CHAPTER I
INTRODUCTION

1.1 Background of the Study

Tax is the compulsory contribution to the government and made without reference to a particular benefit received by the tax payer. It is personal obligation to pay tax and there is not direct relationship among tax, benefit and individual tax payers.

Taxation is a major instrument of social and economic policy. It has three goals to transfer resource from the private to the public sector, to distribute the cost of government fairly by income classes (Vertical equity) and among people in approximately the same economy circumstance (horizontal equity) and to promote economic growth, stability and efficiency. These objectives are closely related to the economic development of a country. So, that the prime concern of the developing country is the attainment of rapid economic development. The rapid economic development requires massive governmental participation, the method of obtaining revenue to meet with such activity. The role of taxation in this connection has increased very much in modern days.

The relation between taxation and economic development has long been a matter of concern to policy makers and general people. The classical economists devoted substantial efforts in analyzing the effects of taxation on growth and the distribution of factor incomes. With the rise of Keynesian economic on stability of the economy became an important issues. The classical and Keynesian ideas constituted prominent themes in early analysis of taxation in UDCs. In the following days, the range of concern widened to include the effect of taxation not just on the rate of

growth of national income but also on the distribution of income and on employment.

A rise in national and per capita output is implicit in economic growth larger savings, increased capital formation and technological. development facilitate this improvement in income helps and in turn. Rise in the per capita availability of capital sources, improvement in skill, efficiency and earning power of labor, better organization of production, greater leisure and increased recreation facilities and the widening of the mental horizon of the people, all these characterized economic growth. Therefore, the UDCs have to accelerate their economic growth rates. To achieve this goal the government needs various types of resources and huge financial as well. Two types of resources are undertaken i.e. internal and external; both are mobilized by the government. However, the internal sources are more preferable to external one for sustainable development. Thus tax revenue and non-tax revenue are the crucial revenue of the government. The tax revenue is received as compulsory payment where as the remaining is conditional. The non tax revenue includes duties and fees, penalties, fines and forfeitures, receipts for sales and rent of government property, principal repayment donation and miscellaneous income. The tax revenue includes both direct tax and indirect tax such as income, tax sales tax, customs duty, excise duty, revenue from land registration etc. of them tax revenue is measure sources of the tax revenue is major sources of the internal revenue as well as the macro economic fiscal instrument of the government.

In the context of Nepal, the role of taxation has increased since initiation planning in 1956 for the purpose of economic development. However, in the earlier period the drastic change needed in improving tax structure was not felt to the low magnitude of government expenditure.

Today government expenditure has increased by greater amount than government revenue, the problem of bridging this gap has become then main issue regarding the fiscal affairs of Nepal.

Thus, there is a greater need of improving tax structure in Nepal. This need becomes more appreciable when we see the higher tax ratio to GDP in developed country. This has generated the strong believe among the economist that the present tax ratio in Nepal which is very low, can be increased substantially which would be a solution of resource problem. However, how this ratio can be raised and in what magnitude the present tax structure is able in raising revenue becomes a subject matter of study.

Thus, the present study is also directed towards the impact analysis of government of Nepal's tax reform and policy on the structure and responsiveness of Nepalese tax system after restoration of democracy in 1990.

1.2 Statement of the Problem

Nepalese economy is strictly agro based economy though most of the people are engaged in agrarian activities. No such great contribution through agriculture tax in revenue. This problems is also reflected in the tax structure of Nepal. Most of the part of tax revenue is contributed by indirect tax rather than direct tax.

Tax structure of Nepal is massively dominated by indirect taxes. As it is said that, direct tax is more progressive that of indirect tax, it has put more tax system regressive justify our tax structure. According to economic survey (2009/10) the share of indirect tax still 73 percent in 2008/09. It has been a problem to bridge the gap between the rich and poor.

The tax administration in Nepal is very weak. There is a lack of specialized revenue services while a revenue group was created within the Nepal administration service in 1992/93, there is still a long way to go in order to develop a specialized revenue offices lack of physical facilities and incentives provided for revenue officials are limited. The situation of local tax administration is even worse.

The bases of Nepalese tax system is very narrow, both legally as well as administratively for example: several goods and services, transaction in income sources and property are kept out of the net major exclusion include the exemption of necessities from various taxes the exemption of agricultural allowance and ranted to employees etc. In addition, several incentives for the industries in the form of tax holidays tax, rebates tax, tax credits addition expenses and depreciation. The means that statutory base is much smaller than the potential tax base.

Nepal is facing acute problem of surplus revenue for development expenditure the different periods, which has posed a serious threat of internal resource mobilization for development activities. Development activities in particular depend upon the extent or resource mobilization of the economy. Higher the revenue surplus, greater will be the possibility of building the infrastructure for developing nations.

The consistently declining revenue surplus for development expenditure revealing a serious threat for the Nepalese economy. The level of voluntary tax compliance is very low. The tax conscious has yet to be developed among the Nepalese. This may be due to the illiteracy complicated tax procedure the low cost of non compliance etc.

The share of development expenditure to total expenditure in 1990/91 was 67.85 and it is began to declining from FY 1994/95 and

reached at 36.92 percent in FY 2008/09. This fact also reveals that the share of development expenditure to total expenditure has been gradually declining and hence created lack of resource for the development.

1.3 Objective of the Study

i. To examine the structure of taxation in Nepal during period FY 1990/91 to FY 2008/09.
ii. To measure the productivity and responsiveness of tax yields in Nepal's tax structure.
iii. To provide the suitable recommendations to improving existing scenario of taxation.

1.4 Significance of Study

Nepal is an under developed country suffering from the resource gap from the very beginning. The country has adopted the policy of mobilizing the internal resources tot he maximum extent. Revenue mobilization has a crucial role in fiscal policy implementation, especially in a developing country like ours where the demand of public funds for public expenditure is high. In this context, taxation has become a powerful instrument for mobilizing the resources. Since, tax revenue is a major source of domestic revenue in Nepal, the measurement of elasticity and buoyancy of tax would be beneficial interims of reforms in tax structure as well as revenue administration. In addition to this, the study of tax elasticity and buoyancy is also useful for revenue forecasting.

1.4 Limitation of the Study

i. This study covers only the period from fiscal year 1990/91 to 2008/09.
ii. Due to nature of data, Sahota method would be employed to separate the effect of discretionary changes to total tax revenue.

1.5 Organization of the Study

The present study is divided into six different chapters. The first chapter is the introductory chapter. The second chapter deals with the review of literature that covers the both theoretical and empirical aspect of the structure and responsiveness of Nepalese tax system. The third chapter deals in explaining the methodology employed in the study. The fourth chapter presents the tax structure in Nepal. The fifth chapter includes the responsiveness and productivity of taxation yield in empirical analysis. Finally, the last chapter includes the summary, conclusion, recommendation of the study.

CHAPTER II
REVIEW OF THE LITERATURE

2.1 Theoretical Review

The relationship between taxation and economics development has long been a matter of concern to policy makers and students of public policy alike. The classical economists devoted substantial effects to analyzing the effects of taxation on growth and the related question of the distribution of factors incomes as witnessed by the full title of record's famous treatise; "principles of Political Economy and Taxation". With the rise of the stability of the economy also became an important subjects of analysis. These classical and Keynesian concerns constituted prominent themes in early analysis of taxation in UDCs (Heller, 1954, Kaldor, 1956, 1957, 1963, Higging; 1959). Subsequently, the range of concerns widened to include the effects of taxation not just on the distribution of that income by income size, class on employment, and on other objective of policy (Gillis 1987), for example, lists the objectives of fiscal policy as the promotion of economic growth, the reduction of income disparities, use of transfer to others. Taxation not only restraints total spending between households and regions, the promotion of economic stability and economic efficiency, and the increasing of host country returns from natural resource endowments.

Tax is defined as a compulsory contribution to the government made with out reference to a particular benefit received by the tax payer. The primary purpose of taxation is to divert control of economic resources form taxpayers to the state for its own by households and enterprises but influences the allocation of economic sources, recognizes

social costs that are not reflected in market prices and affects the distribution of income and wealth (Goode, 1984).

Taxation is used as the main policy instrument for transferring resources to the public sector. It can also assist in creating an atmosphere within which the private sector operates in conformity with national objectives. From the efficiency viewpoint, It can be said that taxes provide the best means of financing the bulk of public expenditures.

2.1.1 Principles of Taxation

The principle necessary ingredient of a tax system designed to promote the required level of employment in a dynamic economy is flexibility, or ability to adjust quickly to changing requirements without violent overhaul.

Equity, efficiency, and administrative feasibility are the three major principles of tax design of any economy. For UDCs, the most important role of taxation is to mobilize the resources for development. As an instrument of resource mobilization, its principal function lies in raising the volume of pubic saving to be used for capital formation consistent with the growth of saving in the economy as a whole. The quantitative role of tax policy for the mobilization of development finance may be considered in two aspects.

In the former case, the economy tends to stay at a stable level of under development equilibrium in which tax revenue is used mainly on the consumption purposes. In the later case, the role of tax policy consists in preventing the increment in output from being consumed by deliberately. Sloughing back and increasing promotion of it into the pool of ingestible resources of the public sector.

In order to assure the objective of plugging back the increment in output, the UDCs have to develop a tax structure that should have a large element of built-in-flexibility. This means that the tax base must grows as income grows. Since the tax rates will only be a fraction of the base, the base must grow faster than total income in order to recapture a substantial part of the increment. Such a tax structure will be one in which the marginal effective rate of taxation in terms of national income must be high.

Although such a tax structure, would be ideally suited to plough back an increasingly large proportion of the increment in output, it may create an adverse economic effect on incentives to resources the tax structure of the UDCs, should be sufficiently diversified and should have coverage both ‘deep and wide’. Such a tax system will be able to mobilize and to tap the tax potential of the different sectors created because of the accelerated process of economic development.

If political decisions are made by legislative majorities, a constitutional constraint require in generality in the imposition of taxes will be economically efficient. In the absence of such a constraint, majorities will tend to impose differentially high taxes on members of political minorities, and such differentiation opens up several sources for resource waste. This argument lends support for a uniform proportional rate of tax on all incomes (Buchanan, 1998).

2.1.2 Horizontal Vs Vertical Equity

While designing the tax policy, the widely accepted principle is the principle of equality. It implies that those with equal abilities to support government, should pay equal amounts and that those with unequal abilities, should pay different amounts bearing a reasonable relegation to their abilities. The former aspect is often called horizontal equity, the

later, vertical equity, the equality aspect of taxations directly concerned with ability-to-pay principle, which is primarily a matter to economic capacity, that can be measured by income, wealth or consumption (Goode, 1984, Musgrave, 1959, Due and Friedlander, 1994, Musgrave and Musgrave, 1989).

In favor of income as a sensible index of equity, it may be argued that a person's economic capacity, and hence his ability to contribute, depends upon his wealth and not upon the way he choose that income in the true index of that social philosophy may not change.

Nor it can be argued that income is the appropriate index for those, who desire progressive taxation and wish to reduce inequality, and that consumption is the appropriate index for those, who wish to impose regressive taxation, to increase inequality. As a matter of historical experience, we find that the income tax has been the vehicle of progressive taxation, and, that the major sources of sales and excise some time, there is no logical necessity for this. Once the taxation have been regressive. At the transaction is made from a tax on commodities to a personal tax on consumer expenditures, the spending tax may be applied with progressive rates, no less than the income tax.

2.1.3 Direct Vs Indirect Taxation

Based on these indices of ability; taxes can, most conveniently, be divided in to two categories, direct and indirect. Direct being those levied immediately on the persons, who are to bear the burden, and indirect tax those which are not so levied (Hicks, 1959). In the traditional language, if impact and incidence are upon the same persons, the tax is said to be direct; if not, the burden is shifted, and the real income of someone else is

affected (i.e. impact and incidence are upon different people) then the tax is indirect (Walker, 1953)

2.1.4 Interventionist Vs Reductionism Approach

In shaping developing tax policy, there are mainly two approaches: The interventionist and the reductionism. The interventionist tradition was represented in the early post war period by such prominent analysts as Heller and Kaldor achievement of a variety of policy objectives through the tax system, but it should do so. The reductionism tradition, government not only cannot achieve many of the policy goals earlier postulated but should not or as the “public choice” school would have it, will not have it will not try to do so (Bird and Oldman, 1990)

A central concern of tax policy makers in UDCs is how best to produce adequate revenues to finance public sector activities without unduly discouraging the private sector’s essential contribution growth. In this respect, traditional interventionist approach to taxation is replaced by reductionist approach, which is generally termed as supply side taxations shows clearly that in the context of UDCs the general direction and strategy of this approach is both widely acceptable and workable. This approach is mainly based on the idea that widespread tax evasion in UDCs can be controlled by broadening tax bases and lowering tax rates, where the marginal rate of personal income tax is excessive. Plausible through it may appear however, it is well established in principle that there is no reason to expect lower tax rates in themselves to reduce evasion. In this connection the following argument is important: If evasion is cost-less, that is, the probability of detection and penalization is infinitely small as is the case in all too many countries then the mere reduction of the nominal tax rate will have no effect at all on evasion.

2.1.5 Appropriate tax Policy for UDCs

What then are the most important specific changes to be considered in the tax system of market oriented developing economy like Nepal? Some economists may want to base their policy advice on sophisticated calculations of optimal tariffs, tax and subsides.

Equity, growth, efficiency, and stability are major objectives of tax policy, which are conflicting each other. A tax system based solely on efficiency ground is unrealistic, which that designed solely for equity purposes cannot be justified on allocative grounds. The degree of progressively will, in practice, continue to be dictated by political and social consensus rather than by the optimizing formulae of tax economists. However, It is accepted that high tax rates and narrow and selective tax bases can create distortions, encourage unproductive activities, erode the revenue base and lower the effective tax rates below the intended nominal tax rates. Tax cuts without reforms in the tax base can introduce more distortions of efficiency and equity than they connect, especially, if they result in inflationary finance (Gandhi, 1974).

Moreover, the literature on optimum commodity taxation has formalized old views among economists about how to make a compromise between the allocative efficiency of consumption and concern for the distribution of income. While in the interest of economics efficiency, tax rates should be relatively high on goods and services for which the demand and supply elasticity's are small. For distributional reasons, the rates should be high on goods and services that play a relatively important part in the consumption pattern of high income earners. Tax should, ceteris paribus, also be high on goods and services, which are close complements, for the consumers of untaxed or indeed un-

taxable goods and services like leisure. Quite complex formulate have in fact been derived to strike a balance between these different often – confecting aspects, using a social welfare function as the criterion for the trade-off (Lindbeck, 1968)

But these actual policy advices are based on different assumptions such as, identical preferences of all individuals, special forms of the production functions, such as Cobb-Douglas production function which demand massive statistical information and administrative competence, but instead more ambitious with respect the basic in sights about the functioning of the political process, for political behavior is important to implement and policies into action.

According to Prest (1979), discussion of public financial policy can in principle take two attempt to draw up a blue print for the overall reform of the revenue and expenditure system. Any such blueprint must consider the relative importance of the various ends serves by the revenue expenditure system, the way in which individual taxes and expenditures contribute to these ends and the co-ordination of these individual contributory elements. The other extreme is to discuss the reform of individual taxes or expenditures without reference to one another, with out necessarily attempting to cover the whole field and with out much consideration of the overall effect on the economic system (Dahal, 2006).

2.1.6 Responsiveness and Productivity of Tax Yields

The concept of “elasticity” and buoyancy” of taxes are often used to examine the responsiveness of tax collection to variation in national income. In other words measuring responsiveness of Taxes in the tax system, 'elasticity and buoyancy are two popular concepts, frequently referred to as automatic stabilizers. If tax system is elasticity than the

functioning of the economic system needs no deli berate or discretionary action of any external authority.

Elasticity or built-in-flexibility; which measures the responsiveness of particular tax system is also known as “stabilized coefficient” which is the static concept, would indicate what size and magnitude of tax would have been over a period of time when there would be no change on the tax rate and legal bases (Dahal, 2000). The responsiveness of tax revenue to changes in national income as measured in terms of elasticity, is of great interest to policy maker and research because elasticity measured with reference to the given tax structure. Thus, it provides real or stabilized value of taxes. In a way this can be considered as a partial account of tax responsiveness to change in the national income.

The modern theory of automatic stabilization concentrates its attention mainly on making fiscal tools automatic in their effects. There are two methods of measuring the automatic response of fiscal tools: They are

a. Sensitivity, and
b. Built-in-flexibility

The first economist to explain sensitivity was R.F. Bretherton in 1937. He defines sensitivity as a proportionate change in tax revenue with the change in national income. The formula measuring sensitivity is percentage change in yield over the percentage change in national income, which may be expressed as income elasticity;

$$\frac{\Delta T}{\Delta Y} \times \frac{Y}{T}$$

Where,

T = Tax yield, Y = National Income

Δ = Change in respective variables

Bretherton opines that tax structure is stabilizing if the sensitivity is greater than unity. And such a income tax is said to be progressive.

In 1918, R.A. Musgrave and Miller developed another method i.e. built-in-flexibility to know the strength of taxation to act as an automatic stabilizer. Their approach starts with sensitivity formula, which they call "income elasticity".

$$E = \frac{(\Delta T)Y_1}{(\Delta Y)T_1}$$

This means, income elasticity (E) of the tax yield (T) is the ratio of the percentage change in tax yield to a given percentage change in income (Y). Then they defined built-in-flexibility' as:

$$\propto = 1 - \frac{\Delta Y}{\Delta Ya}$$

Where,

ΔY = Change income in the particular tax system

ΔYa = This refers to a system where (E) is set equal to zero.

ΔY/Ya = Refers to the ratio of change in income in a particular tax system to change in income of the tax system had zero income elasticity and

$\propto$ = Built-in-flexibility.

If $\propto$ = 0, then, there is no built-in-flexibility. If $\propto$=1 built in flexibility is perfect, i.e., total income remains constant.

Given the community's propensity to consume (MPC), $\propto$ will vary directly with:

a. average tax rate, T/Y and

b. income elasticity, E = (ΔT) Y/ΔY(T)

Their ∝ cannot exceed unity for MPC cannot exceed unity, and when marginal tax rate (ΔT/ΔY) reaches 100%, ∝ would be equal to MPC. Here, ΔT/ΔY is their simplified formula to measure built-in-flexibility' of taxation.

After the formulation of these two methods, many tax analyst have tried to apply them to know the automatism of taxation. But they have confused one method for the other and have not been able to specify the purpose for which either of the methods in suited. For example, R.E. Sliter in USA, has used elasticity or sensitivity formula to measure built-in-flexibility thus identifying the later with the former. In his won words "loosely defined built-in-flexibility is the automatic sensitivity of tax yield to national income variations".

J.A. pechman defined built in-flexibility as the change in the tax yield (T) associated with the change in gross national product (GNP) which is the product of two components, fit tax base flexibility, $\Delta T_1/\Delta GNP$ and Marginal rate of taxation, $\Delta T/\Delta T_1$.

$$\frac{\Delta T}{\Delta GNP} = \frac{\Delta T_1}{\Delta GNP} * \frac{\Delta T}{\Delta T_1}$$

Where,

T_1 = Taxable income.

G.S. Sahota calls elasticity or sensitivity as 'built-in-flexibility' and administrative flexibility as 'buoyancy'. The later refers to change in tax yield as a result of change in legal tax rates and tax base including (or excluding) income change. Musgrave called it as 'formula flexibility'.

Vito Taznzi jointly called elasticity ad 'built-in-flexibility' as sensitivity. Elasticity can be obtained by regressing the adjusted gross income (AGI) with tax yield (T) using following equation.

$T = \propto Y^b$

Taking log both side,

$\log T = \log \propto + b \log Y$

Here, Y is the adjusted gross income (AGI) and b gives the elasticity of the tax with respect to AGI.

According to Tanzi elasticity is a ratio that is defined as percentage change in tax yield that is brought about by a change in one percent in AGI. Built in flexibility is defined as the ratio of the absolute change in Tax yield to the absolute change in AGI. To get directly the built in flexibility of T with respect to AGI, Tanzi response the relation as:

$T = a + b\ AGI$

Where, b gives the built in- flexibility.

Indirectly, Tanzi defines built - in - flexibility as the product of elasticity and rage tax rate (T/AGI).

Symbolically,

$$\text{Elasticity} = \frac{\Delta T}{T} \times \frac{AGI}{\Delta AGI}$$

Multiplying by T/AGI, we get built-in-flexibility as:

$$\frac{\Delta T}{T} \times \frac{AGI}{\Delta AGI} \times \frac{T}{AGI} = \frac{\Delta T}{\Delta AGI}$$

In this formulation, built in flexibility is exactly equivalent to the Marginal tax rates with respect to adjusted gross income (AGI).

N.N Chaudhary opines that in estimating the built - in - elasticity a tax, historical revenue series must be adjusted to eliminate the effects on revenue of discretionary tax measuring during the period under review. If no such adjustment is made one obtains the buoyancy of the tax, which reflects growth in the base caused by the increase in income and from discretionary tax changes. In, fact, the terms "Elasticity" or "built-in-flexibility" or "stabilize coefficient" are similar and like wise the terms "buoyancy" or "sensitivity" or "exploitation coefficient" or administrative flexibility".

The distinction between those two concepts is that elasticity coefficient measures what would happen to the tax revenues if there was no change in tax law over a time period, tax buoyancy measures what has actually happened. Thus, former measure can therefore be viewed as a partial account of responsiveness and the latter as an account of total responsiveness. Sometimes, these are also viewed as indicators of static and dynamic characteristics of a system. Built-in-flexibility is interpreted as a static function for it measures the growth of tax revenues over a "constant tax base" and tax buoyancy as dynamic function for it measures growth of tax revenues unadjusted for any changes in rates, bases etc.

In measuring the elasticity and buoyancy of a tax system, two general problems have been encountered.

a. How should the effect of discretionary changes be separated from other tax revenue growth ? and
b. What should be the form of the equation used to estimate the tax - income relationship ?

The first step in this direction is to separate automatic growth of revenue from total revenue growth by eliminating discretionary changes.

Actual revenue data reflects both normal growth and discretionary changes. It is therefore, necessary to construct a hypothetical net revenue or, 'cleared' series from gross revenue series by clearing the discretionary effects. This is a desirable requirement in the case of forecasting also.

The term "discretionary effects" is referred to as the net effect on tax yield of any change in the tax rate or base which occurs through legislative or executive action. Discretionary changes are defined as legal change in the tax rate or in the tax base, the introduction of new taxes, and certain administrative efforts. The changes in the yield of taxes due to improvement in the tax administration is also considered as a discretionary change.

The term "automatic effects" is the total tax increase in any given period minus the increase due to discretionary actions. The frequency of discretionary changes does not necessarily follow any framed rule and the magnitude of these changes can differ significantly from one year to another. There may or may not be any relation of these changes with the existing revenues. Even in a single year, alternations in different taxes may very widely and new taxes may be introduced and some older ones abolished. For forecasting purposes, the discretionary changes cannot be assumed to have the same effect thought.

Though a complete adjustment of historical revenue series is not possible, different methods used for tax revenue adjustments are important. These methods are:

a. Constant structure method
b. Proportional adjustment method
c. Dummy variable technique and
d. Divisa Index Approach.

Above two; Dummy variable method and Divisa index methods, there is no need to begin by first "purging" the revenue series of the effect of discretionary action before elasticity estimations are undertaken.

2.2 Empirical Review

2.2.1 International Empirical Review

C.Y. Mansfied (1972) ahs studied the "Elasticity and Buoyancy of a tax system Paraguay" for the period 1962 to 1970 an era of conscious tax reform by examining two major problem

a. What was the elasticity of the system and its components and how is the size of the elasticity coefficient explained ? and
b. What was the buoyancy of the system relative its elasticity ?

He found the elasticity coefficient of total tax system was 1.14 and elasticity of different tax head such as income tax 1.08 wealth taxes 1.52 and export taxes had a low elasticity of 0.06. Whereas the buoyancy coefficient had measured 1.69 which implies that one percent change in GDP will bring out 1.14 percent change in total tax and remaining 0.55 percent change in total revenue due to discretionary changes.

There have been few empirical studies done on estimating the buoyancy and elasticity of Barbados's tax system. However, scholars such as Willams (2001) and Howard (1977 and 1992) have included estimates of buoyancy and elasticity in their treaties of the Barbodo's tax system and public finance.

Willaims (2001) estimated the average tax buoyancy and the tax elasticity to be 1.14 for the period 1976 to 1990.She also observed that indirect tax component such as stamp duties levies and consumption taxes were the major determinant of the buoyancy rate. He employed standard

method to calculate tax elasticity. This involve cleaning the series of discretionary change, and regression tax on GDP using single equation ordinary least square (OLS). Additionally, total tax elasticity was disaggregated into levies, direct taxes and stamps duty elasticity. She concluded that direct taxes had greater tax elasticity than indirect taxes because there were subject to less discretionary change between 1978 to 1986.

Howard (1992) estimated Barbado's' tax buoyancy to be 0.68 the period 1974 to 1984. He employed the following simple linear regressing model.

log TC = log a + blog Y

Where TC is tax category b is the buoyancy coefficient and Y is the GDP. The buoyancy coefficient is statistically significant and R^2 value exceed 95 percent. he attributed the low tax buoyancy to structural and administrative factor. He also suggested the growth of an underground economy might have reduced the revenue productivity of the base, thereby lowering the tax buoyancy.

2.2.2 Nepalese Empirical Study

In Nepal's tax structure, various researchers have found heterogeneous responsiveness of taxes to GDP. Madan Kumar Dahal has studied various aspects of Nepal's tax structure for the period 1952/53 to 1981/1982 in general and 1964/65 to 1981/82 in particular. In this period the over all elasticity of the total revenue equals almost unity (1.01), for indirect tax it is marginally higher than unity (1.02) compared with the elasticity of direct tax (0.68) and the elasticity of tax revenue is 0.92 reflecting the tax system less responsive to change in income. But

buoyancy coefficients for the same period are 1.54 for total revenue, 1.52 for tax revenue, 1.63 for indirect tax and 1.23 for direct taxes.

Among the individual taxes the elasticity of sales tax is highest (1.96) followed by income tax (1.38), import duties (1.03)., export duties (0.77), and land tax (-0.04). The buoyancy coefficient for sales tax is again highest (2.56) followed by excise duties (2.23), income tax (1.86), import duties (1.79), export deities (1.14) and land tax (0.31). These figures imply that the inelasticity of taxes in the tax structure of Nepal is primarily concentrated on land tax, import duty, import duty, excise duty and to some extent on income tax.

Govinda Ram Agrawal found that buoyancy of income tax for the period 1967/68 to 1975/76 was 2.18 and elasticity 2.01 implying that income taxes has promising future prospects. But elasticity of the land tax is the lowest (0.12) as the buoyancy coefficient (0.17) while sales (1.74) and excise duties (1.29) are fairly elastic. In term of buoyancy coefficient, excise tax (2.24) secured the first position followed by sales tax (2.20) and income tax (2.18).

Puskar Raj Rijal (1976) in his study revenue productivity and equity of Nepalese aspects of Nepalese taxation: A Structural Analysis for the period 1964/65 1970/71" found the elasticity and buoyancy coefficient for the total tax revenue 1.82 and 2.18 respectively in that study period by using proportional adjustment method of SAHOTA. This study has indicated that the Nepalese tax structure as whole is elastic. This study found income tax elasticity as high as 4.39 among the different tax head. The buoyancy of income tax for the study period was 3.13. The different between buoyancy and elasticity coefficient of income tax for the period was (-1.26). The tax system as whole had buoyancy of 2.18

compare to an elasticity of 1.28 which indicates the positive impact of legislative change on the revenue productivity of the tax system.

Hari Dhoj Pant (1991) has tried to provide suggestion for structural changes in the revenue administration of Nepal after the restoration of multiparty democracy. He has measured tax elasticity as 0.495 for the period 1974/75 to 1983/84 and on the other hand tax buoyancy has declined to 1.28 in the period 1974/75 to 1988/89 from 1.37 in 1997/95 to 1988/89. During the period elasticity of customs, excise, sales, import have improved but elasticity of income, contract and hotel tax has declined indicating that efforts to rise revenue through discretionary measures in introduce live.

IDS (1978) has reported that the elasticity of the Nepalese tax system extremely low in comparison with the buoyancy for the period 1974/75 to 1984/85.This report has indicated that the government has concentrated only introducing various discretionary measure rather than broadening the tax base. This study shows the elasticity of tax revenues 0.86 and buoyancy 1.35 similarly the report found the elasticity of direct tax and indirect tax to 0.66 and 0.93 respectively. Within these taxes, the elasticity of sales tax excise duty, import duty, export duty and income tax were reported at 1.007, -0.33, 0.56, 0.66 and 1.06 respectively. Among them, elasticity of the indirect tax was more than the direct tax and among all taxes, income tax had highest elasticity which was around unitary elasticity. Besides income tax and sales tax, other taxes were inelastic in nature. The buoyancy coefficient of all taxes except export duty (-0.035) are above unity [From 1.057 (direct tax) to 1.751 (sales tax)]

Kishor Kumar Guru-Gharana in an article "weaknesses of the Tax policy and tax structure in Nepal" has found that the elasticity coefficient of total revenue is 0.495 for the period 1974/75 to 1983/84 and 0.587 for the period 1974/75 to 1988/89, implying the marginal improvement in the revenue elasticity. For the same periods, buoyancy coefficients are 1.365 and 1.281 respectively. Except for contact tax (1.898) and sales tax (1.053) the elasticity's of remaining taxes (customs, excise, income, hotel, entertainment, land revenue etc.) are either extremely low (for below unity) or negative whereas the buoyancy of all taxes except land revenue tax and below unity. This high buoyancy but low elasticity shows that the government is engaged in imposing high rates on a few taxed commodities and regressive nature of the tax system.

R.P. Adhikari (1995), in an occasional paper "Elasticity and buoyancy in Nepal" empirically measure the elasticity and buoyancy of major Nepalese taxes including revenue during the period of 1974/75 to 1993/94. He had also divided the period into two sub periods (i) from 1974/75 to 1983/84 and (ii) 1984/85 to 1993/94. He found that buoyancy of overall revenue was much higher. (1.10) in comparison with lower elasticity of overall revenue (0.65). In the whole sample, implying that one percent change in national income affects (0.450) percent change in the revenue, due to discretional measures. He also found that elasticity of total revenue at first sample period was very low (0.40) in comparison with the elasticity of total revenue of whole sample period (0.68), implying that the built in flexibility of the system is improving considerably over the first sample period. On the other hand, this difference the elasticity and buoyancy of second period acclaimed (0.037), which was smallest in comparison with both whole sample period as well as first sample period. This implied that Nepal had greater

scope for increasing revenue for with combatively lesser degree is discretionary measure in future.

Another study done by Mani Kumar Nepal Presented on the dissertation to Tribhuvan University in 1995 for FY 1968/69 to 1992/93 showed natural effect of total revenue and tax revenue weak with elasticity's 0.6356 and 0.5113 respectively. But discretionary effect for total revenue and tax revenue satisfactory with buoyancies 1.2094 and 1.1634 respectively. The performance of automatic and discretionary effect for non tax revenue is good with elasticity 1.1351 and buoyancy 1.4150. The poor performance of automatic action for indirect tax, custom duty and income tax with elasticities 0.6139, 0.4368, 0.4756 respectively but satisfactory discretionary effect with buoyancies 1.2099, 1.0717, 1.1971 respectively. But this study reflected very weak performance of automatic action for direct tax with elasticity 0.1351 and more discretionary effect with buoyancy 1.0012. This study pointed out the over all evaluation of direct taxes for automatic actions of taxation.

Jayanty Paudel (2002) in her M.A. Dissertation entitles "Income Taxation in Nepal: A study of its structure and Productivity", focused the study on describing the structure of income tax in Nepal and estimating the elasticity and butyric of income tax in Nepal for the period of 25 years from 1975 to 2000. The study has shown that Nepal has been heavily relying on the eternal and internal debt to meet the budget deficit because of low revenue collection compared to the total expenditure. The dependence is increasing, which is not desirable for any economy. Thus, it is more essential to mobilize the internal revenue to the optimum level. The trend of overall revenue in Nepal shows the continuous increasing over the study period with an average annual growth 16 percentage. In the composition of revenue, share of tax is significantly higher than the

non tax revenue within the tax revenue the contribution of indirect tax decreased from 74 percentage in 1975/76 to 73 percent in 1999/00. Similarly, within the direct tax, income tax was the largest source which contributed more than 86 percentage in 1999/00. The elasticity and buoyancy coefficients of income tax have been found to be 0.61 and 1.36 respectively during the period under the review. This shows that Nepalese income tax is very inelastic. The differences (0.75) between buoyancy and elasticity coefficient shows that there are minimum changes for the discretionary changes. She has also evaluated the success of the voluntary disclosure of income scheme (VDIS) programme.

At last she says that the Nepalese tax administration has been attempting to modify itself to meet the pressing challenges brought about by change in technology and economy policies. However, still its working procedures are traditional and the cost administration has not brought to the satisfactory level.

Shankar Prasad Nepal (2002) in his Ph.D. Dissertation entitled Taxation of income Nepal" analyzed about; is Nepalese income tax system automatic responsive type ? if yes, to what extent and if it is not, why ? And to extent is it being correlated to tax rate change. Is structure of exemption riddled with loopholes, inequalities and arbitrary expenditure ? If it is so, then to what extent, the have eaten into the potentialities of revenue raising components of income tax. His study period cover from 1980/81 to 1998/99 revenue yields from personal income tax as percentage of GDP has gone up from 0.37 to 0.57 during period starting from FY 1980/81 to 1988/89 but there after it, as percentage of GDP, has gone down continuously and reached a low level of 0.39 in the year 1995/96. Although it registers advance after 1995/96 and reached a level of 0.67 in the year 1998/99. The overall elasticity of Nepalese income tax for the period 1980/81 to 1996/97 work out to 0.53.

This shows that the structure of income tax in Nepal is not much responsive. it also shows elasticity coefficients before the restoration of democracy of Nepal was 0.35 (1980/81 to 1989/99) but raise to 1.21 after the restoration to multiparty democracy in Nepal.

Alok J. Sakya (2005) has studied the "Structure and Responsiveness of Nepalese Tax System" during the period from 1976/77 to 2002/03, further this whole sample period was divided into the two sub period. (i) from 1976/77 to 1990/91 and (ii) 1991/92 to 2002/03 and important objective to compare the responsiveness and productivity of Nepalese tax system before and after the restoration of democracy. Using Sahota method for data adjustment. He found the elasticity coefficients of total tax revenue of whole period is 0.618 and period (i) 0.587 and period (ii) 0.669. At the same time buoyancy coefficient of the whole period is 1.140 and period (i) 1.148 and period (ii) 1.128.

The conclusion that can be derived from the review of Nepalese empirical study is that various studies have found the heterogeneous responsiveness of the particular tax system to the GDP. This may be due to change made by tax authority in the fiscal policy over study period. Moreover, different value of elasticity and buoyancy coefficient estimated by above discussed studies might be due to the choice of the base year, time interval and choice of proxy variable. However, this review disclose the fact that there have been no research which compares the structure and responsiveness of Nepalese tax system after restoration of democracy in 1990, under the assumption that structure changes may have occurred in the revenue generation due to the different policies adopted by Government of Nepal (GON). During the study periods, hence, an attempt is made in the present study to address the issues as what is the structure and responsiveness of Nepalese tax system after the restoration of democracy in 1990.

CHAPTER III
METHODOLOGY

Taxes for the purpose of present study are taken to mean any compulsory payment without any direct quid-pro-quo. Accordingly, revenue sources of government of Nepal, as are shown under the heading of customs duties, excise duties, import duties and VAT which are called indirect tax. Whereas income tax, land tax, registration tax are taken as direct taxes Remaining sources of Revenue like fees dividend , and penalty, fine are considered as non tax revenue.

There are two concept of measuring responsiveness and productivity of tax yields: Elasticity and buoyancy, some elementary concepts.

3.1 Elasticity and Buoyancy

Tax Bases: Tax bases are legal description of taxable heads on which taxes are imposed. For Example tax based of excise duty is production or packing, and tax base of income tax is earned income. In developing countries legal tax bases are often not available and it is hard to justify various sources of tax bases in the real sense. In many countries where the real tax base is not available then the convention is to apply "proxy" to tax bases. The criteria for proxy bases will depend on the socio-economic circumstances and the legal considerations of the country. For example proxy bases are wage, salary and other incomes for tax on income, index of land are for land tax.

Discretionary Changes: Discretionary changes are voluntary changes done by the government so as to influence tax revenue collection

like changes in the rates of taxes, changes in the bases of taxes, introduction of new taxes and certain administrative efforts.

Elasticity: The change in revenue yields as a result of automatic or normal growth along is measured by the concept of elasticity. In this case change in revenue yield as a result of discretionary effects is discarded. Elasticity is called built in flexibility or stabilized coefficients. This provides real values of taxes. This can be considered as a partial account of tax responsive to changes in the National income.

Buoyancy: The change in revenue as a result of both discretionary effects as well as automatic or normal growth is measured by the concept of buoyancy. Buoyancy is also called sensitivity or exploitation coefficients. This provides 'floating' or 'face' value taxes. this can be considered as a total account of tax responsive to change in the National Income.

Actual revenue series consist of both normal growth and discretionary changes. It is there fore necessary to construct a adjusted revenue series from gross or actual revenue series by clearing the discretionary effects. Thus, the only necessary step to measure elasticity is to separately automatic growth' and 'growth form discretionary change of gross or total or unadjusted historical revenue series. Though a complete adjustment of historical revenue series is not possible different methods are used for tax revenue adjustment the are: dummy variable techniques, constant structure method, divisa index approach and proportional adjustment method.

3.2 The Data

Most of the data for this study are obtained from the budget speeches of various years, economic survey and various publications of Nepal Rastrya and World Bank reports.

3.3 Method of Adjusting Tax

3.3.1 Constant Structure Method

The constant structure method was mainly synthesized and used for the estimation of personal income taxes in united state. The studies by Harris (1968), Singer (1970), Wasy Lenko (1975) and Bhal (1961), which conceptually extended for other types employed constant structure method. The constant structure method required the reconstruction of a simulated time series based on detailed base rate structures. it requires the use of disaggregated data on the changing composition of bases, places and heavy demand on availability of data. The choice of a proper reference year is important here because the elasticity of the tax structure in reference year influence any forecast made form the data. It is usual to take current year as the reference period to base the forecast on the elasticity of existing structure. (Monya, 1984).

The term 'constant tax rate' is used to refer to a tax which an unchanged rate and legal base structure. This so-called constant structure method to generate a hypothetical revenue exercise applies the rate structure of a reference to the tax bases of the years. unfortunately no study has been done on this basis in developing countries. one good reason for this is that the data in developing countries are not available in the disaggregated from with respect to various taxes.

The method suggested by Lewis (1962), which involves the derivation of adjusted tax receipts through a multiplicative process, 'bases on current tax, accruals and the current and previous years' actual tax rates. Symbolically, if r_i: and r_{i-1} represents the rates in the 1^{st} and $(i - 1)^{th}$ year respectively and T_i represents the tax accruals the i^{th} years, i^{th} years tax accrual at (i-1) the year tax rate would be given by T_i $(r_{i-1})/r_i$. The other way of arriving at the hypothetical tax yield, for the i^{th} year is through the multiplication of the i^{th} year base with the tax rate of $(i - 1)^{th}$ year i.e., by B_i. r_{i-1} where B_i represents the tax base in i^{th} year.

according to Auld (1971), If ΔT_{i-1} was the change in period (i-1), when there were no change in tax legislation and ΔB_{i-1} was the change in tax base, then change in revenue pertaining i^{th} period based on the (i-1) tax rate would be given by $\Delta bB_i \left(\frac{\Delta T_{i-1}}{B_{i-1}} \right)$. This method is a modified version of the above mention one. This method cannot be used when the base is unknown or when the change in legislation has affected tax base. The application of this method also requires that the conditions in the current period remain same as those in previous period.

3.3.2 Proportional Adjustment Method

The proportional adjustment method, popularly known as adjustment method, is relevant particularly in the context of developing countries where data arrangement is not good. This method requires the budget estimates of the tax yield resulting from discretionary measures, or more formally, this method adjusts the revenue yield for each to arrive a revenue yields base on the structure of rate and exemptions for reference year. It is applied to each observation a sequence of multiplicative factors, which measures the revenue impact of discretionary change in each year and adjusted each year’s actual yield to

the previous year's basis, according to the impact of discretionary changes in the year. There are various methods and some of important one such as: Prest, Chand and Chelia, and Sahota method are discusses below.

1. Prest Method (1962)

According to prest adjust the historical tax receipts for discretionary change by subtracting form each year's actual tax revenue the estimated presence effects of that year's discretionary changes and further adjusted the so obtained tax revenues of each year to the cumulative effects of discretionary changes tries till that year.

The Prest formula can be developed symbolically as follows:

Let,

(a) $T_1, T_2, T_3, \ldots\ldots\ldots, T_t \ldots\ldots\ldots T_n$ are the actual tax yields for a series of years.

(b) $D_1, D_2, D_3, \ldots\ldots D_t, \ldots\ldots D_n$ measures the effects of discretionary change in the i^{th} year in the i^{th} year revenue outturn.

(c) T_{ij} indicates the j^{th} year's actual tax yields adjusted to the tax structure that existed in year i.

If i=1, is the reference year, the series $T_{11}, T_{12}, T_{13}, \ldots\ldots\ldots T_{1t}, \ldots\ldots\ldots T_{in}$ represents what the tax receipts would have been if the tax structure had remained as in year 1 with all discretionary changes removed from the years following year 1. It is this series that forms the basis used for measuring elasticity of tax. The series is developed as follows.

$$T_{11} = T_1$$

$$T_{12} = T_2 - D_2$$

$T_{13} = T_{23} (T_{12}/ T_2)$

$T_{14} = T_{34} (T_{23}/T_3) (T_{12}/T_2)$

…….

……..

$Tij = T_{j-1,j} (T_{j-2,\ j-1}/T_{j-1}) \ldots\ldots\ldots (T_{23}/T_3) (T_{12}/T_2)$

Thus, to adjust the tax yield of any year to the hypothetical yield for that year, if base year tax structure had prevailed, the actual tax yield is multiplied by squares of multiplicative factors. The effect of any one of these factors is to adjust tax yield to tax structure that provided in the year to which the factor referred.

2. Chand and Chelia Method

Another for elimination of discretionary change from the actual tax revenue. The following formula can be used for obtaining the adjusted revenue series.

$$T_{nr} = T_r (T_{r+1}/T_{r+1}\ D_{r-1}) \ldots\ldots T_n/T_n - D_n$$

Where,

T_{nr} = adjusted or net tax yield in r^{th} year, Dr = Discretionary charges, in r^{th} year, T_r = Actual tax yield in r^{th} year.

n = Reference year or number of year considered.

r = 1, 2, 3, 4, 5, ……, n

3. Sahota Method

The adjustment method given by Sahota assumes that the discretionary changes in any given year may affects the over all automatic elasticity but in respect of revenue yields they would influence the yield of the year in which they have taken place. Accordingly, he

opined that elimination is to be done in such a way that the changes in the yields to change in tax rates or the base, in a year are accounted for only in year. If interpreted that particular correctly, this method yields the same series as the Prest method

The Sahota expression to determine the actual tax receipts excluding discretionary effects in the year is may be written as:

$$I_i.= \frac{T_i}{T_{i-1}}(I_{i-1})$$

Where, T_i stands for i^{th} year tax collection adjusted to rates in year i-1. Alternatively this can be written as:

$$IT_t = \frac{(AT_t \pm RT_t)}{AT_{t-1}} \times IT_{t-1}$$

Where,

IT_t = Adjusted or the net tax yield at time t, AT_t= Actual tax yield at time t,

RT_t = Actual Discretionary change at time t;

IT_{t-1} = Adjusted or the net tax yield of previous year (t-1)

AT_{t-1} = actual tax yield at time (t-1)

3.3.3 Dummy Variable Technique

According to Singer (1968), when ever a discretionary change occurs in rate or base in a tax a dummy variable to be inserted into the regression equation. A separate dummy variable is necessary for each year in which discretionary changes occur with the dummy variable technique. Singer used the following equation for estimating the income elasticity of income tax revenue.

$$\text{Log } T = \log a = b \log Y + \sum_{i=1}^{n} C_i D_i$$

Where,

T and Y are expressed in aggregate or per capital terms and stands for total revenue and GNP or GDP; C_i can be interpreted as the change in elasticity (b) occurring due to discretionary change. The apparent draw back of this technique is its demand of separate dummy for each discretionary change which would lead to substantial loss in degrees of freedom if the discretionary changed occur frequently with limited number of observations. In such a situation the estimated coefficients may not be reliable.

According to Dahal (2000), the dummy variable technique does not requires data adjustment it requires only information on the data of discretionary action in an addition to the basic yield and GNP series. The great advantage of the dummy variable therefore, is that there is just no need to begin elasticity is measured. The dummy variable technique can be expressed as follows.

$$\text{Loy } T_{at} = (\beta + \lambda D_t) \log Y_t$$

Where, D_t = o prior to discretionary change and 1 after discretionary change. The coefficients "λ" measures changes in the elasticity of the tax that occurs because of discretionary change. The dummy variable procedure is difficult to employ when there are many observations (degree of freedom) by one.

3.3.4 Divisa Index Approach

In the Divisa index approach of Chaudhary (1974) to measure the revenue effects of discretionary change, the latter are considered as analogous to technical change, assuming that the underlying tax function is homogeneous. Chaudhary has shown that the tax revenue elasticity can be estimated by adjusting the buoyancy by a simple trans formation of a division index of discretionary changes (Dahal, 2000).

This method does not require the prior elimination of discretionary effects in tax elasticity estimation. This is done by first eliminating the effects of discretionary measures on revenue by an index which isolates automatic from total growth of revenue . The buoyancy measures obtained by any standard technique is then adjusted by a suitable transformation of the index of discretionary revenue to find tax yield elasticity.

The Divisa Index of the revenue effects of discretionary tax changes equals the percentage increase in total tax yield divided by percentage automatic increases. The index must possess the invariance property for which the tax function must be continuously different able. It is possible to do away progressive tax rate structure (Dhal 2000).

This approach assumes the continuously differentiable aggregate tax yield function given by:

$$T_{(t)} = f [X_1 (t), \ldots\ldots\ldots\ldots X_K (t) ; t]$$

Where,

X_1 (t) is the proxy tax base with K categories. [i = 1, 2, 3, …K] and the time variable t is a proxy for discretionary measures.

If D_t is the Divisa index of discretionary Change, and $D = \frac{dD/dt}{D}$

then

$D(t) = f_t/f$ and $Bi(t) = f_i x_i/f$.

This method does not replace the other existing methods. The only advantage of this method is that it uses only historical data and requires no specific information on the revenue effects or on the frequency of post discretionary tax changes. Choudlary, asserted himself that: if, however, the choice is between the Divisa index and the proportional adjustment methods and there is reliable data on the discretionary revenue effects, the proportional adjustment method should be used.

3.4 Method of Adjusting for Discretionary Changes

In order to estimate elasticity and buoyancy accurately it is necessary to separate discretionary changes from the tax revenue series. Experts have used several methods to separate automatic and discretionary changes in tax revenue systems. For the effective use of the other methods suitable data on legal tax bases and simple tax structure for necessary adjustments are not available in Nepal.

There are various methods like, Constant Structure, Method, Devisa Index, Dummy Variable Method, and Proportional Adjustment Method. But due to the nature of data of UDCs, we mostly preferred proportional adjustment method. In this method there are three another methods, there are Prest Methods, Sahota Method, Chand and Chellia Method. In present study, SAHOTA METHOD has been used to separate discretionary changes from the tax revenue series due to its simplicity. This is accompanied in two steps. Firstly, a preliminary series of adjusted tax yields is prepared by subtracting from the actual yield

For each year, the estimated amount attributed to the discretionary change in that year. Secondly, the "adjusted" series thus obtained is further refined by using the formula given below to form of "final" series which excludes the continuing impact of each discretionary change on future years so that the elasticity of a given tax structure in the base year may be established

Symbolically, $IT_t = \frac{AT_t \pm R_t T_t}{AT_{t-1}} \times IT_{t-1}$

Where,

IT_t = Adjusted or the net tax yield at time t, AT_t= Actual tax yield at time t,

RT_t = Actual Discretionary change at time t;

IT_{t-1} = Adjusted or the net tax yield of previous year (t-1)

AT_{t-1} = actual tax yield at time (t-1)

To attain the objective of this study consider eleven different categories of revenue heading including tax revenue non tax revenue. The following eleven tax heads are taken as dependent variable which are regressed with a single independent variable gross domestic product (GDP) and their component while estimate elasticity and buoyancy coefficient.

Dependent variable		Independent variable
1.	Total Revenue (TR)	Total GDP [at current price]
2.	Tax Revenue (TXR)	Total GDP [at current price]
3.	Non Tax Revenue(NTR)	Total GDP [at current price]
4.	Direct Taxes (DT)	Total GDP [at current price]
5.	Indirect Taxes (IDT)	Total GDP [at current price]
6.	Income Taxes (IT)	Total GDP [at current price]
7.	Sales Taxes (ST)	Total GDP [at current price]

8. Custom Taxes (CD) Total GDP [at current price]
9. Import Taxes (IMD) Total GDP [at current price]
10. Export Duties (EXD) Total GDP [at current price]
11. Excise Duties (ED) Total GDP [at current price]

3.5 The Model

The model specified in study comprise of several equation to examine the responsive both single regression productivity of the Nepalese tax system estimate buoyancy and elasticity coefficients of various revenue series. Moreover regression equation are transformed to double log linear to have the estimate of the elasticity and buoyancy of various specified relation.

To estimate the elasticity and buoyancy coefficients for the specified tax groups, the following regression equation are employed.

$$\text{Log } Ta = \log \propto + \beta \log Y + u \text{ ..... (1), For elasticity}$$

$$\text{Log } T = \log \propto_1 + \beta_1 \log Y + v \text{ .....(2), For buoyancy.}$$

Where,

Ta = Adjusted tax revenue series

T = Actual tax revenue series

Y = Total GDP

U and V = Stochastic Variables

β = elasticity coefficient

β_1 = buoyancy coefficient

Then elasticity coefficient (β) can be calculated by solving these two normal expiations

$$\sum \log Ta = n \log \propto + \beta \sum \log Y \text{ …….....(3)}$$

$$\sum \log Y \times \log Ta = \log \alpha \sum \log Y + \beta \sum [\log Y]^2 \ldots\ldots(4)$$

Which gives,

$$= \frac{\sum \log(Y) \log Ta) - n[Mean \log(Y)] \times [Mean \log(Ta)]}{\sum [\log(Y)]^2 - n[Mean(Y)]^2}$$

When, we used T instead of Ta, we get the buoyancy coefficient (β_1) with the same procedure. In this study computations are done by using SPSS programs.

3.5 Tools of Analysis

Regression analysis attempt to study the functional relationship between related variables. Independent variable, which is used to predict the variable of interest is called, explained variable. The functional relationship between variable may be linear, non-linear, parabolic etc. by transforming variable (dependent or independent or both) or by using double log linear model which has been shown in the above equation 1 and 2.

3.5.1 Coefficient of the Determination (R^2)

The degree of relationship existing between dependent variables is shown by the coefficient of determination (R^2). Hence, in each case, the coefficient of determination (R^2) has been calculated in order to test the explanatory power of independent variables. After estimating the regression parameters, R^2 is used for judging the explanatory power, which measures the dispersion of observations around the regression line. It is essential because the closer the observations to the line, the better explanation of the variations of dependent variables by the change the explanatory variables. Thus in over all, R^2 has been computed to show the

percentage of the total variable that is explained by the independent variables. The formula to derive R^2 is mentioned below.

$$R^2 = \frac{(1-\sum e^2)}{\sum T^2}$$

Where,

$\sum e^2$ = is the residual sum of squares, and

ΣT^2 = is the sum of square of the dependent variable

3.5.2 T-Test

The small sample test, t-test, will be performed in order to identity the statistical significance of an observed sample regression coefficient and the formula for calculating the value is:

$$t = \hat{a} / SEa_i$$

Where,

$\hat{a}_i$ = estimated value of a_i, and

S.E = standard error of $\hat{a}_i$ or $\sqrt{Var\ \hat{a}_i}$

3.5.3 F-Test

F-test is used to measures the overall significance of the estimated regression, which is also a test of significance of R^2 because these two vary directly. When $R^2 = 0$, F is zero and when $R^2 = 1$, F is infinite. That is to say, large the R^2, the greater the F value. Thus large value of F-test implies that the overall significance of the estimates regression is good. The F value can be computed as

$$F = \frac{R^2/(k-1)}{(1-R^2)/n-k}$$

Where,

k = Total number of parameters to be estimated.

n= number of observation

R^2 = coefficient of determination

3.5.4 Durbin Waston (D.W) Test

In statistics, the Durbin-Watson Statistic is a test statistic used to detect the presence of autocorrelation (a relationship between values separated from each other by a given time lag) in the residuals (prediction errors) from a regression analysis. It is named after James Durbin and Geoffrey Watson. However, the small sample distribution of this ratio was derived in a parth-breaking article by john von Neumann (von Neumann, 1941). Durbin and Watson (1950, 1951) applied this statistic to the residuals from least squares regressions, and developed bounds tests for the null hypothesis that the errors are serially independent (not auto correlated) against the alternative that they follow a first order autoregressive process. Later, John Denis Sargan and Alok Bhargava developed several von Neumann-Durbin-Watson type test statistics for the null hypothesis that the errors on a regression model follow a process with a unit root against the alternative hypothesis that the errors follow a stationary first order auto regression (Sargan and Bhargava, 1983).

Computing and interpreting the Durbin-Watson Statistic

If e_t is the residual associated with the observation at time *t*, then the test statistic is

$$d = \frac{\sum_{t=2}^{T}(e_t - e_{t-1})^2}{\sum_{t=1}^{T} e_t^{\,2}}$$

Where T is the number of observations. Since d is approximately equal to 2(1-r), where r is the sample autocorrelation of the residuals, d = 2 indicates no autocorrelation. The value of d always lies between 0 and 4. If the Durbin-Watson statistic is substantially less than 2, there is evidence of positive serial correlation. As a rough rule of thumb, if

Durbin-Watson is less than 1.0, there may be cause for alarm. Small values of d indicate successive error terms are, on average, close in value to one another, or positively correlated. If d > 2 successive error terms are, on average, much different in value to one another, i.e., negatively correlated. In regressions, this can imply an underestimation of the level of statistical significance.

To test positive autocorrelation at significance a, the test statistic d is compared to lower and upper critical values ($d_{1,a}$ and $d_{U,a}$).

- If $d < d_{L,a}$, there is statistical evidence that the error terms are positively autocorrelated.
- If $d < d_{U,a}$, there is statistical evidence that the error terms are not positively autocorrelated.
- If $d_{L,a} < d$ ¸- If $d < d_{U,a}$, the test is inconclusive.

To test for negative autocorrelation at significance a, the test statistic (1-d) is compared to lower and upper critical values ($d_{L,a}$ and $d_{U,a}$)

- If $(4-d) < d_{L,a}$, there is statistical evidence that the error terms are negatively auto correlated.
- If $(4-d) > d_{U,a}$, there is statistical evidence that the error terms are not negatively auto correlated.
- If $d_{L,a}<(4-d)<d_{U,a}$, the test is inconclusive.

The critical values, $d_{L,a}$ and $d_{U,a}$, very by level of significance (a), the number of observations and the number of predictors in the regression equation. Their derivation is complex - statisticians typically obtain them from the appendices of statistical texts.

CHAPTER IV
STRUCTURE OF NEPALESE TAX SYSTEM

4.1 Background

The term "tax structure" bears its meaning differently with its context and place. Tax structure of any country is somewhat affected by the social and political factors. This can be clarified by the view of Richard Musgrave in his theory of tax structure charge. In his view tax structure development is shaped by economic as well as social and political factors. Economic factor influences in two ways. In the first place, nature of tax base changes with changes in the structure of the economy which goes with development. Secondly, the economic objectives of the tax policy vary with the stage of economic development (S.K Singh, 2004). In the context of Nepalese tax structure, Bhavani Dhungana et. al. in their research work defined, that tax structure refers to the level as well as relative importance of various taxes in the composition of total tax revenue of a country. A discussion of tax structure deals with the balance between direct and in direct taxes. Taxes may be levied on consumption, income and capital. Taxes levied on consumption are known as indirect taxes where as taxes on income and capitals are known as direct taxes (Bhatta, 2009). About the tax structure, Harley H. Hinrich (1966) has presented his view that a general theory of tax structure change during economic development. And the important of tax structure in economic development process is manifested by the probe "economic development depends, for more than is commonly recognize on a carefully thorough out well organized tax structure". This probe is assumed to be more important in the context of those countries in which government outlay is rising faster than tax structure.

4.2 Historical Background

Regmi (1971) has written that there are no reliable records about taxation in the ancient Nepal, era before the unification of Nepal. Tax collections used to collect levies and tools from the travelers and merchants Another important source of revenue is land irrigation tax and religions monuments preservation tax etc. Taxes were levied in the form of kind, cash and labor as well as certain portion of product. After the unification of Nepal, tax collection method, tax bases and their entire tax system seems some how more practical and developed than ancient Nepal. It is seen that taxes were collected in three different levels.

1. Royal place: to finance occasional and ceremonial needs. These taxes were broad based and progressive.
2. Government: To finance administrative, military and other purposes.
3. Local: Prerequisite of local official, functionaries and medicates.

So far as the system of direct taxation was concern, it is much more limited to the special levies 'Darshan bhet', 'Salami,', 'Walak' and land tax'. Taxes were imposed primarily on occupation and economic activities. During the 104 year oligarchic rule of Rana family, Tax system also faced a dark year. There was no systematic budget, the income and the expenditure were never publicized and no difference between income of state and income of Rana family. Therefore, they defined the system as their own interest. During the 19th century there were traditional system like 'Birta', 'Jagir', and 'Jhara' under which the state is able to acquire goods and utilize manpower with out using money a means of exchange. However, modern tax system begins with the advent of democracy and manifestations of the first consolidate budget comprising revenue and expenditure of the kingdom of Nepal in 1951. For this contract system, collecting taxes was gradually replaced by the system of collecting taxes

directly by the constitute at different times to provide suggestion to rationalize the customs schedule. The excise act 1958, the custom act 1962, and the land revenue Act 1964, were introduced in order to can solidate various excise, customs duties, land revenue laws, and unify tax system through the country. Modern taxes like income tax foreign investment tax, urban house and land tax, were introduced in 1959/60. Sales tax was introduced at the retail level in 1956/66, then moved to the wholesale level in 1968, and further shifted the import manufacturing in 1974. VAT was introduced in 1997, in the place of the sales tax, hotel tax, entertainment tax air flight tax and contract tax. Till now several new taxes were include in the Nepalese tax family after 1951, a few taxes were restarted over the year.

However, various reforms have been initiated improve the quality of services in tax administration, make the administration tax payer friendly and increase the revenue yield required for meeting exposes of various development activity. The assertive of the Tenth plan (2002-2007) are increase revenue elasticity by broadening the tax base, Maximum mobilization of domestic resource and gradually refusing dependency on foreign assist trance (Tenth Plan, 2002). The quantitative targets during the plan period refers to that revenue to GDP (R/Y) ratio would be 14.0 percent, while the share of direct tax, indirect tax, and non tax revenue to GDP would mark 3.5, 7.7 and 2.8 percent, respectively. The number of income tax payer will be increased to 300,000 and size of VAT registered tax payers will read 40,000. Non tax revenue will be increased through reforms in dividend is and loan investment administrative and legal reform will carry on making tax administration simple, transparent and perfect. In recent year, Government of Nepal has made tremendous efforts to mobilize internal revenue through improving tax system in various ways. There could be summarized as (a) Implementation of VAT projects in cooperation with DANIDA (b) Implementation of Income tax Administration Consolidation (ITAC)

project in cooperation with GTZ (c) implementation of Automated system for custom data and account (ASYCUD) project in the department of custom in cooperation with UNCTAD. (d) enactment of local self government Act 1999 and local self government regulation 1999. (e) setting up of the revenue Advisory Board. (f) Establishment of the Local Authority Fiscal Commission (LAFC).

Nepal's tax system is circumscribed by serious structural constraints. The major constraint existing in the tax system is that it lacks simplicity and transparency (Dahal et. al. 1995). With extremely limited tax base, low tax elasticity, relatively higher tax rates, poor voluntary compliance ineffective tax administration, growing arbitration in assessment, rigid and in incomprehensive tax laws and regulation, and numerous tax shelters, taxation in Nepal has so far been attributed to 'negotiations' resulting in rampant corruption. Tax avoidance, evasion and delinquency have also increased substantially over the year. This is one of the critical reasons, why the number of taxpayers as of 1997/98 confined to 309665 i.e. just over 1 percent of the total population (Statistical Abstract 1999: 66). A majority of the taxpayers are ignorant of existing laws and regulations and various circulation frequently issued by the tax authorities. The increasing use of discretionary power by the authority for the assessment has been perennial sources of corruption. there is apprehension that the tax payer is neither sufficiently protected by law nor is their contribution ever recognized. A significant amount of revenue is missing before reaching treasury in between the tax payer and tax officials. The tax administration in Nepal appears to be inefficient, in different, and corruption. In fact, corruption has weakened the tax base. Nepal is also considered as place for 'tax has'. The major challenge facing Nepal's tax administration is: how is identify the tax payers that are still unrecorded and being them in to tax net, there by improving voluntary compliance (Dahal Sunil, 2006).

4.3 Resource Gap in Nepal

To bridge the gap between expenditure and revenue, internal and external loans are based in Nepal's case, there is increasing reliance, especially on foreign loan for deficit financing so that increasing out standing dept the repayments of principal and interest are also increasing each year. This again necessities further borrowing. Hence, our economy is circumscribed by dept trap. Therefore, special emphasis needs to be given to mobilize internal resources in order to meet the resource gap.

Despite the various measures adopted by government Nepal to boost the revenues collection then still exists substantial gap between revenue and expenditure. Several constraints, such as structural administration and institutional, have hampered government's efforts to increase recourses mobilization through taxation. According to the Economic survey 2009/10 revenue expenditure gap was 6.6 percentage of GDP in 2008/09.

The situation of financial resource gap is given in table (4.1). The resource gap (total expenditure minus total domestic revenue) has been increasing rapidly. Since 1990/91 to 2008/09 with annual percentage growth rate is 12.5 This shows a clear appearances of the poor performance of domestic resources mobilization to increases revenue. Since the annual percentage growth rate to total expenditure is found to be 13.8 and that of the total revenue is 15 percent. As we consider resource gap as the different between total expenditure and total revenue plus foreign grants, there was no any more gap at the initial year of the study. In the subsequent years as compare to remaining years it has been gradually increasing. Similarly, the resource gap, if we consider the resource gap is difference between total expenditure minus total revenue plus foreign grant and foreign loans has also been growing at even faster rate by nearly 11.2 percent per annual than other two gap.

Table 4.1

Resource Gap in Nepal (1990/91 to 2008/09)

(Rs. in Million)

Fiscal Year	Total Expenditure	Total Revenue	Resource Gap	Foreign Grant	Resource Gap	Foreign Loan	Resource Gap
	A	B	A-B	C	A-(B+C)	D	A-(B+C+D)
1990/91	23549.3	10729.5	12819.8	2164.8	10655.0	6256.7	4398.2
1991/92	26418.2	13512.7	12905.5	1643.8	11261.7	6816.7	4444.8
1992/93	30897.7	15148.4	15749.3	3793.3	11956.0	6920.9	5035.1
1993/94	33597.4	19580.9	14016.5	2393.6	11622.9	9163.6	2459.3
1994/95	39060.0	24575.2	14484.8	3937.1	10547.7	7312.3	3235.4
1995/96	46542.4	27893.1	18649.3	4825.1	13824.2	9463.9	4360.3
1996/97	50723.8	30373.5	20350.3	5988.3	14362.2	9043.6	5318.6
1997/98	56118.3	32937.9	23180.4	5402.6	17777.8	11054.5	6723.3
1998/99	59379.0	37257.4	22321.6	4336.6	17985.0	11852.4	6132.6
1999/00	66272.5	42893.8	23378.7	5711.7	17667.0	11812.2	5854.8
2000/01	79835.1	48893.6	30941.5	6753.4	24188.1	12044.0	12144.1
2001/02	80072.2	50445.5	29626.7	6686.1	22940.6	7698.7	15241.9
2002/03	84006.1	56229.8	27776.3	11339.1	16437.2	4546.4	1189.8
2003/04	89442.6	62331.0	2711.6	11283.4	15828.2	7629.0	8199.2
2004/05	102560.5	70122.7	32437.8	14391.2	18046.6	9266.1	8780.3
2005/06	110889.2	72282.1	38607.1	13827.5	24779.6	8214.3	16565.3
2006/07	133604.6	87712.2	45892.4	15800.8	30091.6	10053.5	20038.1
2007/08	161349.9	107622.5	53727.4	20320.7	33406.7	8979.9	24426.8
2008/09	219661.9	143474.5	76187.4	26382.9	49804.5	9968.9	39835.6

Source: Various Issues of Economic Survey, MOF and A Handbook of Government Finance Statistics, NRB.

Table 4.1 shows the disappointing situation of Nepalese fiscal system as the loan component has been increasing at the rate of 15.2 percent per annum, which further intensifies the debt serving charges. On the contrary., the grant component has increased only by 12.5 percent per annum. The level of voluntary tax compliance is very low. The tax conscious has get to be developed among the Nepalese, This may be due to the illiteracy of complicated tax procedure the low cost of non-compliance etc.

4.4 Tax-GDP Ratio

The percent of total tax revenue to total GDP is known as Tax GDP ratio. It is also called tax effort ratio. Despite various attempts to mobilize tax revenue, Nepal is the lowest taxed economy in the world. GDP ratio in Nepal is the lowest among SAARC countries and among rest of the world as well (table 4.1). Thus, it is clear that this component of revenue needs the highest boosting the rise tax effort ratio in line with other developing as well as developed economies.

Tax GDP ratio (as shown in table 4.3) of Nepal ranges between 6.81 percentages to 13.26 percentages in the years 1990/91 to 2008/09. Table 4.3 also shows the tax revenue and GDP has been increasing year by year for the study period, there fore the tax effort ratio (or percent of total tax revenue to total GDP) has been increasing. Here, 13.26 tax effort ratios is the highest ratio and 6.81 is the lowest rate during the study sample period. Subsequently the magnitude of total revenue has been increased from. Rs 8.2 billion to Rs 117.05 in the same period. At the same time the marginal tax has reached at 25.19 percent in FY 2008/09, which is the higher rate of the study period and 3.85 percent is the lower marginal tax rate corresponding the FY 2001/02. The tax effort ratios and marginal tax rates are not so smoothly growth these are fluctuated in the some where of the fiscal year, but are not so far deviated from the mean value. The Tax-GDP ratio can visualized as the simplest measure of tax burden or sacrifice of the tax-payers in national sense.

The marginal rate shows the ratio of change in total tax revenue to change in GDP in the same year. It is seen that there is wide variation in marginal tax rate from. 3.85 percent to 25.19 in the FY 2001/02 and 2008/09 respectively. This shows that, in the FY 2001/02 the percentage change in total tax revenue due to the percentage change in total GDP is lower than the FY 2008/09. This happened due to the following factors such as: the betterment tax administration, wide tax base and development in tax system of Nepal. Tax reform program also played an in important role an increment of marginal tax rate.

Income elasticity of tax may be defined as the ratio of marginal tax rate to average tax rate, if the ratio exceeds unity, tax system is said to be elastic. Negative elasticity refers to the regressive nature of taxation and elasticity below unity indicates the inelastic nature of tax. Income elasticity of Nepal's tax structure is rather elastics most of the figures are above unity. It ranges from 0.40 (2001/02) to 2.49 (1994/95).

Table 4.2

Tax GDP Ratio (1990/91 to 2008/09)

(Rs. in Million)

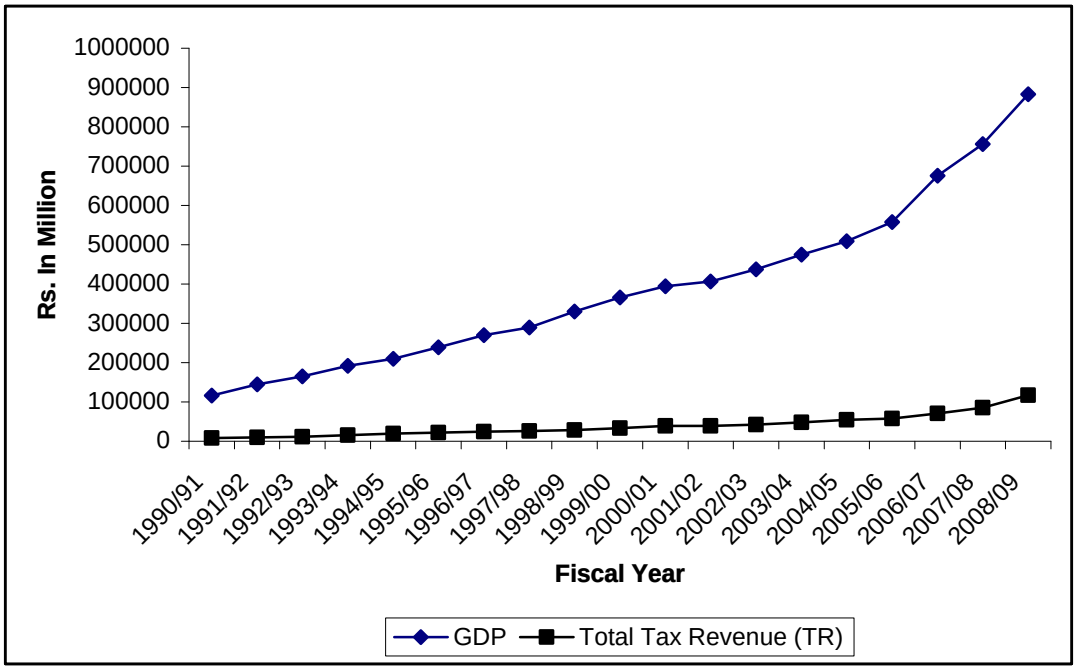
Fiscal Year	GDP	Total Tax Revenue (TR)	Change in GDP (ΔGDP)	Change in Total Tax Revenue (ΔTTR)	Average Tax Rate (I)	Marginal Tax Rate (II)	Income elasticity (II ÷ I)
1990/91	116127	8176.3	16426	-	-	-	-
1991/92	144933	9875.6	28806	1699.3	6.81	5.90	0.87
1992/93	165349	11662.5	20416	1786.9	7.05	8.75	1.24
1993/94	191596	15371.5	26202	3709	8.02	14.16	1.77
1994/95	209974	19660.0	18378	4288.5	9.36	23.33	2.49
1995/96	239388	21668.0	29414	2008	9.05	6.83	0.75
1996/97	269570	24424.3	30182	2756.3	9.06	9.13	1.01
1997/98	289798	25939.8	20228	1515.5	8.95	7.49	0.84
1998/99	330018	28752.9	40220	2813.1	8.71	6.99	0.80
1999/00	366251	33152.2	36233	4399.3	9.05	12.14	1.34
2000/01	394052	38865.0	27801	5712.8	9.86	20.55	2.08
2001/02	406138	39330.6	12086	465.6	9.68	3.85	0.40
2002/03	437545	42586.9	31407	3256.3	9.73	10.37	1.07
2003/04	474918	48175.7	37373	5588.8	10.14	14.95	1.47
2004/05	508651	54104.8	3733	5929.1	10.64	17.58	1.65
2005/06	557869	57430.4	49218	3325.6	10.29	6.76	0.66
2006/07	675849	71126.7	117890	13696.3	10.52	11.61	1.10
2007/08	756335	85155.5	80486	14028.8	11.26	17.43	1.55
2008/09	882955	117051.9	126620	31896.4	13.26	25.19	1.90

Source: Economic Survey, Various Issues, MOF.

The growth trend of the GDP and tax revenue in the study period is also shown in the figure (4.1). The tax revenue has been growing very slowly with the comparison of the growth trend of GDP.

Figure: 4.1

Growth Trend of the GDP and Tax Revenue (1990/91 to 2008/09)



4.5 Structure of Total Revenue

Total revenue of Nepal is composed of tax revenue and in-tax revenue. In table 4.4, the total revenue for the study period from FY 1990/91 to 2008/09 has been increasing year by year. Tax and non-tax revenue has been two basic components to sum of total revenue of Nepal. During the study period, tax revenue had played a dominate role for the contribution of total revenue. Tax revenue over the time not exceeded 81.6 percent and fluctuate up and down over the years. In Fiscal year 1991/92 the contribution to tax revenue was 73.1 to total revenue, which was lowest, compared to other study year. Similarly, in the FY 1991/92 the contribution of Non-tax revenue to the total tax revenue is highest (i.e. 26.9 percent) and in the FY 2006/07, its contribution to the total tax revenue is lowest (i.e. 18.9 percent).

Table 4.3
Contribution of Tax and Non-tax Revenue as Percent of Total Revenue (1990/91 to 2007/08)

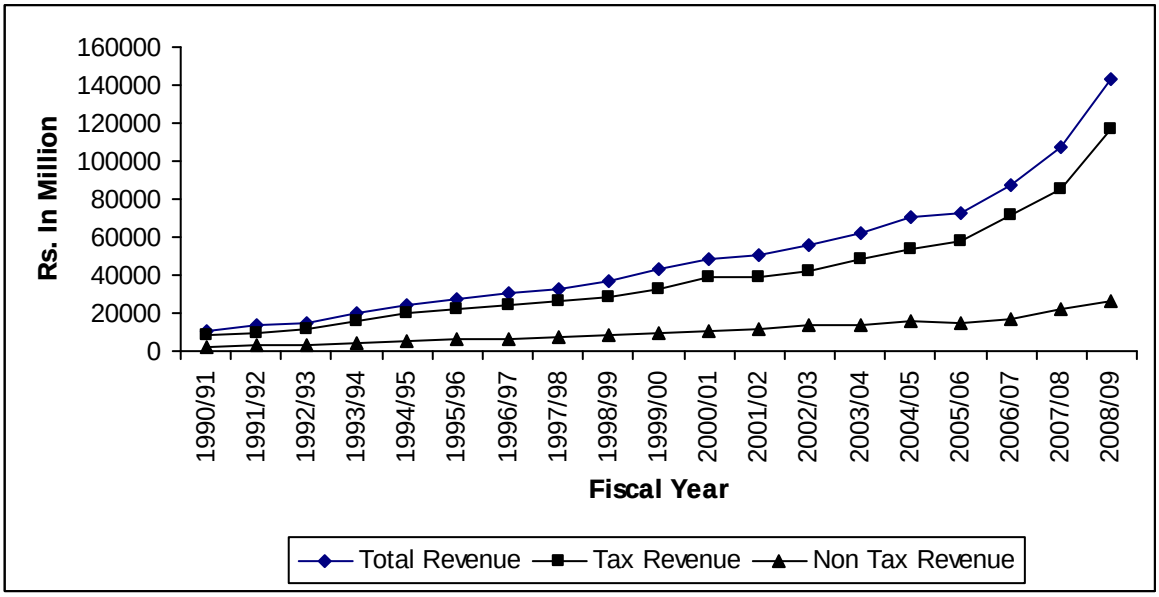
(Rs. in Million)

Fiscal Year	Total Revenue	Tax Revenue		Non Tax Revenue	
		Amount	%	Amount	%
1990/91	10729.5	8176.3	76.2	2553.2	23.8
1991/92	13512.7	9875.6	73.1	3637.1	26.9
1992/93	15148.4	11662.5	77	3485.9	23.0
1993/94	19580.9	15371.5	78.5	4209.4	21.5
1994/95	24575.2	19660.0	97.9	4945.1	20.1
1995/96	27893.1	21668.0	77.7	6225.1	22.3
1996/97	30373.5	24424.3	80.4	5949.2	19.6
1997/98	32937.9	25939.8	78.8	6998.1	21.2
1998/99	37257.4	28752.9	77.2	8504.5	22.8
1999/00	42893.8	33152.2	77.3	9741.6	22.7
2000/01	48893.6	38865.0	79.5	10028.6	20.5
2001/02	50445.5	39330.6	78	11114.9	22.0
2002/03	56229.8	42586.9	75.7	13642.9	24.3
2003/04	62331.0	48175.6	77.3	14155.3	22.7
2004/05	70122.8	54104.8	77.2	16018.0	22.8
2005/06	72282.1	57427.0	79.4	14855.1	20.6
2006/07	87712.2	71126.7	81.1	16585.5	18.9
2007/08	107622.5	85155.5	79.1	22467.0	20.9
2008/09	143474.5	117051.98	81.6	26422.6	18.4

Source: Economic Survey, Various issues, MoF

The composition of the total revenue with the tax revenue and Non-tax revenue is also clearly explained in the figure (4.2). Where the tax revenue has been played the dominant role for the total revenue. It covered around 78 percent of the total revenue in this study period for FY 1990/91 to FY 2007/08 of Nepal.

Figure: 4.2
Composition of total Revenue (1990/91 to 2008/09)



4.6 Structure of Tax Revenue

Total tax revenue can be studied by dividing it's into two part i.e direct tax and indirect tax revenue. Table 4.5 shows the contribution of both direct tax and indirect tax revenue to sum of the total revenue. During the study period of FY 1990/91 to 2008/09, the percentage contribution form direct tax seems to be far lesser than that if indirect tax. the volume of collected amounts through both of the taxes seems to be increasing simultaneously from the period of 1990/91 to 2008/09. In 1990/91, the amount collected through direct tax was Rs 1284.7 million while the amount colleted through indirect taxation during the same year was Rs 6891.6. But the amount was increased simultaneously to reached Rs 34320.33and Rs 82731.17 million respectively in the fiscal year of 2008/09. This increment was due to the expansion of tax base and rate to both deep and wide and increment in the general economic activities in the country. During the period 1990/91 to 1997/98, the contribution of direct tax some where three times, some where four times and somewhere even five times lesser than that of indirect tax but from the period

1995/96 to 2008/09 the contributing of direct tax is increasing slowly and that has reached at 29.3 percent of the total revenue in the FY 2008/09. Although direct tax system has been considered as the aspect of ability to pay principle in nature how ever, due to unequal distributional of income in Nepal, government of Nepal has not been able to collect adequate amount of money through this source. On an average, the contribution of indirect tax to collect the total tax revenue is about 78 percent in this study period. Tax structure in Nepal is not justifiable on equity ground and progressiveness. Beyond the FY 1995/96, the contribution of indirect tax on the total tax revenue is decreasing slowly.

Table 4.4

Contribution of Direct and Indirect Tax Revenue as Percent of Total Tax Revenue (1990/91 to 2008/09)

(Rs. in Million)

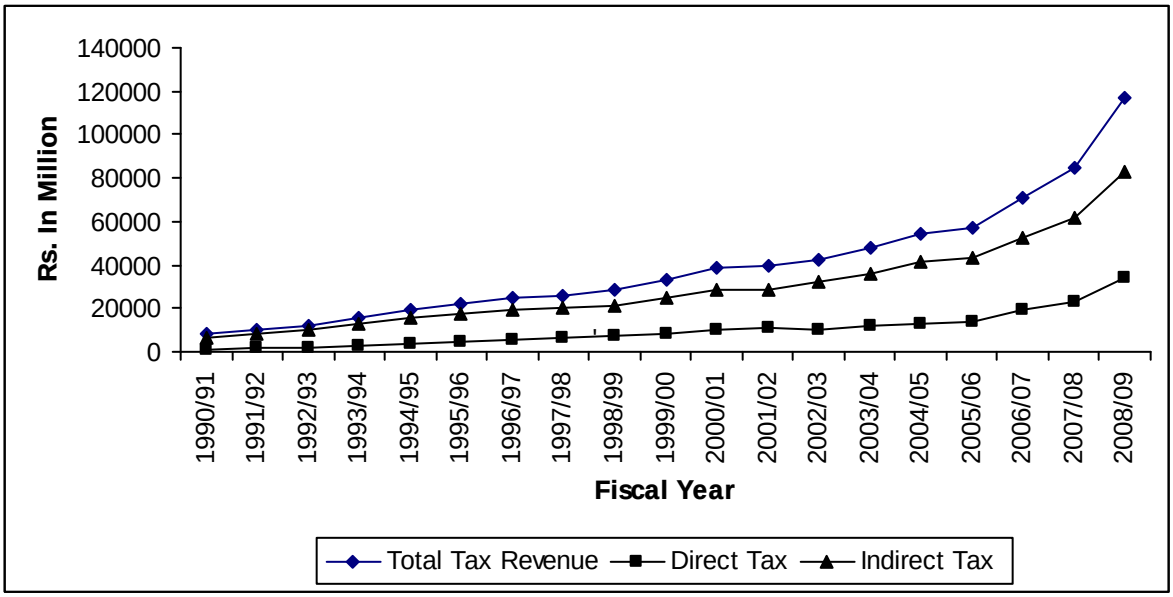
Fiscal Year	Total Tax Revenue	Direct Tax		Indirect Tax	
		Amount	%	Amount	%
1990/91	8176.3	1284.7	15.7	6891.6	84.3
1991/92	9875.6	1487.1	15.1	8388.5	84.9
1992/93	11662.5	1879.6	16.1	9782.9	83.9
1993/94	15371.5	2657.4	17.3	12714.1	82.7
1994/95	19660.0	3797.0	22.8	15863.0	77.2
1995/96	21668.0	4385.2	21.2	17082.8	78.8
1996/97	24424.3	5233.8	21.4	19190.3	78.6
1997/98	25939.8	6028.5	23.2	19911.3	76.8
1998/99	28752.9	7296.7	25.4	21456.2	74.6
1999/00	33152.2	8554.9	25.8	24597.3	74.2
2000/01	38865.0	10199.7	26.2	28665.7	73.8
2001/02	39330.6	10597.4	26.9	28733.2	73.1
2002/03	42586.9	10105.7	23.9	32481.2	76.1
2003/04	48175.6	11883.9	24.7	36273.8	75.3
2004/05	54104.8	13061.0	24.1	41043.8	75.9
2005/06	57427.0	13961.5	24.3	43465.5	75.7
2006/07	71126.7	18980.3	26.7	52146.4	73.3
2007/08	85155.5	23087.7	27.1	62067.8	72.9
2008/09	117051.5	34320.33	29.3	82731.17	70.7

Source: Economie survey, Various Issue, MoF

Figure 4.3 shows the composition of tax revenue with the direct tax and indirect tax. Here, line representation of indirect tax amount is closer to the line of the total revenue, where as the line representation of direct tax is far from the line of total revenue. This showed that the contribution of direct tax in the total revenue is much lesser than the contribution of indirect tax on it. But over the years direct tax is found to increases.

Figure 4.3

Contribution of Direct and Indirect Tax Revenue as Percent of Total Tax Revenue (1990/91 to 2008/09)



4.7 Structure of Direct Tax

In Nepal's tax structure, the premier components on direct tax revenue are:

(a) Land Revenue and Registration, and (b) Tax on property, profit and income. Those two large elements of direct tax revenue are classified in the following categories. The land Revenue and Registration has divided into Land Revenue, House and land Registration fees. Similarly,

Tax on Property, profit and Income has divided into the Income Tax from the public Enterprises, Income tax from the semi-public enterprises, Income tax from private corporation Bodies, Income tax from Individual, Income tax from Remunerations, Urban house and land Tax, Vehicles tax, Tax on the interest and Other taxes. The large amount of the direct taxes on total tax revenue signifies the maturity of the economy, for example, the amount of direct tax one half of the tax revenue signify the tax structure of well developed countries and one fifth or one sixth portion of total taxes signify the least development countries. Nepal being least developed country, on and average, the tax revenue contributed by indirect tax had nearly 73 percent during study period. During the period before the democracy, most of the direct taxed were related to the agriculture sector in limited tax base. After democracy, modern tax system introduced with consolidated change in tax bases which brings results change in tax structure. Moreover. New tax system mainly focuses to the income tax and property tax by widening its tax basses.

Table (4.5) had shown that in the FY 1990/91 of study period land revenue and registration contributed the 41.9% to the direct tax. Moreover, the remaining portions are contributed by tax on property, profit and income. Tax structure also changes with the changes in socio-economies structure of country and results different seared in the context of direct taxes. Now same table has showed that in the FY 2007/08, contribution of land revenue and registration category falls down to the 12.5 percent of direct taxes and other remaining 87.5 percent is contributed by tax on profit, property and income.

Table 4.5

Composition of Direct Tax Revenue (1990/91 to 2007/08)

(Rs. in Million)

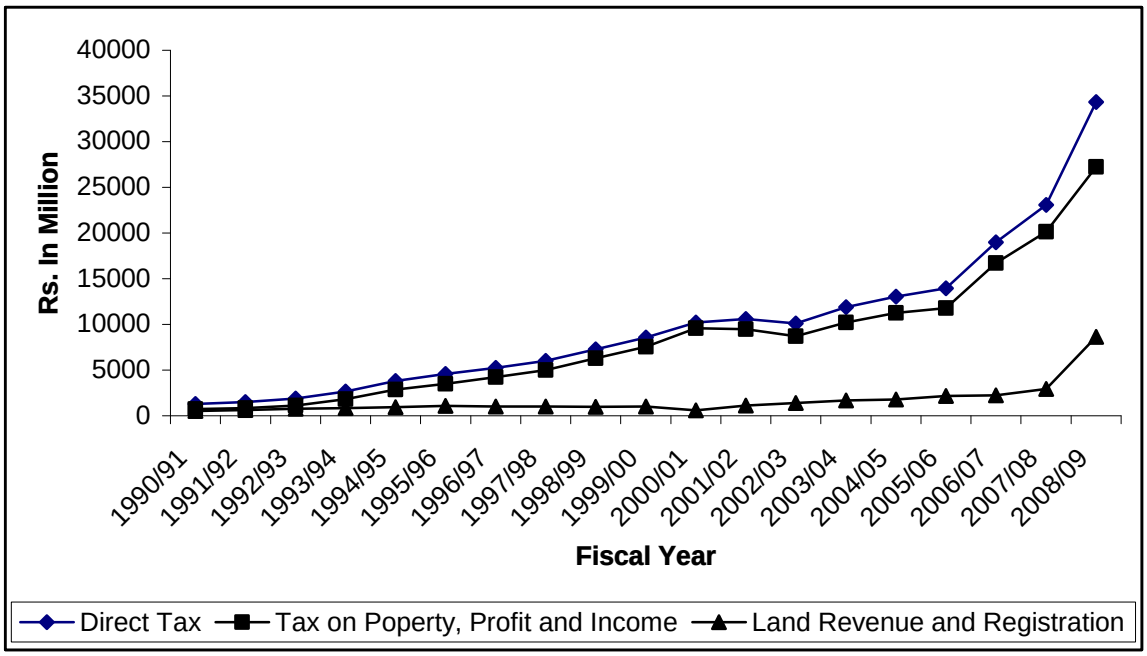
Fiscal Year	Direct Tax	Tax on Property, Profit and Income		Land Revenue and Registration	
		Amount	%	Amount	%
1990/91	1284.7	746.0	58.1	538.7	41.9
1991/92	1487.1	855.0	57.5	632.1	42.5
1992/93	1879.6	1125.0	59.9	754.6	40.1
1993/94	2657.4	1824.0	68.6	833.4	31.4
1994/95	3797.0	2859.0	69.6	938	30.40
1995/96	4585.2	3506.0	69.9	1079.2	30.10
1996/97	5233.8	4218.0	73.2	1015.8	26.80
1997/98	6028.5	5009.0	74.6	1019.5	25.40
1998/99	7269.7	6301.0	77.7	995.7	22.30
1999/00	8554.9	7536.0	79.0	1018.9	21.0
2000/01	10199.1	9592.0	89.7	607.7	10.30
2001/02	10597.4	9478.0	84.0	1119.4	16.00
2002/03	10105.7	8692.0	80.5	1413.7	19.50
2003/04	11881.9	10204.0	80.0	1679.9	20.0
2004/05	13031.0	11262.0	80.1	1799.0	19.9
2005/06	13961.5	11781.0	78.3	2180.5	21.70
2006/07	18980.3	16726.0	82.9	2254.3	17.10
2007/08	23087.7	20147.0	82.6	2940.7	17.40
2008/09	34320.33	27247.38	79.4	8653.39	20.6

Source: Economic Survey, Various issues, MoF

Graphically, the structure of direct tax is shown in the fig (4.4). Here, the line representation of tax on property, profit and income amount is closer to the line of direct tax, where as the line representation of land revenue and registration is far from the line of direct tax. This showed that the contribution of tax on property, profit and income in the direct tax is much higher the in the contribution of land revenue and registration.

Figure 4.4

Composition of Direct Tax Revenue (1990/91 to 2007/08)



4.8 Structure of Indirect Tax

Table (4.6) shows the composition of indirect tax. In the most of UDCs, the indirect tax played dominant role as the revenue. The main feature of the Nepalese fiscal structure is the heavy reliance on indirect tax. In Nepal's tax structure, the premier components of indirect tax are custom duties, excise duties and value Added Tax (VAT). Custom duties are one of the important tax items in revenue collection. It contributed 32.0 to 44.4 percent of total indirect taxes during the study period which is shown in table (4.6). Since VAT has been introduced in 16 November 1997 in place of sales tax, hotel tax, contract tax air flight tax and entertainment tax in Nepal. Data before the 1997 included summation of all these heading under the VAT category in the given table (4.6). In 1990/91, custom duties, excise duties and VAT contribution on indirect tax were 44.2, 17.4 and 38.4 percent respectively as shown in the table

(4.6). In absolute term their contribution were 3044.3 million, 12003 million and 2647.0 million respectively.

Table (4.6) shows rather disappointing scenario of custom duties for study period. However, it has been 40.0 percent in FY 1991/92 to 44.2 percent in the FY 1994/95 and starts decline continuously 44.4 percent from FY 1998/99 to 32.4 percent in 2008/09. Other important contribution of indirect taxes is excise duty on industrial product. Since, Nepal is not so industrialized country; the size of excise duty is also small in comparison to VAT and customs duty. In the early of our study period it had contributed 17.4 percent and reached at 19.7 percent in the FY year 2008/09. VAT has been introduced in Nepal since 1997 with a view to effectively mobilizing internal revenues improving tax system. But it hadn't did work properly the six years of preliminary stage. It is because of various technical, economic and socio-political reasons. How ever, after the FY 2004/05 it had started to give some positive results. In the FY 1997/98, when VAT was introduced, it had able to collect Rs 8524.9 million and it contributed 42.8 percent of total indirect taxes, Now, until the FY 2008/09 of this study, it contributed has reached to 47.9 percent of the total taxes, where as it was 50 percent in FY 2006/07.

Table 4.6

Composition of Indirect Tax (1990/91 to 2008/09)

(Rs. in Million)

Fiscal Year	Indirect Tax	Custom Duties		Excise Duties		Sales Tax/VAT	
		Amount	%	Amount	%	Amount	%
1990/91	6891.6	3044.3	44.2	1200.3	17.4	2647	38.4
1991/92	8388.5	3358.9	40.0	1419.3	17.0	3610.3	43.0
1992/93	9782.9	3945.1	40.4	1452.6	14.8	4385.2	44.8
1993/94	12714.1	5255.2	41.3	1592.3	12.5	5866.6	46.2
1994/95	15863.0	7017.9	44.2	1657.5	10.4	7187.6	45.4
1995/96	17082.8	7327.4	42.9	1945.9	11.4	7809.5	45.7
1996/97	19190.5	8309.1	43.3	2302.1	12.0	8579.3	44.7
1997/98	19911.3	8499.9	42.7	2886.5	14.5	8524.9	42.8
1998/99	21426.2	9517.5	44.4	2952.5	13.8	8986.2	41.8
1999/00	24397.3	10813.3	44.0	3132.7	12.7	10651.3	43.3
2000/01	28665.7	12479.0	43.5	3804.8	13.3	12381.9	43.2
2001/02	28733.2	12492.6	43.5	3973.3	13.8	12267.3	42.7
2002/03	32481.2	14236.4	43.8	4777.5	14.7	13467.3	41.5
2003/04	36273.8	15554.2	42.9	6221.4	17.2	14498.2	39.9
2004/05	41043.8	15701.5	38.3	6446.3	15.7	18896.0	46.0
2005/06	43465.5	15343.7	35.3	6306.4	15.0	21615.4	49.7
2006/07	52146.4	16707.6	32.0	9343.2	18	26095.6	50.0
2007/08	62067.8	21062.5	33.9	11189.6	18.1	29815.7	48.0
2008/09	82731.17	26792.85	32.4	16237.59	19.7	39700.92	47.9

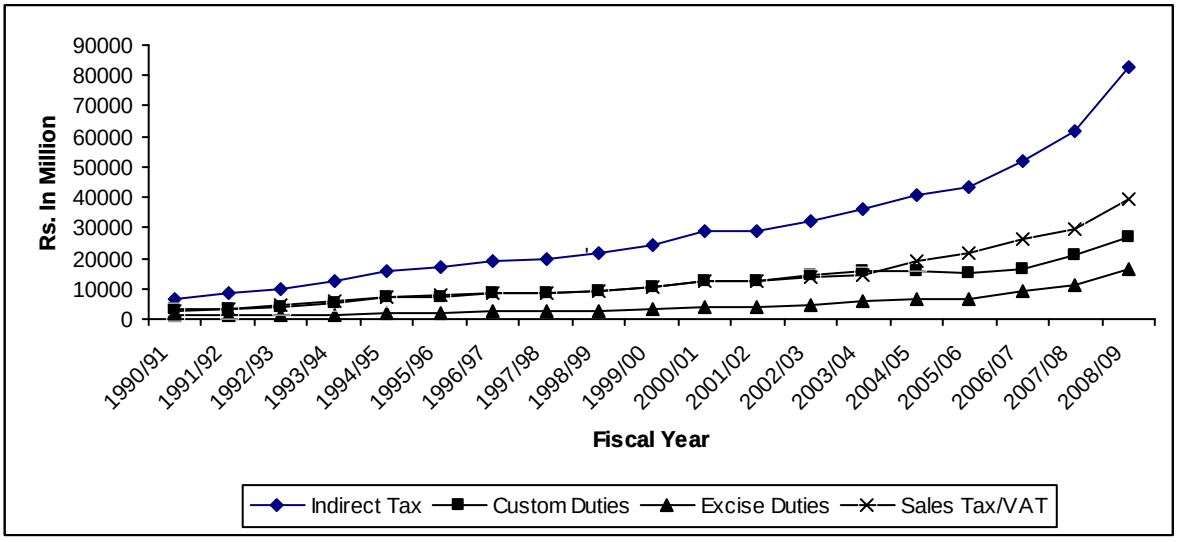
Source: Economic Survey, Various issues, MoF

Graphically, the composition of the indirect tax is clearly shown in the figure (4.5). In the beginning the contribution of VAT in the indirect tax had much more than other taxes. However, beyond 2004/05 the VAT was increased faster than other and become largest contributed element of

the indirect taxes. The custom duties and excise duties have been increased slowly and smoothly than the VAT

Figure 4.5

Composition of Indirect Tax (1990/91 to 2008/09)



4.8 Composition of Custom Duties

Table (4.8) shows the composition of custom duties. Mainly, custom duties are made of three different tax heads viz. Import Duties, Export Duties and Indian Excise refund. Among these three important taxes, import duties contributed more, than other two taxes. The contribution of import duties is ranging from 74.2 percent to 90.4 percent during the study period. The contribution of import duties had 2.0 percent to 8.1 percent of the total custom duties and the contribution of Indian excise refund is ranging from the 7.0 percent to 28.0 of the total custom duties in the study period.

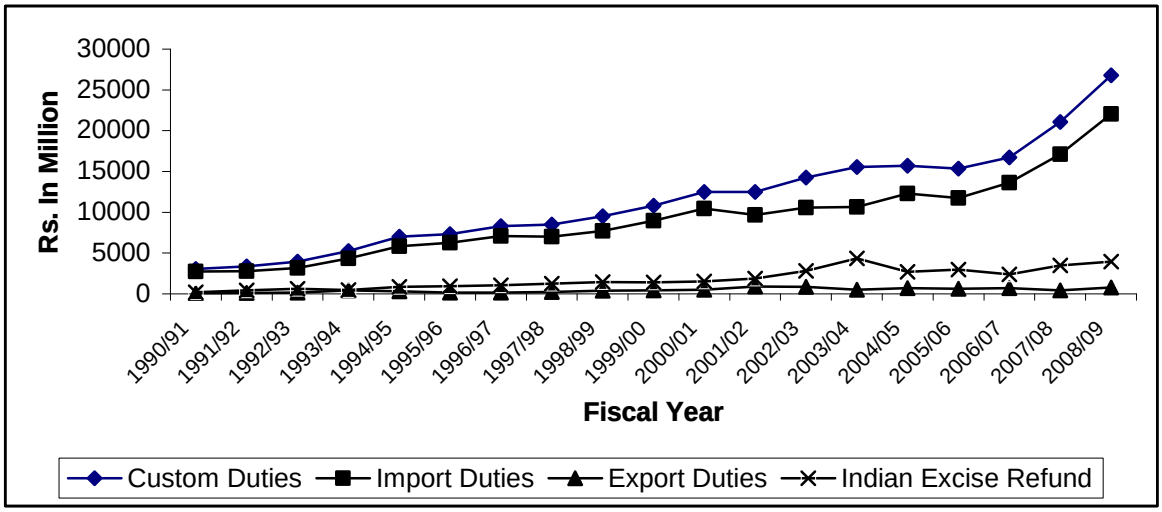
Table 4.7
Composition of Custom Duties (1990/91 to 2008/09)

(Rs. in million)

Fiscal Year	Custom Duties	Import Duties		Export Duties		Indian Excise Refund	
		Amount	%	Amount	%	Amount	%
1990/91	3044.3	2753.0	90.4	78.5	2.6	212.8	7.0
1991/92	3358.9	2795.0	83.2	114.7	3.4	449.2	13.4
1992/93	3945.1	3178.0	80.5	140.7	3.6	626.4	15.9
1993/94	5255.2	4356.0	82.9	427.0	8.1	472.2	9.0
1994/95	7017.9	5840.0	83.3	332.5	4.7	845.4	12.0
1995/96	7327.4	6247.0	85.3	149.9	2.0	930.5	12.7
1996/97	8309.1	7093.0	85.4	167.0	2.0	1048.3	12.6
1997/98	8499.9	7019.0	82.5	217.1	2.6	1263.8	14.9
1998/99	9517.5	7698.0	80.9	378.0	4.0	1441.5	15.1
1999/00	10813.3	8960.0	82.9	432.5	4.0	1420.8	13.1
2000/01	12479.0	10465.0	83.9	492.6	3.9	1521.4	12.2
2001/02	12492.6	9678.4	77.5	917.4	7.3	1896.8	15.2
2002/03	14236.4	10567.7	74.2	855.7	6.0	2813.0	19.8
2003/04	15554.2	10666.9	68.6	527.1	3.4	4360.2	28.0
2004/05	15701.5	12299.1	78.4	697.9	4.4	2704.5	17.2
2005/06	15343.7	11744.6	76.5	625.0	4.1	2974.1	19.4
2006/07	16707.6	13626.1	81.6	708.7	4.2	2372.8	14.2
2007/08	21062.5	17128.2	81.3	445.6	2.1	3488.7	16.0
2008/09	26792.85	22056.57	82.32	793.75	3.0	3942.53	14.7

Source: Economic Survey, Various issues, MoF

Figure 4.6
Composition of Custom Duties (1990/91 to 2008/09)



CHAPTER IV
RESPONSIVENESS AND PRODUCTIVITY OF TAX YIELDS A AN EMPIRICAL ANALYSIS

The concepts of elasticity and buoyancy of taxes are often used in measuring the responsiveness of tax collection with respect to change in GDP. A high elastic tax system is said to be desirable, but in most of the cases, the major sources of government revenue may have low elasticity in which cases the authorities must seek additional revenue by introducing discretionary changes. Then, growth in tax revenue may come about through high buoyancy as opposed to the natural growth through elasticity (Mansfield, 1972).

The given tax system is said to be elastic if elasticity coefficient exceeds unity, otherwise it is considered as inelastic. to bridge to resource gap in any economy, an elastic tax system is highly advantageous which reduces the probable instability in the economy due to change in tax rates or its legal base.

To compute the elasticity and buoyancy coefficients for the periods under study, double log linear has been employed, that is, the regression model $\log (T) = \log (\alpha) + (\beta) \log (Y)$ is used to fit the data. In this model, coefficient β is of prime importance as it measures the percentage change in dependent variable T for one percentage change in independent variable Y. Accordingly, the intercept ($\log \alpha$) term has little scope for analysis, and hence, has not been considered for analysis.

To estimate the elasticity and buoyancy coefficients for the specified tax groups, the following regression equation are employed.

$$\text{Log } Ta = \log \propto + \beta \log Y + u \quad \text{..... (1), For elasticity}$$

Log T = log $\propto_1$ + β_1 log Y + v .....(2), For buoyancy.

Where,

Ta = Adjusted tax revenue series

T = Actual tax revenue series

Y = Total GDP

U and V = Stochastic Variables

β = elasticity coefficient

β_1 = buoyancy coefficient

Then elasticity coefficient (β) can be calculated by solving these two normal expiations

$\sum$log Ta = n log $\propto$ + $\beta \sum$ log Y …….....(3)

$\sum$ log Y × log Ta = log $\alpha \sum$ log Y +$\beta \sum$ [log Y]^2 ……(4)

Which gives,

$$= \frac{\sum \log(Y)\log Ta) - n[\,Mean\log(Y)\,]\times[\,Mean\log(Ta)\,]}{\sum[\log(Y)\,]^2 - n[\,Mean(Y)\,]^2}$$

When, we used T instead of Ta, we get the buoyancy coefficient (β_1) with the same procedure. In this study computations are done by using SPSS programs.

5.1 Elasticity Estimation of Nepalese Taxes (1990/91 to 2008/09)

Elasticity of yield is an important aspect of the tax structure; An Elasticity of 'unity' implies that one percent change in GDP will be accomplishes by one percent change, tax revenue, an elasticity greater than unity implies that the percentage change in tax revenue will exceed in GDP. Consequently, a tax system is said to be elastic if the coefficient

exceeds unity, and inelastic if it is less than unity. For economics dynamism an elastic tax system in highly advantageous for the public expenditure activities which help to balance between equity, growth and efficiency in an economy. In fact, a developing country would get economies equality, stability and development only when it mobilizes more revenue by adopting an elastic tax system an initial stage of its development movement.

In table (5.1), the elasticity coefficients of individual groups of taxes have been presented. In addition, various parameters that signify the goodness of fit of model and explanatory power of independent variables like adjusted R^2, F, t and DW statistics have been presented.

The elasticities of selected group of taxes are rather divergent (Table 5.1). They range from -0.16 for export duties to 1.01 for the income tax revenue. As the elasticities of group of taxes other than income tax revenue are less than unity, the tax system as a whole could not be considered elastic and responsive to national income. An efficient tax system ought to give better results, and a progressive tax system should necessarily possess greater elasticity than unity. This intensifies the need to go for individual tax elasticity analysis to identify the specific taxes responsible for the emergence of this lacuna.

The elasticity of different revenue heads of tax are shown in table 5.1. The overall elasticity of the total revenue in tax structure for the study period is 0.56. This implies that one percent increase in country's GDP results 0.56 percent increase in total revenue. This indicates that the total revenue is not responsive to GDP. As the coefficient is positive, it can be said that total revenue in Nepal is positively influenced by GDP. The adjusted R^2 (0.93) indicates that 93 percent of total revenue in

influenced by country's GDP. F and t statistics is significant at 1.0 percent level implies that the model is best fitted and relationship is reliable. That means the influence of any other independent variable to total revenue is nominal. Elasticity coefficient for total tax revenue is 0.55 which explains an inelastic relationship between total tax revenue and the country's GDP. This shows that about a 1 percent change in GDP has contributed on an average of 0.55 percent change in total tax revenue.

The values of parameters - adjusted R^2 = 0.89, F statistics = 173.0173 and t statistics = 13.160 all justify the best fit of the model at 1 percent significance level.

Elasticity coefficient for non tax revenue is 0.53 which also explains an inelastic relationship between non tax revenue and the country's GDP. This shows that about a one percent change in GDP has contributed on an average of 0.54 percent change in non tax revenue. Both F and t statistics are significant at 1 percent level which implies the model is best fitted and relation is reliable.

The elasticity of total direct tax during the period from 1990/91 to 2008/09 has found 0.74. It signifies that about one percent increase in GDP has contributed on an average 0.74 percent increase in total direct tax collection. Adjusted R^2 is 0.92 implying that 92 percent change in total direct tax has been explained by change in explanatory variable - GDP. Both F and t statistics are significant at 1 percent. Income tax, has an elasticity coefficient 1.01 which explains that about one percent increase in country's GDP has on an average contributed to 1.01 percent increase in income tax. The model fits best as the parameters adjusted R^2 and as high as of 0.93; F and t are significant at 1 percent significance level.

Regarding indirect tax categories; elasticity coefficient for total indirect tax is 0.69 implying that about one percent increase in the country's GDP has brought on an average 0.69 percent increase in total indirect tax. The relationship is best fit at 1 percent significance level. Custom duties have an elasticity coefficient of 0.70 which is less than unity referring to less elastic relationship. Adjusted R^2 value of 0.96 implies that 96 percent variation in custom duties is explained by the change in GDP. The test statistics show the goodness.

Excise duties also have an elasticity coefficient less than unity (0.38) showing that hundred percent increase in GDP has contributed only 38 percent increase in excise duties. Both F and t statistics are significant at 1 percent. Sales tax has an elasticity coefficient of 0.38. The test statistics show the best fit of the model at one percent significant level.

The elasticity coefficient of export duties (-0.16) exhibits negative relationship between export duties and country's GDP. The test statistics are found best fitted at one percent significant level. The elasticity coefficient of import duties (0.57) implies that one percent increases in country's GDP has on an average contributed 0.57 percent increase in import duties. The test statistics are found significant at one percent.

The above findings of indirect tax elasticity show no strong responsiveness of the tax with respect to country's GDP. Among the three sub-heads of indirect tax custom duties is found higher elasticity coefficient than the other two components in relative terms.

Table. 5.1

Elasticity Coefficient ( ) of Different Tax Heads for Study Period (190/91 to 2008/09)

Dependent variable	independent variable	Coefficient	$\overline{R}^2$	Standard error	t-statistics	F-statistics	D-w
TR	GDP (Y)	0.56	0.93	0.0926	14.464	209.219	0.561
TXR	GDP (Y)	0.55	0.90	0.01	12.920	166.934	0.486
NTR	GDP (Y)	0.53	0.88	0.108	11.776	138.67	1.389
DT	GDP (Y)	0.74	0.92	0.132	13.561	183.897	0.598
IDT	GDP (Y)	0.69	0.86	0.20	10.308	106.250	0.480
IT	GDP (Y)	1.01	0.93	0.64	15.674	245.326	0.691
CD	GDP (Y)	0.70	0.96	0.031	22.569	510.559	1.148
ED	GDP (Y)	0.38	0.90	0.031	12.499	156.255	1.413
EXD	GDP (Y)	0.16	0.66	0.110	-1.098	1.206	1.160
IMD	GDP (Y)	0.57	0.89	0.048	12.036	144.855	0.80
Sales Tax	GDP (Y)	0.38	0.87	0.83	4.547	206.678	0.32

Significant at 1% level.

Source: Calculated based on data in Appendix-I and II

In table (5.1) the D-W statistic measures the autocorrelation which refers to the relationship, not between two (or more) different variables but between the successive values of the same variables. Here DW<2 indicates positive autocorrelation implying the economic growth and cyclical movement of the economy, or the variables Y and T tend to grow in periods of growth or they to show cyclical patens.

5.2 Buoyancy Estimation of Nepalese Taxes

It is observed from elasticity estimate that Nepalese tax system is not necessarily be automatic responsive types with respect to change in

national income or GDP. To make the system more responsive, government efforts is needed in the form of additional taxation and improved administrative competence. These governmental efforts are called discretionary measures, and can be seen for buoyancy estimate of a tax system. The buoyancy coefficient of a tax is given by the ratio of percentage change in the tax revenue to the percentage change in GDP or national income, which gives an idea about the overall increase comprising the effect of both automatic increase and of increase attributable to discretionary measures. Further, buoyancy coefficient of a tax system reflects change in revenue collection due to two factors viz. automatic growth and discretionary change. Therefore, the buoyancy coefficient of a tax is given revenue to the percentage change in national income are GDP.

Table 5.2, provides the buoyancy estimates of various major, tax revenue heads and sub revenue tax heads. As shown in the table (5.2) the buoyancy coefficient of total revenue is found 1.25. This implies that one percent increase in GDP is accompanied by 1.25 percent increase in total revenue. A tax system is considered to be buoyant if the value of buoyancy coefficient is greater than unity. In this sense the total revenue can be considered as relatively buoyant with respect to the growth of economy. The model is well explained at 1 percent significance level.

Table: 5.2

Buoyancy Coefficients ($_1$) of Revenue Heads for the Study Period (199/91 to 2008/09)

Dependent variable	independent variable	Coefficient	$\overline{R}^2$	Standard error	t-statistics	F-statistics	DW
TR	GDP (Y)	1.25	0.99	0.02	59.690	3229.21	1.25
TXR	GDP (Y)	1.47	0.72	0.21	6.77	45.830	2.3
NTR	GDP (Y)	1.14	0.98	0.040	30.034	902.016	1.6
DT	GDP (Y)	1.60	0.99	0.046	35.060	1227.19	0.71
IDT	GDP (Y)	1.19	0.99	0.026	45.00	2207.91	1.06
IT	GDP (Y)	1.85	0.97	0.078	23.53	543.868	0.47
CD	GDP (Y)	1.07	0.97	0.043	22.05	616.99	0.77
ED	GDP (Y)	1.31	0.96	0.064	20.25	410.071	0.48
EXD	GDP (Y)	1.08	0.66	0.18	6.07	36.94	0.09
IMD	GDP (Y)	1.01	0.97	0.044	22.88	323.53	1.03
Sales Tax	GDP (Y)	1.29	0.97	0.048	26.77	716.76	1.90

Significant at 1% level.

Source: Calculated based on data in Appendix-I and II

Similarly, the buoyancy coefficients of all major tax and non tax revenue heads are found greater then unity. The buoyancy coefficients of tax revenue, non tax revenue, custom duties, direct tax, indirect tax and income tax are found 1.47, 1.14, 1.07, 1.60, 1.19 and 1.85 respectively. This high buoyancy but low elasticity for all major tax and non tax heads signifies the additional governmental efforts of changing the base and the rate of structure to increase revenue.

Among the other major tax and non tax revenue heads, the buoyancy coefficients of income tax is the highest (1.85). This implies

that one percent increase in GDP (Y) followed by 1.01 percent increase in income tax. As income tax is the major, component of direct tax, better prospects of Nepalese tax system can be hoped through direct taxation which is considered to be helpful to reduce unequal distribution of income and wealth.

The adjusted R^2 of all major tax heads except total tax revenue (0.72) ranges from 0.97 of custom duties to 0.99 total revenue. This suggests that there is high degree of association between these revenue heads and the change in GDP (Y). F and t statistics suggest that the model of all major revenue heads are significant at 1 percent level which implies that the model is best fitted and relationship is reliable.

Table 5.2 also shows the buoyancy coefficients of sub revenue heads for the study period 1990/91 to 2008/09. The buoyancy coefficients of all sub revenue heads also found to be greater than unity. The buoyancy coefficients of export duties (1.08), import duties (1.01), Excise duties (1.31) and sales tax (1.29) are revenue buoyant having buoyancy coefficients greater than unity. The adjusted R^2 value for export duties is (0.66) which suggests that there is medium fit of the data to the assumed model. The adjusted R^2 value of other sub revenue heads are ranges between excise duties (0.96) to sales tax (0.97).

The value of F and t statistics at all significant at 1.0 percent level which implies that the model is best fitted and relationship is reliable. The DW statistics, in the case of buoyancy estimate, is significant at 1 percent significant level.

From the above results, the elasticity of Nepalese tax structure is extremely low in comparison with buoyancy. This indicates that government has been concentrating more on adopting various

discretionary measures. This is not conducive to effective mobilization of revenue through taxation. The tax system in which discretionary measures play vital role can not serve the principle of equity, stability and increase possibility of tax evasion and thus creating uncertainty in tax collection.

The less elastic tax system causes many problems like lack of revenue surplus for development, widening resource gap etc. To bridge the gap, there is increasing reliance on foreign loan which is not on favor of the country. So, the government has to focus on for implementation of policies to raise the government revenue by automatic response of tax system rather than that of discretionary efforts through it is also a chief part of increasing revenue.

5.3 Problem of Taxation

The most unfortunate feature of the structure of taxes in Nepal is that it has been erratic and unstable in policies, bases and rates. Further, the low automatic response of Nepalese tax system can be explained by the existence of narrow base, different in taxes and exemption limits.

The analysis of structure and responsiveness of Nepalese tax system also showed that one of the most significant tax reform measure adopted by government of Nepal in the recent year is the implementation of broad bases VAT in 1997 and its quite satisfactory performance. Further, the performance of non-tax revenue is also found to be quite satisfactory. However, this improvement is not at all substantial enough to address the issue of increasing fiscal imbalance in the country. As a whole, the above analysis shows deficiency in every aspect of the Nepalese tax system viz. Tax effort and taxable capacity, structure of individual taxes and their bases, administrative feasibility, equity,

stability, sustainability, political will, taxpayers' compliance, etc. As a result, the elasticity of taxes is very low both individually and collectively compared to their respective buoyancy, indicating that some revenue growth seems possible only through discretionary changes. However, this approach can not have cumulative impact or initiate a self-sustaining process of revenue mobilization, for they are constrained by various political, social and economic factors. Further, the result also disclose that the low elasticity of majority of the individual taxes have to the explained in terms of their low rate response i.e., the factor which would fall mostly within the control of tax authorities, indicating the administrative inefficiency and regressive nature of Nepalese tax system.

CHAPTER VI

FINDINGS, CONCLUSION AND RECOMMENDATIONS

6.1 Summary of the Findings

As Nepal is undergoing the process of economic development, it needs higher government expenditure to meet the proposed development programs. This ultimately creates a resource gap on one head. On the other, foreign aid, loan and grants as well as domestic borrowing are not considered as permanent solutions to fill the resource gap between expenditure and revenue. In this connection, the share of non-tax revenue is very low. These facts justify the ultimate solution that only by means of taxation that the gap can be bridged. Raising the tax rate is not the sole solution. Therefore, improvement in tax structure is required. Taxation is not only an instrument of obtaining higher revenue, but also the medium to eliminate undesirable effects in the economy as well as the introducer of desirable effects.

The overall trend of revenue from taxation in Nepal shows that the contribution of tax revenue to GDP has been increasing from 6.8 percent in 1990/91 to 13.26 percent in 2008/09 with some steady rates. But this ratio seems to be minimal as asserted by Sir Arthur Lewis that less than 10 percent tax-GDP ratio is UDCs would have to be raised to at least 17 percent in order to satisfy the minimum requirement of a modern state. At the same time, the share of direct tax to GDP increased from 1.11 percent in 1990/91 to 3.89 percent in 2008/09, but the share of indirect tax heightened to 9.37 percent from 5.93 percent during the same period.

In terms of tax revenue ratio, the contribution of direct tax to total tax revenue has continuously declined and indirect taxes have continuously risen. Indirect tax has been exceeding the contribution to the

total tax revenue over the period. In the total revenue, the share of total tax revenue has been playing a dominant role over the study period. Though indirect tax is considered regressive in nature, the structure of taxation in Nepal is not justifiable on equity grounds and progressiveness.

In the case of Nepal, if the budget is analyzed, then it is found that the share of development expenditure is decreasing, while the share of regular expenditure is increasing. The situation has reached a point where Nepal is almost unable to meet even the regular expenditure through internal sources of revenue. The resource gap is increasing every year which has led to wide budget deficit. The problem is how to reduce this resource gap in order to supplement development expenditure.

Regarding elasticity and buoyancy, the elasticity coefficient of almost all taxes is less than unity, that is, inelastic in nature while have negative elasticity. In fact, the inelastic nature of the tax system in developing countries is an inherent characteristics resulting from heavy reliance on indirect taxes. The import and export duties are based on the pattern of Nepalese people which does not reflect a good scenario because more than 31 percent are below the poverty line. Without increase in consumption capacity, import revenue could not be maximized. If the base of export duties is expanded, perhaps the present level of negative elasticity could be reduced. Excise duties would be more responsive to income only when industrialization of the country takes momentum. Therefore, inelasticity of excise duties would be reduced with the growth of industrialization.

The study shows the improvement in income taxation It is seen that the elasticity coefficient of income taxation has 1.01 in study period. This result shows some scope of direct tax.

Most of the tax head the buoyancy coefficient is greater than one, implying discretionary change made have significant effect for faster revenue growth since the buoyancy coefficients of most of the tax heads are greater than unity, the tax structure of is Nepal is said revenue buoyant. Beside this, the major findings of this study are summarized as follows.

1. The amount of Resource gap has increased by more than three fold during the study period from FY 1990/91 to 2008/09.
2. Nepalese tax structure is regressive in nature as more than 70 percent of the tax revenue is contributed by indirect tax.
3. The share of Direct tax to GDP has been increasing in slow pace where as the share of indirect tax to GDP has been increasing in fast rate.
4. The composition of direct tax is made of tax on property, profit and income and land revenue and registration tax, where the share of income tax to direct tax has been increased; the share of land revenue and registration has been decreased.
5. Major components of indirect taxes are sales, excise and custom duties in which the share of customs duties is increasing elasticity but share of excise duties and sales tax are declining with relatively low elasticity coefficients.
6. This study shows the indirect taxes in general contain better automatic growth potentialities then direct taxes.
7. There is a wide difference between elasticity and buoyancy estimates of almost all taxes which indicates that the increase in revenue productivity has come through new measures with upward revision of rate structure and having narrow bases.

Elasticity coefficients of various taxes, 1990/91 to 2008/09

a. Elasticity of total revenue was 0.56, adj. R squared was 93.
b. Elasticity coefficients of tax revenue was 0.55, adj. R Squared was 89.
c. Elasticity coefficient of non-tax revenue was 0.53 adj. R squared was 88.
d. Elasticity coefficient of direct tax was 0.74, adj. R squared was 92.
e. Elasticity coefficient of indirect tax was 0.69, adj. R squared was 86.
f. Under the category of indirect tax, elasticity of sales tax/VAT was 0.38 and that custom duties was 0.70.
g. Elasticity coefficient of income tax was 1.01, adj. R squared was 92.
h. Elasticity coefficient of excise duties was 0.38 adj. R squared 90.

Buoyancy coefficients of various taxes, 1990/91 to 2008/09.

a. Buoyancy coefficient of total revenue was 1.25, adj. R squared was 99.
b. Buoyancy coefficient of total tax revenue was 1.52 adj. R squared was 72.
c. Buoyancy coefficient of non-tax revenue was 1.14 adj. R squared was 98.
d. Under the direct tax category, all the components were buoyant
e. Similarly, under the indirect tax category, all the components were buoyant.

6.2 Conclusion

Increasing the tax revenue is not an end in itself, rather it is a means to meet the fiscal imbalance, reduce inequality of wealth and income, and

make proper allocation of resources and incentives to work and invest, which would lead to increase in productivity, and hence, the national income. Thus, raising revenue is only one of many goals and a tax system must be administratively feasible. Moreover, the equality principle cannot be neglected and the tax system must be directed not to misallocate resources. All these goals cannot be achieved simultaneously, so tax reform is a matter of trade-offs.

Given amount of revenue can be abstained with higher tax rates, but if the tax base is narrow it leads to higher chances of tax evasion. So broadly-based taxes are supposed to be useful with smaller rates. As increased revenue is necessary to enhance and strengthens overall domestic resource mobilization, mere upward adjustment in the rates, or even the introduction of new taxes, may not be able to ensure desirable increase in revenue.

Many well-designed and well-meaning tax policies have filed due to the lack of institutional and administrative capacities of the government. Thus a logical inference that can be drawn is that Nepal has been suffering from serious financial crisis due to lack of tranquility during the past few years. Its stability in terms of the availability of higher revenue resource without causing excess burden to the 'have-nots' groups depends on the ability of the government as to what extent it can increase the taxable capacity, which is generally measured by the per capital income and on the willingness and preparedness of the people to tighten their belts."

As more than 40 percent of the GDP comes from the agricultural sectors, inadequate taxation of this sector has often been attacked on the criterion of equality. In Nepal, more than 69 percent of the labor force is engaged

in agricultural activities, but the majority of them are below the absolute poverty line. In this sense, taxing the agricultural sector in the percent situation may not be justified on economic grounds. thus, the foremost objective would be to raise agricultural income, there by raising the income of the rural population.

Most of the elasticities of different tax heads are less than unity for the period from 1990/91 to 2008/09. This is indicative of poor responsiveness and productivity of tax yield with respect to GDP. The significance of elasticity in the tax system is that it is a crucial determinant to siphon-of automatically the increasing portion of national income into public exchequer without additional effort. The primary factors responsible for low tax elasticity in Nepal's tax structure can be attributed to the following reasons: (1) Agriculture, the biggest sector of the economy, contributing 40 percent of the GDP, which is still a subsistence sector that falls outside the jurisdiction of taxation; (2) Blanket exemptions in the industrial sector with a series of tax shelters in conjunction with numerous ad-hoc exemptions and deductions and (3) Government inability to drive for effective internal resource mobilization.

In this study, tax to GDP $\overline{R}^2$ is 0.90, supporting the macroeconomic proposition that tax is the increasing function of the national income.

6.3 Recommendations

On the basis of the findings of the present study, some recommendations have been made for a sound and effective tax system, which could be considered by the concerned by the concerned authorities while reforming Nepal's tax system. They are as follows:

a. Sound administrative capacity is one of the major bottlenecks that have to be overcome for increasing the built-in-flexibility of

Nepal's tax system. Thus, tax assessment and collection should be carried out by well prepared, well trained and well remunerated personnel. Rewards should be given for honesty and sever punishments for corruption without discriminating politically, and without giving unnecessary political protection to corrupt officials. At the same time, tax evaders should be punished accordingly.

b. The tax policy should have a clear cut direction and be consistent with a long-run perspective of the policy. The tax policy should be concentrated on optimum revenue mobilization for reducing tax revenue expenditure gap.

c. The present Nepalese tax structure depends heavily on indirect taxes. The more than 70 percent share of indirect tax to total revenue over the study period have been mentioned in the results. The inelastic nature of tax revenue is due to the sluggishness of direct taxes as their is ample scope for tax evasion and avoidance. So the effective way for more revenue generation from direct taxes is to make them progressive supported by a competent tax administration.

d. The absence of a progressive tax structure creates disparity in the distribution of income and wealth. Therefore, progressive direct taxes like income tax and property tax are to be considered as an effective measure to reduce inequality in the distribution of income and wealth. Hence, prudent wealth tax should be imposed on unproductive accumulation of wealth while making productive investment tax free.

e. The general direction of tax reforms should be towards broadening the tax base and lowering tax rates in the long run.

f. To increase revenue elasticity, the tax authorities must extend the tax base, ensure maximum mobilization of domestic resources,

gradually reduce dependency on foreign assistance, increase voluntary complaisance, and improve efficiency in tax administration.

g. The tax base should be broadened, especially in the areas of income tax and value added tax.

h. The tax rates should be competitive in comparison to other neighboring countries.

i. Formulation and implementation of a policy on customs duties conducive to economic development and foreign trade, which is also WTO-friendly, is imperative.

j. Strengthening of the consultation process with the private sector on revenue policy matters through the Revenue Consultative Committee is another requirement.

The key to the success of any taxation policy is the promotion of a strong and self-sustaining tax structure, which will be obtained through improving tax system. The significance of elasticity in the tax system is that it is a crucial determinant to siphon off automatically the increasing portion of national income into the public exchequer.

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