor region for reducing poverty. However, the returns of spending on comparatively developed region have higher in terms of agricultural productivity. The poverty reduction effect in the form
of agricultural productivity by government spending on health is also considerable, but it could not be measured clearly in Uganda.

Lofgren and Robinson (2004) in their study explored the impact of government spending on long-run growth and poverty in Sub-Saharan Africa (SSA), illustrating cross-country research on the direct and indirect association between public spending and total factor productivity (TFP) growth. The dynamic, computable general equilibrium (CGE) model has been used for the period 1998 to 2015. The impact of public spending on agriculture, human capital, transportation-communication, defence, and other on TFP growth has been empirically estimated. The simulation of alternative government spending strategies implied that the reallocation of public expenditure to more productive areas, mainly in agriculture which facilitates to increase efficiency of government spending for poverty reduction strategies. The impact of spending on defence has been found negative. The designing strategies for human capital accumulation have been found considerable returns and productivity effects. Foreign financing has been found necessary for private consumption and investment. As well, it could be played a central role for improvement in economic performance including achieving the Millennium Development Goals of halving poverty by 2015 in SSA.

Wilhelm and Fiestas (2005) in their working paper provided an overview on the linkages between public spending and poverty reduction on the basis of rigorous case studies of nine countries. Due to data limitations, their study did not try to establish such a relationship with statistical or econometric methods. They opined that public spending has the potential to have effects on poverty reduction in two ways. First, it can move up the overall performance of the economy of the country. Second, it can increase the access of the poor to contribute to the overall growth process by strengthening their capabilities and reducing the transaction cost. The government funded social services are basically targeted to the poor; however, the richer get the benefits relatively more than the poor class of the society. For example, it cited that 46 percent of educational spending in Nepal ultimately benefits the richest five percent and only 11 percent reaches the poorest. In India, the richest five percent receive the curative health care subsidy three times as much as the poorest five percent do. This is surprising and a highly skewed distribution of social services in developing countries. Despite these facts, overall results show that the education expenditure has positive effects on poverty reduction. Agriculture spending
seems to have a very significant effect on poverty reduction. Spending on infrastructure seems to have a positive impact on poverty reduction; and in most of the cases, expenditure on health appears to have a positive impact on reducing poverty.

O’Donnell et al. (2007) performed a comparative study on the prevalence of public health expenditure across eight Asian countries, namely, Bangladesh, India, Indonesia, Malaysia, Nepal, Sri Lanka, Thailand and Vietnam, and three Chinese provinces or regions Gansu, Heilongjiang, and Hong Kong-Special Administrative Region (SAR) using consistent methods. Dominance tests were used to determine whether the distribution of public healthcare deviates significantly from perfect equality. In all these countries and provinces the public health funding is pro-rich substantially. Public health spending is strongly pro-poor in Hong Kong SAR and is significantly pro-poor in Malaysia and Thailand. However, the health subsidy is gently pro-rich in Vietnam. There exist trickledown effects in health spending in low income countries. At the local level the health spending has been on the basis of political power, local elite motive than the necessities of rural poor. The share of public health subsidy in Nepal has been gone to the poorest 20 percent of individuals is less than 7 percent shows the lowest position among the considered countries. The study showed that the pro-rich distribution of public healthcare subsidies that is persistent in most developing countries is unnecessary but that effective targeting is easier to realize at higher levels of national incomes. The central part of the study is that the economic growth may not only slow down the government budget constraint on pro-poor policies but also increase pro-poor incidence indirectly by raising the demand of wealthier individuals by offering the choice for private sector alternative services.

Paternostro, Rajaram and Tiongson (2007) dealt with the composition of public spending in the heavily indebted poor countries (HIPC’s) at the post conflict epoch. The social sector spending has been taken as the key to poverty reduction and it has been also taken as the main tool to promote economic development in the post-conflict epoch. However, the effect of public spending on economic growth and distribution is complex to measure and not easy to outline. In this regard, the modified Ferroni and Kanbur framework has been applied for the expenditure allocation choice between social expenditure and infrastructure expenditure or physical capital. The modified framework permitting a choice among social spending, infrastructure spending and other spending, introducing inequality as a policy
variable and identifying headcount poverty and selected social indicators as major policy objectives.

The conceptual foundations and precedent empirical studies have been rigorously reviewed by Paternostro et al. (2007) and confirmed that poverty could be reduced through targeted public spending in those countries. The issue of public spending should be taken as long-term research agenda to provide theoretically and empirically robust and verifiable guidance to public spending policy. The development aid to HIPCs should be increased for the betterment of the poor. Poverty and public spending are the country specific phenomenon. Therefore, the impact of any given type of public spending must be tailored to country specific and be based on previous empirical analysis that takes account of the lags and leads in their effects on equity and growth and ultimately on poverty reduction of the country.

Lamichhane and Shrestha (2009) examined the impact of public spending on agriculture, education and health upon rural poverty by using public expenditure time series data of Nepal spanning over the period 1981 to 2004. The study has defined qualities of life as poverty and is measured in terms of life expectancy which is explained as a function of agricultural production and literacy rate. The simultaneous linear equation model was used to estimate the results. The double log functional forms were used for all equation system. The economic variables as expenditure on health, education and agriculture and time trend were exogenous and agricultural total factor productivity and literacy rate were endogenous variables. They found positive and significant relationship between total factor productivity and public spending on education. Same relationship was also in between total factor productivity and public spending on agriculture. The public spending on education was found positively and highly significant in determining the literacy rate in Nepal. The analysis of expenditure has found that the expenditure on education has greater impact on poverty than the spending on agriculture and health expenditure. The paper revealed that the public spending on education and agriculture is significant and positively related to total factor productivity and hence related to improve the qualities of life, thereby reducing the poverty level in the country. This result shows that with delivering proper education, the farmers could easily adopt new technologies in farming, which they can use in order to enhance the productivity in agriculture. The increase in production could generate income which leads to reduce poverty in Nepal.
Balma, Ilboudo, Kabore, Zerbo, and Kabore, (2011) tackled the subject using multi-sectoral computable general equilibrium model to evaluate the direct and indirect effects of public education strategy on welfare, poverty and income distribution in Burkina Faso. The equivalent variation (EV) has been used to measure the impact on welfare. It has been found that the increase in public education spending ultimately has a positive impact on welfare and poverty. The effect of increased in public primary education spending on households could thus largely be explained in terms of its impacts on income and on consumption prices, enhance lower prices for household consumption baskets which improve both their nominal income and welfare. On the other hand, the increase in demand of primary education could be balanced by introducing sales tax. The increased amount of sales tax could be used to cover a portion of the unit cost of primary education. However, the effect of introducing sales tax leads to an increase in consumption prices. This price hiking leads to an increase in the consumer price index for all households, with the size of the increase depending on their consumption basket. Further, if the government choose to adjust by taxing household income, the average cost of households’ consumption baskets declines and this leads to a greater benefit in terms of well-being. Finally, it is the combination of price and income effects which determine the impact of the shock on well-being and poverty. This result is interesting with respect to the poverty reduction strategy. Ultimately, all types of households could get benefit from an increase in welfare and a decrease in poverty.

Tiwari (2012) attempted to explore the impact of government spending (as a social expenditure) on the status of poor in India. The social expenditures in India have the broader objective of expanding social opportunities and improving the standards of life in the form of provisioning basic education, health service and nutritional standards of the people at large and make positive effect for poverty alleviation programmes. This expenditure has been allocated for urban and rural development, to the marginalized sections of society on infrastructural development and for the well being of the deprived sections. The study analyzed the trends of government spending on social services and then checked whether government spending has been able to make an effect on the state of poverty in the country or not. The study took into account the rigorous review the economic literature in the field and inferred that the rising levels of per capita income, economic growth and lowering poverty head count ratio of the people has been significantly associated with social sector government spending which in turn has been
correlated with a declining incidence of poverty in India during the first to eleventh plan period. But the top-down effect of the government spending did not seem to show the clear-cut consequence on the pro-poor programmes. The study pointed to develop the public expenditure programme for those who are living in destitute poverty. If all the level of governments makes a focus for those who are below poverty line by investing more on the sadly poor, then the results of these expenditures can be more encouraging. Subsequently, targeting the investment on destitute poor, the goal of “inclusive growth” can be achieved in real sense in poverty alleviation programs.

2.8. Conclusion
In this chapter, we have rigorously reviewed the various studies relating to the concept of fiscal decentralization, study on the Nepalese experience on decentralization and fiscal decentralization then poverty in Nepal and elsewhere. We have considered the fundamental issue of our study, the impact of fiscal decentralization on poverty reduction. At the end, we have made a review on the effect of public spending on poverty has been presented.

Fiscal decentralization has been a key component of decentralization. It has been a policy reform agenda since 1990s in developing, developed, unitary as well as federal countries in the world. The major components of fiscal decentralization are expenditure assignment, revenue assignment, fiscal transfers and local borrowing. Fiscal decentralization makes government closer to the people and delivers better services. It increases willingness to pay for the services and it ultimately contributes in nation building. However, it has some inherent defects as: it increases macroeconomic instability, enhances regional disparities and chance of local elite capture in the local governance. Eventually, fiscally decentralized system is able to accommodate the diversity of taste and preferences of the people for public services and is a subject of country specific manner.

Nepal has been followed centralized-unitary political system. Although having more than six decades efforts on decentralization, it could not provide adequate fiscal power to the local governments to deliver basic local services. In this scenario, Nepal adopted fiscal decentralization as a policy strategy in 1999 and has been practicing with the approach of LSGA. After a decade long state of insurgency the country is on the way of state reformation and on the course of writing the new constitution. The issues of local
autonomy and self governance have been increasing on for adopting it in the constitution making process. Therefore, there is necessary to assess the past experiences on fiscal decentralization for addressing its strengths in the future policy making process.

The structure and role of the municipal government vary from country to country and within a country. In developed countries, the role and responsibilities of a municipality is a local government having more autonomy and more resources. On the other hand, the municipalities in developing countries have weak resource base, low autonomy and undefined roles and responsibilities. The case of Nepal is modest different. The municipal governance of Nepal has a long history since the Rana regime. The LSGA is promulgated nearly one and half decade ago. This is the main base for municipal governance. But the numbers of 23 Acts are contradictory to LSGA in Nepal and they have not been amended. Still there is a wide gap between municipal expenditure and revenue sources. But the fact which makes us happy is the municipal government in Nepal has more fiscal strength and extensive roles in local service delivery than the rural local governments and the district local governments. Therefore, the municipalities are more capable for performing their task and service delivery to their citizens. However, considering the above, we can bring to a close that Nepal is at the initial stage of fiscal decentralization.

Reducing poverty has been the key agenda for the country Nepal and other developing countries in the world. However, poverty is multifaceted humanitarian problem. As such, it could not be eliminated, although, it could be reduced. Poverty is mainly a rural local phenomenon in Nepal. The headcount poverty ratio has been decreasing gradually in Nepal. The country has been attempting to achieve the millennium development goals and to halve the poverty by 2015. The studies show that the consumption (cost of basic needs-CBN) approach of measurement of poverty is admired to measure the moneymetric dimension of poverty in Nepal and elsewhere.

The impact of public spending in education, health and agriculture seems significant for poverty reduction in the country. However, the effect of public spending on poverty reduction is not purely an economic phenomena and is depends on the sociological and political factors of the country. The empirical results of concerning literature show that the impact of public expenditure differs as per the sector in spending.
There is no clear-cut linkage between fiscal decentralization and poverty. Both are multidimensional issues and are of place, time and context specific one. The reviewed literature show that there are mixed results in regards to the effect of fiscal decentralization for reducing poverty. The democratically designed fiscal decentralization system only may have effect significantly on poverty and inequality and vice versa. Nepal is relatively a failure country in decentralization practice with a very little impact on poverty and it lies at the category of “somewhat negative” performers. However, theoretically, fiscal decentralization is extremely important for the success of poverty reduction. It empowers people, protects our societies, enhances prosperity, positively contributes to social justice and equity and promotes autonomy at the local level. In the forthcoming chapter we shall present the econometric model and the corresponding methodology to estimate the model.
Chapter Three

Econometric Models, Methodology and Data

3.1. Introduction

We have already surveyed the selected literature in chapter two of our study. The literature on the concept of fiscal decentralization, poverty, linkage on fiscal decentralization and poverty, municipal finance and the effect of government spending in the economy of the nation have been reviewed under the chapter. The conceptual foundation on the subject matter from chapter two leads us to go in for models, methodology and data of the study.

The present chapter has been designed to deal with the analytical outline in relation to the fiscal decentralization and poverty in the context of Nepal and, therefore, to present the quantitative tools and techniques to that end. The research methodology along with the specification of the model for the estimation of result shall be discussed. We shall go to the econometric models, methodology and data on the basis of previous studies. The chapter is based on the available figures at national level and at municipality level data of Nepal.

This chapter has been divided into the sections as follows. Some important observations about the data are in section 3.2. In order to locate the time point on and from which the fiscal decentralization has been role in changing the economy through reducing the poverty, cumulative sum (CUSUM) test, cumulative sum of squares (CUSUMSQ) test with Chow test is discussed in section 3.3. The spline function approach is introduced in section 3.4. Since we shall be using time series data for the purpose of estimation, there is every possibility that the time series data are nonstationary or have unit root. Therefore, in section 3.5, the tests of stationarity using correlogram analysis and Augmented Dickey-Fuller test are stated. If the time series data we having is found to be nonstationary the appropriate formulation or the transformation of data which is considered in section 3.6. The regression model for the estimation of fiscal decentralization and poverty is discussed in section 3.7. The methodology of data collection and the data management is outlined in section 3.8. The topic on estimation procedure is offered in section 3.9. The specification,
definition and measurement of variables are considered in section 3.10. The general hypotheses for the purpose of testing are stated in section 3.11 which is followed by conclusion in section 3.12.

3.2. Some Important Observations about the Data
In the empirical estimation, we shall use the time series data spanning over 1983 to 2010 in Nepal. It is evident that the numerical level of data has been changed over the time period. The time series data show the trend of indicator or variable at that duration. The Most time series data comprises four components, namely, trend, seasonal, cyclic and irregular patterns. Thus, most of the time series data are nonstationary. We shall eliminate the non-stationarity of data and shall use in the estimation of result. However, to examine the socio, economic and demographic profile of the country and the municipality we shall use the level time series data. The level data supposed to be captured the meaning of the variable or the indicator, thus, the level data shall be used for summary (descriptive) statistics, graphical exposition and tend line analysis.

3.2.1. Summary Statistics
The summary statistics describes the main feature of information quantitatively. It summarise the key characteristics of dataset often with descriptive figures and is presented in the tabular form. It has been used for summarising a number of statistical features of the sample in the research. We shall use summary statistics to measure central tendency (arithmetic mean and median), maximum value, minimum value, measures of variability (standard deviation and coefficient of variation-CV), skewness, kurtosis and the number of observations of time series data. The summary measures help us to summarise the information on the basis of initial description of the data as part of more extensive statistical analysis or they may be sufficient in and of themselves for a particular investigation.

The measures of central tendency are numerical values that tend to locate in some sense the average of a set of data. The arithmetic mean (mean) is the most common measure of central tendency and it shows the average value of data. The median is the middle value of the set of data when the data are ranked in order according to magnitude. The maximum and the minimum values refer to the highest and lowest magnitude of data. Standard deviation is the average distance of observation to the arithmetic mean. Coefficient of
variation shows the deviation as a percentage of arithmetic mean. The kurtosis indicates the characteristics of the extremes of a frequency distribution of data. The benchmark of standard of distribution is the perfect normal distribution which has zero kurtosis by definition. The skewness is the degree of asymmetry in a frequency distribution of data. A perfect symmetrical frequency distribution has no (zero) skewness. If the distribution of the variable is strongly skewed, it may be more appropriate to use nonparametric test of statistical significance. The number of observations in this study refers to the time span of corresponding data expressed in number of years.

3.2.2. Graphical Exposition
The statistical information or data may be presented in some graphic or diagrammatic form. Graphical method of presentation of data is better for visualization. In this method the observation shall be presented in graphical diagram. It provides a better understanding on the overall tendencies of data points within the time series. We display the time series data of the country and municipality through bar diagram. The need of graphical presentation of time series data with descriptive statistics for our study is outlined below.

(1) The information presented in tabular form or in a descriptive record only is not sufficient to draw the results.
(2) The graphical form of representation makes it possible to draw visual impressions of data.
(3) The graphic method of the representation of data enhances our understanding about the issue of this study.
(4) This method makes the comparisons easy and creates an imprint on mind for a longer time.
(5) It is a less time consuming task to draw the inferences from the time series information in comparison to the non-graphical methods.
(6) It presents the features of indicators in a simplified way.
(7) It makes easy to understand the patterns of growth, distribution, composition, structure and the density of data over the time period.

3.2.3. Overall Trend of the Variables and Indicators
The trend is the long-term movement in the series. We shall compute the trend line of the indicators and variables with the graphical exposition of data. To examine the change in the trend of socio, economic and demographic indicators we use exponential tendency of
yearly data on the respective indctor to the time series 1983 to 2010. This is well accepted methodology to examine the changing trend of the indicator in time series analysis. The exponential trend equation in deterministic form is specified as stated below.

\[ y = ae^{bt} \]  \hspace{1cm} (3.2.3A)

Where, \( a \) is the shift parameter and \( b \) is the growth rate parameter of the indicator \( y \) over the time period \( t \). The positive value of \( b \) indicates increasing trend in \( y \) and vice versa. The same method shall be applied to analyze the changing trend of poverty measures in these sections as well.

To find the growth rate of the poverty measures in the national level analysis the natural log ratio of a variable with its time lag shall be measured. Now the exponential growth rate of variable is defined as below.

\[ \text{Growth Rate} = \ln \left( \frac{x_t}{x_{t-1}} \right) \]  \hspace{1cm} (3.2.3B)

Where, \( x_t \) is the variable and its one period lag is \( x_{t-1} \).

To study the exponential changing tendency of incidence of poverty in the municipalities of Nepal we use yearly data on incidence of poverty or poverty head-count ratio over the time period 1983 to 2010. The exponential trend equation in deterministic form is specified as stated below.

\[ POVIN = Ae^{bt} \]  \hspace{1cm} (3.2.3C)

Where, \( A \) is the shift parameter and \( b \) is the growth rate parameter of the incidence of poverty (POVIN) over the time period \( t \). The negative value of \( b \) indicates decreasing trend in incidence of poverty and vice versa.

3.3. Description of the Structural Shift

We shall estimate the structural shift using recursive residual analysis. Recursive residuals are a set of residuals which, if disturbances are independently and identically distributed, will thus greatly facilitating tests of the null hypothesis (Dominic, 2008; Johnston, 1991). Recursive residuals are members of the general class of LUS (linear unbiased with a scalar variance matrix) residuals. If there are \( k \) coefficients to be estimated in the \( b \) vector, then the first \( k \) observations are used to form the first estimate of \( \hat{b} \). This process is continual.
until the entire \( n \) sample points have been used, yielding \( n - k + 1 \) estimates of the \( \beta \) vector. At each step the least estimate of \( \beta \) can be used to predict the next value of the dependent variable. The one step ahead forecast error resulting from this prediction, suitably scaled, is defined to be a recursive residual. Suppose we consider the classical linear regression model as outlined below with its usual assumptions.

\[
Y = X \beta + U
\]  
(3.3A)

Where, the symbols have used standard meaning. Then the estimated model is mentioned below.

\[
y = X \hat{\beta} + u
\]  
(3.3B)

under the assumption \( u \sim N(0, \sigma^2 I) \). The symbols have as usual standard meaning.

Let us refer to the \( X_{t-1} \) by \((t-1) \times k\) matrix of the regressors from period 1 to period \( t-1 \) and \( y_{t-1} \) the corresponding vector of observations on the dependent variable. These data up to period \( t-1 \) give an estimated coefficient vector, denoted by \( \hat{\beta}_{t-1} \). This coefficient vector gives us a forecast of the dependent variable in period \( t \). The forecast is \( x_t \hat{\beta}_{t-1} \), where, \( x_t \) is the row vector of observations on the regressors in period \( t \). The forecast error is \( y_{t-1} - x_t \hat{\beta}_{t-1} \) and the forecast variance is written as stated under.

\[
\sigma^2 \left[ 1 + x_t' (X_{t-1} X_{t-1})^{-1} \right]
\]

Then the recursive residual \( w_t \) is then defined as follows.

\[
w_t = \frac{y_{t-1} - x_t \hat{\beta}_{t-1}}{\sqrt{\sigma^2 \left[ 1 + x_t' (X_{t-1} X_{t-1})^{-1} \right]}}
\]  
(3.3C)

with the assumption \( w_t \sim N(0, \sigma^2) \). The symbols have their usual standard meaning.
These residuals can be calculated for $t = k+1, ..., n$. If the maintained model is valid, the recursive residuals will be independently and normally distributed with zero mean and constant variance $\sigma^2$. The recursive residuals are plotted about the zero line. Plus and minus two standard errors are also shown at each point. Residuals outside the standard error bands imply instability in the parameters of equation.

### 3.3.1. CUSUM and CUSUMSQ Test for Structural Shift

In this subsection we briefly discuss on the application of recursive residual outlined by Brown, Durbin and Evans (1975) for testing structural change over time. As specified for the model $y = X \beta + u$, the hypothesis of no structural change is listed below.

$$H_0 : \beta_1 = \beta_2 = ... = \beta_n = \beta$$

$$\sigma_1^2 = \sigma_2^2 = ... = \sigma_n^2 = \sigma^2$$

Where $\beta_i$ denotes the vector of coefficients in the period $i$ and $\sigma_i^2$ the disturbance variance in the period. The null hypothesis would be violated if the $\beta$ vectors remained constant but $\sigma^2$ varies. The technique consists of a couple of tests called cumulative sum (CUSUM) test and cumulative sum of squares (CUSUMSQ) test. The CUSUM test is mainly good at detecting systematic departure of the $\beta_i$ coefficients that results in a systematic sign on the first step ahead forecast error (Adhikary and Bhattacharya, 2012). On the other hand, the CUSUMSQ test is useful when the departure of the $\beta_i$ coefficients from constancy is jumbled rather than systematic but that there involves a systematic change in the accuracy of the estimated equation as observations are added. These tests are better option to test structural stability than Chow test of structural stability. Since the Chow test is suffers from the problem that the time of break point due to some structural shift in the system is pre selected one and actual time of break point is assured after a long trial and error process. However, the CUSUM and CUSUMSQ tests are designed in such a method that it indicates the time point from which the structural break has been occurred.

The CUSUM test is based on the cumulative sum of the recursive residuals. The option plots the cumulative sum together both the 5 percent critical lines. The test finds the parameter instability if the cumulative sum goes outside the area between the two critical lines. The CUSUM test is based on the test statistic mentioned below.
\[ W_t = \frac{\sum_{i=k+1}^{t} w_i}{\sigma} , (t = k+1, k+2, \ldots, n) \]  
(3.3.1A)

The assumption of CUSUM test is heteroscedasticity is not a problem. The assumption of parameter stability is met, \((w_{k+1}, w_{k+2}, \ldots, n)\) will be independent and normally distributed with mean zero and variance \(\sigma^2\). Now \(w_i\) is the recursive residual defined above, and \(\hat{\sigma}^2 = \frac{RSS_n}{(n-k)}\) with \(RSS_n\) being the residual sum of squares calculated from all \(n\) sample points. \(W_t\) is the cumulative sum and is plotted against \(t\). If the parameter vector \(b\) remains constant from to period, then \(E(W_t) = 0\), but it entail changes \(W_t\) will tend to diverge from the zero mean value line. The significance of any exit from the zero line is assessed by reference to a pair of 5 percent significance lines; the distance between the significance lines is increases as \(t\) increases. The significance of the departure from the zero line may be assessed by reference to a pair of straight line that passes through \(k, \pm 0.948\sqrt{(n-k)}\) and \(n, \pm 3 \times 0.948\sqrt{(n-k)}\). The movement of \(W_t\) outside the critical lines shows instability.

Another test, CUSUMSQ test is also recommended by Brown, Durbin and Evans (1975). The CUSUMSQ test involves a plot of \(S_t\) defined as the test statistic outlined under.

\[ S_t = \frac{\sum_{i=k+1}^{t} w_i^2}{\sum_{i=k+1}^{n} w_i^2} , (t = k+1, k+2, \ldots, n) \]  
(3.3.1B)

The expected value of \(S_t\) under the hypothesis of parameter constancy is \(E(S_t) = \frac{t-k}{n-k}\) which goes from origin or zero at \(t = k\) to unity at \(t = n\). The significance of the departure of \(S_t\) from its expected value is assessed by reference to a pair of 5 percent parallel straight lines, called critical lines around the expected value. The CUSUMSQ test provides a plot of \(S_t\) against \(t\) and the pair of 5 percent critical lines. The movement of \(S_t\) value outside the critical lines suggest the parameter or variance is instable. If the plot lies above
the upper critical line, the implication is that the regression is tracking poorly in the early subsample in comparison with the total sample. A plot below the lower critical line suggests the reverse, namely, that the regression is tracking better in the early subsample than in the complete sample.

3.3.2. Chow Test for Structural Break

We furthermore consider Chow test to locate the significant point of structural shift. Chow (1960) created the technique to test the equality of sets of coefficients in two regressions, is popular in econometric and other research by the name of Chow test (Maddala, 1977; Koutsoyiannis, 2004). This test is the special case of \( F \) test and is furthermore used to test the stability of coefficients.

In what follows, we have two sets of data, that \( n_1 \) samples belong to the first regime and \( n_2 \) samples to the second regime respectively. In this case the regression model is considered as stated below.

For the first regime;
\[
y = \alpha^{(1)} + \beta_{1}^{(1)} x_1 + ... + \beta_{k}^{(1)} x_k + u
\]

For the second regime;
\[
y = \alpha^{(2)} + \beta_{1}^{(2)} x_1 + ... + \beta_{k}^{(2)} x_k + u
\]

If \( \alpha^{(1)} = \alpha^{(2)}, \beta_{1}^{(1)} = \beta_{2}^{(2)}, ..., \beta_{k}^{(1)} = \beta_{k}^{(2)} \)

The subscripts \((1)\) and \((2)\) denote the first and the second regimes respectively.

We want to test the estimated relationships of (3.3.2A) and (3.3.2B) differ significantly or not. The estimation of common relationship should be done. However, the equations (3.3.2C) give \( k + 1 \) linear restrictions can be tested by \( F \) test. To get the unrestricted residual sum of squares each equation should be estimated one by one, we get the residual sum of squares for each equation and should be added them. This has degrees of freedom \( (n_1 - k - 1) + (n_2 - k - 1) = (n_1 + n_2 - 2k - 2) \). Again, to get the restricted residual sum of squares, we pool the data and estimate the single equation. This residual sum of squares has degrees of freedom \( (n_1 + n_2 - k - 1) \). Then by applying the \( F \) test, the relevant \( F \) ratio is formed as stated under.
\[ F^* = \frac{RRSS - URSS/(k+1)}{URSS/(n_1 + n_2 - 2k - 2)} \]  

(3.3.2D)

It has a $F$ distribution with degrees of freedom $(k+1), (n_1 + n_2 - 2k - 2)$. Where, $RRSS$ is the restricted residual sum of squares and $URSS$ the unrestricted residual sum of squares.

Now our null hypothesis is $H_0: \beta_i = 0$, that is, there is no difference in the coefficients obtained from the two samples. We compare the observed $F^*$ ratio with the theoretical value of $F_{0.05}$ (or other levels of significance) with degrees of freedom $v_1 = (k+1)$ and $v_2 = (n_1 + n_2 - 2k - 2)$. The theoretical value of $F$ (at the chosen level of significance) is the value that defines the critical regions of the test. Again, if $F^* > F_{0.05}$ we reject the null hypothesis, that is, we accept that the two regressions differ significantly or the two samples give different relationships.

### 3.4. Spline Function Analysis

We consider the spline function approach (Poirier and Garber, 1974) to find the trend in the growth of several variables of interest in different time periods. Once a particular year is accepted as a significant point of structural shift, we shall enter on that year to examine the effect of fiscal decentralization on poverty reduction in Nepal with the help of spline function. Assuming a linear time trend, the postulated linear model is stated below.

\[
\begin{align*}
\text{Regime 1: } & \ln Y_t = \alpha_1 + \beta_1 t + u_t & \text{for } t \leq t_1 \\
\text{Regime 2: } & \ln Y_t = \alpha_2 + \beta_2 t + u_t & \text{for } t_1 < t \leq t_{end}
\end{align*}
\]

(3.4.1)

Where the choice of $t_1$ as the time point of structural shift will be confirmed by the test of stability based on recursive residuals as we get in the method of Recursive Least Squares. Now, Let us consider the following variables.

\[
Regime_{1t} = t; Regime_{2t} = \begin{cases} 
0 & \text{if } t \leq t_1 \\
(t - t_1) & \text{if } t_1 < t
\end{cases}
\]

(3.4.2)

The function is then re-parameterised as listed below.

\[
\ln Y_t = \alpha_1 + \delta_1 Regime_{1t} + \delta_2 Regime_{2t} + u_t
\]

(3.4.3)
The expression \([\exp(\beta_i) - 1]*100\) will yield the percentage growth rate for the \(i^{th}\) period \(i = 1,2\); where \(\beta_1 = \delta_1, \beta_2 = \delta_1 + \delta_2\) and \(\alpha_2 = \alpha_1 - \delta_2 t_1\).

The turn towards fiscal decentralization in Nepal is the promulgation of LSGA in 1999 in Nepal. Thus, the equation (3.4.2) will be used to compute the growth rates in the period prior to (1983 to 1998) and posterior to (1999 to 2010) the enactment of LSGA in Nepal are \(Regime_{it}\) and \(Regime_{it+1}\) respectively. Fitting the values from (3.4.3) by OLS, we test the significance of \(\delta_1 (=\beta_1)\) examining whether there is a trend in the first regime and \(\delta_2\) whether the slope in the second regime is significantly different from in the first.

We shall apply the spline function to examine the structural stability indicated by the explanatory variables on the route of fiscal decentralization in Nepal.

3.5. Testing of Stationarity or Unit Root

Normally the time series data is not generated by stationary processes. Therefore such data has been assumed to be changed with respect to time or nonstationary. The models could be developed by stochastic process which assumed the data is to be in equilibrium about a constant mean level or the same at any point in time or stationary. The concept of stationarity is used for solving the practical problems involving random processes in time series analysis. Just like time-invariance is an important characteristic of many deterministic systems, stationarity describes certain time-invariant property of a random process. Stationarity also leads to frequency-domain description of a random process. We test the stationarity of the time series data using Augmented Dickey-Fuller test and Correlogram Analysis.

3.5.1. The Augmented Dickey-Fuller (ADF) Test

We shall investigate the stationarity properties of the time series data (1983 to 2010) of Nepal using the Augmented Dickey-Fuller (ADF) test. The purpose of augmenting the Dickey-Fuller regression is to get white noise errors. A series \(Y_t\) is said to be integrated of order \(d\) denoted by \(Y_t \in I(d)\) if it becomes stationary after differencing \(d\) times and thus \(Y_t\) contains \(d\) unit roots. A series which is \(I(0)\) is said to be stationary. To determine whether
a series is stationary or nonstationary, unit root test developed by Dickey and Fuller (1979) shall be used. The ADF test is based on the estimate of the following equation.

\[ \Delta Y_t = \alpha + \delta Y_{t-1} + \varepsilon_t \]  

(3.5.1)

Where \( \Delta Y_t = Y_t - Y_{t-1} \), \( \alpha \) is constant and \( \varepsilon_t \) is a pure white noise.

If \( \delta = 0 \), then the series is said to have a unit root and is nonstationary. Hence, if the hypothesis, \( \delta = 0 \), is rejected for the equation (3.5.1) it can be concluded that the time series does not have a unit root and is integrated of order zero, that is it has stationarity properties.

### 3.5.2. The Correlogram Analysis

In this study we consider autocorrelation (AC) and partial autocorrelation (PAC) under correlogram analysis for testing stationarity of the time series data in Nepal. The AC refers to the correlation of a time series with its own past and future values. This means the correlation between members of a series of numbers arranged in time period is AC. The set of autocorrelation coefficients arranged as a function of separation in time is the sample autocorrelation function (ACF). The ACF tells us how much correlation there is between neighboring data points in the series. The plot of the ACF as a function of lag is called the correlogram. More information can be obtained from the partial autocorrelation function (PACF) which is obtained by the autoregressive process in ACF. The plot of the PACF as a function of lag is called the partial correlogram.

We define autocorrelation with lag \( k \) as stated under (Pindyck and Rubinfeld, 1998).

\[ \rho_k = \frac{E[(y_t - \mu_y)(y_{t+k} - \mu_y)]}{E[(y_t - \mu_y)^2]E[(y_{t+k} - \mu_y)^2]} = \frac{\text{Cov}(y_t, y_{t+k})}{\sigma_y \sigma_{y_{t+k}}} \]  

(3.5.2)

Where \( \rho_k \) is the autocorrelation coefficient with the lag \( k \).

\( y_t \) is stochastic time series can be generated by a set of jointly distributed random variables.

\( \mu_y = E(y_t) \) is the mean of the series \( y_t \).
stand for the positive square root of the variance of the associated series and is
called the standard deviation.

For a stationary process the variance at time $t$ in the denominator of equation (3.5.2) is the
same as the variance at time $t+k$; thus, the denominator is just the variance of the
stochastic process. Thus the equation (3.5.2) can be written as below.

$$\rho_k = \frac{E[(y_t - \mu_t)(y_{t+k} - \mu_{t+k})]}{\sigma_y^2} \quad (3.5.3)$$

Here the numerator in equation (3.5.3) is the covariance between $y_t$ and $y_{t+k}$, so that

$$\rho_k = \frac{\gamma_k}{\gamma_0} \quad (3.5.4)$$

Thus, $\rho_0 = 1$ for any stochastic process.

Where $\gamma_k$ is the covariance of the series $y_t$ at any lag $k$ and

$$\gamma_k = Cov(y_t, y_{t+k}) = E[(y_t - \mu_t)(y_{t+k} - \mu_{t+k})].$$

Suppose a stochastic process is simply written as $y_t = \epsilon_t \quad (3.5.5)$

Where $\epsilon_t$ is an independently distributed random variable with zero mean.

Now it is easy to see from equation (3.5.3) that the autocorrelation function for this
process is given by $\rho_0 = 1$, $\rho_k = 0$ for $k > 0$. The process of equation (3.5.5) is called
white noise and there is no model that can provide a forecast any better than $\hat{y}_{T+l} = 0$ for
all $l$. Thus, if autocorrelation function is zero (or closer to zero) for all $k > 0$, there is little
or no value in using a model to forecast the series.

The autocorrelation function in equation (3.5.3) is purely theoretical in that it describes a
stochastic process for which we have only a limited number of observations. In practice,
then, we calculate as estimate of the autocorrelation function, called the sample
autocorrelation function as outlined below.

$$\hat{\rho}_k = \frac{\sum_{t=1}^{T-k} (y_t - \bar{y})(y_{t+k} - \bar{y})}{\sum_{t=1}^{T} (y_t - \bar{y})^2} \quad (3.5.6)$$
We know from the definition that both the theoretical and estimated autocorrelation functions are symmetrical, that is, that the correlation for a positive displacement is the same as that for a negative displacement, so that $\rho_k = \rho_{-k}$. In plotting autocorrelation function (by plotting $\rho_k$ for different values of $k$), one need only positive values of $k$. If the particular value of the sample autocorrelation function $\hat{\rho}_k$ is close enough to zero to permit the assumption that the true value of the autocorrelation function $\rho_k$ is definitely equal to zero.

To test the Joint Hypothesis we use $Q$ Statistic introduced by Box and Pierce as stated below.

$$Q = T \sum_{k=1}^{K} \hat{\rho}_k^2 \quad (3.5.7)$$

$Q$ Statistic is approximately distributed with Chi-square with $K$ degrees of freedom. $T$ is the number of observations in the series, $k$ is the number of lags and $\hat{\rho}_k$ is sample autocorrelation function.

To obtain partial auto correlation function let us consider the covariance and autocorrelation function for the autoregressive process of order $p$. First, let us see the covariance with displacement $k$ is determined from the equation stated below.

$$\gamma_k = E[y_{t-k}(\phi_1y_{t-1} + \phi_2y_{t-2} + \ldots + \phi_py_{t-p} + \epsilon_t)] \quad (3.5.8)$$

Now letting $k = 0, 1, \ldots, p$, we obtain the following $p + 1$ differences equations which can be solved simultaneously for $\gamma_0, \gamma_1, \ldots, \gamma_p$.

$$\gamma_0 = \phi_1\gamma_1 + \phi_2\gamma_2 + \ldots + \phi_p\gamma_p + \sigma^2$$

$$\gamma_1 = \phi_1\gamma_0 + \phi_2\gamma_1 + \ldots + \phi_p\gamma_{p-1}$$

$$\gamma_p = \phi_1\gamma_{p-1} + \phi_2\gamma_{p-2} + \ldots + \phi_p\gamma_0$$

(3.5.9)

For displacements $k$ greater than $p$ the covariance are determined from the following relation.
\[ \gamma_k = \phi_1 \gamma_{k-1} + \phi_2 \gamma_{k-2} + \ldots + \phi_p \gamma_{k-p} \]  
(3.5.10)

By dividing the left hand and right hand sides of the equations (3.5.9) by \( \gamma_0 \), we can derive a set of \( p \) equations that together determine the first \( p \) values of the autocorrelation function as outlined under.

\[ \rho_1 = \phi_1 + \phi_2 \rho_1 + \ldots + \phi_p \rho_{p-1} \]

\[
\begin{align*}
\rho_2 &= \phi_1 \rho_{p-1} + \phi_2 \rho_{p-2} + \ldots + \phi_p \rho_{p-2} \\
\rho_p &= \phi_1 \rho_{p-1} + \phi_2 \rho_{p-2} + \ldots + \phi_p
\end{align*}
\]  
(3.5.11)

For displacements \( k \) greater than \( p \), we have, from the equation (3.5.10) as stated under.

\[ \rho_k = \phi_1 \rho_{k-1} + \phi_2 \rho_{k-2} + \ldots + \phi_p \rho_{k-p} \]  
(3.5.12)

The equations in the relation (3.5.9) are the Yule-Walker Equations; if \( \rho_1, \rho_2, \ldots, \rho_p \) are known, the equations can be solved for \( \phi_1, \phi_2, \ldots, \phi_p \). We solve Yule-Walker Equations for successive values of \( p \). In other words, suppose we begin with hypothesizing that \( p = 1 \). The equation (3.5.11) boils down to \( \rho_1 = \hat{\phi} \) or using the sample autocorrelations \( \hat{\rho}_1 = \hat{\phi} \).

Thus, if the calculated value \( \hat{\phi} \) is significantly different from zero, we know that the autoregressive process is at least order 1. Let us denote this value \( \hat{\phi} \) by \( \hat{\phi}_1 \). We repeat the process. We can get the series \( a_1, a_2, a_3, \ldots \) the partial correlation function and note that we can infer the order of the autoregressive process from its behaviour. In particular, we should observe that \( a_j \approx 0 \) for \( j > p \).

To test whether a particular \( a_j \) is zero, we can use the fact that it is approximately normally distributed, with mean zero and variance \( 1/T \). Hence, we can ask whether it is statistically significant at, say, 5 percent level by determining whether it exceeds \( 2/\sqrt{T} \) in magnitude.

3.6. Solution to the Unit Root

From the aforesaid Augmented Dickey-Fuller test and Correlogram analysis we confirm that there might be stationarity or having unit root in the time series data of selected indicators of poverty measures and fiscal decentralization in Nepal for the period 1983 to
2010. That is, in time series analysis there is no doubt that the level data of the indicator and variables are non stationary. To convert nonstationary time series data to stationary time series data we shall covert the indicators and variables in growth form as indicated below.

\[
\text{Growth Rate} = \ln \left( \frac{X_t}{X_{t-1}} \right)
\]

Where \( X_t \) are the selected indicators and variables of time series data in Nepal.

**3.7. Regression Analysis**

Since our key objective is to find the functional relationship between fiscal decentralization and poverty in Nepal. There is econometric method that can be used to derive estimates of parameters of functional relationship from statistical observations. The widely used econometric technique for the specification of functional relationship between the dependent and explanatory variables is classical regression model or the ordinary least squares (OLS) method. In this section we shall present simple linear regression model. Consequently we shall offer the estimable specific model for our study

**3.7.1. Specification of the Econometric Model**

We shall use multiple regression model that consists of dependent variable is explained by the explanatory variables of the econometric model (Johnston, 1991). The selected variables shall be carried out for the stepwise and best subset approach is used to fit the variables in the model. The model shall be tested by using estimated values \( R^2 \), adjusted \( R^2 \), p values, t test and F test. The multiple regression model can be written as follows.

\[
Y_i = \beta_0 + \beta_1 X_1 + ... + \beta_i X_i + \varepsilon_i
\]  

(3.6.1A)

Here, \( \beta_0, \beta_1, ..., \beta_i \) are parameters (regression coefficients), \( X_1, X_2, ..., X_i \) are known as explanatory variables and \( \varepsilon_i \) is a supporting element or a random error which is independent and is normally distributed. The assumptions of the model are outlined below.

i. Zero mean: \( E(\varepsilon_i) = 0 \) for all \( i \).
ii. Common variance: \( \text{Var}(\varepsilon_i) = E(\varepsilon_i^2) = \sigma^2 \) for all \( i \).

iii. Independence: \( \varepsilon_i \) and \( \varepsilon_j \) are independent for any \( i \) and \( j \) (\( i \neq j \)). It means,

\[
\text{Cov}(\varepsilon_i, \varepsilon_j) = E(\varepsilon_i, \varepsilon_j) = 0, \text{ for } i \neq j.
\]

iv. Independence of \( x_j \): That is \( \varepsilon_i \) and \( x_j \) are independent for all \( i \) and \( j \). This is possible only when \( x_j \) are considered random variables.

The assumptions i, ii and iii altogether simply written as, “the \( \varepsilon_i \) are IID(0, \sigma^2)”. It is read as “the \( \varepsilon_i \) are independently and identically distributed with zero mean and common variance \( \sigma^2 \)”.

Now, relation (3.6.1A) can be written as,

\[
Y_i = \beta_0 + \sum_{j=1}^{k} \beta_j X_{ij} + \varepsilon_i \quad \text{(3.6.1B)}
\]

### 3.7.2. Specification of the Estimable Model

We shall consider the incidence of poverty (POVIN) of the municipality as an endogenous variable. The explanatory variables shall be relative size (SIZE), tax autonomy (AUTO), social programme indicator (SOC), and fiscal decentralization (D) shall be the dummy variable for the estimation of regression line. These variables form our parsimonious or basic specification. We shall employ the dataset of municipalities in Nepal for 28 years covering 1983 to 2010. We shall apply the following semi log form of regression model to estimate the relationship between the variables of the municipalities in Nepal.

\[
\ln \left( \frac{Y_t}{Y_{t-1}} \right) = \beta_0 + \beta_1 \ln \left( \frac{X_{1t}}{X_{1t-1}} \right) + \beta_2 \ln \left( \frac{X_{2t}}{X_{2t-1}} \right) + \beta_3 \ln \left( \frac{X_{3t}}{X_{3t-1}} \right) + \beta_4 D_t + u_t \quad \text{(3.7.2)}
\]

Where

- \( Y_t \) stands for the Incidence of Poverty,
- \( \beta_0 \) stands for the Constant,
- \( X_{1t} \) stands for the Relative Size,
- \( X_{2t} \) stands for the Tax Autonomy,
\(X_{3t}\) stands for the Social Expenditure Indicator,

\(D_{t}\) stands for the Fiscal Decentralization Dummy,

\(\beta_1,...,\beta_4\) are the respective Parameters,

\(t\) is the time period from 1983 to 2010 (28 years), and

\(\epsilon_t\) is the Error Term.

### 3.8. Methodology of Data Collection

There are in total 58 municipalities in Nepal. This study covers all 58 municipalities of Nepal. The time series data of 28 years since 1983 to 2010 has been considered for the study. This period can be considered due to availability of nationwide data of all municipalities of the country. For national level study, we consider the time series data of Nepal of the same time period of 28 years since 1983 to 2010. The data of the same time period has been taken for the country also so as to compare the result with municipalities and for the sake of simplicity in analysis.

#### 3.8.1. Nature and Sources of Data

For this study, we entirely based on secondary data. The empirical study on all 58 municipalities of Nepal is based on the following data sources. The first is the Financial Database by German Technical Cooperation (GIZ or GTZ)/ Urban Development through Local Efforts (UDLE) Programme, Nepal. GIZ/UDLE has been maintained annual time series data of 28 years on municipal revenue, expenditure, population, area and the number of employees of the each and every municipalities of Nepal since the fiscal year 1982-83 to 2009-10. The GIZ/UDLE, Nepal does not publish this time series data for the public purpose. However, as the joint effort with Municipal Management Division, Ministry of Local Development and Local Bodies Fiscal Commission, Nepal, it has been published annual analysis of municipal fiscal data analysis entitled ‘Detailed Revenue and Expenditure Breakdown with Budget and Key Financial Indicators of 58 municipalities’ since the fiscal year 1997-98.

‘The Fiscal Status Analysis of Local Bodies’ published by Local Bodies Fiscal Commission (LBFC), Government of Nepal (GoN), Lalitpur in the years 2007, 2009 and 2011 has been used for the data source of LBs. These publications have been also used for
the management of data and for the preparation of indicators for our study. In this regard, the official records of DDC Division, Municipality Division and VDC Division of MoLD have been consulted. The annual reports and publications of MoLD, LGCDP, Association of District Development Committees in Nepal (ADDCN), Municipal Association of Nepal (MuAN) and National Association of Village Development Committees in Nepal (NAVIN) have been used for more information about the performance of LBs in Nepal.

In case of national level fiscal and social data, we consulted the following data sources. The first is ‘Economic Survey of Fiscal Year 2010-11 Statistical Tables (Vol. 2)’ and other previous volumes of ‘Economic Survey’ which has been published annually by MoF, Nepal. For detailed breakdown of revenue and expenditure the central budget speech and Red Book of concerning years published by MoF and ‘Annual Report’ of related issues published by The Office of Comptroller General, MoF, Nepal were consulted. The necessary volumes of Flash Reports, Annual Report of Department of Education, Ministry of Education, and Educational Management and Information System (EMIS) of University Grants Commission, Nepal have been utilized for the educational data. The official record of Department of Health, Ministry of Health, Nepal, has been used for health related indicators. The official database and annual reports of various years from the Office of Comptroller General and from the Office of Auditor General have been used for necessary information. Moreover, World Population Data Sheet, Government Finance Statistics (GFS), PovCalNet (http://iresearch.worldbank.org/PovCalNet/jsp/index.jsp) of the World Bank and Meta Data of World has been used from internet.

Vol. 1 and 2), Nepal Population and Housing Census 2011 (Vol. 1 and 2), and Population Census 2011, (Brief Results). The monetary data for our study has been obtained from the Quarterly Economic Bulletin, (Vol. 46 No. 4) of Nepal Rastra Bank (the central bank of Nepal). The available data might be inadequate; however, it offers some suggestive evidence on the extent of fiscal decentralization and poverty at the national and municipal level in Nepal.

3.8.2. Management and Processing of Data
After collection the data from the aforementioned secondary sources we turn our concentration towards the management and processing of data. This assignment involves a number of closely connected operations so as to get summarizing those data then we are able to obtain reliable answers to relevant research questions.

In this perspective in the first stage, the obtained data were presented in various tables. For this, on the basis of common characteristics of available data, its classification should be done. The categorization of municipal data is to be done on the base of their topographic feature, geographical location and their age of formation. On the other hand, the national level data should be grouped on the basis of its common ground of the subject matter. Then we select few of them from each category and present the final table for analysis. The well managed statistical tables simplify the presentation and facilitate the comparisons. It also helps us to draw our attention to the important feature of data and could easily find out the errors. Then we easily correct the error from the table.

After tabulation the data the next task involves the statistical analysis of data. In our study, we first convert the data which are expressed in monetary value from current (nominal) price to constant (real) price term. The GDP deflator is taken from ‘Economic Survey of the fiscal year 2010-11 (Vol. 2)’ published by MoF, Nepal. We can’t get the deflator of each and every item. As a result, GDP deflator has been taken as an overall deflator to deflate the data. We convert the values in terms of 2001 as the base year.

In Nepal, every fiscal year starts on mid July and ends on mid July of the next year. It means every fiscal year is the combination of two (almost equal period) half years as per the Nepali calendar system and is expressed as the combination of two years like 1982-83. For the sake of simplicity in computation, the dual value of the fiscal year like 1982-83
has been changed to 1983 only. Therefore, for the municipal level and country level estimation only a single later half figure will be used to denote fiscal year in place of dual numeral. However, for the diagrammatic presentation, wherever it is possible, the dual value will be used too.

3.8.3. Classification of the Municipalities

There are in total 58 municipalities spreads in the country, Nepal. At first, the information of these municipalities is compiled separately in 58 tables. Then the aggregate value of all municipalities is in separate table. Again, for the task of data management in our study, we classify municipalities on the ground of their topographic feature, geographical location where they are in and their age of formation in the form of municipality. This classification facilitates the comparison for the study. We consider the aggregate data of each category for the estimation. The classification is listed below.

(1) Classification on the basis of topography: It is already mentioned in subsection 1.6. of chapter one of our study about the topography of Nepal. By viewing this, the municipalities should be classified in to two sub categories hilly and terain as pointed out below.

a. Hilly municipalities: The municipalities located at the high hills (mountains) and mid hills are called hilly municipalities. These are spreads from east to west in the northern side of the country. In total, there are 28 municipalities are in the hill. These are (1) Ilam (2) Dhankuta (3) Khandbari (4) Triyuga (5) Kamala Mai (6) Bhimeswar (7) Kathmandu (8) Lalitpur (9) Bhaktapur (10) Madhyapurthimi (11) Kirtipur (12) Banepa (13) Dhulikhel (14) Bidur (15) Panauti (16) Hetauda (17) Pokhara (18) Byas (19) Prithvinarayan or Gorkha (20) Lekhnath (21) Waling (22) Putali Bazar (23) Baglung (24) Tansen (25) Narayan (26) Dipayal (27) Amargadhi and (28) Dasarathchand.

b. Terain municipalities: The municipalities situated at the southern plain (tarai) are called terain municipalities. These municipalities are also ranges from east to west of the country. In other words, the remaining numbers of municipalities than the hills are terain municipalities. So, the total numbers of terain municipalities are 30. These are (1) Bhadrapur (2) Damak (3) Mechinagar (4) Biratnagar (5) Dharan (6) Inaruwa (7) Itahari (8) Rajbiraj (9) Lahan (10) Siraha (11) Janakpur (12) Jaleswor (13) Malangawa (14) Birgunj (15) Kalaiya (16) Bharatpur (17) Gaur (18) Ratnanagar (19) Siddharthanagar (20) Butwal (21) Kapilvastu (22) Ramgram (23)

(2) **Classification on the basis of geographical location:** We have discussed about the political system of Nepal in sub section 1.6.4 of our study. Nepal is divided into 5 development regions from east to west respectively as: eastern, central, western, mid western and far western. By keeping this fact in mind we can classify the total number of municipalities into two sub categories as eastern and western as follows.


b. Western municipalities: The municipalities located in western, mid western and far western development regions are called western municipalities. These are spreads from high hills to southern plain and western than the capital city of the country. The total numbers of western municipalities are 24. These are (1) Pokhara (2) Lekhnath (3) Byas (4) Prithvinarayan or Gorkha (5) Waling (6) Patalibazar (7) Baglung (8) Siddhartha nagar (9) Butwal (10) Tansen (11) Kapilvastu (12) Ramgram (13) Tribhuwanagar or Ghorahi (14) Tulsipur (15) Nepalgunj (16) Birendranagar (17) Guleria (18) Narayan (19) Dhangadi (20) Tikapur (21) Dipayal (22) Mahendranagar or Bhimdutta (23) Amargadhi and (24) Dasarathchand.

(3) **Classification on the basis of age of formation as a municipality:** Municipalities could be classified on the basis of their age of declaration as a municipality. In this regard, we classify the total municipalities of Nepal into two categories old and new are presented below.

a. Old municipalities: The municipalities which were formed before 1982 are termed as old municipalities. These are spreads in various parts of the country. The

b. New municipalities: The municipalities which were declared as the status of municipalities after 1982 are termed as new municipalities. These are also spreads in various parts of the country. The numbers of new municipalities are also 29. These are (1) Mechinagar (2) Inaruwa (3) Itahari (4) Khandbari (5) Siraha (6) Triyuga (7) Bhimeswar (8) Kamala Mai (9) Malangawa (10) Madhyapurthimi (11) Kirtipur (12) Panauti (13) Dhulikhel (14) Bidur (15) Gaur (16) Ratnanagar (17) Prithvinarayan or Gorkha (18) Byas (19) Lekhnath (20) Waling (21) Putalibazar (22) Baglung (23) Ramgram (24) Tulsipur (25) Gulariya (26) Narayan (27) Tikapur (28) Amargadhi and (29) Dasarathchand.

3.9. Empirical Estimation Process
The empirical estimation shall be done by using the econometric software package EViews 3.1 of the computer. This econometric package is user friendly and easily available. Therefore, for further specification we use the econometric package EViews 3.1. However, the econometric package STATA 9.1 shall be used for the estimation of poverty in municipal and national level data of Nepal. Since, for the estimation of poverty by using small area estimation (SAE) method, the econometric software STATA has been preferred by the World Bank and other international institutions in Nepal and worldwide (CBS, WFP and WB, 2006).

3.10. Specification, Definition and Measurement of the Variables
The theoretical point of view shows that the facet of fiscal decentralization system is numerous and diverse. The literature reveals that the fiscal decentralization is measured in different ways. The issue of measuring decentralization is somewhat a difficult task (Ebel and Yilmaz, 2002). Measurement of fiscal decentralization as an explanatory variable is more problematic. It means there is no single or best measure of decentralization. Bell et al. (2006) states that it is not easier to measure fiscal decentralization. On the other hand,
the concept of poverty is also very broad and there is no consensus about their accurate meaning and proper measurement. Taking these difficulties into consideration, with viewing our objectives of study, on the basis of conceptual framework the following points should be considered to select the variables for the empirical analysis.

1. Relevancy: The variables should be relevant for the study;
2. Availability: The variables should be constructed on the basis of availability of data;
3. Credibility: The variables should be purposeful and credible; and
4. Quantifiability: The dimension of the subject matter for the study should be quantified by the variables.

We shall use the terminology ‘indicator’ and ‘variable’ interchangeably for the same sense. Based on these criteria, the relevant variables for the entire country and for the all 58 municipalities in Nepal are identified in the following sub sections.

3.10.1. Variables for the National Level Study

We shall use the following variables or indicators for the national level study.

1. Poverty Incidence (POVIN): Poverty incidence (headcount index or poverty head count ratio) is simply the share of population that is defined as poor. It is the share of total population whose consumption is below 2,220 kilocalorie per person per day for the year 2010. It measures the percentage of population living below the defined poverty line.

2. Poverty Gap (POVGAP): Poverty gap (depth of poverty) is the sum of the distance between the selected threshold and the level of income or consumption of each individual, divided by the total population. It measures in percentage terms how far the average expenditure of the poor falls short from the defined poverty line (2,220 kilocalorie per person per day for the year 2010). The average value is taken over the entire population for counting the non poor as having zero poverty gap.

3. Squared Poverty Gap (POVSG): Squared poverty gap (severity of poverty) is computed by adding up the square of the distance between the selected threshold and the level of income or consumption of each individual, and then dividing by the total population. It measures in percentage, where the average is taken over the entire population with zero value of poverty gap to the non poor. By squaring the
poverty gap more weight is given to large gaps, thus, it shows the inequality among the poor.

(4) Gini Coefficient (GINI): Gini coefficient measures the extent to which the income distribution among the individuals or households within an economy deviates from perfect equal distribution. This coefficient measures the area between the Lorenz curve and a hypothetical absolute line of equality. It is expressed as percentage of area under the hypothetical absolute line. Thus a Gini coefficient of 0 represents the perfect equality, whereas a 100 implies perfect inequality.

(5) Mean Years of Schooling (SCH): Mean years of schooling is the average number of years of education received by a people ages 25 years and older, converted from education attainment levels using officials durations of each level. Therefore, higher the mean years of schooling stand for the higher the quality of life and higher number of skilled manpower in the working group of population.

(6) Adult Literacy Rate (LIT): Adult literacy rate is the total percentage of population age 15 years and above who can, with understanding, read and writes a short, simple statement on their everyday life. This indicator is calculated by diving the number of literates aged 15 years and above by the corresponding age group of population and multiplying the result by 100.

(7) Infant Mortality Rate (IMR): Infant mortality rate is the number of death of a child less than one year of age in per 1,000 live births in a particular year. The IMR for a given region is calculated by the number of children dying under one year of age, divided by the number of live births during the same year, multiplied by 1,000 (Andrews et al., 2008). The infant mortality rate takes away the potential physical, social and human capital.

(8) Average Life Expectancy (LEX): Average life expectancy is the expected number of years of life remaining at a given age. It is an average; a particular person may well die many years before or many years after their expected survival (Sullivan and Sheffrin, 2012). Higher the average life expectancy denote higher is the span of life of the people.

(9) Productivity of Principal Food Crops (in metric ton per hectare) (FOOD): It is the ratio of total food crops (paddy, maize, wheat, barley and millet) produced in metric tonnes to the total area of these crops cultivated in hectare of the year. The food is the base of life. So the higher the productivity of food crops denotes the higher is the level of food security in the country.
Productivity of Principal Cash Crops (in metric ton per hectare) (CASH): It is the ratio of total cash crops (sugarcane, oil seeds, tobacco, potato and jute) produced in metric tonnes to the total area of these crops cultivated in hectare of the year. The principal cash crops are also called the high value or high impact crops. Thus higher the productivity of cash crops indicates the higher is the volume of domestic and foreign trade. It denotes the state of livelihood and the status of employment in the country.

Expenditure on Education (XED): It is the percentage share of central government expenditure in a particular year, in Nepalese currency (NPR) on education to the country’s GDP at the same year. The increasing amount of educational expenditure leads to increase mean years of schooling and adult literacy rate in the country.

Expenditure on Health (XHLT): It is the percentage share of central government expenditure in a particular year, in Nepalese currency (NPR) on health to the country’s GDP at the same year. Higher amount of government spending on health reduces IMR and improve in average life expectancy of the people.

Expenditure on Agriculture (XAG): It is the percentage share of central government expenditure in a particular year, in Nepalese currency (NPR) on agriculture to the country’s GDP at the same year. More government expenditure on agriculture boosts up the productivity of food crops and productivity of cash crops.

In wrapping up, additional government spending on education, health and agriculture improves the respective indicators then get better living standard of the people.

3.10.2. Variables for the Municipal Level Study
We have specified the poverty variable and fiscal decentralization variables for the municipal level study as outlined below.

(1) Poverty Incidence (POVIN): Poverty incidence (incidence of poverty or head-count index or poverty head count ratio) is simply the share of population that is defined as poor. It is the share of total population whose consumption is below than the 2,220 kilocalorie per person per day for the year 2010 in Nepal. It measures the percentage of population living below the defined poverty line.

We have eight measures of decentralization variables each carries different aspect of fiscal decentralization. The most frequently used measures of fiscal decentralization in cross
country analysis are subnational shares of total government expenditures or revenues. These two indicators show the authority of local governments over expenditures and revenues. We apply these popular concepts to measure fiscal decentralization. We also follow the autonomy, accountability and service delivery measures of fiscal decentralization for the construction of variables.

(2) Relative Size (SIZE): It is the ratio of total municipal expenditure to the total expenditure on local development expressed in percentage of the country in a year. It shows the comparison of municipal expenditure to the expenditure via central government to the local government in Nepal. It means, higher the relative size higher is the independent absorption (expenditure) capacity of municipality.

(3) Tax Autonomy (AUTO): It is the share of tax revenue of municipality to the total municipal revenue of the municipality in percentage. It depicts the sovereignty of revenue collection then for the autonomy in expenditure. It is the measure of revenue decentralization. It means, higher the tax autonomy higher is the autonomy in expenditure.

(4) Own Source of Revenue Per Capita (OSR): It is the ratio of own source of revenue of the municipality to the total population of the municipality. It reveals the contribution done by each local resident to the revenue source of municipality. The greater the share of own source of revenue, the greater accountability of the local governments to the local residents who pay taxes.

(5) Vertical Imbalance (VIMB): It is the share of central grants to the total municipal revenue in percentage. It indicates the dependency (fiscal independence) of central grant in the municipal expenditure. The notion is, the greater the share of central grant in total municipal expenditure, the greater responsibility to the central government rather than the answerability to the local people. It too reveals the intergovernmental fiscal relation in the governance system.

(6) Social Programme Indicator (SOC): It is the share of social programme (education, health, forestry, cultural and sports, disaster relief, financial assistance and miscellaneous) expenditure of the municipality to the total expenditure of the municipality in percentage. In other words, it is the amount of expenditure done for the social welfare especially to the deprived groups of the municipal population. So it refers to the social responsibility of the local government.
Expenditure Per Capita (EXPC): It is the ratio of total municipal expenditure to the total municipal population of the respective year. This indicator measures the aggregate expenditure (current, social and capital investment) done to each local resident through municipal budget. The higher the expenditure per capita indicates the higher investment is done for the better life of local residents. It is the part of expenditure decentralization.

Service Provider Indicator (SERV): It is the number of municipal employee in per 1,000 municipal population. The larger the number of municipal employ the higher is the level of services to the local people. Higher the value of SERV indicates the better level of municipal service delivery.

Fiscal Decentralization Dummy (D): The fiscal decentralization dummy shall be applied for removing seasonal variations in time series analysis. This variable can be estimated among the other explanatory variables. We express this dummy as a binary variable. That is, \( D = 1 \) for the period 2000 to 2010 or the period after fiscal decentralization in Nepal and \( D = 0 \) for the period 1983 to 1999. The dummy shall help us to measure the interrelationship between the variables.

In regression analysis, we shall use incidence of poverty (POVIN) as a dependent variable and the explanatory variables will be relative size (SIZE), tax autonomy (AUTO), social programme indicator (SOC) and fiscal decentralization dummy (D).

3.11. The Hypothesis Framework
We now develop the hypotheses that shall be tested in chapters four and five. The numbers of explanatory variables affect the dependent variable in the country and the municipalities in Nepal. From the theoretical analysis, we have seen that there are number of fiscal decentralization variables are affecting the poverty. We consider national level and municipal level hypotheses in the following subsections.

3.11.1. Testable hypotheses at National Level
Refer to the spline function analysis in section 3.4, the testable hypothesis for the national level analysis has been specified as stated below.
**Hypothesis 1**
The incidence of poverty is expected to decline over the time period in Nepal. So, we want to test null hypothesis $H_0 : \beta = 0$ against alternative hypothesis $H_1 : \beta < 0$.

**Hypothesis 2**
The poverty gap is likely to decrease over the time period. Thus, we shall test null hypothesis $H_0 : \beta = 0$ against alternative hypothesis $H_1 : \beta < 0$.

**Hypothesis 3**
The severity of poverty is usually decreasing over the time period. Hence, we test null hypothesis $H_0 : \beta = 0$ against alternative hypothesis $H_1 : \beta < 0$.

**Hypothesis 4**
The income inequality is normally falling over the time period. Therefore, we would like to test null hypothesis $H_0 : \beta = 0$ against alternative hypothesis $H_1 : \beta < 0$.

**Hypothesis 5**
The incidence of poverty after the promulgation of Local Self Governance Act, 1999 (LSGA) is supposed to be declined in the municipalities in Nepal. Therefore, the testable null hypothesis is $H_0 : \delta_2 = 0$ against the alternative hypothesis $H_1 : \delta_2 < 0$.

**Hypothesis 6**
The poverty gap in the second regime is likely to be reduced. As such, the null hypothesis is $H_0 : \delta_2 = 0$ against alternative hypothesis $H_1 : \delta_2 < 0$. 
Hypothesis 7
After the enactment of LSGA it is believed that the severity of poverty is to be decreased. Therefore, we want to test the null hypothesis $H_0 : \delta_2 = 0$ against alternative hypothesis $H_1 : \delta_2 < 0$.

Hypothesis 8
The income inequality in the regime of LSGA is thought to be lessened. So, the null hypothesis is $H_0 : \delta_2 = 0$ against alternative hypothesis $H_1 : \delta_2 < 0$.

3.11.2. Testable hypotheses at Municipal Level Analysis
The testable hypothesis shall be specified for testing in our study stating whether these are statistically significant or not, individually or jointly with the incidence of poverty in the municipalities of Nepal.

Refer to the regression equation (3.7.2) where the growth rate of the variable of specific choice has been considered for regression on growth rate of relative size (SIZE), growth rate of tax autonomy (AUTO), growth rate of social programme indicator (SOC) and fiscal decentralization dummy (D). Consider now the effect of these specific variables on poverty index (POVIN). Then the hypotheses on incidence of poverty are presented below.

Hypothesis 1
Relative size is expected to decrease the incidence of poverty in the municipalities in Nepal. Therefore, we want to test the null hypothesis $H_0 : \beta_1 = 0$ against the alternative hypothesis $H_1 : \beta_1 < 0$.

Hypothesis 2
Tax autonomy is likely to reduce the incidence of poverty. As a result, we would like to test the null hypothesis $H_0 : \beta_2 = 0$ against the alternative hypothesis $H_1 : \beta_2 < 0$. 
**Hypothesis 3**
Social programme indicator is supposed to decline the incidence of poverty. So, we want to test the null hypothesis \( H_0: \beta_3 = 0 \) against the alternative hypothesis \( H_1: \beta_3 < 0 \).

**Hypothesis 4**
Fiscal decentralization is liable to lessen the incidence of poverty. For that reason, we want to test the null hypothesis \( H_0: \beta_4 = 0 \) against the alternative hypothesis \( H_1: \beta_4 < 0 \).

### 3.12. Conclusion
This chapter has attempted to locate the model, methodology and data for our study. The concepts of descriptive statistics for the indicators or variables, graphical exposition of indicators and the basis of trend line analysis have been offered. The cumulative sum test, cumulative sum of squares test, spline function approach and the Chow test have been presented to test the structural change due to the promulgation of Local Self Governance Act, 1999 in Nepal. The regression model will be used to estimate the relationship between incidence of poverty and fiscal decentralization variables.

We have outlined the concept on the test the stationarity of time series data using correlogram analysis and Augmented Dickey-Fuller test.

We have collected secondary data from the national level publications and official databases. The fiscal and poverty data of the 58 municipalities of Nepal for 28 years spanning over the time 1983 to 2010 have been considered. The data have been managed and processed. For the comparative study, we classified the 58 municipalities on the basis of ecological belts, administrative regions and their period of formation as a municipality. We have specified the variables with its detailed description, which would be used for the estimation of result. The set of hypotheses in the context of poverty reduction through fiscal decentralization have been explained and presented with the intuitive logic. The econometric software package which is to be used for the estimation of result has been offered. We are going to present the estimation of empirical results for the impact of fiscal decentralization on poverty in Nepal in chapter four.
Chapter Four
Fiscal Decentralization and Poverty
Empirical Evidences of the Whole Country

4.1. Introduction
In the previous chapter we have offered the models, methodology and data to be needed for the empirical estimation of our study. Present chapter is devoted to the empirical results to the impact of fiscal decentralization on poverty reduction outcomes in Nepal. This chapter is based on the national level time series data of the country. We shall interpret the empirical results. The findings of this chapter will lead to a set of policy prescriptions. Our empirical analysis has been presented one by one in the following subsequent sections.

We begin the description of our empirical result with a brief overview on the profile of selected socio, economic and demographic indicators in Nepal for the period from 1983 to 2010 in section 4.2. In this section, we discuss the changing trend of mean years of schooling, adult literacy rate, infant mortality rate, average life expectancy, productivity of principal food crops, productivity of principal cash crops, expenditure on education, expenditure on health and expenditure on agriculture is discussed. In section 4.3 the profile of poverty and related issues, notably, incidence of poverty, depth of poverty, severity of poverty and deviation from the income equality in Nepal in the period prior to and later than fiscal decentralization is described. The analysis on structural shift and trend in poverty in Nepal is outlined in section 4.4. Under this section we locate the time point in year of structural shift in Nepal using cumulative sum (CUSUM) test and cumulative sum of squares (CUSUMSQ) test. The location of time point is confirmed by Chow test. We examine the structural shift in the issues of poverty by means of spline function approach (Poirier and Garber, 1974). We test the stationarity of time series data on the poverty related issues. The correlogram analysis is done to test the stationarity and to specify the order of autoregressive scheme in the variables of the issues of poverty. We considered the Augmented Dickey-Fuller unit root test. After that the trend and structural shifts in poverty related issues in Nepal for the entire period
of 28 years (1983 to 2010) and prior and posterior of fiscal decentralization is estimated using stationary or rate of growth form time series data. We conclude the chapter in section 4.5.

Nepal is diversified in socio-economic characters. The educational status of the people has been changing over time. The agriculture is the main means of livelihood option for the people. The health status, especially the status of children has been considerable. In this regard we want to discuss selected socio, economic and demographic indicators of Nepal in the upcoming section.

**4.2. Profile of Selected Socio-Economic-Demographic Indicators in Nepal during 1983-2010**

It could be observed from the table 4.2.1 that a brief profile of selected educational, agricultural and health related indicators in Nepal. Referring to table 4.2.1, it is clear that the mean years of schooling of the country, measured as the average number of years of education received by a people of age 25 and above are roughly 2.5 years. The average adult literacy rate of 15 years and above is 39.7 percent of the total population of the corresponding group. In this period, the average infant mortality rate of the country is 80.5 per 1,000 live births and the average life expectancy is 58.1 years. The productivity of food crops (paddy, maize, wheat, barley and millet) produced in the country is approximately 2 metric tons per hectare and the average productivity of cash crops (sugarcane, oil seeds, tobacco, potato and jute) produced is 7.9 metric tons per hectare respectively. This shows that the productivity of cash crops is better than the productivity of food crops at the given time period in Nepal. The average central government expenditure on education, health and agriculture are 2.6 percent, 0.9 percent and 1 percent respectively.

We would like to compare the average status of the socio, economic and demographic indicators of Nepal for the phase before (1983 to 1999) after (2000 to 2010) fiscal decentralization in the country. Let us consider the educational expenditure as a percentage of GDP the figure before fiscal decentralization is 2.20 and it has increased after the fiscal decentralization and reaches to 3.25. The mean years of schooling and adult literacy rate are considerably increased over the two periods with the figure correspondingly 2.00 years to 3.29 years and 32.05 percent to 51.45 percent.
Let us consider the average expenditure on agriculture as a percentage of gross domestic products (GDP). It is unfavourably affected after fiscal decentralization in Nepal. It is 1.21 before fiscal decentralization and decreases by 50 percent after fiscal decentralization and reaches to 0.60. However, the average productivity of food crops and cash crops increases in this era. It is an interesting case. The average productivity of food crops lead to 0.56 metric tons per hectare and cash crops by 4.25 metric tons per hectare after fiscal decentralization.

The demographic indicators are favourably increased after fiscal decentralization in Nepal. The health expenditure expressed as a percentage of GDP has been increased from 0.79 to 1.03 after fiscal decentralization. The average infant mortality rate decreases by 45.90 per 1,000 live births and the average life expectancy rate increases by 7.35 years after fiscal decentralization in Nepal.

We examine the changing trend of selected socio, economic and demographic indicators of Nepal. We use exponential trend line to examine the varying trend of the indicators as mentioned in the research methodology chapter of this study. The trend line examination of the indicators shall facilitate to know the socio-economic situation of the country in the before and can predict the same for the future. Therefore, subsequent part of this section is devoted to the presentation of diagrammatic trend of the indicators, namely, mean years of schooling, adult literacy rate, infant mortality rate, average life expectancy, productivity of principal food crops, productivity of principal cash crops, expenditure on education, expenditure on health and expenditure on agriculture in Nepal spanning over the period 1983 to 2010.
Table 4.2.1. Descriptive Statistics on Socio-Economic-Demographic Indicators in Nepal during 1983-2010†

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Median</td>
<td>Maximum</td>
</tr>
<tr>
<td>Mean Years of Schooling (25 years &amp; older)</td>
<td>2.51</td>
<td>2.51</td>
<td>3.80</td>
</tr>
<tr>
<td>Adult literacy rate (%) (15 years &amp; above)</td>
<td>39.67</td>
<td>36.85</td>
<td>56.50</td>
</tr>
<tr>
<td>Infant Mortality Rate (per 1,000 live births)</td>
<td>80.51</td>
<td>80.55</td>
<td>123.39</td>
</tr>
<tr>
<td>Average Life Expectancy Rate (Years)</td>
<td>58.13</td>
<td>57.41</td>
<td>65.52</td>
</tr>
<tr>
<td>Productivity of Principal Food Crops (M. Ton/Hectare)</td>
<td>2.01</td>
<td>1.99</td>
<td>2.48</td>
</tr>
<tr>
<td>Productivity of Principal Cash Crops (M. Ton/Hectare)</td>
<td>7.87</td>
<td>7.60</td>
<td>11.39</td>
</tr>
<tr>
<td>Average Life Expectancy Rate (Years)</td>
<td>2.01</td>
<td>1.99</td>
<td>2.48</td>
</tr>
<tr>
<td>Productivity of Principal Food Crops (M. Ton/Hectare)</td>
<td>7.87</td>
<td>7.60</td>
<td>11.39</td>
</tr>
<tr>
<td>Productivity of Principal Cash Crops (M. Ton/Hectare)</td>
<td>2.61</td>
<td>2.53</td>
<td>4.37</td>
</tr>
<tr>
<td>Expenditure on Education (as a % of GDP)</td>
<td>0.88</td>
<td>0.85</td>
<td>1.58</td>
</tr>
<tr>
<td>Expenditure on Health (as a % of GDP)</td>
<td>0.97</td>
<td>0.94</td>
<td>1.99</td>
</tr>
<tr>
<td>Expenditure on Agriculture (as a % of GDP)</td>
<td>0.97</td>
<td>0.94</td>
<td>1.99</td>
</tr>
</tbody>
</table>

† Source: Author’s own calculation based on secondary data.
Figure 4.2.1 reveals that the mean years of schooling of the 25 years and older population in Nepal for the period 1983 to 2010. It clearly shows that the mean years of schooling has been gradually increased 1.24 years in 1983 and reaches to 3.8 years in 2008.

The adult literacy rate of Nepal expressed as the age of 15 years and above individuals expressed in percentage is presented in figure 4.2.2. It also positively changes as per the time period. It seems that the increase in adult literacy is faster than that of the mean years of schooling in Nepal.
Figure 4.2.3 presents the infant mortality rate per thousand live births expressed in number within the period from 1983 to 2010 in Nepal. The trend of infant mortality has been gradually decreased which shows that the state of neonatal health has been improving in Nepal.

The data for average life expectancy in years of the overall country Nepal is presented in figure 4.2.4. From this table it is evident that the average life expectancy has been increased and reached up to 55.52 years in the year 2010. It shows that the overall health service delivery in Nepal is reasonable.
From the figure 4.2.5 we understand that the productivity (yield in metric tonnes per hectare) of principal food crops (paddy, maize, wheat, barley and millet) has been increased in the period 1983 to 2009 in Nepal. The increasing trend of productivity of the food crops denotes the better level of food security in the country.

We present the trend in productivity (yield in metric tonnes per hectare) of principal cash crops (sugarcane, oil seeds, tobacco, potato and jute) in Nepal for the period 1983 to 2010 in figure 4.2.6. The trend of the productivity of cash crops has been increasing over the time period. It indicates that the volume of domestic and foreign trade of Nepal has been increased for the transaction of cash crops. This situation leads towards better economy of the country.
We know that education, health and agriculture are the bases of the country. Poor people of the country mainly depend on these basic services provided by the government rather than the private sector. Therefore, improvement in educational, health and agricultural sector thrust in poverty reduction. In Nepal, social priority sectors include basic education, basic health facilities and supply of agricultural inputs. Let us now depart to the government spending on education, health and agriculture for the period 1983 to 2010 in Nepal. The tendency of expenditure on education expressed as a percentage of GDP is presented in figure 4.2.7 reveals that the government spending on education has been increased more than two times in the period of 28 years in Nepal. This increasing tendency on educational expenditure leads to increase mean years of schooling and adult literacy rate in the country.

**Figure 4.2.7. Expenditure on Education (as a % of GDP)**

Figure 4.2.8 shows the trend of government spending on health facilities (as a percentage of GDP) in Nepal over 28 years for the period 1983 to 2010. The government expenditure on health has been increasing gradually. However, the government spending on health is lower than half of the educational spending. It means the government of Nepal and other stakeholders are not conscious to deliver health services to the people like the other underdeveloped countries in the world. This little amount of spending on health leads to low level of health especially to the poor people. The cause of low level of improvement in average life expectancy and infant mortality rate in Nepal might be the lower government spending on health. Therefore, the amount of spending on health must be increased to reduce poverty in Nepal.
Agriculture has been the backbone of Nepalese economy. The importance of agriculture in Nepal has been already noted in the country information of the Introduction chapter of this study. Let us consider the government spending on agriculture in Nepal for the period 1983 to 2010.

The tendency on agricultural spending by the government over the time has been decreased gradually in the figure 4.2.9. This negative tendency leads to low level of agricultural extension services to the farmers. The farmers are obviously poor in Nepal. The lower amount of government spending on agriculture enhances low productivity which adversely affect on poverty reduction. Therefore, for poverty reduction in Nepal there should be huge government spending in the form of subsidies, technical support and inputs in the agricultural sectors.
4.3. Profile of Poverty and Related Issues in Nepal before and after Fiscal Decentralization

The aim of every government is to improve the living standard of its population then maximizing welfare. Nepal too, has been an effort to improve the level and quality life of the people. To take steps to tackle the troubles of citizen has been the agenda of the government of Nepal since the inception of its first periodic plan in the fiscal year 1956-57. However, the assessment of poverty, first of all, has been defined and quantified in the fiscal year 1976-77. The survey conducted in 1976-77 has estimated that 32.9 percent of the total population lies below the absolute poverty line. The absolute poverty has been defined as the situation where the people do not attain the daily minimum standard of living. Although the surveys conducted after that time showed the higher value of absolute poverty than the value of same in first survey. After that time Government of Nepal conducted the national level surveys with the collaborations of national and international institutions in the year 1984, 1992, 1995-96, 2003-04 and 2010-11 in the country. Except these national levels survey there have been conducted various studies on poverty in Nepal. Therefore, the study on poverty and its related issues are still the matter of importance in Nepal.
The present study is as well related to the consumption dimension of poverty. We shall discuss on the trend of incidence of poverty, depth of poverty, severity of poverty and deviation from the income equality in Nepal in the next subsection.

4.3.1. Indicators of Poverty in Entire Nepal

In the table 4.3.1 we have summarized the descriptive statistics of the poverty measures and deviation from income equality in Nepal using data spanning over the period of 1983 to 2010. The average value of incidence of poverty (POVIN), which means the number of people lying below the defined poverty line, is 36.8 percent of the total population. The maximum value of incidence of poverty is 42.5 percent in 1999 and minimum value is 25.2 percent in the year 2010. The poverty gap, which shows the aggregate deficit of the poor relative to the poverty line, in an average is 9.7 percent. Subsequently, the squared poverty gap, which is sensitive to changes in the income distribution among the poor and gives the higher weight for poor households who experience higher poverty, the mean value is 3.8 percent. The average value of income inequality is 35.7 percent.

Table 4.3.1. Descriptive Statistics on Poverty in Nepal†

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
<th>Issues on Poverty</th>
<th>Incidence of Poverty</th>
<th>Depth of Poverty</th>
<th>Severity of Poverty</th>
<th>Deviation from Income Equality</th>
<th>Incidence of Poverty</th>
<th>Depth of Poverty</th>
<th>Severity of Poverty</th>
<th>Deviation from Income Equality</th>
<th>Incidence of Poverty</th>
<th>Depth of Poverty</th>
<th>Severity of Poverty</th>
<th>Deviation from Income Equality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>36.86</td>
<td>9.70</td>
<td>3.76</td>
<td>35.70</td>
<td>41.56</td>
<td>11.35</td>
<td>4.54</td>
<td>32.80</td>
<td>29.59</td>
<td>7.14</td>
<td>2.56</td>
<td>40.17</td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>41.15</td>
<td>10.94</td>
<td>4.40</td>
<td>32.70</td>
<td>41.76</td>
<td>11.56</td>
<td>4.63</td>
<td>32.60</td>
<td>29.17</td>
<td>6.99</td>
<td>2.47</td>
<td>39.26</td>
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<tr>
<td>Maximum</td>
<td>42.48</td>
<td>11.90</td>
<td>4.82</td>
<td>46.00</td>
<td>42.48</td>
<td>11.90</td>
<td>4.82</td>
<td>35.60</td>
<td>38.00</td>
<td>9.37</td>
<td>3.59</td>
<td>46.00</td>
<td></td>
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<tr>
<td>Minimum</td>
<td>25.20</td>
<td>5.40</td>
<td>1.80</td>
<td>31.92</td>
<td>40.00</td>
<td>9.94</td>
<td>3.84</td>
<td>31.92</td>
<td>25.20</td>
<td>5.40</td>
<td>1.80</td>
<td>32.80</td>
<td></td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>6.46</td>
<td>2.25</td>
<td>1.05</td>
<td>4.38</td>
<td>0.57</td>
<td>0.53</td>
<td>0.25</td>
<td>0.89</td>
<td>4.04</td>
<td>1.19</td>
<td>0.53</td>
<td>3.79</td>
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<tr>
<td>CV</td>
<td>17.52</td>
<td>23.20</td>
<td>28.03</td>
<td>12.28</td>
<td>1.36</td>
<td>4.65</td>
<td>5.51</td>
<td>2.70</td>
<td>13.65</td>
<td>16.62</td>
<td>20.76</td>
<td>9.44</td>
<td></td>
</tr>
<tr>
<td>Skewness</td>
<td>-0.77</td>
<td>-0.62</td>
<td>-0.59</td>
<td>1.06</td>
<td>-1.03</td>
<td>-1.32</td>
<td>-1.55</td>
<td>2.21</td>
<td>0.75</td>
<td>0.49</td>
<td>0.65</td>
<td>-0.08</td>
<td></td>
</tr>
<tr>
<td>Kurtosis</td>
<td>1.86</td>
<td>1.75</td>
<td>1.68</td>
<td>2.90</td>
<td>4.54</td>
<td>4.09</td>
<td>4.89</td>
<td>7.25</td>
<td>2.75</td>
<td>2.44</td>
<td>2.63</td>
<td>2.87</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>28</td>
<td>28</td>
<td>28</td>
<td>28</td>
<td>17</td>
<td>17</td>
<td>17</td>
<td>17</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td></td>
</tr>
</tbody>
</table>

† Source: Author’s own calculation based on secondary data.

Consider the status of issues on poverty in the regime before and after the fiscal decentralization in Nepal. The incidence of poverty has been considerably decreased after adopting the policy on fiscal decentralization. Before fiscal decentralization in an average
41.56 percent of the total population was below the defined poverty line and the same are approach to 29.59 percent later than fiscal decentralization. The depth of poverty has been changed from 11.35 percent to 7.14 percent and the severity of poverty has been changed from 4.54 percent to 2.56 percent during fiscal decentralization. The deviation from income equality in percentage has been increased for the period of fiscal decentralization. The average value of deviation from income equality in the period 1983 to 1999 was 32.80 percent.

We know the trend of incidence of poverty in Nepal decreasing over the time period from the figure 4.3.1. It has been already discussed in chapter three that the incidence of poverty or head-count index is simply the share of population that is defined as poor. It is the share of population whose food consumption is below 2,220 kilocalorie each person per day for the year 2010 as decided by the Central Bureau of Statistics, Nepal. It is seen that in the year 1999 the incidence of poverty was maximum then it started to fall down swiftly. Here the considerable matter is that the year 1999 is the time period of the promulgation of Local Self Governance Act, 1999 (LSGA) in Nepal. This time point has been taken as the starting point of fiscal decentralization in Nepal. So, we can say that the poverty has been declined more visibly after the fiscal decentralization in Nepal.
The figure 4.3.2 has considered the depth of poverty for the period 1983 to 2010 in Nepal. It is known to us that the poverty gap (depth of poverty) is the sum of the distance between the selected threshold and the level of income or consumption of each individual, divided by the total population. It measures in percentage terms of how far the average expenditure of the poor falls short from the defined poverty line (2,220 kilocalorie each person per day for 2010). The average value is taken over the entire population for counting the non poor as having zero poverty gap. Thus the declining trend of poverty gap in the figure shows that the share of population whose poverty gap is below the defined poverty line has been lowering in Nepal. This value was higher in the year 1995 then after the year 1999 it has been decreasing speedily and reaches to 5.4 percent in the year 2010.

The squared poverty gap (severity of poverty) is computed by adding up the square of the distance between the selected threshold and the level of income or consumption of each individual, and then dividing by the total population. It measures in percentage, where the average is taken over the entire population with zero value of poverty gap to the non poor. By squaring the poverty gap more weight is given to large gaps, thus, it shows the inequality among the poor. The figure 4.3.3 reveals that the inequality among the poor in Nepal has been increasing over the time period from 1983 to 2010 in Nepal. The severity of poverty also has been decreasing at a very fast rate after the year 1999 in Nepal. It means fiscal decentralization was the means to reduce inequality among the poor. Furthermore, we can say
that fiscal decentralization is the successful attempt to formulate the social and economic justice in the country.

From the figure 4.3.4 we note that the degree of income inequality which is denoted by Gini coefficient in Nepal has been increasing over the time period 1983 to 2010 in Nepal. It is already noted that the deviation from income equality measures the extent to which the income distribution among the individuals or households within an economy deviates from perfect equal distribution. This coefficient measures the area between the Lorenz curve and a hypothetical absolute line of equality. It is expressed as percentage of area under the hypothetical absolute line. Thus a deviation from income equality of 0 represents the perfect equality, whereas a 100 implies perfect inequality. Here the value of degree of income inequality is relatively lower in the year 1983 and reached higher in the year 2008 in Nepal. After that it started to decline. The considerable matter in this regard is that the value of deviation from income equality has been decreasing onwards 1999 in Nepal shows that the fiscal decentralization policy is unsuccessful to decline income inequality in Nepal. It means after this period the gap between rich and poor has been increased very swiftly.
4.4. Structural Shift and Trend in Poverty in Nepal

Fiscal decentralization started in Nepal since the year 1999 all the way through the statute. In this section we deal with the effect of fiscal decentralization on the various indicators of poverty in Nepal. In order to locate the time point/year on and from which the effect of fiscal decentralization came into realization in decentralization in Nepal we shall carry out the cumulative sum (CUSUM) test and cumulative sum of squares (CUSUMSQ) test for the incidence of poverty, depth of poverty, severity of poverty and the deviation from income equality in Nepal. These couple of tests confirm the identification of year of effects of fiscal decentralization being felt in the economy in the country. Furthermore, we confirmed the located time point by Chow test.

4.4.1. Location of Time Period/Year of Structural Shifts: CUSUM and CUSUMSQ Tests and Chow Test

We look at the plots of cumulative sum and cumulative sum of squares statistic lay in the critical limits. Now in all figures we have offered time period in the horizontal axis and the respective cumulative sum and cumulative sum of squares values on the vertical axis. We plot the recursive residuals as described in the methodology chapter three. The departure of plot from the expected value may suggest the structural shift. The time point (in year) of structural shift shall be further tested by Chow test.
The figure 4.4.1A and 4.4.1B reveal cumulative sum and cumulative sum square tests on the structural change through fiscal decentralization on the incidence of poverty in Nepal. In the cumulative sum test the residual plot has been declining rapidly after the year 1999. The residual plot in cumulative sum of squares has gone upward just after the year 1999 and entered the critical boundary. Thus both the tests show that the year 1999 is the time point of structural shift in the country and the time point is further confirmed by Chow test statistic. The Chow test of statistic is statistically significant at 1 percent level. Thus, the Chow test confirms that there has been structural change in the year 1999 in Nepal. The Chow test statistic is outlined in the table 4.4.1A.

Figure 4.4.1A. CUSUM Test for Incidence of Poverty in Nepal
In 1999, there was a structural change in Nepal’s depth of poverty. It has been clearly shown by cumulative sum test of figure 4.4.1 C and cumulative sum of squares test of the figure 4.4.1D. Again the change has been established by Chow test statistic. The Chow test statistic is statistically significant at 1 percent level and is stated in the table 4.4.1B.
Figure 4.4.1C. CUSUM Test for Depth of Poverty in Nepal

![CUSUM Test for the Depth of Poverty in Nepal](image)

Figure 4.4.1D. CUSUMSQ Test for Depth of Poverty in Nepal

![CUSUM Squares Test for the Depth of Poverty in Nepal](image)

Table 4.4.1B. Chow Breakpoint Test for the Depth of Poverty: 1999

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>59.051</td>
<td>0.000</td>
</tr>
<tr>
<td>Log likelihood ratio</td>
<td>49.798</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Once again the test of structural shift by figures 4.4.1E and 4.4.1F for severity of poverty in Nepal shows the year 1999 as the year of structural change and it is confirmed by Chow test statistic, which is statistically significant at 1 percent and is presented in the table 4.4.1C.
Figure 4.4.1E. CUSUM Test for Severity of Poverty in Nepal

![CUSUM Test for the Severity of Poverty in Nepal](image)

Figure 4.4.1F. CUSUMSQ Test for Severity of Poverty in Nepal

![CUSUM Squares Test for the Severity of Poverty in Nepal](image)

<table>
<thead>
<tr>
<th>Table 4.4.1C. Chow Breakpoint Test: 1999</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
</tr>
<tr>
<td>Log likelihood ratio</td>
</tr>
</tbody>
</table>

The figure 4.4.1G and 4.4.1H show that the test of structural shift the deviation from income equality in Nepal. The cumulative sum test and cumulative sum squares test for the deviation from income equality show that the year 1999 is the point of structural break in the country and this time point is confirmed in table 4.4.1D by Chow test. The Chow test shows that the test of stability is statistically significant at 1 percent level.
The cumulative sum and cumulative sum of squares test on all indicators related to poverty followed by the Chow test show that effects of fiscal decentralization have started immediately from the year 1999 when the policy began to be implemented. Therefore, we shall consider the year 1999 as the break-point or the year of the structural shifts and proceed to look into the effects of fiscal decentralization on different poverty indicators. We shall use the spline function approach to examine the effects of fiscal decentralization on the poverty in entire Nepal.
4.4.2. Structural Shift and Trend in Poverty in Nepal

We have located the time point of structural shift or change correspond to the year 1999 in Nepal by means of cumulative sum and cumulative sum of squares test on the various indicators related to poverty followed by the Chow test. Now we want to test empirically the trend of structural change for the entire period (1983 to 2010), before fiscal decentralization (1983 to 1999) and during fiscal decentralization (2000 to 2010) in Nepal. The spline function methodology is useful to compute the structural change for the entire period and for the different regimes due to policy changes in the country. We consider semi-logarithmic spline function in order to examine the structural shift in poverty in Nepal. For this we re-parameterized function, which we have already mentioned in chapter three in the context of research methodology, as outlined under.

\[ \ln Y_i = \alpha_i + \delta_{1i}w_{i1} + \delta_{2i}w_{i2} + u_i \]

The expression \( \left[ \exp(\beta_i)-1 \right] \times 100 \) will yield the percentage growth rate for the \( i^{th} \) regime \((i = 1, 2)\), (for the two different regimes, which are \( w_{i1}, w_{i2} \) respectively) where \( \beta_1 = \delta_1 \) and \( \beta_2 = \delta_1 + \delta_2 \). The growth rate for the entire period will be captured by the equation as \( \ln Y_i = \alpha + \beta t + u_i \) and \( \left[ \exp(\beta)-1 \right] \times 100 \) will give us the rate of growth the relevant variables.

In table 4.4.1 we confirm the relationship between poverty measures, namely, incidence of poverty, depth of poverty, severity of poverty and deviation from income equality with the time for the entire period 1983 to 2010. We run the regression as specified by research methodology using level data. The four poverty measures are regressed with time in separate re-parameterized function. The estimated result shows that there exist a negative association between dependent and explanatory variables in the first three regression models. But in the last case there exist a positive association between deviation from income equality and coefficient of time of the regression model.
Table 4.4.1. Trend in Poverty (Variables at Level) in Nepal over the Period 1983-2010†

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Explanatory Variable</th>
<th>Coefficients</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>$R^2$</th>
<th>F-Stat</th>
<th>D W Stat</th>
<th>Growth Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG(POVIN) Incidence of Poverty</td>
<td>TIME</td>
<td>-0.020</td>
<td>0.002</td>
<td>-8.263*</td>
<td>0.72</td>
<td>68.279</td>
<td>0.142</td>
<td>-1.957</td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>3.877</td>
<td>0.040</td>
<td>97.659*</td>
<td>0.71</td>
<td>0.72</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOG(POVGAP) Depth of Poverty</td>
<td>TIME</td>
<td>-0.028</td>
<td>0.003</td>
<td>-10.839*</td>
<td>0.82</td>
<td>117.490</td>
<td>0.181</td>
<td>-2.804</td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>2.654</td>
<td>0.044</td>
<td>60.940*</td>
<td>0.81</td>
<td>0.82</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOG(POVSG) Severity of Poverty</td>
<td>TIME</td>
<td>-0.035</td>
<td>0.003</td>
<td>-11.052*</td>
<td>0.82</td>
<td>122.147</td>
<td>0.188</td>
<td>-3.486</td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>1.794</td>
<td>0.053</td>
<td>33.656*</td>
<td>0.82</td>
<td>0.82</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOG(GINI) Deviation from Income Equality</td>
<td>TIME</td>
<td>0.011</td>
<td>0.002</td>
<td>6.060*</td>
<td>0.59</td>
<td>36.719</td>
<td>0.162</td>
<td>1.090</td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>3.447</td>
<td>0.030</td>
<td>114.900*</td>
<td>0.57</td>
<td>0.59</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

† Source: Author’s own calculation based on secondary data.

* indicates significant at 1% level; ** indicates significant at 5% level; *** indicates significant at 10% level

We found that the coefficient of explanatory variable, the time regime over the period 1983 to 2010, is -0.020 in the regression equation with log (POVIN) and it has been found to be statistically significant at 1 percent level. This shows that the incidence of poverty (POVIN) has significantly decreased by 0.020 with respect to increased by unit time over the entire period. The growth rate of incidence of poverty has declined by -1.957 percent over the period of time. This implies that the incidence of poverty in Nepal found to be empirically declining for the period 1983 to 2010.

We see that in equation of log(POVGAP) and time the coefficient of time is -0.028 and it has been found to be statistically significant at 1 percent level. It implies that the poverty gap is decreases by 0.028 units due to the unit increase in time. The growth rate of poverty gap has been calculated to be -2.804 percent. This indicates that the depth of poverty found declining rapidly for the period 1983 to 2010 than the declining rate of incidence of poverty in Nepal for the same period.
Consider the coefficient of time is -0.003 in the spline function of logarithmic value of severity of poverty and it has been found statistically significant at 1 percent level of significance. The declining rate of severity of poverty is -3.486 percent. It is evident that the declining rate of severity of poverty in the given period is faster than the declining rate of incidence of poverty and the declining rate of depth of poverty in Nepal. The estimated coefficient of time is positive which indicates that there is positive association between the deviation from income equality and time. This is the reverse relationship than the previous three cases. The coefficient of time is 0.011 which is statistically significant at 1 percent level of significance. In the period 1983 to 2010 the income inequality has been increased by 1.090 percent in Nepal.

The test of overall significance has been shown by F statistic. Here the computed F statistic at the degrees of freedom (1, 26) is greater than the tabulated F statistic at the degrees of freedom (1, 26), in the all four cases. So, we reject the null hypothesis, that is, we accept that the regression is significant indicating not all the coefficients of the variable and the constant is zero. It indicates that the time period is significant for reducing the poverty measures in Nepal.

The squared multiple correlation coefficients which is denoted by R squared is correspondingly 0.72, 0.82, 0.82 and 0.59 in the model show that better goodness of fit of the regression plane to the sample observations. However, the very small value of Durbin Watson d-statistic, correspondingly, 0.142, 0.181, 0.188 and 0.162 has found. It suggests that in all the spline function models of the table 4.4.1 there is strong first order autocorrelation between the variables. The notable matter according to Granger and Newbold (1974) is the “R squared is greater than Durbin Watson d statistic is a good rule of thumb to suspect that the estimated regression is spurious”. The result obtained from the table 4.4.1 suggests that there might be a spurious or nonsensical relationship between dependent variable and explanatory variable in the model.

Consider the table 4.4.2 which displays the structural shifts in the poverty measures, namely, incidence of poverty, depth of poverty, severity of poverty and deviation from income equality through fiscal decentralization in Nepal. Now we compare the structural change of poverty measures in the regime first (1983 to 1999) or before fiscal decentralization with the
poverty measures in the regime second (2000 to 2010) or after fiscal decentralization in Nepal. What we see here is that there exists negative association between poverty measures (except deviation from income equality) and the regimes first and second.

Refer to the table 4.4.2 we note in the equation of log(POVIN) index for regime one is -0.002 and the result has been found statistically insignificant. The growth rate of incidence of poverty before fiscal decentralization has been found to be negative and it is -0.25 percent. This implies that though regime one is empirically and statistically insignificant, still the incidence of poverty prior to fiscal decentralization policy was declined. After the policy of fiscal decentralization has been implemented in 1999 the coefficient in the equation of log (POVIN) is found to be -0.047 and the result is statistically significant at 1 percent level. During this regime two when the government of Nepal implemented the policy of fiscal decentralization the growth rate of incidence of poverty has been found to be -4.84. Therefore during the period of fiscal decentralization in Nepal the incidence of poverty has declined significantly at the rate of 4.84 percent.

The coefficient of time regime one (1983 to 1999) is -0.010 in the equation with dependent variable log(POVGAP), and it is statistically significant at 1 percent level of significance. The declining rate of growth of poverty gap (POVGAP) in the regime is 1 percent. The coefficient for the regime two (2000 to 2010) has found negative and it is -0.050 possessing statistically significant at 1 percent level. The failing rate of depth of poverty in the second regime is around six times bigger than that of the first shows that fiscal decentralization policy is highly successful to reduce depth of poverty in Nepal. The test of overall significance at 1 percent rejects the null hypothesis that there is no significant change in depth of poverty between the first and second regimes. That is, we accept alternative hypothesis stating that there is significant change in depth of poverty between the first and second regimes in Nepal.
Table 4.4.2. Structural Shifts in Poverty (Variables at Level) in Nepal due to Fiscal Decentralization†

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Explanatory Variable</th>
<th>Coefficients</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>$R^2$</th>
<th>F-Stat</th>
<th>D W Stat</th>
<th>Growth Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG(POVIN) Incidence of Poverty</td>
<td>Regime_1</td>
<td>-0.002</td>
<td>0.002</td>
<td>-1.416</td>
<td>0.96</td>
<td>288.602</td>
<td>0.567</td>
<td>-0.25 -4.84</td>
</tr>
<tr>
<td></td>
<td>Regime_2</td>
<td>-0.047</td>
<td>0.004</td>
<td>-11.877*</td>
<td>(0.96)</td>
<td>190.370*</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>3.737</td>
<td>0.020</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOG(POV GAP) Depth of Poverty</td>
<td>Regime_1</td>
<td>-0.010</td>
<td>0.002</td>
<td>-4.536*</td>
<td>0.96</td>
<td>325.555</td>
<td>0.816</td>
<td>-1.00 -5.83</td>
</tr>
<tr>
<td></td>
<td>Regime_2</td>
<td>-0.050</td>
<td>0.005</td>
<td>-9.875*</td>
<td>(0.96)</td>
<td>99.924*</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>2.506</td>
<td>0.025</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOG(POV SG) Severity of Poverty</td>
<td>Regime_1</td>
<td>-0.013</td>
<td>0.003</td>
<td>-4.743*</td>
<td>0.96</td>
<td>324.685</td>
<td>0.562</td>
<td>-1.30 -7.14</td>
</tr>
<tr>
<td></td>
<td>Regime_2</td>
<td>-0.061</td>
<td>0.006</td>
<td>-9.662*</td>
<td>(0.96)</td>
<td>51.663*</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>1.613</td>
<td>0.031</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOG(GINI) Deviation from Income Equality</td>
<td>Regime_1</td>
<td>0.007</td>
<td>0.003</td>
<td>2.251*</td>
<td>0.61</td>
<td>19.706</td>
<td>0.415</td>
<td>0.73 1.71</td>
</tr>
<tr>
<td></td>
<td>Regime_2</td>
<td>0.010</td>
<td>0.007</td>
<td>1.305</td>
<td>(0.58)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>3.440</td>
<td>0.037</td>
<td>93.955*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

† Source: Author’s own calculation based on secondary data.

* indicates significant at 1% level; ** indicates significant at 5% level; *** indicates significant at 10% level

Consider the coefficients in the period regime one and regime two at the spline function model and their impact on the severity of poverty (POVSG) in Nepal. These coefficients are negatively associated with poverty gap and both are statistically significant at 1 percent level of significance for the model. It indicates that the severity of poverty which indicates the inequalities among the poor have been significant in the era of before fiscal decentralization and during fiscal decentralization in Nepal. The corresponding growth rates that have been declining during fiscal decentralization is almost six times than the before. It denotes the fiscal decentralization policy in Nepal is successful to reduce inequalities among the poor. The R squared is 0.96 shows better level of goodness of fit in the model. The adjusted R squared is 0.96. That is, the explanatory variables (time regimes) explain 96 percent of variation and 96 percent of variance in the severity of poverty. The computed the F statistic is 324.685 and it is greater than the critical value of the same at 1 percent level of significance. Hence we reject the null hypothesis of no decline in severity of poverty in the course of fiscal decentralization. The result confirms that fiscal decentralization is effective means to reduce the inequalities among the poor.
In the case of fourth poverty measure, the deviation from income equality (GINI), there is positive relationship between the dependent variable (log(GINI)) and the period regimes one and two. The regime one the coefficient is statistically significant at 1 percent level informing that the 0.007 point increase in deviation from income equality by the one point increase in time in the era of before fiscal decentralization in Nepal. The regime two the coefficient is statistically insignificant indicates that fiscal decentralization policy is insignificant to affect the income inequality among the poor. The deviation from income inequality in the prior fiscal decentralization period has been increased by 0.73 percent. We also find that the growth rate in deviation from income equality in the second regime is 1.71 percent and it is greater than the same in the first regime though it is statistically insignificant. The employed regression model explains 61 percent of the variation and 58 percent of variance of the variables. The overall significance of the model has been indicated by F test. The computed F statistic is greater than its critical value at 1 percent. Hence we reject the hypothesis of no increase in deviation from income equality subsequent to fiscal decentralization in Nepal. In other words deviation from income equality over the period has been increased before fiscal decentralization than the same in the later period.

As we see the coefficient of explanatory variable are highly statistically significant. The values of R squared are higher and are statistically significant. Thus we may say that there is significant statistical relationship between dependent and explanatory variables. The F stat is too higher and significant. Therefore, the overall model is statistically significant. However, the phenomenon is spurious and unstable which is common in time series analysis.

The results of table 4.4.1 and 4.4.2 depict that in most of the cases the variables like the incidence of poverty, depth of poverty, severity of poverty and the deviation from equality are statistically significant at 1 percent level. The goodness of fitting has been found to be very high. But, the values of the Durbin Watson d statistic in most of the cases are very low-even lower than the corresponding values of the Durbin Watson d statistic. The ‘rule of thumb’ states that this is an indication of spuriousness in the regression. In other words, this implies that the relevant variables are not stationary and the regression relation is not stable in the short run.
This enforces us to consider the regression analysis with the variables which have no unit roots or the relevant variables are integrated of order zero.

4.4.3. Test of Stationarity by Correlogram Analysis

In this section we shall test the stationarity of the time series data on all the variables measuring poverty in Nepal. The test of stationarity is to be done because we have confirmed the data on poverty measures are nonstationary. If we go for the estimation using nonstationary data then the result will be spurious. The correlogram analysis for the poverty measures should be performed to identify whether there is presence of unit root is or not?, in the time series data of poverty measures in Nepal.

The autocorrelation coefficient in the specified lag shows the randomness of the variable in the given series. For a random series, lagged values of the series are uncorrelated and we expect that autocorrelation coefficient approaches to zero. The autocorrelation function (ACF) is a set of correlation coefficients between the series and lags of itself over time. The amount of correlation between a variable and a lag of itself that is not explained by correlations at all lower order lags. The correlation at lag 1 propagates to lag 2 and presumably to higher order lags.

The partial autocorrelation function (PACF) is the partial correlation coefficients between the series and the lags of itself over time. Partial autocorrelation at lag 2 is the difference between the actual correlation at lag 2 and expected correlation due to propagation of correlation at lag 1. If the partial autocorrelation function displays a sharp cut off while the autocorrelation function decays more slowly, that is, has significant spikes at higher lags, we say that the series displays an autoregressive (AR) signature. It means, the lag at which the partial autocorrelation function cuts off is the indicated number of autoregressive terms. The autocorrelation function declines in geometric progression from its highest value at lag 1 and the partial autocorrelation function cuts off abruptly after one lag in the autoregressive process of first order (AR(1)). Note that if the process is stationary, the autoregressive process of first order is equivalent to the moving average process of infinite order (MA(∞)).
In the correlogram analysis we consider the above mentioned conceptual foundation then plot the series of autocorrelation (AC) and partial autocorrelation (PAC) with the given lag. After that the stationarity shall be tested on the basis of these values. The autocorrelation and partial autocorrelation coefficient for the incidence of poverty (POVIN) are shown in Table 4.4.3. We consider the 12 lag and the absolute value of autocorrelation is approaches to near about zero (0.045) at the eighth lag of autocorrelation series. The partial autocorrelation series is also started near unity, like a series, then it fall to negative after first lag shows the mean equation is follows the autoregressive first order scheme. Q statistic is statistically significant at 1 percent level. It confirms that the correlation is exists among the time series data points of the incidence of poverty in Nepal.

Table 4.4.3. Autocorrelation and Partial Autocorrelation for Incidence of Poverty

<table>
<thead>
<tr>
<th>Lag Length</th>
<th>AC</th>
<th>PAC</th>
<th>Q-Stat</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.904</td>
<td>0.904</td>
<td>25.437</td>
<td>0.000</td>
</tr>
<tr>
<td>2</td>
<td>0.785</td>
<td>-0.178</td>
<td>45.352</td>
<td>0.000</td>
</tr>
<tr>
<td>3</td>
<td>0.650</td>
<td>-0.141</td>
<td>59.562</td>
<td>0.000</td>
</tr>
<tr>
<td>4</td>
<td>0.528</td>
<td>0.005</td>
<td>69.313</td>
<td>0.000</td>
</tr>
<tr>
<td>5</td>
<td>0.409</td>
<td>-0.071</td>
<td>75.413</td>
<td>0.000</td>
</tr>
<tr>
<td>6</td>
<td>0.286</td>
<td>-0.120</td>
<td>78.537</td>
<td>0.000</td>
</tr>
<tr>
<td>7</td>
<td>0.168</td>
<td>-0.060</td>
<td>79.666</td>
<td>0.000</td>
</tr>
<tr>
<td>8</td>
<td>0.045</td>
<td>-0.132</td>
<td>79.750</td>
<td>0.000</td>
</tr>
<tr>
<td>9</td>
<td>-0.094</td>
<td>-0.214</td>
<td>80.139</td>
<td>0.000</td>
</tr>
<tr>
<td>10</td>
<td>-0.185</td>
<td>0.166</td>
<td>81.744</td>
<td>0.000</td>
</tr>
<tr>
<td>11</td>
<td>-0.240</td>
<td>0.066</td>
<td>84.600</td>
<td>0.000</td>
</tr>
<tr>
<td>12</td>
<td>-0.246</td>
<td>0.111</td>
<td>87.779</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Figure 4.4.3A. Correlogram for Incidence of Poverty
Using the values of autocorrelation from the table 4.4.3 we construct the correlogram of incidence of poverty as shown in the figure 4.4.3A. The fitted line in the correlogram facilitate for evaluating linearity and strength of relationship of current with past values. The fitted line cuts just after eighth lag shows the autocorrelation is approaches to zero after this lag.

The partial correlogram for incidence of poverty has been sketched on the basis of partial autocorrelation’s value from the table 4.4.3. The partial autocorrelations are plotted against lag shows that the partial autocorrelation strip in second lag is negative. It indicates the residuals of the time series data are serially correlated with autoregressive first order scheme. The series of the dataset which we used to describe the trend of incidence of poverty over the period could be made stationary by first differencing; the resulting series will be stationary.

In the case of time series data we often find that there is autocorrelation or serial correlation in the random variable. The source of autocorrelation may be the omitted of explanatory variable. The next source of autocorrelation may be misspecification of the mathematical form of the model. The other sources of autocorrelation are interpolations in the statistical observations and misspecification of the true random term. The time series data on the depth of poverty (POVGAP) in Nepal is autocorrelated. We examine the autocorrelation of depth of poverty in the further treatise. What we see in the table 4.4.4 is autocorrelation and partial autocorrelation for the depth of poverty with 12 lags.
Table 4.4.4. Autocorrelation and Partial Autocorrelation for Depth of Poverty

<table>
<thead>
<tr>
<th>Lag Length</th>
<th>AC</th>
<th>PAC</th>
<th>Q-Stat</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.896</td>
<td>0.896</td>
<td>24.986</td>
<td>0.000</td>
</tr>
<tr>
<td>2</td>
<td>0.797</td>
<td>-0.030</td>
<td>45.517</td>
<td>0.000</td>
</tr>
<tr>
<td>3</td>
<td>0.678</td>
<td>-0.155</td>
<td>60.984</td>
<td>0.000</td>
</tr>
<tr>
<td>4</td>
<td>0.562</td>
<td>-0.062</td>
<td>72.055</td>
<td>0.000</td>
</tr>
<tr>
<td>5</td>
<td>0.442</td>
<td>-0.089</td>
<td>79.182</td>
<td>0.000</td>
</tr>
<tr>
<td>6</td>
<td>0.325</td>
<td>-0.066</td>
<td>83.218</td>
<td>0.000</td>
</tr>
<tr>
<td>7</td>
<td>0.222</td>
<td>-0.011</td>
<td>85.195</td>
<td>0.000</td>
</tr>
<tr>
<td>8</td>
<td>0.118</td>
<td>-0.089</td>
<td>85.783</td>
<td>0.000</td>
</tr>
<tr>
<td>9</td>
<td>0.002</td>
<td>-0.172</td>
<td>85.784</td>
<td>0.000</td>
</tr>
<tr>
<td>10</td>
<td>-0.083</td>
<td>0.053</td>
<td>86.103</td>
<td>0.000</td>
</tr>
<tr>
<td>11</td>
<td>-0.156</td>
<td>-0.013</td>
<td>87.299</td>
<td>0.000</td>
</tr>
<tr>
<td>12</td>
<td>-0.214</td>
<td>-0.040</td>
<td>89.704</td>
<td>0.000</td>
</tr>
</tbody>
</table>

The autocorrelation is lowest and is closer to zero at the ninth lag. The Q statistic which follows the chi squares distribution with 11 degrees of freedom is statistically significant at 1 percent level. So we accept the hypothesis that the time series data was generated by a white noise process. The partial autocorrelation in first lag is 0.896, the highest, and it became negative in second lag. It limits our analysis of autocorrelation in the first order autoregressive scheme. Same representation is outlined in the figure 4.4.4A. The line which shows the trend of the lag cuts just after ninth lag.

![Figure 4.4.4A. Correlogram for Depth of Poverty](image-url)
In the correlogram of figure 4.4.4B, the partial autocorrelation band of the second lag is negative. It confirms the autocorrelation in time series data shall be converted to stationary by autoregressive process of first order.

![Figure 4.4.4B. Partial Correlogram for Depth of Poverty](image)

The autocorrelation and partial autocorrelation for the severity of poverty are outlined in table 4.4.5. Both correlation coefficients for the scatter plot summarize the strength of the linear relationship between present and past values. It is helpful to compare the computed correlation coefficient with critical level of correlation required to test the hypothesis that the sample comes from a population with zero correlation at the indicated lag. The autocorrelation is approaches to zero in the ninth lag.

Table 4.4.5. Autocorrelation and Partial Autocorrelation for Severity of Poverty

<table>
<thead>
<tr>
<th>Lag Length</th>
<th>AC</th>
<th>PAC</th>
<th>Q-Stat</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.902</td>
<td>0.902</td>
<td>25.330</td>
<td>0.000</td>
</tr>
<tr>
<td>2</td>
<td>0.804</td>
<td>-0.056</td>
<td>46.202</td>
<td>0.000</td>
</tr>
<tr>
<td>3</td>
<td>0.692</td>
<td>-0.128</td>
<td>62.271</td>
<td>0.000</td>
</tr>
<tr>
<td>4</td>
<td>0.578</td>
<td>-0.074</td>
<td>73.959</td>
<td>0.000</td>
</tr>
<tr>
<td>5</td>
<td>0.457</td>
<td>-0.107</td>
<td>81.589</td>
<td>0.000</td>
</tr>
<tr>
<td>6</td>
<td>0.339</td>
<td>-0.068</td>
<td>85.976</td>
<td>0.000</td>
</tr>
<tr>
<td>7</td>
<td>0.232</td>
<td>-0.023</td>
<td>88.126</td>
<td>0.000</td>
</tr>
<tr>
<td>8</td>
<td>0.124</td>
<td>-0.093</td>
<td>88.768</td>
<td>0.000</td>
</tr>
<tr>
<td>9</td>
<td>0.003</td>
<td>-0.172</td>
<td>88.769</td>
<td>0.000</td>
</tr>
<tr>
<td>10</td>
<td>-0.083</td>
<td>0.078</td>
<td>89.087</td>
<td>0.000</td>
</tr>
<tr>
<td>11</td>
<td>-0.156</td>
<td>-0.015</td>
<td>90.284</td>
<td>0.000</td>
</tr>
<tr>
<td>12</td>
<td>-0.218</td>
<td>-0.051</td>
<td>92.769</td>
<td>0.000</td>
</tr>
</tbody>
</table>
In the figure 4.4.5A the autocorrelation coefficient \( \rho_k \) is plotted against the 12 values of lag \( k \) we get the correlogram of severity of poverty in Nepal. In the particular value, that is nine; of the sample autocorrelation function \( \hat{\rho}_k \) is close enough to zero to permit the assumption that the true value of the autocorrelation function \( \rho_k \) is definitely equal to zero. A straight line is fitted to the points in a lagged scatter-plot to facilitate evaluation linearity and strength of relationship of current with the past values. A series of lagged scatter-plots at increasing lags (For example, \( k = 1, 2, \ldots, 12 \)) helps in assessing whether the dependency is restricted to one or more lags.

Figure 4.4.5B shows the partial correlogram of severity of poverty in Nepal. The negative band just after first band shows the time series data shall be make stationary by autoregressive first order (AR(1)) scheme.
Table 4.4.6 shows the results of autocorrelation and partial autocorrelation in the lag length 12 for the deviation from income equality (GINI). The autocorrelation shows the correction in the time series data of the same variable. The value of autocorrelation for deviation from income equality is started 0.741 and approaches to zero at eighth lag. The autocorrelation for the same is negative in second lag. It shows the time series data of deviation from income equality is first order nonstationary. The correlation coefficients are statistically significant at 1 percent level conclude to reject null hypothesis that there is stationarity in the time series data on poverty measures in Nepal.

Table 4.4.6. Autocorrelation and Partial Autocorrelation for Deviation from Income Equality

<table>
<thead>
<tr>
<th>Lag Length</th>
<th>AC</th>
<th>PAC</th>
<th>Q-Stat</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.741</td>
<td>0.741</td>
<td>17.070</td>
<td>0.000</td>
</tr>
<tr>
<td>2</td>
<td>0.547</td>
<td>-0.004</td>
<td>26.728</td>
<td>0.000</td>
</tr>
<tr>
<td>3</td>
<td>0.503</td>
<td>0.220</td>
<td>35.226</td>
<td>0.000</td>
</tr>
<tr>
<td>4</td>
<td>0.451</td>
<td>0.012</td>
<td>42.343</td>
<td>0.000</td>
</tr>
<tr>
<td>5</td>
<td>0.393</td>
<td>0.040</td>
<td>47.971</td>
<td>0.000</td>
</tr>
<tr>
<td>6</td>
<td>0.286</td>
<td>-0.131</td>
<td>51.091</td>
<td>0.000</td>
</tr>
<tr>
<td>7</td>
<td>0.156</td>
<td>-0.135</td>
<td>52.063</td>
<td>0.000</td>
</tr>
<tr>
<td>8</td>
<td>0.020</td>
<td>-0.193</td>
<td>52.080</td>
<td>0.000</td>
</tr>
<tr>
<td>9</td>
<td>-0.051</td>
<td>-0.032</td>
<td>52.195</td>
<td>0.000</td>
</tr>
<tr>
<td>10</td>
<td>-0.124</td>
<td>-0.118</td>
<td>52.911</td>
<td>0.000</td>
</tr>
<tr>
<td>11</td>
<td>-0.200</td>
<td>-0.042</td>
<td>54.896</td>
<td>0.000</td>
</tr>
<tr>
<td>12</td>
<td>-0.250</td>
<td>-0.023</td>
<td>58.179</td>
<td>0.000</td>
</tr>
</tbody>
</table>

The correlogram for the deviation from income equality is plotted as per our research methodology and what we found is that the absolute value of autocorrelation coefficient at the ninth lag is approaches approximately to zero.
The partial correlogram for the degree of income inequality is plotted in the figure 4.4.6B. This plot shows that the bar after first bar is negative indicating the nonstationary data of deviation from income equality for Nepal could be make stationary by first order autoregressive process of stationarity.

From the correlogram analysis, we note that the empirical values of the Q statistic which follow the chi-squares distribution with 11 degrees of freedom are statistically significant at 1 percent level for autocorrelation coefficients of any order. This implies that there is significant autocorrelation in all the variables related to the issue of poverty. There is thus unit root or non-stationarity in the data on issues of poverty. The partial correlogram helps us to specify the order of the autoregressive scheme.
4.4.4. Test of Unit Root by Augmented Dickey-Fuller (ADF) Test

We found in section 4.3.2 that the data on poverty related issues are non stationary. Thus, the estimation of result by using non-stationary data leads to spurious and non-reliable relation in the regression analysis. Thus we consider the regression analysis after changing the non-stationary time series data on poverty related issues to stationary time series data of the same. In this sub-section we go for testing the unit root using Augmented Dickey-Fuller test.

The unit root in the time series data has been tested by the significance test of the coefficient $\delta$ in the equation $\Delta Y_t = \alpha + \delta Y_{t-1} + \epsilon_t$ where $\Delta Y_t = Y_t - Y_{t-1}$ and $\epsilon_t$ is a pure white noise. The unit root test for the time series data on the issues of poverty as developed by Dickey and Fuller (1979) is mentioned in the table 4.4.7. The Augmented Dickey-Fuller test statistic for the incidence of poverty in Nepal has found statistically significant at 1 percent, 5 percent and 10 percent level shows that there is unit root in the time series data on incidence of poverty. Thus the data is non-stationary having unit root. Here we accept the null hypothesis that there exists a unit root in the time series data of incidence of poverty in Nepal.

The coefficient of depth of poverty is 1.157 and it is statistically insignificant. It indicates that the time series data of depth of poverty in Nepal is non stationary. Here we accept the null hypothesis that there is unit root in the depth of poverty over the time period.

The poverty measure which indicates the inequalities among the poor, that is, severity of poverty has found statistically significant in 1 percent, 5 percent and 10 percent level of significance. It means there has a unit root in the time series data on severity of poverty in Nepal.

The computed Augmented Dickey-Fuller statistic of deviation from income equality in Nepal has found small than the critical value of the same shows that it is statistically insignificant. Therefore we accept the null hypothesis that there is unit root in the time series data of income inequality in Nepal for the time period 1983 to 2010.
Table 4.4.7. The Unit Root Test for the Variables related to Poverty at Levels†

<table>
<thead>
<tr>
<th>Augmented Dickey-Fuller Test</th>
<th>1% level</th>
<th>-3.700</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exogenous: Constant; Lag Length: 0 (Automatic based on SIC, MAXLAG=6)</td>
<td>5% level</td>
<td>-2.976</td>
</tr>
<tr>
<td>Testable Equation: $\Delta Y_t = \alpha + \delta Y_{t-1} + \varepsilon_t$; Null Hypothesis: $H_0: \delta = 0$ against $H_1: \delta &lt; 0$</td>
<td>10% level</td>
<td>-2.627</td>
</tr>
<tr>
<td>Test critical values:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Null Hypothesis</td>
<td>Augmented Dickey-Fuller test statistic</td>
<td>Probability</td>
</tr>
<tr>
<td>POVIN (Incidence of Poverty) has a unit root</td>
<td>0.804</td>
<td>0.992</td>
</tr>
<tr>
<td>POVGAP (Depth of Poverty) has a unit root</td>
<td>1.157</td>
<td>0.997</td>
</tr>
<tr>
<td>POVSG (Severity of Poverty) has a unit root</td>
<td>1.143</td>
<td>0.997</td>
</tr>
<tr>
<td>GINI (Deviation from Income Equality) has a unit root</td>
<td>-1.905</td>
<td>0.325</td>
</tr>
</tbody>
</table>

† Source: Author’s own calculation based on secondary data.

The test of stationarity shows that incidence of poverty, depth of poverty, severity of poverty and deviation from income equality; all have the unit roots as the empirical values of the Augmented Dickey-Fuller test statistic which are found to be smaller than the corresponding critical values at 1 percent, 5 percent and 10 percent level of significance. As we find that there is unit root in all the variables at level, let us consider all the variables in the form of growth form defined as growth rate $= \log(x_t/x_{t-1})$. Because we know that if a time series has a unit root, the first differences of such time series are stationary. It is called difference stationary process (DSP). Therefore, for the solution of nonstationary we take the first difference of the series in the further analysis.

Previously we have found that the time series data on incidence of poverty, depth of poverty, severity of poverty and income inequality are non stationary. This has been confirmed with the help of Box-Pierce Q test and Augmented Dickey-Fuller test. Since the level of these variables is nonstationary then the regression line estimated thereby is unreliable and unstable. Therefore it is not possible to confirm that the Nepal’s fiscal decentralization has been able to reduce poverty.
What we need to do is to have stable and reliable relation between the variables of poverty measures and fiscal decentralization. To that end it has considered not the variables are level but the variables at of growth. Therefore, we have transformed observations on the growth rate of incidence of poverty \((\log(POVIN/POVIN(-1)))\), growth rate of depth of poverty \((\log(POVGAP/POVGAP(-1)))\), growth rate of severity of poverty \((\log(POVSG/POVSG(-1)))\) and growth rate of deviation from income equality \((\log(GINI/GINI(-1)))\). We have undertaken the Augmented Dickey-Fuller test to test whether the time series observation of these growth rate are stable or not?

Our estimable equation takes the form \(\Delta Y_t = \alpha + \delta Y_{t-1} + \epsilon_t\). Where \(Y_t\) stand for incidence of poverty, depth of poverty, severity of poverty and deviation from income equality. We note that in all these situations the null hypothesis \(H_0: \delta = 0\) has been rejected at 5 percent level of significance. Therefore, we conclude that the time series observations of all specified variables are stationary or they have no any unit root. Therefore in the next section how in Nepal the growth rate of incidence of poverty, depth of poverty, severity of poverty and deviation from income equality behave over time. We shall also consider whether the behaviour of the growth rates of these variables is affected due to fiscal decentralization in Nepal.

Consider the table 4.4.8 we observe that the growth rate of incidence of poverty in Nepal has found statistically significant at 5 percent level of significance. It means the growth in time series data with a period lag in incidence of poverty is stationary. So we accept the alternative hypothesis that there is non-stationarity in the growth form of time series data of incidence of poverty in the country.

The growth rate of depth of poverty is stationary. That is the computed value of Augmented Dickey-Fuller statistic is bigger than that of same and is significant at the 10 percent level. We reject the hypothesis that there is a unit root in the growth rate of depth of poverty in Nepal.
We found that the Augmented Dickey-Fuller test statistic of growth rate in severity of poverty is -3.822 and is statistically significant at 1 percent level of significance shows that there is no unit root of the variable growth rate of severity of poverty.

The growth rate in the deviation from income equality over the time period 1983 to 2010 in Nepal has found statistically significant at 10 percent level of significance. Therefore, we accept the hypothesis that there is no unit root in the growth rate of income inequality in Nepal. That is we reject null hypothesis against alternative hypothesis.

Table 4.4.8. The Unit Root Test for the Growth Rate of the Variables related to Poverty†

<table>
<thead>
<tr>
<th>Augmented Dickey-Fuller Test</th>
<th>Test critical values:</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exogenous: Constant; Lag Length: 0 (Automatic based on SIC, MAXLAG=6)</td>
<td>1% level -3.700</td>
<td><strong>0.030</strong></td>
</tr>
<tr>
<td>Testable Equation: $\Delta Y_t = \alpha + \delta Y_{t-1} + \varepsilon_t$; Null Hypothesis: $H_0: \delta = 0$ against $H_1: \delta &lt; 0$, where $Y_t = \log(x_t / x_{t-1})$</td>
<td>5% level -2.976</td>
<td><strong>0.011</strong></td>
</tr>
<tr>
<td></td>
<td>10% level -2.627</td>
<td><strong>0.008</strong></td>
</tr>
<tr>
<td>Null Hypothesis</td>
<td>Augmented Dickey-Fuller test statistic</td>
<td>Probability</td>
</tr>
<tr>
<td>LOG(POVIN/ POVIN(-1)) (Incidence of Poverty) has a unit root</td>
<td>-3.218**</td>
<td><strong>0.030</strong></td>
</tr>
<tr>
<td>LOG(POVGAP/ POVGAP(-1)) (Depth of Poverty) has a unit root</td>
<td>-3.674**</td>
<td><strong>0.011</strong></td>
</tr>
<tr>
<td>LOG(POVSG/ POVSG(-1)) (Severity of Poverty) has a unit root</td>
<td>-3.822*</td>
<td><strong>0.008</strong></td>
</tr>
<tr>
<td>LOG(GINI/ GINI(-1)) (Deviation from Income Equality) has a unit root</td>
<td>-2.985**</td>
<td><strong>0.053</strong></td>
</tr>
</tbody>
</table>

† Source: Author’s own calculation based on secondary data.

* indicates significant at 1% level; ** indicates significant at 5% level; *** indicates significant at 10% level
The test of stationarity shows that the growth rates for incidence of poverty, depth of poverty, severity of poverty and deviation from income equality; all have no unit roots as the empirical values of the Augmented Dickey-Fuller test statistic are which are found to be significantly greater than the corresponding critical value at 5 percent level of significance. The Augmented Dickey-Fuller test is widely used; however, its power is very limited. It only allows us to reject or fail to reject the hypothesis that a variable is not a random walk. Especially at a high significance level, the failure to reject provides only weak evidence in favour of the random walk hypothesis.

4.4.5. Trend and Structural Shifts in Poverty (Growth Rate of the Variables) in Nepal due to Fiscal Decentralization
The poverty measures, that is to say, incidence of poverty, depth of poverty, severity of poverty and deviation from equality has been changed over the period of time. It is the dynamic nature of developmental process. The poverty measures are adhering to the other factors as well to the time. Therefore, the poverty in the past affects the poverty for today. The poverty of today shall be the base for the same in the future. The time lag of the variable addresses the notion of past history of its own. The future values depend on current and past values.

It is to be noted that the varying pattern of nonstationary time series data of the poverty measures in the entire period and in the regime of pre fiscal decentralization along with post decentralization is discussed by means of table 4.4.1 and 4.4.2. At that discussion the variables was considered in the level form only. However, it shall be the base for the discussion in the current sub-section. In this sub-section we deal with the relationship of growth rate of poverty measures to the time regime in the entire Nepal for the period of 1983 to 2010. That is we shall use the stationary time series data for spline regression analysis in the future. The illustration is depicted in the table 4.4.9 and 4.4.10.

Refer to table 4.4.9 where we summarises how do the growth rates of incidence of poverty, growth rate of depth of poverty, growth rate of severity of poverty and growth rate o deviation from income equality change over time span of 28 years (1983 to 2010). Consider the growth rate of incidence of poverty we note that the coefficient of time in a regression of
log(POVIN/POVIN(-1)) is -0.002 and the result is significant at 5 percent level. The growth rate of incidence of poverty during this period 1983 to 2010 the incidence of poverty declines 0.197 percent. We should note that in this regression equation which is highly nonlinear one should not be worried of low value of R squared (0.37). But the matter of optimism is that the value of Durbin-Watson d statistic is approximately 2 (that is 1.774). This implies that the regression relation between the growth rate of incidence of poverty and time is stable relation and reliable.

We see that the coefficient of time variable is negatively associated with the growth rate of depth of poverty (log(POVGAP/POVGAP(-1))) and is statistically significant at 5 percent level of significance. In the time period 1983 to 2010 the growth rate of depth of poverty has decreased at the rate of 0.292 percent. The Durbin Watson d-statistic is 1.947 (closer to 2) indicates there is no autocorrelation between the variables. The goodness of fit of the model which is shown by R squared is not better. But the overall significance of the model has been indicated by F statistic is statistically significant at 1 percent level bring us to reject the null hypothesis, that is, we accept that there is a significant decline in the growth rate of incidence of poverty in the time period 1983 to 2010 in Nepal.

We note that the coefficient of explanatory variable (time) is -0.004 and it is statistically significant at 1 percent level in the regression equation of logarithmic growth rate of severity of poverty in Nepal over the time 1983 to 2010. It is evident that there is no autocorrelation between the variables. The growth rate on the severity of poverty has been decreased by 0.373 percent over the time period. The value of R squared is smaller, that is, it explains only 29 percent of the variation of the independent variable in the regression model. F-stat is significant which means there is significant decline in the growth rate of severity of poverty over the time period.
Consider the growth rate in deviation from equality (log(GINI/GINI(-1))) and explanatory variable time is negatively associated in the spline function model of the stationary time series data of Nepal spanning over the period 1983 to 2010. The coefficient of time is -0.002 and it is found statistically insignificant. The Durbin Watson d statistic is 1.206 shows that there is positive autocorrelation of the first order in the model. The computed F-statistic is lower than the tabulated value of the same in the (1, 26) degrees of freedom. It means the overall significance of the model accept the null hypothesis that there is no linear relationship between growth rate in income inequality and the spline coefficient. The value of R squared point out the low level of goodness of fit of the model. The growth rate of income inequality or deviation from equality in the period 1983 to 2010 is decreased by -0.156 percent in Nepal.
The figures 4.4.9A, 4.4.9B, 4.4.9C, 4.4.9D and the table 4.4.9 show that the growth rates of incidence of poverty, depth of poverty, severity of poverty and deviation from equality have declined over the period 1983 to 2010. From the figure 4.4.9A it is evident that the growth rate of incidence of poverty in Nepal has been onwards 2000. But it was positive in the years 1992 and 1999. The trend line of the growth rate curve of incidence of poverty shows that it would be negatively increase in the future.

![Figure 4.4.9A. Growth Rate of the Incidence of Poverty in Nepal](image)

Figure 4.4.9A illustrates the growth rate of the depth of poverty in Nepal for the period 1984 to 2010. The curve shows negative growth in poverty gap except in the years 1986 and 1996. It depicts that the tendency of depth of poverty would be negative in the future. Furthermore, the decreasing trend of poverty gap is higher than the same in the incidence of poverty in Nepal.

![Figure 4.4.9B. Growth Rate of the Depth of Poverty in Nepal](image)

Figure 4.4.9B illustrates the growth rate of the depth of poverty in Nepal for the period 1984 to 2010. The curve shows negative growth in poverty gap except in the years 1986 and 1996. It depicts that the tendency of depth of poverty would be negative in the future. Furthermore, the decreasing trend of poverty gap is higher than the same in the incidence of poverty in Nepal.
Figure 4.4.9C further depicts that the trend of growth rate of the severity of poverty in Nepal for 28 years onwards 1983. The curve is positive before the year 1985 and in 1986 indicates the positive changes in severity of poverty in Nepal. After 1999 there has been thoroughly negative growth rate which shows that there should be positive impact of fiscal decentralization on the inequality among the poor. The slope of trend line of this curve is higher than the trend lines of the growth in incidence of poverty and the growth in depth of poverty in Nepal shows the decreasing trend of severity of poverty is rapid than the decreasing trend of the remaining poverty measures.
Figure 4.4.9D exhibits the trend of growth rate of the deviation from perfect equality for 28 years before 2010 in Nepal. The growth in income inequality is negative before 1998. But after 1998 the growth rate of the deviation from income equality is positive except in the year 2006 and 2010. However, the trend line of the growth curve is negative with lower slope than the trend lines of the other three previous poverty measures shows that the changing rate in income inequality is slower than the changing rate of other poverty measures in the same direction.

In this section we shall consider the structural shift in poverty in Nepal due to fiscal decentralization. We noted that the structural shift took place in the year 1999. In this case we do not consider the poverty measures not at level but in terms of rate of growth in order to escape on the nonstationary time series data.

Refer to table 4.4.10 we note that in the spline regression relation between growth rate of incidence of poverty and the two regimes. One is before fiscal decentralization and two for after fiscal decentralization. The coefficient of regime one is -0.003 and it is statistically significant at 1 percent level. In this regime one the growth rate of incidence of poverty has declined at the rate 0.31 percent. After adopting the policy on fiscal decentralization the growth rate of incidence of poverty for the regime two, the coefficient in the equation of growth rate of incidence of poverty is 0.003 and it is statistically insignificant. Thus, we also find that the growth of incidence of poverty during fiscal decentralization has declined at 0.02 percent though it is statistically insignificant.
Let us consider the growth rate of depth of poverty in two regimes (the period prior to 1999 and posterior to 1999) in Nepal. The estimation in the column 1 of the table depicts that the spline coefficients, namely, regime one and regime two and the regression constant. We found that there is negative association (-0.004) between the growth of depth of poverty and time regime one which is found statistically significant at 10 percent level. Thus the time period before fiscal decentralization is likely to reduce depth of poverty. However, the coefficient of regime two is positive unexpectedly and is not statistically significant. It indicates that the depth of poverty has been increased after the fiscal decentralization period in Nepal. This result is reverse to the real situation in the country. The declining rate of depth of poverty in the regime one is -0.037 and is more than twice folding of the same in regime two. The variation and variance of the independent variable is explained respectively by the explanatory variable is 43 percent and 39 percent. The computed F stat is slightly greater than that of the critical value. The alternative hypothesis has accepted that the existence of decrease in depth of poverty prior to fiscal decentralization at 1 percent level of significance.

Table 4.4.10. Structural Shifts in Poverty (Growth Rate of the Variables) in Nepal due to Fiscal Decentralization†

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Explanatory Variable</th>
<th>Coefficients</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>$R^2$</th>
<th>F stat</th>
<th>D W Stat</th>
<th>Growth Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG(POVIN/POVIN(-1)) Incidence of Poverty</td>
<td>Regime_1</td>
<td>-0.003</td>
<td>0.002</td>
<td>-1.819***</td>
<td>0.39</td>
<td>7.835</td>
<td>1.670</td>
<td>-0.31</td>
</tr>
<tr>
<td></td>
<td>Regime_2</td>
<td>0.003</td>
<td>0.004</td>
<td>0.770</td>
<td>(0.34)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>0.021</td>
<td>0.020</td>
<td>1.062</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOG(POVGAP/POVGAP(-1)) Depth of Poverty</td>
<td>Regime_1</td>
<td>-0.004</td>
<td>0.002</td>
<td>-1.829***</td>
<td>0.43</td>
<td>9.472</td>
<td>1.965</td>
<td>-0.37</td>
</tr>
<tr>
<td></td>
<td>Regime_2</td>
<td>0.002</td>
<td>0.004</td>
<td>0.450</td>
<td>(0.39)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>0.022</td>
<td>0.023</td>
<td>0.942</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOG(POVSG/POVSG(-1)) Severity of Poverty</td>
<td>Regime_1</td>
<td>-0.005</td>
<td>0.002</td>
<td>-1.953***</td>
<td>0.34</td>
<td>6.514</td>
<td>1.985</td>
<td>-0.49</td>
</tr>
<tr>
<td></td>
<td>Regime_2</td>
<td>0.003</td>
<td>0.005</td>
<td>0.533</td>
<td>(0.29)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>0.031</td>
<td>0.029</td>
<td>1.071</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOG(GINI/GINI(-1)) Deviation from Income Equality</td>
<td>Regime_1</td>
<td>0.004</td>
<td>0.004</td>
<td>1.090</td>
<td></td>
<td>9.006</td>
<td>1.633</td>
<td>0.39</td>
</tr>
<tr>
<td></td>
<td>Regime_2</td>
<td>-0.014</td>
<td>0.008</td>
<td>-1.806***</td>
<td>(0.37)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>-0.023</td>
<td>0.041</td>
<td>-0.555</td>
<td></td>
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</tr>
</tbody>
</table>

† Source: Author’s own calculation based on secondary data.

* indicates significant at 1% level; ** indicates significant at 5% level; *** indicates significant at 10% level

Growth Rate = $\ln(x_t/x_{t-1})$
We found that the coefficient of first regime is -0.005 and it is statistically significant at 10 percent level of significance in the spline regression equation of \( \log(\text{POVSG}/\text{POVSG}(-1)) \) and time regimes. It reveals that the growth rate of severity of poverty in Nepal before fiscal decentralization has increased by a unit point leads to decreased by 0.005 point in the first regime. We apply the same relation for regime two and found that the coefficient is 0.003 and it is statistically insignificant. The growth rate of severity of poverty has declined by 0.49 percent before 1999 (regime one) and the same has declined by 0.20 percent onwards the year 2000 (regime two) in the country. The notion of this relation is that the severity of poverty has declined in both the regimes. That is, the disparity among the poor has been decreased significantly before fiscal decentralization period.

Consider the growth rate of deviation from income equality, the coefficient of spline function for the first and second regimes are respectively 0.004 and -0.014 implying the growth rate of income inequality 0.39 percent in the pre fiscal decentralization period and -1.00 percent during the fiscal decentralization period. We note that the coefficient of regime two is statistically significant at the 10 percent level but the coefficient of regime one is not statistically significant. Thus compared to pre fiscal decentralization period there has been a significant and tremendous decrease in growth rate of income inequality during fiscal decentralization period in Nepal.

The Durbin-Watson d statistic for the incidence of poverty, depth of poverty, severity of poverty and deviation from income equality are closer to 2 indicates that there is no autocorrelation in the first order scheme. We have 50 percent of the coefficients of explanatory variables are statistically insignificant. Even in the case of statistically significant variables, the level of significance is poorer, that is, only at the level of 10 percent. The computed values of F statistic are greater than the critical value of F statistic at 1 percent level of significance. It shows that the spline function model which we have used to find the relationship between growth rate of poverty measures and time regimes are overall significant statistically. In general, the table 4.4.10 shows that the pre fiscal decentralization period is successful to decline the growth of incidence of poverty, depth of poverty and severity of poverty. On the other hand, post fiscal decentralization is success to decline income equality in Nepal.
4.5. Conclusion

This chapter has been devoted to the empirical investigation on the impact of fiscal decentralization on poverty in Nepal. For this we have offered the profile of selected socio-economic and demographic indicators in Nepal during 1983 to 2010. The indicators include mean years of schooling, adult literacy rate, infant mortality rate, average life expectancy, productivity of principal food crops, productivity of principal cash crops, and government spending on education, health and agriculture in Nepal. The profile has been outlined in descriptive statistical form for the whole time period as well as for the two regimes, namely, before and after the promulgation of Local Self Governance Act, 1999 in Nepal. The profile helped us to find the average value of those indicators for the entire period of study. It stated the national level scenario of socio, economic and demographic condition prior and after the promulgation of Local Self Governance Act, 1999 in the country.

We have considered the bar diagram with exponential trend line for each and every socio-economic and demographic indicators to depict the tendency of the same in Nepal over the study period. All indicators are rising in increasing trend shows the better impact of government spending in the respective sectors of the country. The decreasing trend in infant mortality rate shows better physical, social and human development in Nepal. However, the lowering tendency in agricultural spending may increase food insecurity, low productivity and adverse effect the livelihood of farmers in the future.

The profiles of poverty measures, namely, incidence of poverty, depth of poverty, and severity of poverty and deviation from income equality in Nepal before and after fiscal decentralization have been presented. Further we examined the trend of those indicators diagrammatically. The tendency of incidence of poverty, depth of poverty and severity of poverty has been declined over the period 1983 to 2010. The deviation from income equality in Nepal has been increased at the same period. This picture shows that there is positive impact on poverty measures through fiscal decentralization in Nepal.

Cumulative sum and cumulative sum of squares tests of structural change are employed. The results show that there is a stable relationship between the poverty variables indicating stability of the estimated tests. The tests show that there is structural break in the year 1999 and is confirmed by the Chow test. The year 1999 is the time of fiscal decentralization by
promulgating Local Self Governance Act, 1999 in Nepal. The tests make us further clear that the year of promulgation of Local Self Governance Act, 1999, is the time point of structural change in Nepal. Spline function approach showed the result that the coefficients of entire time period (1983 to 2010), prior to fiscal decentralization (1983 to 1990) and after fiscal decentralization (2000 to 2010) are statistically significant at 1 percent level of significance. Despite of the spuriousness in the regression it assured that there is significant change in poverty measures in the regime of fiscal decentralization in Nepal.

The correlogram analysis confirms the data set is nonstationary or having unit root and it could be make stationary by changing the indicators to growth form. The Augmented Dickey-Fuller test has been used to test the unit root on the dataset of the issues of poverty in Nepal and found unit root in all the cases.

The growth rate of poverty measures in the entire period and the prior to fiscal decentralization are statistically significant. It is paradoxical result than the real situation of Nepal. In fact the poverty changes in Nepal after fiscal decentralization is significant than the same after fiscal decentralization. The growth rate of incidence of poverty, depth of poverty, severity of poverty and deviation from income equality are negative. This shows poverty has been decreased significantly over the period of time in Nepal. However, it is statistically insignificant.

In the present chapter we have examined the trend of social, economic and demographic indicators over the period 1983 to 2010 in the entire Nepal. The year of structural shift in the incidence of poverty, depth of poverty, severity of poverty and in the income inequality have been offered. We have checked the unit root of time series data of poverty related measures then computed the growth rate of same indicators using original data and stationary data of the country. We shall examine the status and trend of the incidence of poverty and fiscal decentralization indicators in the municipalities in Nepal in the next chapter. The effect of fiscal decentralization on the incidence of poverty in the all categories of the municipalities in Nepal shall be analyzed and shall be computed the relationship between fiscal decentralization and incidence of poverty in the chapter five.
Chapter Five

Fiscal Decentralization and Poverty
Empirical Evidences in the Different Municipalities

5.1. Introduction

We have analyzed the social, economic and demographic status of Nepal in the chapter four of the study. At that chapter the poverty related issues and the time point of structural shift were determined. The poverty related data has been found non stationary over the period of time. Then we have examined the trend in poverty measures using both nonstationary and stationary time series data for the period 1983 to 2010 in Nepal. Now in the present chapter we shall empirically examine the impact of fiscal decentralization in the municipalities of the country spanning over the time period 1983 to 2010.

Nepal has been adopting unitary and centralized system in the governance since the long time. Nowadays the country is in transitional stage and is moving to state reconstruction and convert the unitary structure to federal state. The building process for the forthcoming constitution is under way. The Interim Constitution of Nepal, 2007 (MoLJ, 2007) has stated “There shall be made progressive restructuring of the State with inclusive, democratic federal system of governance, by doing away with the centralized and unitary structure of the State so as to end discriminations based on class, caste, language, gender, culture, religion and region”. The current periodic plan, Three Year Plan Approach Paper (2010-11 to 2012-13) has spelled out the policies on fiscal decentralization (NPC, 2010) more clearly. It is evident that the foundation of democratic federal system of governance is fiscal decentralization. However, the practice of fiscal decentralization is still in preliminary stage in Nepal. The municipalities in Nepal are relatively more autonomous and advanced local bodies than the Village Development Committees and the District Development Committees in Nepal. As such, the fiscal decentralization to the municipalities in Nepal shall be the interesting area of studies to make guiding principle of
the state. Although, the empirical study on the impact of fiscal decentralization in the municipalities of the country have not been conducted. Now the current chapter of our study shall fulfil the gap on the aforesaid subject matter by means of empirical analysis on the impact of incidence of poverty in the course of fiscal decentralization in Nepal.

In this chapter we shall analyze the impact of fiscal decentralization on poverty incidence in the municipalities of Nepal for the period 1983 to 2010. The summary statistics of poverty incidence and fiscal indicators with the trend of the same variables shall be presented diagrammatically for all the categories of municipalities. We shall analyze the impact of fiscal decentralization on poverty reduction in total, hilly, terrain, eastern, western, old and new municipalities in Nepal are successively in section 5.2 to section 5.8. The determinants of structural shift and trend of fiscal decentralization in the all categories of the municipalities in Nepal shall be analyzed using semi-log regression model, which shall be outlined in the consecutive subsections under section 5.9. At the end in section 5.10, the conclusion of the chapter shall be offered.

5.2. Incidence of Poverty and Fiscal Indicators in All 58 Municipalities of Nepal

We know that the urban area of Nepal indicates the total area occupied by 58 municipalities of the country. In this section we shall present summary statistics of urban poverty of Nepal for the period 1983 to 2010. Then we shall present the summary statistics of fiscal indicators for the total municipalities in the same period. Moreover, we shall analyze the trend of poverty and fiscal indicators of all municipalities in Nepal with the help of bar diagram and trend line.

5.2.1. Descriptive Statistics on Incidence of Poverty and Fiscal Indicators in All 58 Municipalities of Nepal

It could be observed from the table 5.2.1 that the average value of incidence of poverty at the total urban area of Nepal in the period 1983 to 2010 is 18.57 percent. The relative size is defined as the proportion of total expenditure of all municipalities in the given year and the total expenditure through ministry of local government of the same year multiplied by 100 is 41.2 percent in an average. The tax autonomy measured as the proportion of total local tax of municipalities to the total revenue, expressed in percentage, is in an average 55 percent. The average value of own source of revenue per capita is NPR 391.2. The vertical
imbalance which is measured in the total grants to the total revenue of the same year expressed in percentage is 16.5 percent (in an average) indicates that the municipalities of Nepal are highly dependent on central grants. The municipality expenses around 7.7 percent of its total expenditure only to the social programmes like education, health and culture. The average expenditure per head of the municipal population is NPR 498.41. As a final point, the service indicator expressed as the number of municipal employee per 1,000 municipal population is about 2.65.

Table 5.2.1. Descriptive Statistics on Incidence of Poverty and Fiscal Indicators in All 58 Municipalities of Nepal†

<table>
<thead>
<tr>
<th></th>
<th>Poverty Incidence in All 58 Municipalities (%)</th>
<th>Relative Size (%)</th>
<th>Tax Autonomy (%)</th>
<th>Own Source of Revenue (Nepali currency per capita)</th>
<th>Vertical Imbalance (%)</th>
<th>Social Programmes Indicator (%)</th>
<th>Municipal Expenditure (Nepali currency per capita)</th>
<th>Service Provide Indicator (per 1000 population)</th>
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</thead>
<tbody>
<tr>
<td>Mean</td>
<td>18.57</td>
<td>41.22</td>
<td>55.04</td>
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<td>16.47</td>
<td>7.71</td>
<td>498.41</td>
<td>2.65</td>
</tr>
<tr>
<td>Median</td>
<td>21.42</td>
<td>37.57</td>
<td>57.60</td>
<td>415.96</td>
<td>16.00</td>
<td>7.25</td>
<td>534.63</td>
<td>2.61</td>
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<tr>
<td>Maximum</td>
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<td>92.10</td>
<td>72.94</td>
<td>523.34</td>
<td>37.15</td>
<td>18.42</td>
<td>765.18</td>
<td>3.23</td>
</tr>
<tr>
<td>Minimum</td>
<td>7.63</td>
<td>18.60</td>
<td>25.43</td>
<td>215.62</td>
<td>4.47</td>
<td>1.71</td>
<td>282.50</td>
<td>1.90</td>
</tr>
<tr>
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<td>8.74</td>
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</tr>
<tr>
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<td>20.51</td>
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<td>56.36</td>
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<td>3.05</td>
<td>1.93</td>
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<td>28</td>
<td>28</td>
<td>28</td>
<td>28</td>
<td>28</td>
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<table>
<thead>
<tr>
<th></th>
<th>Poverty Incidence in All 58 Municipalities (%)</th>
<th>Relative Size (%)</th>
<th>Tax Autonomy (%)</th>
<th>Own Source of Revenue (Nepali currency per capita)</th>
<th>Vertical Imbalance (%)</th>
<th>Social Programmes Indicator (%)</th>
<th>Municipal Expenditure (Nepali currency per capita)</th>
<th>Service Provide Indicator (per 1000 population)</th>
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<td>43.88</td>
<td>61.05</td>
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<td>5.21</td>
<td>429.13</td>
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<td>60.3</td>
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<tr>
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<td>72.94</td>
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<td>8.52</td>
<td>671.42</td>
<td>3.23</td>
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<tr>
<td>Std. Dev.</td>
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<td>1.67</td>
<td>1.66</td>
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<tr>
<td>Observations</td>
<td>17</td>
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<td>17</td>
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<td>17</td>
<td>17</td>
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<table>
<thead>
<tr>
<th></th>
<th>Poverty Incidence in All 58 Municipalities (%)</th>
<th>Relative Size (%)</th>
<th>Tax Autonomy (%)</th>
<th>Own Source of Revenue (Nepali currency per capita)</th>
<th>Vertical Imbalance (%)</th>
<th>Social Programmes Indicator (%)</th>
<th>Municipal Expenditure (Nepali currency per capita)</th>
<th>Service Provide Indicator (per 1000 population)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
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<td>37.11</td>
<td>45.74</td>
<td>430.63</td>
<td>22.65</td>
<td>11.58</td>
<td>605.47</td>
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<tr>
<td>Median</td>
<td>9.55</td>
<td>38.64</td>
<td>46.72</td>
<td>443.41</td>
<td>22.72</td>
<td>11.3</td>
<td>594.61</td>
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<tr>
<td>Maximum</td>
<td>16.06</td>
<td>48.47</td>
<td>57.65</td>
<td>523.34</td>
<td>37.15</td>
<td>18.42</td>
<td>765.18</td>
<td>2.67</td>
</tr>
<tr>
<td>Minimum</td>
<td>7.63</td>
<td>25.67</td>
<td>25.43</td>
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<tr>
<td>Std. Dev.</td>
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<td>10.69</td>
<td>52.72</td>
<td>8.99</td>
<td>3.92</td>
<td>87.24</td>
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<tr>
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<td>33.83</td>
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<td>-0.41</td>
<td>0.02</td>
<td>0.20</td>
<td>0.34</td>
<td>0.99</td>
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</tr>
<tr>
<td>Kurtosis</td>
<td>1.55</td>
<td>2.14</td>
<td>2.13</td>
<td>2.02</td>
<td>1.75</td>
<td>2.12</td>
<td>2.39</td>
<td>1.82</td>
</tr>
</tbody>
</table>

† Source: Author's own calculation based on secondary data.

198
Now we compare the average value of the indicators of the all 58 municipalities before (1983 to 1999) and after (1999 to 2010) the fiscal decentralization in Nepal. If we see the incidence of poverty in the all 58 municipalities in Nepal it is found that more than 50 percent of the same has been decreased after fiscal decentralization. The relative size, tax autonomy and service provide indicator have been decreased. On the contrary; own source of revenue per capita, vertical imbalance, social programme indicator and expenditure per capita have been increased after fiscal decentralization in Nepal.

5.2.2. Incidence of Poverty in All 58 Municipalities of Nepal

To examine the changing trend in incidence of poverty we use exponential tendency of yearly data on incidence of poverty or poverty head-count ratio of the period 1983 to 2010 in the municipalities of Nepal. This is well accepted methodology to examine the changing trend of the indicator in time series analysis. The same method shall be applied to analyze the changing trend of incidence of poverty in the all categories of the municipalities in the following subsections as well.

Figure 5.2.2 discloses the incidence of poverty of all 58 municipalities in Nepal. This shows the scenario of the total urban poverty in Nepal for the time period 1983 to 2010. The poor population from the defined poverty line in the urban area of Nepal has been declined smoothly. In 1983 the poverty head-count ratio was 27.57 percent and it reaches to 7.63 percent in the year 2008. It seems that urban head-count poverty ratio has been increased in all categories (hilly, terain, eastern, western, old and new) of the
municipalities in the year 2010. Here it has reached to 15.5 percent in the year 2010. Because in the year 2010-11 Central Bureau of Statistics, Nepal has adjusted the national poverty line as 2,220 kilocalorie per capita per day (NPR 19,261.00 per person per year). However, the regionally adjusted national poverty line was defined as 2,124 kilocalorie per capita per day (that is, NPR 5,089.00 per person per year) in 1995-96; 2,144 kilocalorie per capita per day (NPR 7,696.00 per person per year) in 2003-04 (up to 2008-09). As such the value of incidence of poverty was shifted up due to the upward shifting of national poverty line in the year 2010. In the real sense the incidence of poverty has been declining onwards 2010. Poverty in 2010 has been calculated as per the new food basket. So, we can’t compare it to the same of the previous years. The more interesting matter is that the poverty has been declined rapidly after 1999 than that of prior time period. The year 1999 is the promulgation of Local Self Governance Act, 1999 in Nepal and it has been taken as the turning point towards fiscal decentralization in Nepal.

5.2.3. Fiscal Indicators in All 58 Municipalities of Nepal

We considered seven fiscal indicators, namely, relative size, tax autonomy, own source of revenue per capita, vertical imbalance, social programme indicator and expenditure per capita to examine the fiscal decentralization status in all categories of the municipalities in Nepal. The details of these indicators were mentioned in the sub-section 3.10.4.1 of the methodology chapter of this study. The data of municipal expenditure on total local development expenditure via central government and sovereignty of tax collection for all 58 municipalities in Nepal for 28 years since 1983 is presented in figure 5.2.3A. The maximum and minimum values of relative size are 92.10 percent and 18.60 percent in the year 1993 and 1983 respectively. At the same figure it seems the tax autonomy is maximum (72.94 percent) in the year 1991 and minimum (25.43 percent) in the year 2010. The trends of both indicators are higher within 1989 to 1994 in the hill municipalities.
It could be observed from the figure 5.2.3B that the contribution of local resident to municipal revenue and per capita expenditure through municipal budget in all 58 Nepalese municipalities for the time period 1983 to 2010. The value of own source of revenue per capita is in peak in the year 2002 and the same is in lowest point in the year 1985. We found the municipal expenditure per capita is highest in the year 2010 and lowest in the year 1991.

Figure 5.2.3C exhibits the share of central grants to the total municipal revenue and the share of expenditure on social welfare (education, health, forestry, cultural and sports, disaster relief, financial assistance and miscellaneous) done by all 58 municipalities in
Nepal during 1983 to 2010. The vertical imbalance is found maximum in the year 2009 and the same is obtained minimum in the year 1992. The social programme indicator is in peak in the year 2007 and the same is lowest in the year 1991.

5.3. Incidence of Poverty and Fiscal Indicators in 28 Municipalities in the Hill Areas of Nepal

The municipalities located to the hill, mountain and valley in Nepal are termed as hilly municipalities. In this section the poverty and fiscal indicators of the hilly municipalities of Nepal and summary statistics of the same for the period 1983 to 2010 shall be discussed.

5.3.1. Descriptive Statistics on Incidence of Poverty and Fiscal Indicators in All 28 Municipalities in the Hill Areas of Nepal

The table 5.3.1 reveals the summary statistics of the variables of the hilly 28 municipalities in Nepal. The average of poverty incidence and the average value of relative size are 18.2 percent and 21 percent correspondingly. The average tax autonomy and vertical imbalance are 51.3 percent and 17.3 percent respectively. The mean value of own source of revenue per capita is NPR 403.9 and the expenditure per capita is NPR 509.6. The average social programmes indicator is 8.3 percent. About 3 municipal employees provide the municipal service to per 1,000 populations.
Table 5.3.1. Descriptive Statistics on Incidence of Poverty and Fiscal Indicators in All 28 Municipalities in the Hill Areas of Nepal†

<table>
<thead>
<tr>
<th></th>
<th>Poverty Incidence in 28 Hilly Municipalities (%)</th>
<th>Relative Size (%)</th>
<th>Tax Autonomy (%)</th>
<th>Own Source of Revenue (Nepali currency per capita)</th>
<th>Vertical Imbalance (%)</th>
<th>Social Programme Indicator (%)</th>
<th>Municipal Expenditure (Nepali currency per capita)</th>
<th>Service Provide Indicator (per 1000 population)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Period: 1983-2010</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>18.23</td>
<td>21.00</td>
<td>51.26</td>
<td>403.92</td>
<td>17.26</td>
<td>8.33</td>
<td>509.58</td>
<td>2.82</td>
</tr>
<tr>
<td>Median</td>
<td>20.25</td>
<td>19.44</td>
<td>52.17</td>
<td>435.10</td>
<td>18.32</td>
<td>7.84</td>
<td>556.27</td>
<td>2.76</td>
</tr>
<tr>
<td>Maximum</td>
<td>26.46</td>
<td>49.68</td>
<td>72.13</td>
<td>568.50</td>
<td>37.38</td>
<td>20.94</td>
<td>805.43</td>
<td>3.51</td>
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<tr>
<td>Minimum</td>
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<td>6.34</td>
<td>27.27</td>
<td>141.17</td>
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<td>1.84</td>
<td>232.64</td>
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<td>5.29</td>
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<td>65.54</td>
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<tr>
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† Source: Author’s own calculation based on secondary data.

We are going to compare the mean value of the indicators of hilly municipalities at the time of prior and posterior of fiscal decentralization in Nepal. It seems that incidence of poverty, tax autonomy and service provide indicator have been decreased after fiscal decentralization. But the relative size, own source of revenue per capita, vertical imbalance, social programme indicator and expenditure per capita by the municipalities have been considerably higher after fiscal decentralization in the municipalities of hills.
5.3.2. Incidence of Poverty in 28 Hilly Municipalities of Nepal

As can be seen from the figure 5.3.2, the poverty incidence of the 28 hilly municipalities in Nepal has been declining over the time period 1983 to 2010. In the hill urban area the decline of poverty is much more rapid than the urban terai. However, urban terai is well connected by road network, well equipped and these are the centres for foreign trade especially to India. It concludes that terain municipalities are relatively weaker to reduce poverty.

5.3.3. Fiscal Indicators in 28 Hilly Municipalities of Nepal

Figure 5.3.3A reveals the data of municipal expenditure on total local development expenditure via central government and sovereignty of tax collection for 28 hilly municipalities in Nepal for the period 1983 to 2010. The relative size is highest (49.68 percent) in the year 1993 and lowest (6.34 percent) in the year 1983. On the tax autonomy it reaches maximum (72.15 percent) in the year 1989 and minimum (27.27 percent) in the year 2010. The value of tax autonomy is relatively higher than the value of relative size over the time period.
The figure 5.3.3B represents the contribution of local resident to municipal revenue and per capita expenditure through municipal budget in 28 hilly municipalities for the 1983 to 2010 in Nepal. The own source of revenue per capita is maximum in the year 2002 and the same is minimum in the year 1983. The municipal expenditure per capita is found maximum in the year 2010 and minimum in the year 1991.

As can be seen from Figure 5.3.3C, the share of central grants to total municipal revenue and the share of expenditure on social welfare done by the 28 hilly municipalities in Nepal
has been changed considerably over the time period 1983 to 2010. Here, the vertical imbalance which denotes the share of central grants to the total municipal revenue is highest in the year 2010 and the same is the lowest in the year 1992. In the next part, the social programme indicator which denotes the share of municipal expenditure in the social programmes, namely, education, health, forestry, cultural and sports, disaster relief, financial assistance and miscellaneous are approaches maximum in the year 2007 and the same is laid down in minimum in the year 1991.

5.4. Incidence of Poverty and Fiscal Indicators in 30 Terain Municipalities of Nepal
The municipalities located in the terai or plain region of Nepal are called terain municipalities. This section is devoted to the analysis on poverty and fiscal indicators of the terain municipalities of Nepal spanning over the period 1983 to 2010.

5.4.1. Descriptive Statistics on Incidence of Poverty and Fiscal Indicators in 30 Terain Municipalities of Nepal
The data of variables in table 5.4.1 implies that the average value of poverty incidence and relative size of terain municipalities are 31.6 percent and 14.5 percent respectively. In terain municipalities, the tax autonomy indicator in an average and vertical imbalance indicator are 59.5 and 15.8 percent roughly. The average own source of revenue and expenditure per capita are NPR 376.5 and NPR 424 approximately. Around 10.4 percent
of the total budget of the terai municipalities is expenses on the social programmes. The average service provider indicator is 2.5 employees each 1,000 municipal populace in terai. The interesting fact is that the hilly municipalities are better performer in fiscal decentralization than the terai municipalities in Nepal.

Table 5.4.1. Descriptive Statistics on Incidence of Poverty and Fiscal Indicators in 30 Terain Municipalities of Nepal†

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<td>Tax Autonomy (%)</td>
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<td>61.96</td>
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† Source: Author’s own calculation based on secondary data.

Let us consider the average indicators of the terai municipalities in the prior (1983 to 1999) and posterior (2000 to 2010) in Nepal. We clearly find that incidence of poverty, tax autonomy, social programme indicator and service provider indicators have been lowered after fiscal decentralization. On the other hand, relative size, own source of revenue per capita, vertical imbalance and expenditure per capita by the municipalities have been remarkably bigger after fiscal decentralization.
5.4.2. Incidence of Poverty in 30 Terain Municipalities of Nepal

Referring to figure 5.4.2, it is clear that the incidence of poverty in the terain municipalities in Nepal has been declined over the period 1983 to 2010 in Nepal. In section 5.3 we discussed that the municipalities in the hill are relatively weaker in physical infrastructure facilities and road connectivity than the municipalities in terai. Though the poverty has been declining in terain municipalities is slower than the hilly municipalities of the country. One cause of this slow decline in poverty is the poor governance in terain municipalities. The next cause might be the unmanageable trend of migration from rural hill and or terai to the urban terai region. It is a well known fact that there was huge flow of population to terai from the hills. However, since about the decade the urban terai has been more unsecure than the remaining part of the country. It made the population flow slow down to the urban terai.

5.4.3. Fiscal Indicators in 30 Terain Municipalities of Nepal

The data of municipal expenditure on total local development expenditure via central government and sovereignty of tax collection for 30 terain municipalities in Nepal for the period 1983 to 2010 is given in figure 5.4.3A. The maximum and minimum values of relative size are 24.49 percent and 2.46 percent in the year 1993 and 1983 respectively. At the same figure we see the tax autonomy maximum (80.51 percent) in the year 19991 and minimum (25.57 percent) in the year 2010. Both indicators are gradually upward after 1991 in the hill municipalities.
The figure 5.4.3B shows the contribution of each local resident to the own source of municipal revenue and per capita expenditure through municipal budget in 30 tarain municipalities of Nepal for the period 1983 to 2010. We get the own source of revenue is maximum in the year 1998 and the same is minimum in the year 1987. The municipal expenditure per capita is the highest in the year 2010 and the same is the lowest in the year 1984.

The proportion of central grants to the total municipal revenue and share of social welfare expenditure on total expenditure through 30 tarain municipalities in Nepal for the period
1983 to 2010 has been presented in table 5.4.3C. The vertical imbalance indicator is reached at maximum in the year 2009 and the same is fallen at the minimum level in the year 1991. If we see the social programme indicator, it has reached maximum in the year 1988 and the same is fallen at minimum level in the year 1992.

5.5. Incidence of Poverty and Fiscal Indicators in 34 Municipalities in the Eastern Region of Nepal

The municipalities located in the eastern and central development region of Nepal are termed as eastern municipalities. The total number of eastern municipalities is 34. The purpose of this section is to assess the poverty and fiscal indicators of the eastern municipalities of Nepal for the period 1983 to 2010.

5.5.1. Descriptive Statistics on Incidence of Poverty and Fiscal Indicators in 34 Municipalities in the Eastern Region of Nepal

The incidence of poverty and fiscal decentralization variables of the 34 municipalities in Nepal are presented in table 5.5.1. The average value of poverty incidence is 22.2 percent and the average value of relative size is 31.5 percent. The own tax covers the 56.7 percent of the total revenue in eastern municipalities. The average dependency on grants to the total revenue of eastern municipalities is 13.4 percent. The mean value of own source of revenue per capita and the average expenditure per capita are NPR 434.9 and NPR 526.8
correspondingly. The average expense is 7.8 percent of its total budget annually in the social programmes at the eastern municipalities. The average value of service provider indicator is 2.8 municipal employees per thousand eastern municipal populations in Nepal.

Table 5.5.1. Descriptive Statistics on the Incidence of Poverty and Fiscal Indicators of 34 Eastern Municipalities in Nepal.

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† Source: Author’s own calculation based on secondary data.

Let us look at the average figure of the indicators of eastern municipalities comparing earlier than (1983 to 1999) fiscal decentralization and later than (2000 to 2010) the same
in Nepal. It appears the higher value of own source of revenue per capita, vertical imbalance, social programme indicator and expenditure per capita have been amplified after fiscal decentralization. Next side, the remaining indicators, namely, incidence of poverty, relative size, tax autonomy and service provide indicators are reduced in size after fiscal decentralization in Nepal.

5.5.2. Incidence of Poverty in 34 Municipalities in the Eastern Region of Nepal
The incidence of poverty in 34 municipalities in eastern Nepal are presented in the figure 5.5.2 shows that the poverty head-count ratio in this region has been declining rapidly in the period 1983 to 2010. The eastern part of Nepal is relatively more developed than the western part of the country. This is the main cause for the better performance of municipality in poverty reduction. The capital city Kathmandu and Lalitpur, other big cities like Biratnagar and Birgunj are lying in the eastern region might be the other causes of better result in poverty reduction.

5.5.3. Fiscal Indicators in 34 Municipalities in the Eastern Regions of Nepal
On the basis of figure given in 5.5.3A we can examine the state of municipal expenditure on total local development expenditure via central government and sovereignty of tax collection for 34 eastern municipalities for the period 28 years before 2010 in Nepal. It is clear that relative size is the utmost in 1993 and the same is least amount in 1983. The tax autonomy is the highest in 1989 and the lowest in 2010.
Referring to figure 5.5.3B, it is obvious that the contribution of local resident in per capita to the own source of municipal revenue and municipal expenditure to each individual via municipal budget in 34 eastern municipalities during 1983 to 2010 in Nepal. We note the own source of revenue per capita is maximum in the year 2002 and the same is minimum in the year 1985. On the other hand, the municipal expenditure per capita is found maximum in the year 2010 and the same is set up minimum in the year 1991.

The figure 5.5.3C reveals the ratio of central grants to the total municipal revenue and the proportion of expenditure on social welfare function performed by the 34 eastern municipalities during 1983 to 2010 in Nepal. The vertical imbalance indicator hiked up at
peak in the year 2010 and the same is felled down at the lowest level in the year 1992. Consider the social programme indicator, it moved up at maximum in the year 2007 and the same is fallen down at the minimum in the year 1991.

5.6. Incidence of Poverty and Fiscal Indicators in 24 Municipalities in the Western Regions of Nepal

The municipalities situated in the western, mid-western and far-western development regions are western municipalities of the country. This section deals with the summary statistics of poverty and fiscal indicators of the western municipalities of Nepal for the period 1983 to 2010. We shall also analyze poverty and fiscal decentralization indicators of the western municipalities for the same period.

5.6.1. Descriptive Statistics on Incidence of Poverty and Fiscal Indicators in 24 Municipalities in the Western Regions of Nepal

On the basis of table 5.6.1 it can be concluded that the incidence of poverty is higher in western part of Nepal than the eastern one. The average poverty incidence in 24 western municipalities is 31.1 percent. The average relative size and tax autonomy are more or less 8 percent and 50.8 percent respectively. The average own source of revenue per capita and average value of expenditure per capita are also lower in western municipality than the eastern municipalities, having merely NPR 283.8 and NPR 428.83. The average vertical imbalance indicator is 26 percent; the mean value of social programme indicator is 7.4
percent roughly. The dependency on central grants of western municipalities is nearly twice than that of the eastern municipalities. The average service provider indicator is 2.4 municipal employees per thousand western municipal population of the country.

Table 5.6.1. Descriptive Statistics on Incidence of Poverty and Fiscal Indicators in 24 Municipalities in the Western Regions of Nepal†

<table>
<thead>
<tr>
<th>Poverty Incidence in 24 Western Municipalities (%)</th>
<th>Relative Size (%)</th>
<th>Tax Autonomy (%)</th>
<th>Own Source of Revenue (Nepali currency per capita)</th>
<th>Vertical Imbalance (%)</th>
<th>Social Programmes Indicator (%)</th>
<th>Municipal Expenditure (Nepali currency per capita)</th>
<th>Service Provider Indicator (per 1000 population)</th>
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<tr>
<td>Mean</td>
<td>31.08</td>
<td>9.78</td>
<td>50.77</td>
<td>283.82</td>
<td>26.03</td>
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<td>428.83</td>
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<td>35.08</td>
<td>9.13</td>
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<td>291.78</td>
<td>24.61</td>
<td>7.15</td>
<td>422.66</td>
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<td>19.30</td>
<td>76.37</td>
<td>383.27</td>
<td>50.27</td>
<td>14.73</td>
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<td>4.77</td>
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<td>14.35</td>
<td>55.33</td>
<td>12.12</td>
<td>4.06</td>
<td>120.99</td>
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<td>39.31</td>
<td>28.28</td>
<td>19.49</td>
<td>46.57</td>
<td>55.08</td>
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<td>-0.49</td>
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</tbody>
</table>

Period: 1983-2010

| Mean                                            | 38.67            | 9.89            | 59.77                                        | 284.76                   | 19.27                          | 5.32                                          | 370.00                                         | 2.68                                          |
| Median                                          | 38.23            | 9.15            | 61.99                                        | 295.02                   | 17.50                          | 4.28                                          | 341.86                                         | 2.69                                          |
| Maximum                                         | 46.38            | 19.30           | 76.37                                        | 383.27                   | 37.18                          | 14.00                                         | 503.85                                         | 3.16                                          |
| Minimum                                         | 28.14            | 4.77            | 40.90                                        | 183.96                   | 6.61                           | 1.54                                          | 261.05                                         | 2.29                                          |
| Std. Dev.                                       | 5.46             | 4.77            | 8.32                                         | 65.55                    | 8.65                           | 3.27                                          | 79.52                                          | 0.25                                          |
| CV                                              | 14.12            | 48.22           | 13.92                                        | 23.02                    | 44.89                          | 61.60                                         | 21.49                                          | 9.38                                          |
| Skewness                                        | -0.28            | 0.73            | -0.36                                        | -0.31                    | 0.41                           | 1.21                                          | 0.16                                           | 0.37                                          |
| Kurtosis                                        | 2.24             | 2.32            | 3.24                                         | 1.79                     | 2.30                           | 3.90                                          | 1.69                                           | 2.52                                          |
| Observations                                    | 17               | 17              | 17                                           | 17                       | 17                             | 17                                            | 17                                             | 17                                            |

Period: 1983-1999

| Mean                                            | 19.35            | 9.60            | 38.85                                        | 282.38                   | 36.48                          | 10.56                                         | 519.75                                         | 1.87                                          |
| Median                                          | 20.59            | 9.10            | 39.05                                        | 273.57                   | 37.47                          | 10.92                                         | 514.79                                         | 1.88                                          |
| Maximum                                         | 26.88            | 12.73           | 50.58                                        | 369.27                   | 50.27                          | 14.73                                         | 735.01                                         | 2.20                                          |
| Minimum                                         | 8.91             | 7.59            | 14.60                                        | 237.74                   | 22.57                          | 5.15                                          | 362.65                                         | 1.54                                          |
| Std. Dev.                                       | 5.88             | 1.85            | 9.73                                         | 37.25                    | 8.90                           | 3.01                                          | 120.12                                         | 0.21                                          |
| Skewness                                        | -0.76            | 0.51            | -0.92                                        | 1.08                     | -0.13                          | -0.18                                         | 0.57                                           | 0.02                                          |
| Kurtosis                                        | 2.69             | 1.84            | 3.60                                         | 3.73                     | 2.33                           | 2.12                                          | 2.44                                           | 1.84                                          |

Period: 2000-2010

| Mean                                            | 19.35            | 9.60            | 38.85                                        | 282.38                   | 36.48                          | 10.56                                         | 519.75                                         | 1.87                                          |
| Median                                          | 20.59            | 9.10            | 39.05                                        | 273.57                   | 37.47                          | 10.92                                         | 514.79                                         | 1.88                                          |
| Maximum                                         | 26.88            | 12.73           | 50.58                                        | 369.27                   | 50.27                          | 14.73                                         | 735.01                                         | 2.20                                          |
| Minimum                                         | 8.91             | 7.59            | 14.60                                        | 237.74                   | 22.57                          | 5.15                                          | 362.65                                         | 1.54                                          |
| Std. Dev.                                       | 5.88             | 1.85            | 9.73                                         | 37.25                    | 8.90                           | 3.01                                          | 120.12                                         | 0.21                                          |
| Skewness                                        | -0.76            | 0.51            | -0.92                                        | 1.08                     | -0.13                          | -0.18                                         | 0.57                                           | 0.02                                          |
| Kurtosis                                        | 2.69             | 1.84            | 3.60                                         | 3.73                     | 2.33                           | 2.12                                          | 2.44                                           | 1.84                                          |

† Source: Author’s own calculation based on secondary data.

Consider the mean value of the indicators of the incidence of poverty and fiscal decentralization in the period before fiscal decentralization and after the period of fiscal decentralization in the western municipalities in Nepal. As we note that incidence of
poverty, relative size, tax autonomy, own source of revenue per capita and service provide indicator are found lowering after fiscal decentralization, the remaining three indicators, that is, vertical imbalance, social programme indicator and expenditure per capita by the western municipalities are approximately doubled after fiscal decentralization.

5.6.2. Incidence of Poverty in 24 Municipalities in the Western Regions of Nepal

The western sector of Nepal is relatively less developed than the eastern sector of the country. So the performances of municipalities are evidently weaker in service delivery and poverty reduction in their jurisdictions. However, figure 5.6.2 shows that the incidence of poverty in the western municipal area has been decreasing smoothly in the study period 1983 to 2010. The poverty

5.6.3. Fiscal Indicators in 24 Municipalities in the Western Regions of Nepal

The municipal expenditure on total local development expenditure via central government and sovereignty of tax collection for 24 western municipalities for the period 1983 to 2010 in Nepal is presented in figure 5.6.3A. It clearly shows that the tax autonomy is comparatively lower than the relative size of the local government. It depicts that those municipalities are poor in internal resource mobilization. Moreover, their expenditure capacity is higher than the revenue generation. The relative size is found utmost in the
year 1993 and lowest amount in the year 1984. The tax autonomy is peak in the year 1991 and least in the year 2010.

The figure 5.6.3B gives the result on revenue contribution of each local individual to the municipality and per capita expenditure through municipal budget in 24 western municipalities in Nepal for 28 years since 1983. The own source of revenue per capita in the year 1995 is found maximum and the same is found minimum in the year 1984. The municipal expenditure per capita is initiated maximum in the year 2010 and the same is the lowest in the year 1986.
The share of central grants to the total municipal revenue and the share of expenditure on social welfare done by 24 municipalities in western Nepal over the period 1983 to 2010 can be seen diagrammatically in figure 5.6.3C. In the year 2009 the vertical imbalance indicator is found maximum and the same is found minimum in the year 1991. The social programme indicator is found maximum in the year 2007 and the same is found minimum in the year 1983.

5.7. Incidence of Poverty and Fiscal Indicators in 29 Old Municipalities in Nepal
The municipalities which were declared as the municipal status before 1982 are the old municipalities in Nepal. We analyse the state of poverty and fiscal indicators of the 29 old municipalities of Nepal for the period 1983 to 2010 under this section.

5.7.1. Descriptive Statistics on Incidence of Poverty and Fiscal Indicators in 29 Old Municipalities in Nepal
Table 5.7.1 discloses the summary statistics of the variables of old municipalities in Nepal. Poverty incidence which is an independent variable for our study having an average value 21.3 percent in the old municipalities in Nepal. The average value of relative size, tax autonomy, vertical imbalance and social programme indicator are 36.6 percent, 57.1 percent, 13.8 percent and 8 percent respectively. The proportion of own source of revenue to the total revenue is much better in old municipalities than the newly formed municipalities. The average value of own source of revenue indicator is 423 Nepalese
rupees. However, the expenditure per capita in both categories of municipalities is nearly equal by average value of NPR 512 for old municipalities. The average service provider indicator in old municipalities is 2.8 and is higher in quantity than the new municipalities in Nepal.

Table 5.7.1. Descriptive Statistics on Incidence of Poverty and Fiscal Indicators in 29 Old Municipalities in Nepal†

<table>
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<tr>
<th></th>
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<tr>
<td></td>
<td>Mean (%)</td>
<td>Median (%)</td>
<td>Mean (%)</td>
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<tr>
<td>Poverty Incidence in 29 Old</td>
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<tr>
<td>Municipalities (%)</td>
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<td>Relative Size (%)</td>
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<td>Own Source of Revenue (%)</td>
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<td>(Nepali currency per capita)</td>
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<td>Service Provide Indicator (%)</td>
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<td>(per 1000 population)</td>
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<td>Kurtosis</td>
<td>1.67</td>
<td>2.58</td>
<td>1.44</td>
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</table>

† Source: Author’s own calculation based on secondary data.

The differences between the regimes of before and after the fiscal decentralization on the basis of indicators of the old municipalities in Nepal have been computed. Incidence of
poverty, relative size, tax autonomy and service provide indicators have been decreased after fiscal decentralization regime. Nevertheless, own source of revenue per capita, vertical imbalance, social programme indicator and expenditure per capita have been augmented after fiscal decentralization regime.

5.7.2. Incidence of Poverty in 29 Old Municipalities in Nepal

The old municipalities are comparatively well equipped, resourceful and developed in Nepal. Their quality in service delivery is better. The incidence of poverty in old municipalities is relatively lower than the new municipalities in Nepal. Figure 5.7.2 reveals the incidence of poverty in the 29 old municipalities in Nepal. The poverty head-count ratio in the old municipalities has been declining in the period 1983 to 2010. It reaches the lowest in 2008.

![Figure 5.7.2. Incidence of Poverty in 29 Old Municipalities in Nepal](image)

5.7.3. Fiscal Indicators in 29 Old Municipalities in Nepal

The fiscal decentralization status related to the municipal expenditure on total local development expenditure via central government and sovereignty of tax collection of the 29 old Nepalese municipalities for the period 1983 to 2010 can be seen from the figure 5.7.3A. The relative size is found maximum in the year 1993 and minimum in the year 2010. Next, the tax autonomy is highest in the year 1993 and lowest in the year 2010.
The information in figure 5.7.3B implies the status on per capita revenue contribution by local individual to the municipality and per capita expenditure through municipal budget by 29 old municipalities in Nepal for the period 1983 to 2010. We have highest value of own source of revenue per capita in the year 2002 and the same is lowest in the year 1985. On the next side the municipal expenditure in per capita is highest in the year 2002 and the same is lowest in the year 1991.

The share of central grants to the total municipal revenue and the share of expenditure on social welfare done by 29 old municipalities in Nepal in 28 years since 1983 are
simultaneously shown in figure 5.6.3C. The vertical imbalance indicator is found maximum in the year 2010 and the same is found minimum in the year 1992. In the same figure we can see that the social programme indicator is in maximum in the year 2007 and the same is in minimum in the year 1991.

**Figure 5.7.3C.** The Share of Central Grants to Total Municipal Revenue and Share of Expenditure on Social Welfare Done by 29 Old Municipalities in Nepal

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<th>Social Programmes Indicator (%)</th>
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<tr>
<td>1999</td>
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<td>2000</td>
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<td>2008</td>
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<td>2009</td>
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</tr>
<tr>
<td>2010</td>
<td>25.61</td>
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</tr>
</tbody>
</table>

5.8. Incidence of Poverty and Fiscal Indicators in 29 New Municipalities in Nepal

The municipalities, declared after the year 1982, are new ones. This section presents the summary statistics of poverty and fiscal indicators of the new municipalities of Nepal for the time period 1988 to 2010. After that we shall examine the same indicators for the same time period in the different subsections.

5.8.1. Descriptive Statistics on Incidence of Poverty and Fiscal Indicators in 29 New Municipalities in Nepal

As can be seen from the table 5.8.1, the matter of our interest of the study, for example, poverty head count ratio and fiscal decentralization variables of 29 new municipalities in Nepal. The average value of poverty head count ratio or poverty incidence is 28.7 percent and is higher than the old municipalities in Nepal. The reason is that the rural sub-urban areas were declared as a new municipality indicates higher poverty. The cause is, the incidence of poverty is higher in rural areas of the country than the poverty incidence in urban ones. The average value of relative size is also more than 6 times lesser in new
municipalities having value of 5.6 percent only. The average tax autonomy, vertical imbalance and social indicator are 40.6 percent, 35.3 percent and 6.6 percent respectively. The average own source of revenue is NPR 262.2 and average expenditure per capita is NPR 486.2 correspondingly. The service provider indicator is 1.7 employees per thousand show the weaker service delivery in new municipalities of Nepal. The summary statistics supports the findings of previous studies regarding the new municipalities in Nepal.

Table 5.8.1. Descriptive Statistics on Incidence of Poverty and Fiscal Indicators in 29 New Municipalities in Nepal†

<table>
<thead>
<tr>
<th></th>
<th>Period: 1988-2010</th>
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<tbody>
<tr>
<td></td>
<td>Poverty Incidence in 29 New Municipalities (%)</td>
<td>Relative Size (%)</td>
<td>Tax Autonomy (%)</td>
<td>Own Source of Revenue (Nepali currency per capita)</td>
<td>Vertical Imbalance (%)</td>
<td>Social Programmes Indicator (%)</td>
<td>Municipal Expenditure (Nepali currency per capita)</td>
</tr>
<tr>
<td>Mean</td>
<td>28.72</td>
<td>5.58</td>
<td>40.64</td>
<td>261.21</td>
<td>35.30</td>
<td>6.61</td>
<td>486.21</td>
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<tr>
<td>Median</td>
<td>28.67</td>
<td>6.92</td>
<td>43.39</td>
<td>260.57</td>
<td>33.19</td>
<td>7.96</td>
<td>438.19</td>
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<tr>
<td>Maximum</td>
<td>42.66</td>
<td>9.35</td>
<td>62.61</td>
<td>394.28</td>
<td>60.90</td>
<td>11.04</td>
<td>904.11</td>
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<td>Minimum</td>
<td>10.09</td>
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<td>14.04</td>
<td>145.72</td>
<td>13.03</td>
<td>0.00</td>
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</tr>
<tr>
<td>Std. Dev.</td>
<td>9.70</td>
<td>2.76</td>
<td>11.92</td>
<td>60.40</td>
<td>10.92</td>
<td>3.42</td>
<td>156.58</td>
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<tr>
<td>CV</td>
<td>33.77</td>
<td>49.40</td>
<td>29.32</td>
<td>23.12</td>
<td>30.94</td>
<td>51.73</td>
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<td>Skewness</td>
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<td>0.64</td>
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</tr>
<tr>
<td></td>
<td>Period: 1988-1999</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Poverty Incidence in 29 New Municipalities (%)</td>
<td>Relative Size (%)</td>
<td>Tax Autonomy (%)</td>
<td>Own Source of Revenue (Nepali currency per capita)</td>
<td>Vertical Imbalance (%)</td>
<td>Social Programmes Indicator (%)</td>
<td>Municipal Expenditure (Nepali currency per capita)</td>
</tr>
<tr>
<td>Mean</td>
<td>36.54</td>
<td>3.47</td>
<td>47.32</td>
<td>275.26</td>
<td>31.81</td>
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<td>Median</td>
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<td>467.97</td>
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<tr>
<td>Maximum</td>
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<td>7.14</td>
<td>62.61</td>
<td>394.28</td>
<td>56.14</td>
<td>9.09</td>
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<td>0.00</td>
<td>283.28</td>
</tr>
<tr>
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<td>2.88</td>
<td>120.25</td>
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<tr>
<td></td>
<td>Period: 2000-2010</td>
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</tr>
<tr>
<td></td>
<td>Poverty Incidence in 29 New Municipalities (%)</td>
<td>Relative Size (%)</td>
<td>Tax Autonomy (%)</td>
<td>Own Source of Revenue (Nepali currency per capita)</td>
<td>Vertical Imbalance (%)</td>
<td>Social Programmes Indicator (%)</td>
<td>Municipal Expenditure (Nepali currency per capita)</td>
</tr>
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<td>Mean</td>
<td>20.19</td>
<td>7.88</td>
<td>33.35</td>
<td>245.88</td>
<td>39.11</td>
<td>9.32</td>
<td>531.24</td>
</tr>
<tr>
<td>Median</td>
<td>22.82</td>
<td>7.84</td>
<td>30.51</td>
<td>249.36</td>
<td>35.57</td>
<td>9.14</td>
<td>432.62</td>
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<tr>
<td>Maximum</td>
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<td>9.35</td>
<td>47.82</td>
<td>314.67</td>
<td>60.90</td>
<td>11.04</td>
<td>904.11</td>
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<tr>
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<td>6.58</td>
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<td>198.15</td>
<td>27.95</td>
<td>7.84</td>
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<tr>
<td>CV</td>
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<td>11.40</td>
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</tr>
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<td>0.86</td>
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<td>Kurtosis</td>
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<td>1.62</td>
<td>2.49</td>
<td>2.51</td>
<td>1.84</td>
<td>3.02</td>
</tr>
</tbody>
</table>

† Source: Author’s own calculation based on secondary data.

We examine the state of indicators in the pre fiscal decentralization era (1988 to 1999) and post fiscal decentralization era (2000 to 2010) in the new municipalities in Nepal. After fiscal decentralization era the incidence of poverty, tax autonomy, own source of revenue
per capita and service provide indicator have been lowered. Thus the other indicators, notably, the relative size, vertical imbalance, social programme indicator and expenditure per capita through the new municipalities have been increased during fiscal decentralization.

5.8.2. Incidence of Poverty in 29 New Municipalities in Nepal

The new municipalities are relatively weaker in resources, service delivery, physical infrastructure and organizational capabilities. Except few cases, new municipalities are not developed. From the figure 5.8.2 we understand that the incidence of poverty in new municipalities has been decreasing rapidly over the time period 1988 to 2010 in Nepal. The head-count poverty ratio is the highest in the year 1988 and lowest in the year 2008 in the new municipalities.

5.8.3. Fiscal Indicators in 29 New Municipalities in Nepal

Figure 5.8.3A discloses the municipal expenditure on total local development expenditure via central government and sovereignty of tax collection for 29 new municipalities for the period 23 years before 2010 in Nepal. The relative size is at maximum in the year 2005 and the same is at minimum in the year 1988. The tax autonomy is highest in the year 1991 and the same is lowest in the year 2010. In the new municipalities the tax autonomy is much bigger than the relative size over the time period.
From the figure 5.8.3A it can be seen that the contribution of each local resident to the municipal revenue source and per capita (local) aggregate expenditure through municipal budget in 29 new Nepalese municipalities during 1988 to 2010. The own source of revenue per capita is reached at peak in the year 1997 and the same is arrived at the lowest in the year 1988. On the expenditure side, the expenditure per capita is the highest in the year 2010 and the same is the lowest in the year 1991.

From the dataset we comprehend that the share of central grants to the total municipal revenue and share of expenditure on social welfare done by 29 new municipalities for the period 1983 to 2010 in Nepal. The vertical imbalance indicator is found maximum in the
year 2009 and the same is found minimum in the year 1991. At the upper part of this figure it is found that the social programme indicator is reached maximum in 2009 and the same is found minimum in the preliminary time (1988 and 1989) of the establishment as a municipality.

From the overall discussion regarding the fiscal indicators of all the categories of municipalities in Nepal, we observe all the fiscal indicators which are found minimum (except relative size and tax autonomy) in the early period of the 1990s. This period is the ending time of partyless Panchayat system and the beginning of multiparty democracy in Nepal. In this transition period the political concern to the local bodies was lesser. It indicates that in each and every transitional phase, the state of fiscal decentralization is weaker. It might be due to the poor governance and absence of the elected executive body in the local governance system.

The relative size is found gradually decreasing after the second half of the 1990s. It denotes the increasing trend of local government expenditure through ministry of local development in comparison to the municipal expenditure.

The indicator tax autonomy has been more or less equal after 1999. However, after 2006 it has been declined. It shows that the revenue sources of the municipalities have been decreased in comparison to their expenditure. In this era the new tax system has been adopted in the municipality on one hand, and the expenditure of the municipalities has been growing on the other. It might be the causes of decrease in tax autonomy in the municipalities in Nepal.

5.9. Impact of Fiscal Decentralization on Poverty in Nepal: Regression Analysis

In this section, the regression analysis on the incidence of poverty through fiscal decentralization for the total, hilly, terain, eastern, western, old and new municipalities of Nepal for the period 1983 to 2010 shall be presented. The dependent variable for the entire analysis is incidence of poverty (POVIN) and the explanatory variables are relative size (SIZE), tax autonomy (AUTO) and social expenditure (SOC). The fiscal decentralization dummy (D) has been considered as zero for the period (1983 to 1999) and the same has been considered as one during (2000 to 2010) by keeping the fact in the mind that the
Local Self Governance Act, 1999 (LSGA) was promulgated in the year 1999 in Nepal. We have considered the aforementioned explanatory variables only for regression analysis because of the following reasons.

1. These variables indicate the occurrence of fiscal decentralization.
2. We have observations only in these variables.
3. These variables are found to be important to explain the incidence of poverty and are widely used (Besley and Coate, 2003; Faguet, 2004 and Sepulveda and Martinez-Vazquez, 2010) for the empirical study.

These are the reasons to choose the explanatory variables in explaining the incidence of poverty in Nepal. We shall consider the growth form of dependent and explanatory variables in the semi-log regression model for the estimation of result.

5.9.1. Effect of Fiscal Decentralization on the Incidence of Poverty in All 58 Municipalities

As illustrated in the table 5.9.1 we have examined the effect of fiscal decentralization on the incidence of poverty into the total 58 municipalities in Nepal. We observe the coefficient of tax autonomy is negative and statistically significant at 1 percent level. It indicates that there is negative association between tax autonomy and incidence of poverty in the municipalities of Nepal. This result reports that the incidence of poverty in all municipalities of Nepal decreases by 0.843 percent with increase in tax autonomy by 1 percent. It means the sovereignty of revenue collection for the autonomy in expenditure has good impact on poverty reduction in the municipalities. Municipalities are devolved the power to fix the tax structure for the purpose of local development. Thus the tax autonomy which is an indicator of fiscal decentralization has been able to reduce the incidence of poverty in Nepal during the period 1983 to 2010.

Considering the effects of social expenditure (expenditure on social programmes, namely, education, health, forestry, cultural and sports, disaster relief, financial assistance and miscellaneous) on the incidence of poverty into all municipalities in Nepal we note that the coefficient of social expenditure in the regression with incidence of poverty has found to be negative and statistically significant at 10 percent level. That is social expenditure is as well negatively associated with incidence of poverty. Thus the effect of social
expenditure is considerable in poverty reduction. However the level of significance of social expenditure (-0.124) is lower (in absolute value) than the coefficient of tax autonomy. The social expenditure channel has found effective to reduce poverty. We mentioned that the main components of social expenditure are education and health services. It is obvious that those public services are goes to the poor who are unable to get the same services from the private sector. Therefore, the social expenditure is successful to educate and for the health care of the poor then ultimately to reduce urban poverty in Nepal.

Table 5.9.1. Effect of Fiscal Decentralization on the Incidence of Poverty in All 58 Municipalities in Nepal †

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative Size (X_{1r})</td>
<td>-0.095</td>
<td>0.114</td>
<td>-0.832</td>
<td>0.414</td>
</tr>
<tr>
<td>Tax Autonomy (X_{2r})</td>
<td>-0.843*</td>
<td>0.265</td>
<td>-3.182</td>
<td>0.004</td>
</tr>
<tr>
<td>Social Expenditure (X_{3r})</td>
<td>-0.124***</td>
<td>0.074</td>
<td>-1.679</td>
<td>0.087</td>
</tr>
<tr>
<td>Fiscal Decentralization dummy (D_r)</td>
<td>-0.051</td>
<td>0.062</td>
<td>-0.827</td>
<td>0.417</td>
</tr>
<tr>
<td>Constant (\beta_0)</td>
<td>-0.015</td>
<td>0.037</td>
<td>-0.391</td>
<td>0.699</td>
</tr>
</tbody>
</table>

R-squared 0.57 Mean dependent variable -0.022
Adjusted R-squared 0.50 S D dependent variable 0.164
S E of regression 0.146 Akaike information criterion -0.851
Sum squared residuals 0.466 Schwarz criterion -0.611
Log likelihood 16.489 Hannan-Quinn criterion -0.780
F-statistic 7.438** Durbin-Watson statistic 1.641

†Author’s own calculation based on secondary data.
* stands for significant at 1% level, ** at 5% level and *** at 10% level of significance

The relative size which shows the ratio of municipal expenditure to the central government expenditure (via ministry of local development) to the local bodies in Nepal is negative and is not statistically significant. It leads to conclude the amount of central government to the municipalities should be increased as per the increased in municipal expenditure over the period of time.

228
We have introduced a fiscal decentralization dummy \((D_t)\) to assess the impact of fiscal decentralization on the incidence of poverty into the municipalities in Nepal. It has not been found statistically significant. However, the negative value of the coefficient of fiscal decentralization dummy points out that there is negative association between fiscal decentralization and incidence of poverty in the municipal area of Nepal.

We have used the nonlinear semi-logarithmic regression model. This is formed by natural-logarithmic growth rate of variables, constant term, fiscal decentralization dummy and a stochastic term. We consider the regression model for the 58 municipalities of Nepal to examine the relationship between fiscal decentralization and poverty as follows.

We define\]

\[
D_t = 0 \text{ before fiscal decentralization (1983 to 1999)}
\]

\[
= 1 \text{ after fiscal decentralization (2000 to 2010)}
\]

Then the regression equations for the entire municipalities in Nepal in the regime at before fiscal decentralization and after fiscal decentralization are respectively stated below.

\[
E\left(\ln \frac{POVIN_{t}}{POVIN_{t-1}} \bigg| D_t = 0\right) = -0.015 - 0.095 \ln \frac{SIZE_t}{SIZE_{t-1}} - 0.843 \ln \frac{AUTO_t}{AUTO_{t-1}} - 0.124 \ln \frac{SOC_t}{SOC_{t-1}}
\]

\[
E\left(\ln \frac{POVIN_{t}}{POVIN_{t-1}} \bigg| D_t = 1\right) = -0.015 - 0.095 \ln \frac{SIZE_t}{SIZE_{t-1}} - 0.843 \ln \frac{AUTO_t}{AUTO_{t-1}} - 0.124 \ln \frac{SOC_t}{SOC_{t-1}} - 0.051
\]

When compare the equations (5.9.1A) and (5.9.1B) and get the relation

\[
E\left(\ln \frac{POVIN_{t}}{POVIN_{t-1}} \bigg| D_t = 1\right) < E\left(\ln \frac{POVIN_{t}}{POVIN_{t-1}} \bigg| D_t = 0\right)
\]

It means the average value of incidence of poverty before fiscal decentralization regime is greater than that after fiscal decentralization regime in the municipalities in Nepal. That is, fiscal decentralization is doing well to reduce poverty inside the municipalities in Nepal. In order to find out the percentage growth (declining) rate of incidence of poverty for the entire period (1983 to 2010) the expression \([\exp(\beta)-1]*100\), where \(\beta\) is the coefficient.
associated with fiscal decentralization dummy variable. That is, the rate of growth incidence of poverty has declined during the period of fiscal decentralization period. This rate is \[ \exp(-0.051)-1 \times 100 = -4.97 \text{ percent in Nepal for all municipalities considered together.} \]

The F statistic is statistically significant at 5 percent level indicates that the overall model is significant to show the relationship between dependent and explanatory variables. Therefore the alternative hypothesis that the tax autonomy and social expenditure help to reduce the incidence of poverty in Nepal has been accepted.

The value of R squared is 0.57 indicates only 57 percent of the total variation in the dependent variable is explained by explanatory variables. Similarly, the value of adjusted R squared is 0.50 and it means 50 percent of the total variance in the dependent variable is explained by explanatory variables in this model. One important point to note is that R squared is a descriptive statistic and it shows the goodness of fit of the regression line. Generally speaking, a high value of R squared is associated with a good fit of the regression line and associate a low value of R squared with a poor fit. We must realize, however, that a low value of R squared can occur for several related reasons. In certain cases explanatory variables \( X_i \) may not be a good explanatory variable. Even though there is a reason to believe that the explanatory variables does not help in the prediction of dependent variable \( Y_i \) unexplained variation in dependent variable may remain even after explanatory variables has appeared in the equation. In time-series studies, however, one often obtains high values of R squared simply because any variable that grows over time is likely to do a good job of explaining the variation of any other variable that grows over time. This suggests that R squared alone may not be a suitable measure of the extent to which a model is satisfactory. A better overall measure might be a statistic which describes the predictive power of the model in the face of new data (Pindyck and Rubinfeld, 1998). In our study too, the time series data of 58 various geographical places spanning over the 28 years have been considered. As such the information obtained from the different geographical area and different time periods might be the causes of small value of R squared as prescribed by Pindyck and Rubinfeld (1998).
Next important logic regarding to the value of R squared is that our regression model is logarithmic and nonlinear. In the nonlinear regression model the value of R squared is not the matter of importance. Whether it should be lower or should be higher. We shall have the value of R squared ranges from 0.57 to 0.40 only in the municipal level regression analysis of this study.

5.9.2. Effect of Fiscal Decentralization on the Incidence of Poverty in All 28 Municipalities in the Hill Areas of Nepal

Refer to the table 5.9.2 where the effects of fiscal decentralization on the incidence of poverty in all the 28 municipalities in the hill areas of Nepal have outlined. The coefficient of tax autonomy is negative and statistically significant at 10 percent level denoting the negative association between tax autonomy and incidence of poverty in the hilly municipalities of Nepal. This outcome further reports that the incidence of poverty in the hilly municipalities of Nepal is decreased by 0.971 percent with increase in tax autonomy by 1 percent. It reveals that only sovereignty of revenue collection for the autonomy in expenditure has good impact on poverty reduction in the municipalities of hills in Nepal.

Table 5.9.2. Effect of Fiscal Decentralization on the Incidence of Poverty in All 28 Municipalities in the Hill Areas of Nepal†

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative Size (X₁)</td>
<td>-0.128</td>
<td>0.289</td>
<td>-0.444</td>
<td>0.661</td>
</tr>
<tr>
<td>Tax Autonomy (X₂)</td>
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<td>0.561</td>
<td>-1.729</td>
<td>0.090</td>
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<td>Social Expenditure (X₃)</td>
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<td>0.192</td>
<td>-0.184</td>
<td>0.856</td>
</tr>
<tr>
<td>Fiscal Decentralization dummy (D)</td>
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<td>-0.341</td>
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</tr>
<tr>
<td>Constant (β₀)</td>
<td>-0.010</td>
<td>0.115</td>
<td>-0.090</td>
<td>0.929</td>
</tr>
</tbody>
</table>

R-squared: 0.40  Adjusted R-squared: 0.29  Mean dependent variable: -0.025  S D dependent variable: 0.436  Akaike information criterion: 1.408  Schwarz criterion: 1.648  Hannan-Quinn criterion: 1.480  Durbin-Watson statistic: 1.543

†Author’s own calculation based on secondary data.

* stands for significant at 1% level, ** at 5% level and *** at 10% level of significance
The coefficient of relative size, social expenditure and fiscal decentralization dummy are negative and statistically insignificant. This result implies that the amount of central government expenditure to the hilly municipalities is not statistically significant for reducing incidence of poverty. The municipal expenditure in the social sector in the hilly municipalities is as well insignificant. The fiscal decentralization dummy is has found to be statistically insignificant means the variable is insignificant to reduce incidence of poverty in the urban hills of Nepal.

The R squared and adjusted R squared is 0.40 and 0.29 respectively. It means 40 percent of the total variation in the dependent variable and the 29 percent of the total variance in the dependent variable are explained by the explanatory variables in the model. The F statistic is significant at 10 percent level of significance. It leads to rejects the null hypothesis that there is no significant reduction in the incidence of poverty by fiscal decentralization. That is, we accept alternative hypothesis stating that there is significant decline in the incidence of poverty through fiscal decentralization in the hilly municipalities in Nepal.

Now we estimate the regression model for the 28 hilly municipalities of Nepal and the poverty reducing in the same area is estimated in below.

We get $D_t = 0$ in the regime before fiscal decentralization

$= 1$ in the regime after fiscal decentralization

So the regression models in the regimes before fiscal decentralization and after fiscal decentralization are outlined under.

$$E\left( \ln \frac{POVIN}{POVIN_{t-1}} \mid D_t = 0 \right) = -0.010 - 0.128 \ln \frac{SIZE_t}{SIZE_{t-1}} - 0.971 \ln \frac{AUTO_t}{AUTO_{t-1}} - 0.035 \ln \frac{SOC_t}{SOC_{t-1}}$$  \hspace{1cm} (5.9.2A)

$$E\left( \ln \frac{POVIN}{POVIN_{t-1}} \mid D_t = 1 \right) = -0.010 - 0.128 \ln \frac{SIZE_t}{SIZE_{t-1}} - 0.971 \ln \frac{AUTO_t}{AUTO_{t-1}} - 0.035 \ln \frac{SOC_t}{SOC_{t-1}} - 0.062$$  \hspace{1cm} (5.9.2B)
Considering relation (5.9.2A) and (5.9.2B) we found that the average growth rate of poverty incidence before fiscal decentralization is greater than the average growth rate of poverty incidence after fiscal decentralization in the urban hill of the country. This relation is shown under.

\[
E\left( \ln \frac{POVIN_t}{POVIN_{t-1}} \middle| D_t = 1 \right) < E\left( \ln \frac{POVIN_t}{POVIN_{t-1}} \middle| D_t = 0 \right)
\]

We find out the declining rate of poverty incidence for the entire period (1983 to 2010) in the hilly municipalities by the expression \([\exp(\beta) - 1] \times 100\), where \(\beta\) is the value of fiscal decentralization dummy in the equation (5.9.2B). That is, \([\exp(-0.062) - 1] \times 100 = -6.01\) percent. The incidence of poverty has been declined after fiscal decentralization by six percent in the hilly municipalities in Nepal. It is interesting fact that the rate of decreasing in the incidence of poverty in the hilly municipalities is faster than the same of the total municipal area of Nepal.

5.9.3. Effect of Fiscal Decentralization on the Incidence of Poverty in All 30 Municipalities in the Terai Area of Nepal

We examine the effects of fiscal decentralization on the incidence of poverty in all 30 municipalities in the plain geographical area of Nepal in the table 5.9.3. The coefficient of tax autonomy is negative and statistically significant in 1 percent level of significance. It shows the tax autonomy, the fundamental element of fiscal decentralization, is significant to cut the incidence of poverty in the respective group of municipalities. The coefficient of social expenditure is also negative and statistically significant at 10 percent level of significance. The reasons are obvious. However, the level of significance of social expenditure is lower than the level of significance of tax autonomy variable depicts the importance of tax autonomy for reducing poverty, on the other hand, low level of impact of social expenditure on poverty in the terai region.

The coefficient of relative size is statistically insignificant enforces us to increase the ratio of total municipal expenditure to the total local government expenditure via central government of Nepal. The coefficient of fiscal decentralization dummy is negatively associated with incidence of poverty and statistically insignificant but the rate of incidence of poverty has been reducing in the entire time period.
Table 5.9.3. Effect of Fiscal Decentralization on the Incidence of Poverty in All 30 Municipalities in the Terai Area of Nepal†

The Regression line: \[ \ln \left( \frac{Y_t}{Y_{t-1}} \right) = \beta_0 + \beta_1 \ln \left( \frac{X_{1t}}{X_{1t-1}} \right) + \beta_2 \ln \left( \frac{X_{2t}}{X_{2t-1}} \right) + \beta_3 \ln \left( \frac{X_{3t}}{X_{3t-1}} \right) + \beta_4 D_t + u_t \]

\[ Y_t = \text{Incidence of Poverty}; \text{Number of Observations: 27} \]

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative Size ((X_{1t}))</td>
<td>-0.112</td>
<td>0.103</td>
<td>-1.089</td>
<td>0.288</td>
</tr>
<tr>
<td>Tax Autonomy ((X_{2t}))</td>
<td>-0.465*</td>
<td>0.206</td>
<td>-2.255</td>
<td>0.034</td>
</tr>
<tr>
<td>Social Expenditure ((X_{3t}))</td>
<td>-0.114***</td>
<td>0.062</td>
<td>-1.842</td>
<td>0.083</td>
</tr>
<tr>
<td>Fiscal Decentralization dummy ((D_t))</td>
<td>-0.071</td>
<td>0.054</td>
<td>-1.299</td>
<td>0.207</td>
</tr>
<tr>
<td>Constant ((\beta_0))</td>
<td>-0.009</td>
<td>0.033</td>
<td>-0.278</td>
<td>0.784</td>
</tr>
</tbody>
</table>

| R-squared                      | 0.42        | Mean dependent variable | -0.033 |
| Adjusted R-squared             | 0.31        | S D dependent variable  | 0.127  |
| S E of regression              | 0.123       | Akaike information criterion | -1.184 |
| Sum squared residuals          | 0.334       | Schwarz criterion       | -0.944 |
| Log likelihood                 | 20.985      | Hannan-Quinn criterion  | -1.113 |
| F-statistic                    | 3.987***    | Durbin-Watson statistic | 1.686  |

†Author’s own calculation based on secondary data.
* stands for significant at 1% level, ** at 5% level and *** at 10% level of significance.

The values of R squared and adjusted R squared show that 42 percent of the total variation and 31 percent of the total variance in the dependent variable are explained by the explanatory variables in the model. The computed F statistic is greater than the critical value at 10 percent level in the model. Hence we accept the alternative hypothesis that there is significant declining in poverty due to fiscal decentralization.

The relation of fiscal decentralization and poverty in the growth rate form for the terai municipalities of Nepal has been computed below. The regression model in the regime before fiscal decentralization, considering fiscal decentralization dummy is equal to zero, we get the relation as mentioned in (5.9.3A).

\[ \ln \left( \frac{POVIN_t}{POVIN_{t-1}} \right) \bigg| D_t = 0 = -0.009 - 0.112 \ln \left( \frac{SIZE_t}{SIZE_{t-1}} \right) - 0.465 \ln \left( \frac{AUTO_t}{AUTO_{t-1}} \right) - 0.114 \ln \left( \frac{SOC_t}{SOC_{t-1}} \right) \]  

\[(5.9.3A)\]
The incidence of poverty-fiscal decentralization model designed for the regime after fiscal decentralization is in equation (5.9.3B) which has been computed by allowing the value of fiscal decentralization dummy is equal to one.

\[
E \left( \ln \frac{POVIN_t}{POVIN_{t-1}} \bigg| D_t = 1 \right) = -0.009 - 0.112 \left( \ln \frac{SIZE_t}{SIZE_{t-1}} \right) - 0.465 \left( \ln \frac{AUTO_t}{AUTO_{t-1}} \right) - 0.114 \left( \ln \frac{SOC_t}{SOC_{t-1}} \right) - 0.071
\]  

(5.9.3B)

From the equation (5.9.3A) and (5.9.3B) we conclude the relation stated below.

\[
E \left( \ln \frac{POVIN_t}{POVIN_{t-1}} \bigg| D_t = 1 \right) < E \left( \ln \frac{POVIN_t}{POVIN_{t-1}} \bigg| D_t = 0 \right)
\]

This inequality relation shows that the average value of incidence of poverty prior fiscal decentralization regime is greater than the average value of incidence of poverty during fiscal decentralization regime. The meaning of this statement is that the incidence of poverty has been decreased significantly during fiscal decentralization in the terain municipalities in Nepal.

In order to estimate the falling rate of incidence of poverty in the terain municipalities we used the expression \([\exp(-0.071)-1]*100\), as usual, and it has found the incidence of poverty has been decreased by of 6.85 percent in the fiscal decentralization regime.

5.9.4. Effect of Fiscal Decentralization on the Incidence of Poverty in All 34 Municipalities in the Eastern Nepal

The effects of fiscal decentralization on the incidence of poverty in the entire 34 municipalities in the eastern zone of Nepal are stated in table 5.9.4. Let us look at the significance of the variables. The coefficient of explanatory variable tax autonomy appears to be negative and it has found statistically significant at 1 percent level of significance. This implies that the sovereignty of revenue collection and autonomy in expenditure in the eastern municipalities is negatively associated with poverty. It means that the higher sovereignty of revenue collection and autonomy in expenditure lowers the poverty in the municipality. Here the incidence of poverty decreases by 0.606 percent due to increase of the tax autonomy by 1 percent.
Table 5.9.4. Effect of Fiscal Decentralization on the Incidence of Poverty in All 34 Municipalities in the Eastern Nepal†

The Regression line: 
\[
\ln\left(\frac{Y_i}{Y_{i-1}}\right) = \beta_0 + \beta_1 \ln\left(\frac{X_{1i}}{X_{1i-1}}\right) + \beta_2 \ln\left(\frac{X_{2i}}{X_{2i-1}}\right) + \beta_3 \ln\left(\frac{X_{3i}}{X_{3i-1}}\right) + \beta_4 D_i + u_i
\]

\(Y_i\) = Incidence of Poverty; Number of Observations: 27

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative Size (X_{1i})</td>
<td>-0.117</td>
<td>0.174</td>
<td>-0.673</td>
<td>0.508</td>
</tr>
<tr>
<td>Tax Autonomy (X_{2i})</td>
<td>-0.606*</td>
<td>0.247</td>
<td>-2.451</td>
<td>0.002</td>
</tr>
<tr>
<td>Social Expenditure (X_{3i})</td>
<td>-0.033</td>
<td>0.102</td>
<td>-0.324</td>
<td>0.749</td>
</tr>
<tr>
<td>Fiscal Decentralization dummy (D_i)</td>
<td>-0.054</td>
<td>0.097</td>
<td>-0.558</td>
<td>0.582</td>
</tr>
<tr>
<td>Constant (\beta_4)</td>
<td>-0.016</td>
<td>0.059</td>
<td>-0.266</td>
<td>0.792</td>
</tr>
</tbody>
</table>

R-squared: 0.41
Adjusted R-squared: 0.30
S E of regression: 0.231
Sum squared residuals: 1.175
Log likelihood: 4.003
F-statistic: 3.779***

†Author’s own calculation based on secondary data.
* stands for significant at 1% level, ** at 5% level and *** at 10% level of significance

The coefficients of relative size, social expenditure and fiscal decentralization dummy are negatively associated with incidence of poverty. However, they are statistically insignificant.

Here F statistic is significant at 10 percent level of significance. The other explanatory variables, namely, relative size, social expenditure and fiscal decentralization dummy are negative and statistically insignificant. The value of R squared is 0.41 indicates that the 41 percent of the total variation in the dependent variable is explained by explanatory variables in the model. Likewise, the value of adjusted R squared is 0.30 connotes 30 percent of the total variance of the dependent variable is explained by the explanatory variable in the model.

The overall significance denoted by F statistic shows the decrease in incidence of poverty into the eastern municipalities in Nepal has been significantly explained by the explanatory variable tax autonomy.
Now let us estimate the regression model for the eastern municipalities to find out the linkage between fiscal decentralization and incidence of poverty in Nepal for the period 1983 to 2010 in Nepal. We considered the value of fiscal decentralization dummy then we proceed as given below.

Now $D = 0$ for the period before fiscal decentralization (1983 to 1999)

$= 1$ for the period after fiscal decentralization (2000 to 2010)

Then the required relations are found as mentioned below.

$$E\left( \ln \frac{POVIN}{POVIN_{t-1}} \mid D_t = 0 \right) = -0.016 - 0.117 \left( \ln \frac{SIZE_t}{SIZE_{t-1}} \right) - 0.606 \left( \ln \frac{AUTO_t}{AUTO_{t-1}} \right) - 0.033 \left( \ln \frac{SOC_t}{SOC_{t-1}} \right)$$  \hspace{1cm} (5.9.4A)

$$E\left( \ln \frac{POVIN}{POVIN_{t-1}} \mid D_t = 1 \right) = -0.016 - 0.117 \left( \ln \frac{SIZE_t}{SIZE_{t-1}} \right) - 0.606 \left( \ln \frac{AUTO_t}{AUTO_{t-1}} \right) - 0.033 \left( \ln \frac{SOC_t}{SOC_{t-1}} \right) - 0.054$$  \hspace{1cm} (5.9.4B)

Comparing the relations (5.9.4A) and (5.9.4B) we get

$$E\left( \ln \frac{POVIN}{POVIN_{t-1}} \mid D_t = 1 \right) < E\left( \ln \frac{POVIN}{POVIN_{t-1}} \mid D_t = 0 \right)$$

This comparison-relation shows that the average growth rate of incidence of poverty before fiscal decentralization is greater than the same after fiscal decentralization in the eastern municipalities in Nepal. It leads to conclude that the rate of declining in incidence of poverty after fiscal decentralization is higher than that of prior period in the urban eastern zone in Nepal.

To find out the declining rate of incidence of poverty in the eastern municipalities, as same as the previous cases, we used the expression $[\exp(-0.054)-1]*100$ and it has found the incidence of poverty has been decreased by 5.26 percent throughout fiscal decentralization period in Nepal.
5.9.5. Effect of Fiscal Decentralization on the Incidence of Poverty in All 24 Municipalities in the Western Nepal

The information in table 5.9.5 implies the effect of fiscal decentralization on the incidence of poverty in the entire 24 municipalities in the western Nepal. It is seen that the coefficient of tax autonomy is negative and statistically significant at 1 percent. This is very much natural. However, the coefficient of social expenditure is positive and statistically insignificant in the model. This is a single case of positive elasticity of the explanatory variable throughout the analysis. It indicates the positive association between social expenditure and poverty, which is a spurious relationship between the incidence of poverty and social expenditure variable.

Table 5.9.5. Effect of Fiscal Decentralization on the Incidence of Poverty in All 24 Municipalities in the Western Nepal†

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative Size ($X_{1t}$)</td>
<td>-0.206</td>
<td>0.154</td>
<td>-1.331</td>
<td>0.197</td>
</tr>
<tr>
<td>Tax Autonomy ($X_{2t}$)</td>
<td>-0.654*</td>
<td>0.195</td>
<td>-3.358</td>
<td>0.003</td>
</tr>
<tr>
<td>Social Expenditure ($X_{3t}$)</td>
<td>0.009</td>
<td>0.095</td>
<td>0.098</td>
<td>0.923</td>
</tr>
<tr>
<td>Fiscal Decentralization dummy ($D_t$)</td>
<td>-0.097***</td>
<td>0.058</td>
<td>-1.691</td>
<td>0.082</td>
</tr>
<tr>
<td>Constant ($\beta_0$)</td>
<td>-0.015</td>
<td>0.048</td>
<td>-0.306</td>
<td>0.762</td>
</tr>
</tbody>
</table>

R-squared                           0.42  Mean dependent variable -0.032
Adjusted R-squared                   0.32  S D dependent variable 0.210
S E of regression                    0.185 Akaike information criterion -0.374
Sum squared residuals               0.751  Schwarz criterion -0.134
Log likelihood                      10.049 Hannan-Quinn criterion -0.303
F-statistic                         4.024*** Durbin-Watson statistic 1.609

†Author’s own calculation based on secondary data.

* stands for significant at 1% level, ** at 5% level and *** at 10% level of significance

The coefficient of fiscal decentralization dummy is negative and statistically significant at 10 percent level of significance in the model. This is too an interesting result during our regression analysis. We found the statistically significant result of the impact of fiscal decentralization on the incidence of poverty in the western and old municipalities of Nepal.
only. It means that in the western Nepalese municipalities the incidence of poverty has been decreased by 0.097 percent after due to fiscal decentralization dummy in the study area. The coefficient of relative size is negative and statistically insignificant which is as same as the previous cases of the municipalities. So the reason of insignificant might be the same.

The coefficient of relative size has been found negative and insignificant. This is evident throughout the regression analysis of this study. The value of R squared and adjusted R squared is 0.42 and 0.32 respectively. The F-statistic is significant at 10 percent level of significance in the model. It allows one to reject null hypothesis that there is no relationship between tax autonomy and fiscal decentralization dummy and incidence of poverty.

As the same process which we did earlier, let’s continue the relationship between fiscal decentralization and poverty for the western municipalities in Nepal as outlined under equations (5.9.5A) and (5.9.5B).

\[
E \left( \ln \frac{POVIN_t}{POVIN_{t-1}} \right) | D_t = 0 = -0.015 - 0.206 \left( \ln \frac{SIZE_t}{SIZE_{t-1}} \right) - 0.654 \left( \ln \frac{AUTO_t}{AUTO_{t-1}} \right) - 0.009 \left( \ln \frac{SOC_t}{SOC_{t-1}} \right) \tag{5.9.5A}
\]

\[
E \left( \ln \frac{POVIN_t}{POVIN_{t-1}} \right) | D_t = 1 = -0.015 - 0.206 \left( \ln \frac{SIZE_t}{SIZE_{t-1}} \right) - 0.654 \left( \ln \frac{AUTO_t}{AUTO_{t-1}} \right) - 0.009 \left( \ln \frac{SOC_t}{SOC_{t-1}} \right) - 0.097 \tag{5.9.5B}
\]

From the equations (5.9.5A) and (5.9.5B) we have

\[
E \left( \ln \frac{POVIN_t}{POVIN_{t-1}} | D_t = 1 \right) < E \left( \ln \frac{POVIN_t}{POVIN_{t-1}} | D_t = 0 \right)
\]

This inequality relation concludes that the incidence of poverty has declined significantly after fiscal decentralization in the western municipalities in Nepal.

The expression \([\exp(\beta)-1]\times100\), where \(\beta\) is the value of fiscal decentralization dummy in the equation (5.9.5B), has been used. Therefore, poverty has been declining after the fiscal
decentralization in the western municipalities is \( [\exp(-0.097) - 1] \times 100 = -9.24 \) percent. However, the poverty declining rate is insignificant statistically.

### 5.9.6. Effect of Fiscal Decentralization on the Incidence of Poverty in All 29 Old Municipalities in Nepal

The figure in the table 5.9.6 reveals the effects of fiscal decentralization on the incidence of poverty in all 29 old municipalities in Nepal. The result shows that the coefficient of tax autonomy is negative and statistically significant at 5 percent level. In the old municipalities the incidence of poverty has been declined by 0.918 percent by unit increase in tax autonomy. The fiscal decentralization dummy is negative and statistically significant at 10 percent level of significance. It indicates negative association between fiscal decentralization and poverty in old municipalities. The impacts of fiscal decentralization have left positive indication on poverty reduction in Nepal.

#### Table 5.9.6. Effect of Fiscal Decentralization on the Incidence of Poverty in the All 29 Old Municipalities in Nepal†

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative Size ( X_1 )</td>
<td>-0.182</td>
<td>0.186</td>
<td>-0.978</td>
<td>0.339</td>
</tr>
<tr>
<td>Tax Autonomy ( X_2 )</td>
<td>-0.918**</td>
<td>0.457</td>
<td>-2.008</td>
<td>0.027</td>
</tr>
<tr>
<td>Social Expenditure ( X_3 )</td>
<td>-0.067</td>
<td>0.091</td>
<td>-0.734</td>
<td>0.545</td>
</tr>
<tr>
<td>Fiscal Decentralization dummy ( D )</td>
<td>-0.069***</td>
<td>0.040</td>
<td>-1.716</td>
<td>0.098</td>
</tr>
<tr>
<td>Constant ( \beta_0 )</td>
<td>-0.008</td>
<td>0.060</td>
<td>-0.131</td>
<td>0.897</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.49</td>
<td>Mean dependent variable</td>
<td>-0.026</td>
<td></td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.40</td>
<td>S D dependent variable</td>
<td>0.234</td>
<td></td>
</tr>
<tr>
<td>S E of regression</td>
<td>0.235</td>
<td>Akaike information criterion</td>
<td>0.105</td>
<td></td>
</tr>
<tr>
<td>Sum squared residuals</td>
<td>1.213</td>
<td>Schwarz criterion</td>
<td>0.345</td>
<td></td>
</tr>
<tr>
<td>Log likelihood</td>
<td>3.576</td>
<td>Hannan-Quinn criterion</td>
<td>0.177</td>
<td></td>
</tr>
<tr>
<td>F-statistic</td>
<td>5.391**</td>
<td>Durbin-Watson statistic</td>
<td>1.642</td>
<td></td>
</tr>
</tbody>
</table>

†Author’s own calculation based on secondary data.
* stands for significant at 1% level, ** at 5% level and *** at 10% level of significance
The coefficient of relative size and social expenditure are negative and statistically insignificant. In the case of old municipalities the value of R squared is moderately higher. It is 0.49. It means 49 percent of the total variation in the dependent variable is explained by explanatory variables. Similarly, the value of adjusted R squared is 0.40 and it means 40 percent of the total variance in the dependent variable is explained by explanatory variables in this model. The value of F statistic is also relatively higher in old municipalities and is significant at 5 percent level. We accept the alternative hypothesis that there is significant relationship between poverty and fiscal decentralization variables.

Now we proceed to compute the regression model for the old municipalities in Nepal using the value of the coefficient of the explanatory variables from table 5.9.6. The regression model before fiscal decentralization has been found as the relation (5.9.6A).

\[ E \left( \ln \frac{POVIN_t}{POVIN_{t-1}} \bigg| D_t = 0 \right) = -0.008 - 0.182 \left( \ln \frac{SIZE_t}{SIZE_{t-1}} \right) - 0.918 \left( \ln \frac{AUTO_t}{AUTO_{t-1}} \right) - 0.067 \left( \ln \frac{SOC_t}{SOC_{t-1}} \right) \]  
\[ (5.9.6A) \]

The regression model after fiscal decentralization has been found as the relation (5.9.6B).

\[ E \left( \ln \frac{POVIN_t}{POVIN_{t-1}} \bigg| D_t = 1 \right) = -0.008 - 0.182 \left( \ln \frac{SIZE_t}{SIZE_{t-1}} \right) - 0.918 \left( \ln \frac{AUTO_t}{AUTO_{t-1}} \right) - 0.067 \left( \ln \frac{SOC_t}{SOC_{t-1}} \right) - 0.069 \]  
\[ (5.9.6B) \]

From the relation (5.9.6A) and (5.9.6B) we have

\[ E \left( \ln \frac{POVIN_t}{POVIN_{t-1}} \bigg| D_t = 1 \right) < E \left( \ln \frac{POVIN_t}{POVIN_{t-1}} \bigg| D_t = 0 \right) \]

That is, the incidence of poverty after fiscal decentralization (\( D_t = 1 \)) is smaller than the incidence of poverty before fiscal decentralization (\( D_t = 0 \)) shows that incidence of poverty has been declined more rapidly after fiscal decentralization in the old municipalities in Nepal. The incidence of poverty has been declined by 6.67 percent for the period 2000 to 2010.
5.9.7. Effect of Fiscal Decentralization on the Incidence of Poverty in All 29 New Municipalities in Nepal

We find out whether there exists any relationship between fiscal decentralization and incidence of poverty in all 29 new municipalities in Nepal is estimated in the table 5.9.7. The coefficient of tax autonomy is -0.485 and is found statistically significant at 1 percent level. The tax autonomy has been found statistically significant in all categories of the municipalities in Nepal. In the case of new municipalities the social expenditure (expenditure on education, health, forestry, cultural and sports, disaster relief, financial assistance and miscellaneous) is negative and statistically significant at 10 percent level of significance.

The relative size is negative and insignificant as similar to the previous cases. The fiscal decentralization dummy is found negative and insignificant too. These both the variables are do not effect on incidence of poverty.

Table 5.9.7. Effect of Fiscal Decentralization on the Incidence of Poverty in All 29 New Municipalities in Nepal†

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative Size ($X_{1t}$)</td>
<td>-0.077</td>
<td>0.109</td>
<td>-0.706</td>
<td>0.490</td>
</tr>
<tr>
<td>Tax Autonomy ($X_{2t}$)</td>
<td>-0.485*</td>
<td>0.188</td>
<td>-2.580</td>
<td>0.001</td>
</tr>
<tr>
<td>Social Expenditure ($X_{3t}$)</td>
<td>-0.065***</td>
<td>0.037</td>
<td>-1.759</td>
<td>0.905</td>
</tr>
<tr>
<td>Fiscal Decentralization dummy ($D_t$)</td>
<td>-0.062</td>
<td>0.085</td>
<td>-0.730</td>
<td>0.475</td>
</tr>
<tr>
<td>Constant ($\beta_k$)</td>
<td>-0.014</td>
<td>0.062</td>
<td>-0.228</td>
<td>0.822</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.42</td>
<td></td>
<td>-0.042</td>
<td></td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.32</td>
<td>S D dependent variable</td>
<td>0.179</td>
<td></td>
</tr>
<tr>
<td>S E of regression</td>
<td>0.185</td>
<td>Akaike information criterion</td>
<td>-0.345</td>
<td></td>
</tr>
<tr>
<td>Sum squared residuals</td>
<td>0.579</td>
<td>Schwarz criterion</td>
<td>-0.097</td>
<td></td>
</tr>
<tr>
<td>Log likelihood</td>
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<td>Hannan-Quinn criterion</td>
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</tr>
<tr>
<td>F-statistic</td>
<td>4.038***</td>
<td>Durbin-Watson statistic</td>
<td>1.664</td>
<td></td>
</tr>
</tbody>
</table>

†Author’s own calculation based on secondary data.

* stands for significant at 1% level, ** at 5% level and *** at 10% level of significance
The value of R squared and adjusted R squared is 0.42 and 0.32 respectively. This is more or less same as the previous cases. The value of F statistic is 4.038 and is statistically significant at 10 percent level of significance. We reject the null hypothesis, that is, we accept that the regression is significant for all coefficients of the explanatory variables are zero.

We introduced the fiscal decentralization dummy ($D_t$) in the regression analysis. The dummy has been taken as zero in the regime before fiscal decentralization and the same has been considered as one after the fiscal decentralization regime. Now substituting the coefficients of the variables from the table 5.9.7 we obtain the regression model for the new categories of the municipalities in Nepal are stated as under.

The regression model for the regime 1988 to 1999, taking $D_t=0$ is

$$E\left( \ln \frac{POVIN}{POVIN_{t-1}} \bigg| D_t = 0 \right) =$$

$$-0.014 - 0.077 \left( \ln \frac{SIZE_i}{SIZE_{i-1}} \right) - 0.485 \left( \ln \frac{AUTO_i}{AUTO_{i-1}} \right) - 0.065 \left( \ln \frac{SOC_i}{SOC_{i-1}} \right)$$

(5.9.7A)

The regression model for the regime 2000 to 2010, taking $D_t=1$ is

$$E\left( \ln \frac{POVIN}{POVIN_{t-1}} \bigg| D_t = 1 \right) =$$

$$-0.014 - 0.077 \left( \ln \frac{SIZE_i}{SIZE_{i-1}} \right) - 0.485 \left( \ln \frac{AUTO_i}{AUTO_{i-1}} \right) - 0.065 \left( \ln \frac{SOC_i}{SOC_{i-1}} \right) - 0.062$$

(5.9.7B)

The equations (5.9.7A) and (5.9.7B) show that

$$E\left( \ln \frac{POVIN}{POVIN_{t-1}} \bigg| D_t = 1 \right) < E\left( \ln \frac{POVIN}{POVIN_{t-1}} \bigg| D_t = 0 \right)$$

It reveals that the average value of incidence of poverty for the regime 2000 to 2010 is smaller than the average value of incidence of poverty for the regime 1988 to 1999. The idea of the relation is that the decreasing in incidence of poverty after fiscal decentralization is faster than the same in before fiscal decentralization.
Here we estimate the reducing rate of incidence of poverty using the expression \([\exp(\beta) - 1]*100\), where \(\beta\) is the value of fiscal decentralization dummy in the equation (5.9.7B). The poverty reducing value for the period after fiscal decentralization is 6 percent. However, the fiscal decentralization dummy is not statistically significant.

From the overall regression analysis the revenue decentralization variable, that is, the tax autonomy is found statistically significant in most of the cases than the expenditure decentralization variable, that is, social expenditure indicator. It shows that the better level of fiscal decentralization has been practiced in Nepal. Here, the important notion is that the revenue decentralization in the municipality connotes fiscal sovereignty and reliable resources for the developmental works. So it is the strong form of fiscal decentralization. However, in the next side, expenditure decentralization is the weaker form of fiscal decentralization. Because the expenditure mandate in the central grant and the money available from the other sources, there need to follow the guideline for the expenditure of the donors. There is low discretion of the municipality to expense and modify the headings of the budget. So, this result denotes a satisfactory practice in fiscal decentralization in Nepal.

The result we have got from this section is the value of Durbin Watson d statistic ranges 1.528 to 1.686 in the categories of the municipalities. This value with below 2 has been showing the some degree of positive autocorrelation in the random variables at the first order autoregressive scheme.

5.10. Conclusion
This chapter is dedicated to the empirical analysis on the impact of fiscal decentralization on poverty in different municipalities in Nepal by using the data spanning over the period of 1983 to 2010. For the estimation of result we categorized the total 58 municipalities of Nepal in seven categories, namely, total, hilly, terrain, eastern, western, old and new. We considered the descriptive statistics of the indicators of each and every category of municipalities in the preliminary part of each section. The descriptive statistics helped us get the average value of the indicators over the time period. It also facilitated comparison of the state of indicators between prior and posterior of the promulgation of Local Self Governance Act, 1999 in Nepal. In all the cases it is found distinct and comparable result
of the indicators in prior and posterior to the enactment of Local Self Governance Act, 1999 in Nepal.

We have considered the trend of incidence of poverty for each categories of the municipality with bar diagram and trend line across the year 1983 to year 2010 in Nepal. In all the cases we found the incidence of poverty has been smoothly declining over the time period. It means the poverty in the urban area of the country has been decreasing in Nepal over the last three decades. The decreasing trend of poverty before the enactment of Local Self Governance Act, 1999 is slower, however, after the enactment of Local Self Governance Act, 1999 the decreasing rate in the incidence of poverty is rapid one. It is found that the incidence of poverty is higher in the terain municipalities whereas the same is lesser in the hilly municipalities in Nepal. On the basis of this result we can conclude that there might be positive impact of fiscal decentralization on poverty in Nepal.

The fiscal indicators of the municipalities in Nepal have been discussed in each of the seven categories over the time period 1983 to 2010. The indicators which we have considered are relative size, tax autonomy, own source of revenue per capita, vertical imbalance, social programme indicator and expenditure per capita of the municipalities. These indicators represent different dimensions of the fiscal decentralization at the municipal level in Nepal. A clear discrepancy between the municipalities is evident. Despite of the geographical location and age of formation of the municipalities in all indicators eastern regional, old generation, hilly municipalities are the best performer of fiscal decentralization. That is western regional, new generation and terain municipalities are relatively weaker in the fiscal decentralization in Nepal. This is the interesting fact for fiscal decentralization in Nepal which we found from the analysis.

The impact of fiscal decentralization on poverty in Nepal has been performed by using regression analysis. We have used the semi-log linear model for all seven categories of the municipalities in Nepal. We have tried to describe the incidence of poverty in the municipalities through the three explanatory variables, namely, relative size, tax autonomy and social expenditure of the municipalities. The relative size is found negative and statistically insignificant in all categories of the municipalities in Nepal. The coefficient of tax autonomy is negative and statistically significant in all categories of the Nepalese
municipalities over the time period. The social expenditure variable is statistically significant in most of the cases. The fiscal decentralization dummy is statistically significant to the incidence of poverty in the western and old municipalities in Nepal. F-statistic is found significant in the whole regression analysis. There is negative association between dependent and explanatory variables. The value of R squared lies 0.57 to 0.40 throughout the analysis. On the basis of estimated value of R squared we know that there is low level of goodness of fit in the regression plane to the sample observations.

In finale, what we found is that the fiscal decentralization defined as tax autonomy indicator and social programme indicators are found more capable to reduce poverty in Nepal. On the basis of these observations we conclude the chapter five. Now we turn to our study towards summary of findings and then to policy prescriptions for the stakeholders in the next chapter.
Chapter Six
Summary and Policy Prescriptions

6.1. Introduction
We investigated the affect of fiscal decentralization on poverty measures in Nepal in chapter four of our study. The fifth chapter offered the empirical evidences of the linkage between fiscal decentralization and poverty in the different municipalities in Nepal. From the outcomes of the empirical estimation and literature survey, finally, we are going to present summary with policy prescription in current chapter six of this study. The summary and policy prescriptions are outlined in the following sections.

In this study we examined fiscal decentralization vis-à-vis poverty reductions which are the fundamental issues of debate in most of the developing countries in the world. Fiscal decentralization has been taken as the policy strategy for poverty reduction in those countries. The promulgation of Local Self Governance Act, 1999 (LSGA) has been taken as the base of fiscal decentralization in Nepal. In our study, we look into the effect fiscal decentralization on poverty in Nepal by using time series data over the period of 28 years (1983 to 2010). However, since the promulgation of Local Self Governance Act, 1999; Nepal has travelled through crucial condition in the local governance practice by the cause of its unstable political situation. Since the year 2002, there are no elected executive in the Nepalese local bodies. After the promulgation of Local Self Governance Act, 1999; the roles, responsibilities, functions, revenue sources, intergovernmental fiscal transfers and local borrowing have been well-defined and these powers were devolved to the municipalities. More than a decade has been gone after the enactment of Local Self Governance Act, 1999; the question has been arising “what is the ultimate impact of Local Self Governance Act, 1999 for the betterment of the people in Nepal?”. At the same time, as fiscal decentralization is the dynamic course of action, thus, the timely revision of Local Self Governance Act, 1999 is essential. There needs to apply the remedial measures on the weakness of Local Self Governance Act, 1999 so as to improve the living condition of the local people.
This is the final chapter of our study. The major findings have derived from the analysis in chapter four and five are given in section 6.2. The summary of findings is helpful to the stakeholders for formulating policy in the future as well as to resolve the consequences of LSGA and fiscal decentralization system in Nepal. Therefore, we prescribe the set of policies prescription on the basis of findings in section 6.3. Finally, in section 6.4 we conclude this study.

6.2. Summary of the Empirical Findings

In this section we shall present the empirical findings obtained from previous chapters of this study. We shall present the findings into two parts, namely, on the basis of national information and on the basis of municipal information in Nepal.

Chapter four contributed the empirical result on the socio, economic and demographic indicators spanning over the time 1983 to 2010 in Nepal. We examined the poverty related issues in the same section for the same time frame. The chapter was entirely based on national level information. Here we present the findings obtained from that part of the thesis as outlined below.

(1) The educational indicators, namely, mean years of schooling and adult literacy rate indicate the social status of the country. The literacy rate is also the component of human development index. Both the indicators have been increasing over time. That is, the social status and the quality of human resources in Nepal have been getting better in Nepal.

(2) The productivity of principal food crops (paddy, maize, wheat, barley and millet) and productivity of principal cash crops (sugarcane, oil seeds, tobacco, potato and jute) have been considered as the economic indicators of the country. These indicators have been amplified spanning over time 1983 to 2010 in Nepal. So, the level of agricultural productivity has been improving in Nepal.

(3) The demographic indicators are infant mortality rate and average life expectancy. The average life expectancy is also the constituent of the human development index. The infant mortality has found to be decreased over the time means the level of human
potential have been as been improved. Thus, demographic indicators are superior across past three decades.

(4) The comparative study before and after the fiscal decentralization in Nepal shows that all the socio, economic and demographic indicators are visibly improved after fiscal decentralization in Nepal. We can say that there is direct association between fiscal decentralization and socio, economic and demographic condition of the country.

(5) The expenditure on education as a percentage of gross domestic product (GDP) and expenditure on health as a percentage of GDP has been increased in the entire period. The same indicators are increased noticeably after fiscal decentralization. However, the expenditure on agriculture as a percentage of GDP has been continuously decreasing in the period 1983 to 2010 in Nepal. The agricultural spending with respect to GDP has been decreased by 50 percent after fiscal decentralization.

(6) The interesting fact is that despite the decreasing amount of agricultural expenditure with respect to GDP, the productivity in major food crops and major cash crops have been increased. This could mean that there is a great contribution of other sectors in agriculture rather than the allocated budget in the agriculture only. Next cause might be the technological improvement and increasing extension services in the agriculture.

(7) The incidence of poverty, depth of poverty and severity of poverty has been significantly decreased in the period of 1983 to 2010 in Nepal. It means poverty has been decreased in the past three decades in the country.

(8) All the poverty measures, namely, incidence of poverty, depth of poverty and severity of poverty has been found lower after the year 2000 than the prior time (1983 to 1999) in Nepal. It denotes that there has been declining trend of those poverty measures after fiscal decentralization period.

(9) The economic inequality has been increased in the last three decades in Nepal. The increase in the inequality occurred because of the gap between middle class and rich are growing. The inequality remains greater in urban areas than in rural areas of the country. The widening in economic inequality has been driven by increase in the
returns to higher education, and to occupational skills in professional employment and self-employment in manufacturing and services (CBS, 2006). Fiscal decentralization policy is insignificant for the distribution of income.

(10) The growth rate of deviation from economic equality has been increased after the year 1999 shows that the economic inequality has been increased after fiscal decentralization in Nepal. As we know that fiscal decentralization only is not sufficient for the economic justice to the people. So, the socio, economic and demographic factors are responsible for widening the gap between rich and poor in the society.

In chapter five, we applied the municipal level information of Nepal over the period 1983 to 2010 and examined the impact of fiscal decentralization in the different municipalities in Nepal. The rigorous studies across the seven categories of the Nepalese municipalities have been performed. On the basis of that portion of our thesis we draw conclusion as stated below.

(1) The incidence of poverty in the total municipal area of Nepal has been declined during the period 1983 to 2010. That is, poverty in the urban area of the country has been decreased since three decades.

(2) The declining trend of poverty in the municipalities before the enactment of Local Self Governance Act, 1999 is slower, however, after the enactment of Local Self Governance Act, 1999 the decreasing rate in the incidence of poverty is swift one. It shows the poverty has been significantly declined after fiscal decentralization period in Nepal.

(3) It has been found that the incidence of poverty is higher in the terai municipalities, whereas, the same is lesser in the hilly municipalities in Nepal. However, it seems terai region is relatively better in road connectivity and infrastructure facilities. Particularly the small municipalities in the terai are vulnerable in the sense of fiscal health (Baral, 2008). The limited tax culture of the local people, weak institutional capabilities, absence of proper data base, untrained human resource and rampant corruption are some causes of low performance of the municipalities.
(4) A clear discrepancy in the status of fiscal decentralization between the municipalities in Nepal is evident. The differences are due to the geographical location, the age of formation, the ecological variation, and accessibility to resources, entry point to India, industrialization and economic activities.

(5) There is a large variation in the fiscal and poverty status of Nepalese municipalities. The geographical location, age of formation, resource mobilization, size of population, infrastructural facilities and overall institutional performance of the municipalities are the main causes of differentiation.

(6) The patterns of all fiscal decentralization indicators show that the eastern regional, old generation and hilly municipalities are the best performer of fiscal decentralization. The trend of poverty declination in those categories of municipalities is considerable.

(7) The municipalities in the western region, new generation and terrain are relatively weaker in fiscal decentralization and poverty reduction in Nepal. The average values of all fiscal decentralization parameters are relatively lower in these categories than the eastern, old and hilly municipalities in Nepal. Therefore, the incidence of poverty has been declined comparatively slower over time in the western, new generation and terrain municipalities.

(8) The relative size which denotes the ratio of total municipal expenditure to the central government expenditure for the local development has been found negatively associated with poverty and is insignificant in all categories of the municipalities in Nepal. Therefore, the central government expenditure for the local development is to be increased to achieve better result of fiscal decentralization then to get significant change in urban poverty.

(9) The term tax autonomy captures the aspects of freedom municipal government have over their own taxes. It encompasses features such as municipal government’s right to introduce or to abolish a tax, to set tax rates, to define the tax base or to grant or relief to individuals and firms. The tax autonomy enables the municipality to gain effective
political power. We have found the coefficient of tax autonomy is significant for minimizing poverty in all categories of the Nepalese municipalities over the last three decades. That is, the impact of tax autonomy is evident to reduce poverty as well as to gain considerable powers on local autonomy.

(10) The social expenditure is significant for reducing poverty in total, terrain and new municipalities. It indicates that the municipal expenses on social programmes like, education, health, forestry, cultural and sports, disaster relief in these municipalities are significant for the betterment of living condition of the people.

(11) There has been significant decrease in the level of incidence of poverty in the western and old municipalities in Nepal. The causes of better impact of fiscal decentralization on poverty in the old municipalities are its well managed organizational structure and reliable fiscal resources.

(12) The regression models which we have used to analyze the impact of fiscal decentralization on poverty in the municipalities in Nepal are found overall significant in all the categories of the municipalities in Nepal.

(13) There is negative association between incidence of poverty and explanatory variables, namely, relative size, tax autonomy, social expenditure and fiscal decentralization dummy throughout the analysis. It denotes the reciprocity between the incidence of poverty and explanatory variables.

(14) From the overall regression analysis the revenue decentralization variable, that is, the tax autonomy is found statistically significant in most of the cases than the expenditure decentralization variable, that is, social expenditure variable. It shows that the context specific form of fiscal decentralization has been practiced in Nepal.

(15) The fiscal indicators of all categories of municipalities in Nepal are found minimum (except relative size and tax autonomy) in the early period of the 1990s. This period is the ending time of partyless Panchayat system and the beginning of multiparty democracy in Nepal. In this transition period the political concern to the local bodies was lesser. It indicates that each and every transitional phase, the state of fiscal
decentralization is weaker. It might be due to the poor governance and the absence of the elected executive body in the local governance system.

(16) The relative size has been found gradually decreasing after the second half of the 1990s. It denotes the increasing trend of expenditure through central government for local development in comparison to the municipal expenditure in Nepal.

(17) The indicator tax autonomy has been more or less equal after 1999. However, later than 2006 it has been declined. It shows the revenue sources of the municipalities have been decreased in comparison to their expenditure. In this era the new tax system has been adopted in the municipality on one hand, and on the other hand, the expenditure of the municipalities has been growing. It might be the causes of decreasing of tax autonomy in the municipalities in Nepal.

(18) From the investigation, what we found is that the fiscal decentralization defined as tax autonomy indicator and social programme indicators are found more capable to reduce poverty in the municipal area of Nepal. On the basis of this result we can conclude that there might be positive impact of fiscal decentralization on poverty in Nepal.

(19) The service providing capacity which is defined by the number of municipal employee as proportion to their population has been found better in old and hilly municipalities.

(20) The municipal expenditure has been mainly based on central grants. There is higher vertical imbalance in western and new municipalities.

(21) There is imbalance between own source of revenue per capita and municipal expenditure per capita in Nepal.

6.3. Policy Prescriptions
Our aim of this study is to recommend the policy prescriptions for the concerning authorities. In this section we shall present the policy recommendation on the basis of empirical findings of this study. The recommendation is divided into general policy
recommendation and specific recommendation. These are outlined in the subsequent sections below.

6.3.1. Specific Policy Prescriptions
We suggest a set of policy prescriptions based on the empirical findings from national level and municipal level study in Nepal. These policies are indicative and are vital for poverty reduction and fiscal decentralization in the country. The specific policy prescriptions are stated below.

(1) We know that agriculture is the backbone of economy and the major means of livelihood in Nepal. The expenses of government on agriculture have been lowering over the period of time. Thus, the same should be increased immediately. In this connection the dependency on agriculture could be gradually decreased by developing the industrial sector.

(2) The low level of government spending on agriculture shows there might be crisis in agriculture and its allied sector in Nepal. Particularly, the level of food security will be lowered, agro-based industry will be collapsed, the trade deficit in agricultural product will be increased and the unemployment (seasonal, disguised and frictional) in agriculture will be enlarged. There should be a vulnerable condition in the livelihood of the people. Therefore, the alternative measures should be opted to solve the food crisis in Nepal.

(3) The empirical estimation shows that the agricultural productivity has been increased in Nepal. Therefore, the agricultural products, especially the cash crops should be exported in more amount than the existing situation. The cash crops should be exported on the basis of comparative benefits of the items. Other cash crops like ginger, tea, ground cardamom, broom grass should be promoted. The new international market should be identified for exporting the items.

(4) The public spending on agriculture has been continuously declined, however, the agricultural productivity of food crops and cash crops have been increased in Nepal. The prime cause of increasing in agricultural productivity might be the technological
advancement and extension services in agriculture. For this reason, these facilities should be increased and spending on agricultural research should be enhanced.

(5) The time of 14 years have been elapsed after the promulgation of Local Self Governance Act, 1999 in Nepal. There have been no elected executives in the local bodies in Nepal. On this duration, there have been vital political alteration in Nepal, namely, Royal massacre, Maoist insurgency, the greater Peoples’ Revolution April 2006, declaration of republic and the removal of long established (240 years) monarchy in 2007 and the new constitution formation process are some remarkable events. Some provisions of the Local Self Governance Act, 1999 are becoming obsolete. As such, the amendment of Local Self Governance Act, 1999 has been becoming desirable and it should be performed.

(6) In Nepal, urban governance and municipal management has not been considered as a prioritized area of governance reform. However, in other countries the municipalities are in the front line of governance reform and they are enjoying more autonomous power for their prosperity. There is a great variation in the Nepalese municipalities. So, the single policy is not applicable to the all municipalities. The supportive programmes for poverty cutback should be conducted to the western, terrain and new municipalities in Nepal.

(7) Municipal taxation has been proved as a fundamental element for fiscal autonomy to the municipalities. To craft more autonomous and advance local government the concern of local autonomy is to be related with the local resources of the local government in Nepal.

(8) The result shows that fiscal decentralization insignificant to decline poverty in Nepal. This indicates that the promulgation of Local Self Governance Act, 1999 only is not the significant factor for declining poverty in the municipality. That is, educational, demographic and economic factors play the major role for reducing poverty. Therefore, municipal budgeting should be linked to poverty waning programmes in their respective jurisdictions.
The social expenditure seems insignificant for reducing poverty in the hill, at eastern and western region and old municipalities in Nepal. Therefore, the amount of social expenditure should be increased to get better result in reducing poverty in those municipalities.

The more power should be devolved to the municipalities for the smooth working for the municipalities. The 23 numbers of contradictory laws to the Local Self Governance Act, 1999. Therefore, these contradictory laws should be amended as per the norms of Local Self Governance Act, 1999. It could facilitate the working procedure for the municipality.

The current grant formula should be revised. Special grant should be allocated for the new and financially weaker municipalities.

It is recommended to follow the theory of “finance follow function”. Unfunded mandates should be avoided gradually.

The participatory planning and inclusive decision making process should be followed in the local governments.

6.3.2. General Policy Prescriptions
We have recommended specific policy prescription in the section 6.3.1. However, it is a responsibility of the researcher to assert the overall prescriptions which add some values for academic undertaking in the future. The general policy prescriptions have been outlined below.

The statecraft of Nepal is unitary and centralized. However, fiscal decentralization is confined in both federal and unitary system. The Local Self Governance Act, 1999 is the achievement of long practice on decentralization in Nepal and it is the foundation for fiscal decentralization. It is evident that without a strong base any system could not be developed. Therefore, the ongoing fiscal federalism process should be tie up to the matured provisions and norms of Local Self Governance Act, 1999 in Nepal.
(2) We know that fiscal decentralization concerns with the design of fiscal structure that is how taxing, spending and regulatory functions are allocated among different levels of government and how intergovernmental fiscal transfer are structured. Considering municipal government, the municipal revenue is the fundamental element. The reliable tax bases for the municipalities should be searched. Its expenditure is to be done for the betterment of urban inhabitants. The rationale intergovernmental fiscal transfer mechanism is to be adopted. Long term plan for municipal loan investment and repayment is to be developed. The above mentioned suggestions on fiscal decentralization are to be done all together.

(3) The state transformation procedure by producing new constitution has been operating in Nepal. The issue of fiscal decentralization for the poverty alleviation should be addressed in the forthcoming constitution. Furthermore, the studies should be conducted on the dimensions of fiscal federalism and the findings should be incorporated in the restructuring process of the state.

(4) It would be worthwhile to investigate the relationship between fiscal decentralization and poverty reduction. Both the issues are multidimensional. The considered variables are not sufficient enough to represent the issue. Other measures of fiscal decentralization can be explored in the future studies. The areas for future studies may include the cross countries study by considering the same indicators.

(5) Since the year there has been no elected executive in Nepal. However, the locally elected council is the necessary condition for fiscal decentralization (Bahl, 1999). Current dispute should be settled; immediately elect for the local bodies and handover the functions of the local bodies to the respective councils for the further fiscal decentralization practice in Nepal.

(6) Nowadays, the issue of ‘local autonomy’ is popular in political arena of Nepal. Our empirical estimation has been found that the tax autonomy is statistically significant in all the municipalities in Nepal. The tax autonomy or fiscal autonomy refers to the power of revenue raising and spending for the local development through local government. Local taxation enables the government to gain effective political power (Feld, Krichgässner and Schaltegger, 2003). Therefore, the fiscal autonomy to the
local governments should be assured to address the current cross-cutting issue in Nepal.

(7) From the empirical estimation we have found that the municipalities in Nepal are financially very weak. They could not able to deliver their service due to the fiscal resources. International practices on fiscal decentralization show that local government should be an economically viable unit. These should be preferably confined to a limited numbers. In this regard the area occupied by municipalities (local bodies) should be restructured on the basis of their economic viability. The number of new municipalities to be declared and the number of Village Development Committees should be cut out.

(8) The local bodies should be addressed constitutionally in the forthcoming Constitution of Nepal so as to have sovereignty in to perform their functions. The steps need to be taken to empower local body through the conception of truly independent institution. Therefore, it would be advisable to carry out the political activities to renovate the local body as a local government in Nepal.

6.4. Conclusion

All in all, we are going to conclude the study with ultimate observations.

The socio, economic and demographic indicators of Nepal have been progressed over the time. There is relatively low importance has been given on agricultural development in the country.

We found the structural change in poverty measures in Nepal in the year 1999, the year of promulgation of Local Self Governance Act, 1999. After that time the poverty related measures have been decreased rapidly.

The municipalities in Nepal are supposed to be autonomous and advanced local bodies in Nepal. The past legacy of devolving authority without fiscal power has been enhancing imperfect devolution. The local bodies have been functioning as a local service centre of the central government. Considering the global trends, people’s demand and geo-physical condition of Nepal the central government could not deliver the basic services efficiently
at the grass-root level. The service directly approaches to the local people especially to the poor sections on time through the municipality. Therefore, the poverty in the local level could be reduced.

We have established the fact that the poverty could be reduced through fiscal decentralization. Our empirical estimation in the chapter four and chapter five rigorously analyzed on the theme. We addressed adequate literature back up in this regard. The conceptual frame work traced the path to fulfill the objective of our study. This study makes the contribution of knowledge in the domain of fiscal federalism literature. It has been bringing the issue of fiscal decentralization and poverty that have been missing from the current literature into the academic debate. This endeavor connected the entities of local government with the central government fiscal policy and holistic picture of the intergovernmental fiscal relationship in Nepal. It helps to contextualize the broad economic, political, social and administrative transformation that has been taking place in contemporary Nepal.

This study is entirely based on the time series information of Nepal and its 58 municipalities. However, the findings of this study shall be generalized to the other local bodies, namely, District Development Committees and Village Development Committees in Nepal. It shall be taken as the base of fiscal federalism in Nepal and shall be the piecemeal in the subject matter for the other underdeveloped and unitary countries in the world. The theme ‘poverty reduction through fiscal decentralization’ has been taken for this study is really interesting but challenging to carry out for us. Generally it has been ignoring to maintain the fiscal and social data at the local or district level. This tendency is deep-rooted in the countries like Nepal. This study has been conducted on the narrow information of the country and the municipalities. Despite the limitations we have got very interesting results which will be useful for the policy formulation to the stakeholders.
Appendix 1. Distribution of Municipalities in Nepal

Map of Nepal

Legend

- Municipalities
- Ecological Belt Boundary
- Regional Boundary
- District Boundary

Development Region (DR)
- Eastern DR
- Central DR
- Western DR
- Mid-Western DR
- Far-Western DR

Kathmandu Valley

0 100 Kilometers
### Appendix 2. Classification of Municipalities in Nepal

<table>
<thead>
<tr>
<th>S N</th>
<th>Municipalities</th>
<th>Topography</th>
<th>Location</th>
<th>Generation</th>
<th>District</th>
<th>Zone</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ilam</td>
<td>Hilly</td>
<td>Eastern</td>
<td>Old</td>
<td>Ilam</td>
<td>Mechi</td>
<td>EDR</td>
</tr>
<tr>
<td>2</td>
<td>Bhadrapur</td>
<td>Terain</td>
<td>Eastern</td>
<td>Old</td>
<td>Jhapa</td>
<td>Mechi</td>
<td>EDR</td>
</tr>
<tr>
<td>3</td>
<td>Damak</td>
<td>Terain</td>
<td>Eastern</td>
<td>Old</td>
<td>Jhapa</td>
<td>Mechi</td>
<td>EDR</td>
</tr>
<tr>
<td>4</td>
<td>Mechinagar</td>
<td>Terain</td>
<td>Eastern</td>
<td>New</td>
<td>Jhapa</td>
<td>Mechi</td>
<td>EDR</td>
</tr>
<tr>
<td>5</td>
<td>Biratnagar</td>
<td>Terain</td>
<td>Eastern</td>
<td>Old</td>
<td>Morang</td>
<td>Koshi</td>
<td>EDR</td>
</tr>
<tr>
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**Note**

i. Kathmandu is Municipal Corporation; Biratnagar, Birgunj, Lalitpur and Pokhara are Sub-municipal Corporation and remaining 53 cities are Municipalities.

ii. Gorkha, Ghorahi and Bhimdutta were previously called Prithvi Narayan, Tribhuwan Nagar and Mahendra Nagar respectively.

iii. EDR, CDR, WDR, MWDR and FWDR are the abbreviation form of Eastern Development Region, Central Development Region, Western Development Region, Mid-Western Development Region and Far-Western Development Region respectively.
## Appendix 3. Functions, Duties and Power of Local Bodies in Nepal

(Clauses 28, 96 and 189 of LSGA)

<table>
<thead>
<tr>
<th>VDC</th>
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<td>(3) Works and transport</td>
<td>(3) Water, environment and sanitation</td>
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<td>(5) Irrigation, soil erosion and river control</td>
<td>(5) Culture</td>
<td>(5) Land reform and land management</td>
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<td>(6) Works and transport</td>
<td>(6) Development of women and helpless people</td>
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<td>(7) Health services</td>
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<td>(8) Forest and environment</td>
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<td>(9) Language and culture</td>
<td>(9) Industry and tourism</td>
<td>(9) Wages for labour</td>
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<td>(10) Tourism and cottage industry</td>
<td>(10) Miscellaneous optional works</td>
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<td>(11) Approval of building design (part3-chapter 9)</td>
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<td>(16) Miscellaneous</td>
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</table>
In addition to executing or causing to be executed the decisions and directions of the Municipal Council, the functions and duties to be performed by the Municipality mandatorily in the municipal area shall be as follows.

**Relating to Finance**

1. To prepare annual budgets, plans and program of the Municipality and submit them to the Municipal Council.
2. To keep the accounts of incomes and expenditures, and other documents pertaining thereto in an updated manner.
3. To expend the money to execute the decisions of the Municipality, subject to the limits of the approved budget.
4. To raise taxes, charges and fees etc. approved by the Municipal Council.

**Relating to Physical Development**

1. To frame land-use map of the Municipality area and specify and implement or cause to be implemented, the industrial, residential, agricultural, recreational areas etc.
2. To prepare housing plan in the area of Municipality and implement or cause to be implemented the same.
3. To carry out plans on drinking water and drainage in the areas of Municipality and operate, maintain and repair or cause to be operated, maintained and repaired the same.
4. To develop, or cause to be developed, green zones, parks and recreational areas in various places in the Municipality area.
5. To arrange for, or cause to be arranged for, public toilets in various places in the Municipality area.
(6) To approve or cause to be approved designs of houses, buildings etc. to be constructed in the areas of the Municipality.

(7) To build community building and rest houses.

**Relating to Water resources, Environment and Sanitation**

(1) To preserve rivers, streams, ponds, deep water, wells, lakes, stone water-taps etc. and utilize, or cause to be utilized them properly.

(2) In the event of necessity to carry out irrigation plans in the Municipality area, to make plans thereof and implement and cause to be implemented the same.

(3) To control and prevent, or cause to be controlled and prevented the possible river-cuttings, floods and soil erosion in the Municipality area.

(4) To assist, or cause to be assisted, in environment protection acts by controlling water, air and noise pollution to be generated in the Municipality area.

(5) To protect or cause to be protected the forests, vegetation and other natural resources within the Municipality area.

(6) To carry out or cause to be carried out sanitation program in the Municipality area.

(7) To carry out and manage or cause to be carried out and managed the acts of collection, transportation and disposal of garbage and solid wastes.

(8) To generate and distribute or cause to be generated and distributed electricity in the Municipality area.

**Relating to Education and Sports Development**

(1) To establish, operate and manage pre-primary schools with own source in the Municipality area and give permission to establish the same.

(2) To extend supports in the operation and management of schools being operated within the Municipality area and to make recommendations for the establishment and dissolution of such schools.

(3) To assist in providing primary level education in mother tongue within the Municipality area.

(4) To make arrangements for providing scholarships to the students of oppressed ethnic communities who are extremely backward on economic point of view.
(5) To prepare and implement or cause to be implemented program on Municipality level adult education and informal education.

(6) To open, operate and manage or cause to be opened, operated and managed, libraries and reading halls in the Municipality area.

(7) To prepare and implement or cause to be implemented, sports development program.

(8) To develop or cause to be developed sports by constituting Municipality level sports development committee.

**Relating to Culture**

(1) To prepare an inventory of the culturally and religiously important places within the Municipality area and maintain, repair, protect and promote, or cause to be maintained, repaired, protected and promoted, them.

(2) To protect, promote and use or cause to be protected promoted and used archaeological objects, languages, religion and culture within the Municipality area.

**Relating to Works and Transport**

(1) To prepare plans of un-pitched and pitched roads, bridges and culverts as needed within the Municipality area, except those roads which are under the responsibility and control of Government of Nepal, and construct, maintain and repair or cause to be constructed, maintained and repaired, the same.

(2) To arrange or cause to be arranged for bus parks and parking places of rickshaws (three-wheelers), horse-carts, trucks etc. within the Municipality area.

(3) To prescribe the upper limit of pushcarts, rickshaws, horse-carts etc. in consideration of transport requirement of the Municipality and register and provide number to them.

**Relating to Health Service**

(1) To operate and manage, or cause to be operated and managed, municipal level hospitals, Ayurvedic dispensaries and health centres.
(2) To open, operate and manage, or cause to be operated and managed, health posts and sub-health posts within the Municipality area.

(3) To formulate program relating to family planning, mother and child welfare, extensive vaccination, nutrition, population education and public health, and to implement or cause to be implemented the same.

(4) To arrange, or cause to be arranged, for prevention of epidemics and infectious diseases.

(5) To ban the public use of such things and objects in the Municipality area as are harmful to the public health or remove the same.

(6) To ban the sale, distribution and consumption of such type of consumer goods this may cause adverse effects on public health.

**Relating to Social Welfare**

(1) To arrange, or cause to be arranged, for cremation of heirless dead person, and to make arrangements for orphanages for helpless people, orphans and children bereaved of parents.

(2) To carryout, or cause to be carried out, program relating to the interests and welfare of the women and children and acts relating to the control of immoral profession and trade.

**Relating Industry and Tourism**

(1) To act or cause to act as a motivator to the promotion of cottage, small and medium industries in the Municipality area.

(2) To protect, promote, expand and utilize or cause to be protected, promoted, expanded and utilized, natural, cultural and touristic heritage within the Municipality area.

**Miscellaneous**

(1) To do plantation on either side of the roads and other necessary places in the Municipality area.
(2) To determine and manage places for keeping pinfolds and animal slaughter house.

(3) To protect barren and governmental unregistered (Ailani) land in the Municipality area.

(4) To determine and manage crematoriums.

(5) To act for the development of trade and commerce.

(6) To frame byelaws of the Municipality and submit it to the Municipal Council.

(7) To carry out necessary functions on the controlling of natural calamities.

(8) To maintain inventory of population and houses and land within the Municipality area.

(9) To register birth, deaths and other personal events pursuant to the prevailing law.

(10) To maintain inventory of the helpless, orphan and disabled children within the Municipality area and arrange to keep them in appropriate place.

(11) To secure public interest by killing rabid and strayed dogs and specify the places to bury dead animals and birds into.

(12) To have such trees cut and houses, walls etc. creating hazardous results demolished.

(13) To up-date the block numbers of the houses in the Municipality area.

(14) To arrange for animal slaughterhouses.

(15) To impound and auction strayed animals.

(16) To arrange for lighting on the roads and alleys.

(17) To grant approval to open cinema halls in the Municipality area.

(18) To arrange or cause to be arranged for Haat bazaar, markets, fairs and exhibitions etc.

(19) To operate and manage or cause to be operated and managed fire brigades.

(20) To confer the honour of distinguished person of the town on any distinguished person.

(21) To carry out or cause to be carried out other acts relating to the development of the Municipality area.

(22) To render assistance for the development of cooperative.

(23) To evaluate the performance of the Secretary and forward it with recommendation to the authority.

(24) To encourage or cause to be encouraged to carry out cooperative, industrial and commercial activities generating income to the Municipality with the investment of private sector as well.
(25) To formulate various programs based on cooperativeness and to carry out or cause to be carried out the same.
(26) To carry out such other functions as are prescribed under the prevailing law.

In addition to the functions, and duties referred to the aforementioned section:

a. The Municipality may also perform the following optional functions in the Municipality area.
(1) To make necessary arrangements for providing standard school education in the Municipality area.
(2) To launch literacy program to eradicate illiteracy from the Municipality area.
(3) To open and operate libraries and reading halls in various places within the Municipality area.
(4) To control unplanned settlement within the Municipality area.
(5) To make the structure and development of the town well planned through the functions such as guided land development and land use.
(6) To arrange for the aged rest-houses and orphanages.
(7) To arrange for the supply of electricity and communications facilities.
(8) To arrange for recreational parks, playing grounds, museums, zoos, parks etc. in the Municipality area.
(9) In order to reduce unemployment, to collect the data of unemployed persons and launch employment-generating program.
(10) To launch program to control river pollution.
(11) To provide ambulance service in the Municipality area.
(12) To arrange for dead body carriers in the Municipality area.
(13) To carry out preventive and relief works to lessen the loss of life and property caused from natural calamity.

b. Consumer groups and other non-governmental organizations shall have to be encouraged for the development and construction works to be done in the Municipality area and such works shall have to be done through such groups or organizations as far as possible.

c. The Municipality shall exercise the powers conferred on it under this Act and the Rules and Byelaws framed under this Act.
## Appendix 5. Revenue and Expenditure Items of Municipalities in Nepal

<table>
<thead>
<tr>
<th>S N</th>
<th>A. The Revenue Items of Municipality</th>
<th>B. The Expenditure Items of Municipality</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>LOCAL TAXES</td>
<td>Unclaimed Land Tax</td>
</tr>
<tr>
<td>i</td>
<td>Octroi Tax</td>
<td>Tax Arrears</td>
</tr>
<tr>
<td>ii</td>
<td>Vehicle Tax</td>
<td>Other Taxes</td>
</tr>
<tr>
<td>iii</td>
<td>Octroi and Vehicle Tax</td>
<td>Salaries</td>
</tr>
<tr>
<td>iv</td>
<td>Professional Tax</td>
<td>Allowances</td>
</tr>
<tr>
<td>v</td>
<td>Houseland/Unified Property Tax</td>
<td>Service Fee (Surcharges)</td>
</tr>
<tr>
<td>vi</td>
<td>House Rent Tax</td>
<td>Industrial Service Fee</td>
</tr>
<tr>
<td>vii</td>
<td>Contract Tax</td>
<td>Recommendation Fee</td>
</tr>
<tr>
<td>viii</td>
<td>Local Market Tax</td>
<td>Radio License</td>
</tr>
<tr>
<td>ix</td>
<td>Sales Tax: Cattle/Fish</td>
<td>Application Fee</td>
</tr>
<tr>
<td>xi</td>
<td>Tax Arrears</td>
<td>Appraisal Fee</td>
</tr>
<tr>
<td>xii</td>
<td>Other Taxes</td>
<td>Building Permit</td>
</tr>
<tr>
<td>2</td>
<td>FEES AND FINES</td>
<td>Registration Fee</td>
</tr>
<tr>
<td>i</td>
<td>Service Fee (Surcharges)</td>
<td>Animal House Fee</td>
</tr>
<tr>
<td>ii</td>
<td>Industrial Service Fee</td>
<td>Water Fee</td>
</tr>
<tr>
<td>iii</td>
<td>Recommendation Fee</td>
<td>Other Fees/Fines</td>
</tr>
<tr>
<td>iv</td>
<td>Radio License</td>
<td>Misc. Revenue/Sale</td>
</tr>
<tr>
<td>v</td>
<td>Industrial Service Fee</td>
<td>Furnitures</td>
</tr>
<tr>
<td>vi</td>
<td>Office Supplies</td>
<td>Advance Refund</td>
</tr>
<tr>
<td>vii</td>
<td>Office Supplies</td>
<td>Sand Gravel Sale</td>
</tr>
<tr>
<td>viii</td>
<td>Registration Fee</td>
<td>Land/Building Sale</td>
</tr>
<tr>
<td>ix</td>
<td>Animal House Fee</td>
<td>Auction Sale</td>
</tr>
<tr>
<td>x</td>
<td>Water Fee</td>
<td>Tender Forms Sale</td>
</tr>
<tr>
<td>xii</td>
<td>Health Supplies</td>
<td>Confiscation Deposit</td>
</tr>
<tr>
<td>3</td>
<td>PROPERTY RENTAL</td>
<td>Misc. Arrears</td>
</tr>
<tr>
<td>i</td>
<td>Market/Shops/Building</td>
<td>Misc. Revenue/Sale</td>
</tr>
<tr>
<td>ii</td>
<td>Bus Park</td>
<td>Misc. Revenue/Sale</td>
</tr>
<tr>
<td>iii</td>
<td>Fish Pond</td>
<td>Misc. Revenue/Sale</td>
</tr>
<tr>
<td>4</td>
<td>OTHER REVENUES</td>
<td>Misc. Arrears</td>
</tr>
<tr>
<td>i</td>
<td>Sand Gravel Sale</td>
<td>Misc. Arrears</td>
</tr>
<tr>
<td>ii</td>
<td>Land/Building Sale</td>
<td>Misc. Arrears</td>
</tr>
<tr>
<td>iii</td>
<td>Auction Sale</td>
<td>Misc. Arrears</td>
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<tr>
<td>iv</td>
<td>Tender Forms Sale</td>
<td>Misc. Arrears</td>
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<td>v</td>
<td>Confiscation Deposit</td>
<td>Misc. Arrears</td>
</tr>
<tr>
<td>vi</td>
<td>Misc. Arrears</td>
<td>Misc. Arrears</td>
</tr>
<tr>
<td>vii</td>
<td>Misc. Revenue/Sale</td>
<td>Misc. Arrears</td>
</tr>
<tr>
<td>5</td>
<td>OWN SOURCE REVENUE (1+2+3+4)</td>
<td>Misc. Arrears</td>
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<tr>
<td>6</td>
<td>MISC. INCOME</td>
<td>Misc. Arrears</td>
</tr>
<tr>
<td>i</td>
<td>Advance Refund</td>
<td>Misc. Arrears</td>
</tr>
<tr>
<td>ii</td>
<td>Cost Sharing</td>
<td>Misc. Arrears</td>
</tr>
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<td>iii</td>
<td>Other Miscellaneous</td>
<td>Misc. Arrears</td>
</tr>
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<td>7</td>
<td>GRANTS</td>
<td>Misc. Arrears</td>
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<td>8</td>
<td>LOANS</td>
<td>Misc. Arrears</td>
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<td>9</td>
<td>BALANCE FORWARD</td>
<td>Misc. Arrears</td>
</tr>
<tr>
<td>10</td>
<td>TOTAL REVENUE (5+6+7+8+9)</td>
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<tr>
<td>x</td>
<td>CURRENT EXPENDITURES</td>
<td>Misc. Arrears</td>
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<td>Salaries</td>
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<td>xii</td>
<td>Allowances</td>
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<td>2</td>
<td>Travel and Per Diem</td>
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</tr>
<tr>
<td>i</td>
<td>Services</td>
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</tr>
<tr>
<td>ii</td>
<td>Rent</td>
<td>Misc. Arrears</td>
</tr>
<tr>
<td>iii</td>
<td>Repair &amp; Maintenance</td>
<td>Misc. Arrears</td>
</tr>
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<td>iv</td>
<td>Office Supplies</td>
<td>Misc. Arrears</td>
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<td>Newspapers</td>
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<td>vi</td>
<td>Fuel</td>
<td>Misc. Arrears</td>
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<td>vii</td>
<td>Clothes/Food Allowance</td>
<td>Misc. Arrears</td>
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<td>viii</td>
<td>Other Material</td>
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<td>ix</td>
<td>Health</td>
<td>Misc. Arrears</td>
</tr>
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<td>x</td>
<td>Food (Prisoners/Animals)</td>
<td>Misc. Arrears</td>
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<td>Financial Asst./Donations</td>
<td>Misc. Arrears</td>
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<td>xii</td>
<td>Wards Adm. Expenses</td>
<td>Misc. Arrears</td>
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<td>xiii</td>
<td>Debt Payment</td>
<td>Misc. Arrears</td>
</tr>
<tr>
<td>xiv</td>
<td>Food (Prisoners/Animals)</td>
<td>Misc. Arrears</td>
</tr>
<tr>
<td>xv</td>
<td>Contingencies</td>
<td>Misc. Arrears</td>
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<td>xvi</td>
<td>Wards Adm. Expenses</td>
<td>Misc. Arrears</td>
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<td>Debt Payment</td>
<td>Misc. Arrears</td>
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<td>xiii</td>
<td>Misc. Arrears</td>
<td>Misc. Arrears</td>
</tr>
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<td>Misc. Arrears</td>
<td>Misc. Arrears</td>
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<td>xvi</td>
<td>Misc. Arrears</td>
<td>Misc. Arrears</td>
</tr>
<tr>
<td>xvi</td>
<td>Misc. Arrears</td>
<td>Misc. Arrears</td>
</tr>
<tr>
<td>xii</td>
<td>Health</td>
<td>Misc. Arrears</td>
</tr>
<tr>
<td>xii</td>
<td>Forestry</td>
<td>Misc. Arrears</td>
</tr>
<tr>
<td>ii</td>
<td>Cultural/Sports</td>
<td>Misc. Arrears</td>
</tr>
<tr>
<td>iii</td>
<td>Disaster Relief</td>
<td>Misc. Arrears</td>
</tr>
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<td>iv</td>
<td>Fin. Assistance</td>
<td>Misc. Arrears</td>
</tr>
<tr>
<td>v</td>
<td>Miscellaneous</td>
<td>Misc. Arrears</td>
</tr>
<tr>
<td>vi</td>
<td>Miscellaneous</td>
<td>Misc. Arrears</td>
</tr>
<tr>
<td>vi</td>
<td>Misc. Revenue/Sale</td>
<td>Misc. Arrears</td>
</tr>
<tr>
<td>3</td>
<td>ORDINARY CAPITAL</td>
<td>Misc. Arrears</td>
</tr>
<tr>
<td>i</td>
<td>Vehicles</td>
<td>Misc. Arrears</td>
</tr>
<tr>
<td>ii</td>
<td>Machinery Equipment</td>
<td>Misc. Arrears</td>
</tr>
<tr>
<td>4</td>
<td>CAPITAL INVESTMENT</td>
<td>Misc. Arrears</td>
</tr>
<tr>
<td>i</td>
<td>Land/Building Purchase</td>
<td>Misc. Arrears</td>
</tr>
<tr>
<td>ii</td>
<td>Building Construction</td>
<td>Misc. Arrears</td>
</tr>
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<td>iii</td>
<td>Town Level Projects</td>
<td>Misc. Arrears</td>
</tr>
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<td>iv</td>
<td>Other Dev./Construction</td>
<td>Misc. Arrears</td>
</tr>
<tr>
<td>5</td>
<td>TOTAL EXPENDITURE (1+2+3+4)</td>
<td>Misc. Arrears</td>
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</tbody>
</table>

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270
Appendix 6. Types of Fiscal Transfer to the Local Bodies in Nepal

<table>
<thead>
<tr>
<th>VDC</th>
<th>Municipality</th>
<th>DDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unconditional grant</td>
<td>Unconditional grant</td>
<td>Unconditional grant</td>
</tr>
<tr>
<td>Conditional grant</td>
<td>Conditional grant</td>
<td>Conditional grant</td>
</tr>
<tr>
<td>Own revenue rights</td>
<td>Own revenue rights</td>
<td>Own revenue rights</td>
</tr>
<tr>
<td>Allocated revenues from DDC</td>
<td>Allocated revenues from DDC</td>
<td>Allocated revenues: royalty on electricity, mining and forest, tourist entry fee, registration fee etc.</td>
</tr>
</tbody>
</table>

Appendix 7. Intergovernmental Fiscal Transfer Formula in Nepal

(Figure Shows the Weight of the Respective Item)

<table>
<thead>
<tr>
<th>VDC</th>
<th>Municipality</th>
<th>DDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population 60%</td>
<td>Population 50%</td>
<td>Population 40%</td>
</tr>
<tr>
<td>Cost weightage 30%</td>
<td>Poverty level 25%</td>
<td>Cost weightage 25%</td>
</tr>
<tr>
<td>Geographical area 10%</td>
<td>Geographical area 10%</td>
<td>Geographical area 10%</td>
</tr>
<tr>
<td>Revenue incentive 15%</td>
<td>Human Development Index 25%</td>
<td></td>
</tr>
</tbody>
</table>

*Source: MoLD(2010) and MoLD Press release (28.09.2010)*.
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**Chapter Four**


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