Chapter- 1
INTRODUCTION

1.1 Background of the study

Rapid economic development is the dominant current trend and Nepal is no exception to this ever-continuing process for the betterment of her people. Capital plays a vital role in this process of rapid economic development. Constitution of Nepal has clearly directed Nepalese government for a self-reliant economic system, encouragement to national enterprises and prevention of economic exploitation as well as upgrading the standard of people in self-sustained manner facilated by sound infrastructure to the development process. The government should generate the sufficient revenue to meet critical minimum requirement to address all these limitations.

Government revenue is the most important source of financing government expenditure. To achieve the national objectives, government is required to make and implement various policies and planning, acts and procedures. Besides these functions, revenue mobilization is one of the most important functions of the government.

Public revenue is the most important sources of financing public expenditure. In order to meet the public expenditure, the government has to raise fund through external and internal sources. The external sources of government are foreign aid and loans. Similarly, internal source includes tax and non-tax revenue.

The dependency on external resources at higher extent might not be fruitful in the long run, although it is a fact that the external resources do constitute substantial portion of income. Most of developing countries, they

should make effective attempt to maximize the mobilization of internal resources. Taxation is a major device for mobilization of internal resources. It is considered as the most effective and reliable source of both revenue.

Taxes are broadly divided into two categories. They are direct tax and indirect tax. Income tax is direct tax that is imposed on the earning of individual and corporation. The underlying reason for the imposition of income tax is to generate more revenue to finance development activities and to help in achieving social justice. Income tax should be justifiable to achieve maximum social and economic objectives. It helps in redistribution of economic means by the transformation of wealth from person with higher economic level to lower economic level. It should minimize gap between haves and haves not. Regional economic imbalances may also be reduced by providing incentives and concession in income tax for promoting industries in backward areas. It has become an effective instrument to ensure balanced socio-economic growth.

Income tax is charged for two purposes. One is for collecting to meet expenses for public welfare activities and another is to create equalitarian society by minimizing the economic gap between haves and have not. Income tax is based on the principle of certainty. It also follows the cannon of economy.

The objectives of sound financial system and creation of unexploited society can't be achieved until the mobilization of economic sources effectively through direct tax like income tax. It is therefore given high priority in almost of the countries, developed as well as developing because they have potential for increasing the yield of the tax system and achieving a system of taxation that satisfies the demand for equity and social justice. It more or less affects on production, growth, economic activities of the government, reduction of dependency on external sources, industrialization, redistribution of income, employment and generation of society justice.

1.2 Focus of the Study

The ultimate goal of developing countries like Nepal is the rapid economic development for the various problems created by over population, unemployment and low standard of living. Capital plays a vital role in the rapid economic development programs, more money have to be spent in various projects. So, a lot of financial resources are needed for country.

Before 1951(2007 B.S.), government of Nepal did not have any plan and policy for the economic development of the country and income and expenditure of government was not made public due to the family rule of Ranas. After the dawn of democracy in 1951(2007 B.S.), government expenditure and revenues was declared publicly in the first budget speech in 1952 (2007 B.S.).

In Nepal, after the democracy, deliberate planning process began in 2013 B.S. To fulfill the planning expenditure and for the process of economic development, a lot of capital was needed. Government could get capital by two financial sources. One is by external sources and other is internal sources. The external sources like foreign aids and borrowing are not enough and suitable for the economic development programs. Foreign aids are guided by socio political motives of the donor countries rather than the need projected by the recipient countries. Borrowing also involves a withdrawal made in return for the government promise to repay at a future date and to pay interest in the interim. Among internal sources, taxation seems to be the most effective way of mobilizing internal sources.

Being a developing country sources of government revenue are very limited in Nepal. Revenue structure of Nepal mostly depends on the foreign assistance and loan but it is unfavorable to the country. Domestic resources are reliable sources to minimize dependency of foreign aid and loan. Taxation is a

major device for mobilization of internal sources. It is considered as the most effective and reliable instrument for balanced economic development and maintaining economic stability. Among various taxes, income tax plays an important role in tax revenue.

Most of the developed countries like USA, Japan and UK etc are able to collect major portion of their revenue through income tax but can't able to collect adequate revenue from income tax and share of income tax to total government revenue structure is very low. This study is focused on analyzing the problem behind this fact and finding measures to overcome the problems associated with income tax system so as to raise its contribution towards government revenue. Currently government of Nepal has brought "*Income Tax Act 2002*" into force as a process of reforming income tax system. There are many provisions that are aimed to enhance revenue mobilization through effective revenue collection procedures. This study is also concerned with problems and prospects raised by newly "*Income Tax Act 2002*" so that contribution of income tax in the national revenue of Nepal will certainly increase in the days to come.

To mobilize internal sources to the maximum possible extent, Nepal government has widened the scope of taxes for the rapid economic development. In keeping the policy of government in mind, this study has attempted to highlight the real situation and contribution of income tax in national revenue of Nepal.

1.3   Statement of the Problem

Economic development is the prime concern of every nation of the world. Underdeveloped countries are facing serious problem in the process of

economic development. Nepal is also not an exception to this condition. The majority of people have not been able to get even basic facilities. The government wants to fulfill the basic needs of the people and accelerate development activities one at a time. Thus, every nation of the world is accomplishing various activities to fulfill these objectives. It needs huge amount of capital. Despite the various measures adopted by the government to boost up revenue collection, there is still a substantial resource gap between expenditure and revenue. The rate of government expenditure is exceeding the rate of growth revenue almost every year. In other words, Nepal has been facing persistent budget deficit from the beginning of its development phase. External deficits, currency depreciation, inflationary pressure, rising interest rates which may cause crowding out effect and reduction in economic growth are the consequences of the budget deficits. The mobilization of revenue has not increased to the level in which the level and speed of our expenditure is rising. Rising the government revenue helps to overcome from the serious bottleneck of resource gap in the process of economic development program. In this context, taxation can be taken as means for resolving this problem by mobilizing additional resources from domestic sources.

Income tax is one of the component of taxation and major sources of government revenue. Income tax in developing nations has been regarded as an instrument of growth and social justice. But government of Nepal is being unable to mobilize the expected income tax from personal as well as corporation. Most of the personal taxpayers do not reveal the income sources even they earn significant amounts. They hardly keep and show their proper accounts. Similarly, many research reports have addressed that tax evasion has become a serious problem as a result the actual collection of income tax is being very low. So the role of corporate income tax revenue is justifiable. Corporations are easily identifiable, keep their accounts and can't escape tax

liabilities. But corporate sector is in initial stage of development in Nepal. The performance of corporate sector, especially the industry is very poor. Their number, profitability, investment in fixed assets, shares in market transactions are all in weak position. There is no agreement as regards to various issues in corporate tax area. The debate is going on as regards to base of tax, method of taxing corporation, method and rate of depreciation, use of appropriate type of tax incentive, treatment of tax inflation etc.

In view of the discussion of the problem taken from the above studies, the research questions are as follows:

1. What is the income tax structure of Nepal?

2. What is the contribution of income tax to government revenue? Is it equally supporting to fulfill the resource gap?

3. What is the trend and share of income tax in government revenue, tax revenue and direct tax revenue?

4. What are the problems of resource mobilization and resource gap in Nepal?

1.4 Objectives of the Study

The main objective of the study is to analyze the contribution of income tax to government revenue of Nepal. Other specific objectives of the study are listed below.

1. To analyze the income tax structure of Nepal.

2. To analyze the contribution of income tax to government revenue.

3.   To analyze the problem of resource mobilization and resource gap in Nepal.

4.   To analyze income tax and GDP growth in relation to development expenditure.

1.5   Significance of Study

Income tax plays significant role in overall economic development in developing countries whether in developed and developing countries, income tax occupies a very important role in overall tax structure is increasing because of its importance for the economic betterment of the country. Therefore the few study have been conducted about structure of income tax and its contribution to the government revenue. So, contribution of income tax to the government revenue of Nepal has been chosen as a relevant topic for the present study.

Nepal is one of the lowest taxed economies in the world as its Tax/GDP as well as Tax/GDP ratios are the lowest among SAARC countries and among the rest of the world as well. This indicates the poor performance of income tax management of Nepal. For the economic development of the country, contribution of direct tax is more necessary rather than indirect tax but the whole tax structure of Nepal is dominated by indirect tax.

Every year there is a need of mobilizing adequate resources for meeting the increasing financial requirements for government's development purpose. Thus, income tax seems to be one of the major potential sources for mobilizing a larger amount of financial resources in Nepal. In developing country like Nepal, the importance of income tax can not be minimize for reducing economic inequality in the society and in instrument to measure the economic standard of people.   But income tax of Nepal is suffering from various

problems. The major problems are: inappropriate tax policies, administrative bottlenecks of direct tax structure and existence of main poverty. So, to identify the problems and to overcome then to improve existing level of income taxation, the field of income tax is essential.

The study will be helpful to economist, planner, tax officers and tax administrators of government. Similarly, this study can also be helpful to the students, teachers, researchers and other individuals who are interested towards the income tax system of Nepal.

1.6   Limitations of the Study

There are some limitations in this study, which are as follows:

1.   This study is mainly based on secondary data. The reliability depends on it.

2.   This study has covered only the last 10 years data from F/Y 1997/98 to 2007/08.

3.   This study is confined to Nepalese laws, acts, rules and regulations to the income tax.

4.   This study has been conducted to fulfill the requirement of the MBS programs of T.U. for the prescribed time, not for generalization purpose.

1.7   Organization of the Study

The entire study has been designed into five main chapters. They are as follows:

1.   Introduction

2.   Review of Literature

3.   Research Methodology

4.   Presentation and Analysis of Data

5.   Summary, Conclusions & Recommendations

The first introduction chapter includes; statement of problem, objective of the study, significance of the study, limitations of the study and organization of the study.

The second chapter, review of literature is done to know what research had been done in the related topic in previous days and what is to be done at present or in future. This chapter has been divided into two main aspects: (a) Conceptual framework and (b) Review of related materials i.e. review of books, review of thesis, review of newspapers, magazines, journals etc.

Research methodology is mentioned in the third chapter. It includes research design, population and sampling, sources of data, procedure of data collection and tools used for analysis.

Presentation and analysis of data have been made in the fourth chapter. The data collected from various sources have been tabulated in their sequential order and data have been described, analyzed and projected with statistical tools as well as general accounting and taxation principle.

The fifth chapter consists of brief summary, conclusions and recommendations of the study. Lastly, essential Appendices and Bibliography have been presented at the end of the study.

Chapter- 2

REVIEW OF LITERATURE

2.1   Conceptual Framework

2.1.1   Income tax

In the present world, income tax occupies one of the most important sources of revenue in most of the countries. Whether it is developed or underdeveloped countries, income tax is regarded as the most important tool for mobilizing internal resources whether the contribution of income tax to the government revenue may be high or low, it has got much more importance in most of the countries of the world.

To know the term 'Income Tax' it is better to define the term 'Income' and 'Tax' separately. Income is generally regarded, as the best measure of ability in the sense of economic well being for income is the primary determinant of the level of living that a family enjoys. In a broad sense, income refers to the economic gain to a particular person during a particular period of time. It includes the person's consumption during a particular period of time as well as the net increase in the individual's personal wealth during the same period. Symbolically, this can be expressed as follows:

$$Y = C - \triangle W$$

Where,

Y, C and $\triangle W$ refer personal income, consumption and net increase of personal wealth respectively. [Andley 1964, P 45]

The term 'Tax' refers a compulsory contribution from a person to the government. According to Seligman "*Taxation is the compulsory contribution from a person to the government to defray expenses occurred in the common interest of all without reference to special benefit conferred*". According to Plehn "*Taxes are general contribution of wealth levied upon persons, natural or corporate to defray expenses incurred in conferring common benefit upon the residents of the states*". [Dhakal 2001, P2]

From the definition given above, it can be said that tax is a compulsory levy and those who are taxed have to pay it without getting corresponding benefit of services or goods from the government. The taxpayer does not have any right to receive direct benefit from the tax paid. Due to this compulsory nature, people have expressed different views in different way about the taxation. Some say "*Nothing is certain in this world but death and taxes*." Some say, "*Death and taxes are both certain but death is not annual*." While other say "*Death means stopping to pay tax*." In conclusion, it can be said that a tax is a liability to pay an amount to the state that is spent for common interest of the people. The tax is collected from haves and basically spent for the interest of have-nots in the society. It helps to bridge the gap between haves and have-not.

In this way, income tax, as the world itself refers to a tax levied on income. In a broad sense, income tax is a levy based upon the production or receipts or gain of the taxpayers within a definite period of time, from the beginning, income tax has been always regarded as a tax based on the canon of ability. The tax could be adjusted as to exempt the lowest income groups from the operation of the tax and make the richer groups bear the burden of the tax according to their income. Apart from such considerations as revenue productivity, income tax has been regarded as the ideal tax from the point of view of equity. [Andley, 1964]

Tax economists have a view that an income tax is a levy imposed upon the incomes of an individual after the exemption limit. Only the taxable income is subject to tax. Otherwise, the objectives and principles of taxation will not be fulfilled. Income tax is imposed on excess income over exemption limit. All income above the tax exemption level is subjected to income tax that is based on the income tax acts of the concerned country. Different countries may have different concept on income tax. In Nepal, income tax is levied on the net income derived after deducting all allowable deductions. According to Income Tax Act-2058 "*Income means a person's income from any employment, business or investment and the total of that income as calculated in accordance with this Act and tax imposed under this Act is known as income tax*." [Section II (h)]

2.1.2 Evolution of Taxation

In early days, taxes were collected at the time of emergencies, to finance wars and to provide communal services. Taxes were levied on the basis of welfare of the people. At that time tax was not compulsory payment. People voluntarily paid the tax because non-payment of tax was taken as sin in the Hindu tax system. According to Hindu's scripture, the duty of king was to serve and secure his people, maintaining peace and harmony and carryout social works. For those purpose, king used to levy tax by collecting crops and cattle from farmers, gold and silver and other metallic goods from traders.

Great Bretain was the first country in the world to introduce the income tax in 1799. It imposed income tax in order to finance war with France. Similarly, in U.S.A. the first federal income tax was imposed in 1862 with the same objective (to finance civil war). However, in the beginning these countries imposed income tax as temporary until 1860. Thereafter, since 1913 it was accepted as permanent tax. This income tax was adopted by different countries

gradually. Italy started it in 1864, and New Zealand adopted in 1891. Australia and Canada had followed the income tax in 1915 and 1917 respectively. After that world war, the income tax became an important source of tax revenue in many developed countries. By 1939, it had become the most important source of revenue in most developed countries and had made appearance in a number of developing countries (Agrawal, 1980).

In our neighboring country India, the income taxation was started in 1860 by the British government to relief from economic burden created due to first democratic revolution. It was then regularly collected after the publication of *Income Tax Act 1886* (Dhakal, 2057).

In this way, income tax has become the regular source of national receipts for many developed and developing countries of the world. In the beginning, income tax was generally levied at a flat rate. Principle of progressive rate of income tax had been adopted by the United Kingdom and New Zealand since 1909. Now-a-days the progressive rate is commonly used rather than flat rate in all over the world.

2.1.3 Taxation in Ancient Nepal

Reliable records about taxation in ancient and medieval Nepal are not available. However, tax has been one of the major sources of government's revenue from the ancient time in Nepal. Taxes were then levied on the merchants, travelers and farmers in the form of cash, kind and labour. On some occasions gold and agricultural products were also paid, as taxes; but the natures of these taxes were temporary. In the Lichhavis regime, income taxes from agriculture and business were introduced as a direct tax for the first time in Nepal. Agricultural income tax was called "Bhaga". The farmers were supposed to pay agricultural income tax to the government in 1/6, 1/8 and 1/12 according to quality of the land that they owned. Income tax, which was levied

on business income, was called "Kara". There did also exist irrigation and religious tax during the regime of king of Ansubarma of Nepal (Shah, 1995).

2.1.4   Taxation in Unified Nepal (1768-1846)

During the period 1768-1846, the major sources of revenue in Nepal were land and homestead taxes, monopolies customs, transit and market duties, mines and mints, the export of forest produce, birds, animals, and various levies and fines. Maximization of revenue was the main objective of the tax policies during that period. Local administrators were directed "*To take whatever is paid willingly by the people*". The taxes were usually collected at three levels.

i.   **Royal Palace:** To finance occasional and ceremonial needs. The taxes were broad based and progressive.

ii.   **Government:** To finance administrative, military and other purposes assessed on official functionaries, occupational groups and other people.

iii.   **Local:** Prerequisites local officials, functionaries and mendicants.

Collection of customs, transit, market and excise duties were given on contracts. In some parts of Terai, taxes were collected at specific rates on jewellery, textiles, falcons, horses, elephants, homespun cloth, yarn, blankets, borax, wax copper, iron, paper, tobacco, herbs, drugs, cotton, salt, yak's tail, musk, sheep and goats. Levying duties on timber exports derived revenue from forests.

The various taxes levied during that period were narrow in base and were imposed primarily on occupations and economic activities, not on income or property. The system of direct taxation was confined to land tax and special levies like "Darshanbhet", "Salami", "Walak" etc. There was no taxation of income in the modern sense of income tax.

2.1.5 Taxation during Rana Regime in Nepal (1847-1951)

Imposition and collection of taxes during 104 years oligarchic rule of the Rana family in Nepal prior to 1951 was the prerogative of the feudal rules. Only those taxes, which suited the objectives, needs and whims of the ruling Prime Minister, were imposed. No budget was framed during the Rana regime. Taxes were collected at the time of requirement due to lack of income tax act and finance act. The collected taxes were directly deposited into the Prime Minister's Account.

Land tax, custom and excise duties in the form of lump sum, contracts, royalty on felling trees, royalty on supply of porters and soldiers, entertainment taxes were the major sources of revenue. There was no direct tax in the country except land tax collected on a contractual basis and "Salami" which the government employees used to pay out of their salaries at a very small percentage.

Rana Prime Minister levied taxes for meeting specific expenditure of the royal household or extraordinary expenditure necessitated by war or other crisis rather than mobilizing revenue in the nation. During Nepal-Tibet war (1855-56), the first Rana Prime Minister Jung Bahadur had imposed a tax on the income of selected groups. Similarly, Bir Shamsher imposed a levy of 1% on the official value of Jagir assignment of government employees in 1891, to

finance the transportation of water pipe supply in the capital. Ranodeep Singh imposed a 50% tax on the income made by fishermen in Deukhuri from the sale of fish in 1882.

2.1.6 Income Tax in Modern Nepal

The role of government has been changed after the independence of the country in 1951. Government was enforced to perform development activities besides regular functions. So, it was realized to impose tax on business profits and remuneration. Consequently, *Finance Act 1959* was passed. In 1960 (2017), a formal Income Tax Act was enacted in accordance with the provision in *Finance Act, 1959* for the first time in Nepal. In three years experience, the *Business Profit and Remuneration Act, 1960* was found very narrow and vague, and it was replaced by the *Nepal Income Tax Act, 1962 (2019).* The Income Tax Act 1962 remained till 1974 and replaced by *Income Tax Act, 1974 (2031)* and it also replaced by new *Income Tax Act 2002 (2058).*

The income law at present enforce in Nepal is *Income Tax Act, 2002 (2058)* and *Income Tax Rule 2002 (2059)* made there under. Finance Act is passed every year to translate the economic policy contained in the budget speech into law. It generally prescribes the rates and exemption limit for tax purposes and may delete, add or modify the provisions contained in the income tax act. Decisions of Supreme Court in Nepal also act as precedents for income tax law purposes. The notification of Nepal Gazette or circular by Inland Revenue Department classifies and complements the legal provisions.

The legal aspects of income tax, therefore, consist of provisions in the constitution, Income Tax Act, finance Act, Income Tax Rules and decisions of

the Supreme Court. Together, they make up income tax law in Nepal. Historical development of income tax law in Nepal is given below: -

2.1.6.1 Business Profit and Remuneration Tax Act, 1960 (2017)

The *Finance Act, 1960* had made provisions for the taxation of business profits and remunerations. An ordinance was issued by the king to collect the tax. In 1960, parliament of Nepal enacted *"Business Profit and Remuneration Tax Act 1960 (2017)"*, which was consisted of 22 sections. With the enactment of that act, the salary tax or personnel income tax was levied upon those individuals whose personal income exceeded Rs. 6,000 per year. In the first three years, the exemption was Rs. 7,000. An examination of tax files in the Kathmandu District Office disclosed 557 personal income tax files of individuals who had paid taxes in one or more years.

The following were the silent features of the Act:

i.   Only remuneration and business profit were subject to tax. Deductions were not specified for the purpose of calculating the income.

ii.   Tax on remuneration was to be deducted at source.

iii.   The basis for calculating the tax liability for remuneration was the income of the current year and for the business profit. It was the profit of preceding year.

iv.   In case of default, fines up to Rs. 5,000 were prescribed.

v.   Taxpayer was given the right to appeal against the tax assessment to local "Bada Hakim". Therefore appeal could be lodged at

Revenue-Court. Every appeal was to be accompanied by security deposit for the amount of tax payable.

vi.   The tax officer was empowered to assess tax on the basis of best judgment estimates.

vii.   Profits from industries were granted a rebate of 25% and profits from small industries were granted a rebate of 50%.

As high discretionary power in assessment of income tax granted to tax officers, various loopholes, narrow and vague tax base were the major shortcomings of that act which cause the *Income Tax Act 1962 (2019)* came into existence.

2.1.6.2   Income Tax Act, 1962 (2019)

The main purpose of the imposition of this Act was not only to raise government revenue but also to reduce inequality of income and wealth distribution with social justice and to create tax-paying habit of the taxpayer. The *Income Tax Act, 1962 (2019)* had 29 sections compared to 22 sections of the previous Act. It was amended in 1972 (2029). It had provision of income tax in agricultural income, but this provision was abolished by the *Finance Act, 1966 (2023).*

The main features of this Act were as follows:

i.   Income was defined as all kinds of income including income derived from business, profession and occupation, house and land rent, investment in cash or kinds,

agriculture, insurance business, agency and any other sources.

ii.   Provision was made for payment of tax in installment as well as for advance payment of tax.

iii.   Carry forward of losses was allowed for a period of two years.

iv.   There were nine sources of income for tax purpose.

v.   The personal as well as residential status of the taxpayer for tax purposes was defined.

vi.   The income tax assessment and collection procedures were specified along with the method of computing net income.

vii.   The basis was specified for assessing tax on the best judgment estimate of the tax officer.

viii.   Provision was made for reassessment of tax as well as rectification of arithmetic errors.

ix.   Provision was made for the exemption of income tax for new industries for certain period.

x.   The agriculture income was brought under the scope of income tax for the first time. But *Finance Act, 2023* exempted this income fully from income tax. The *Finance act, 2030* again brought agriculture income under scope of income tax. However, because of heavy political pressure, the *Finance Act, 2034* again exempted agriculture income under the scope of income tax.

2.1.6.3 Income Tax Act, 1974 (2031)

Income Tax Act, 1974 (2031) had been implemented in place of *Income Tax Act, 1962 (2019)*. Its basic framework had been derived from previous act and it had 66 sections with clear cut provision of self assessment, carry forward of losses for three years and precise definitions of related terms like tax, assessment of tax, year of income, income of non residence taxpayers etc. This act was amended in 1977, 1979, 1980, 1984, 1985, 1986, 1989 and 1992 to make it more practical and to eliminate confusing terms. In this act, certain provisions were added and some provisions were amended from time to time so the *Income Tax Act, 1974* had become more scientific and better organized with the progress of time. Government of Nepal enacted the *Income Tax Rule, 1982 (2039)* in accordance with the authority given under section 65 of *Income Tax Act, 1974 (2031).*

Some of the main features of this act, 1974 are as follows:

i.   This act had clearly defined about income tax, taxpayer, year of income, personal status of taxpayer, non-resident taxpayer, net income and so on.

ii.   Five heads of income sources were specified i.e. (a) Agriculture, (b) Industry, Business, Profession of Vocation, (c) Remuneration, (d) House and Land Rent and (e) Other sources.

iii.   Methods of computing the taxable income from each head had been specified with deductions allowable.

iv.   The Act had made it obligatory for taxpayer to register their industries, business, professions or vocation in the tax office and any changes should be notified.

v.	Carry forward of losses is allowed for within subsequent three years.

vi.	Provision was made for self-assessment of tax for the first time in Nepal.

vii.	Provision was made relating to deduction for life insurance premium and contribution made for philanthropic purpose.

viii.	Taxpayer was required to keep their accounts and records of the income and to be preserved for six years.

ix.	Provision was made to make agreement for avoidance of double taxation with foreign government.

x.	Provision was made relating to reassessment or additional assessment of tax.

2.1.6.4   Income Tax Act, 2002 (2058)

To enhance revenue mobilization through effective revenue collection procedure for the economic development of the nation, and to amend and integrate the laws relating to income tax, the parliament of Nepal enacted *Income Tax Act, 2002 (2058),* since 1st April 2002 (19th Chaitra, 2058).

This act was brought in Nepal to avoid the following defects of *Income Tax Act, 2031.*

i.	Narrow base of tax.

ii.	Taxing only the income originated in Nepal.

iii.   Dispersion of tax related acts, i.e. income tax related provisions were given in different acts.

iv.   Low penalty rate to tax evader.

v.   Incompatible to self-assessment, and

vi.   Unsuitable to modern economy.

The main objectives of *Income Tax Act, 2058* are presented below:

1.   To levy tax on all income sources and income earning transactions.

2.   To impose uniform tax to all people and all sources.

3.   To make income tax revenue more productive and elastic.

4.   To develop the tax system by means of extended scope, clear-cut, transparent and simple procedure.

5.   To make accountable and improve tax administration.

6.   To reduce economic cost neutralizing income tax.

7.   To emphasize statement based on accounting system.

8.   To make responsible to income taxpayers emphasizing procedure of self-assessment system.

The key features of *Income Tax Act, 2058* are:

a.   All income tax related matters are confined within the Act by abolishing all tax related concessions, rebates and exemption provided by different Acts.

b.   The Act has broadened the tax base. Unlike previous tax act, tax rates are spelled out in the act. The tax rates and concessions are harmonized on equity grounds.

c.   The Act has introduced a pool system of charging depreciation. Intangible assets are also depreciated.

d.   The Act has first introduced taxation on capital gains.

e.   The Act has provided liberal loss set-off and carry forward/backward provisions. Inter-head adjustments of losses are clearly specified.

f.   The Act has introduced a provision for administrative reviews to allow the tax administration to correct mistakes made by tax administrators internally.

g.   The Act has provided a stringent fine and penalty for the defaulters.

h.   Global incomes of a resident are made taxable. Non-residents are also taxed on their incomes with source in Nepal.

i.   List of expenses is inclusive. All expenses relating to income have been made admissible.

j.   The Act has made provision of international taxation. Foreign tax credit has been introduced for the first time.

k.   The Act has separated administrative and judicial responsibilities by distinguishing civil liabilities of the taxpayers from criminal liabilities.

2.2   Review of Related Studies

It is not an easy task to perform a research study based on income tax system because it is changing rapidly with the flow of time. In lack of sufficient review of available materials, it is a very complex problem to find details information about income tax in Nepal. There are various studies carried out by different institutions and individuals. Reviews of available materials based on income tax are certainly helpful regarding to the subject matter in the tax system of Nepal. For this purpose, various books and dissertations reviewed for this study are as follows:

2.2.1   Review of Thesis

Mr. Daya Raj Tripathee had presented a thesis entitled, "*Income Tax System in Nepal and Some Potential Areas for Reform*" in 1995. Deficit annual budget and deficit financing of the nation were his main concern of the study where he had tried to show the tax structure in Nepal, role of income tax in Nepalese economy, income tax administration and tax evasion in Nepal along with reforms.

Mr. Tripathee had conducted his research using 15 years data since 1974/75 to 1989/90. Primary data were also used which were collected through opinion survey within Kathmandu valley. Simple statistical tool such as mean and time series were used to analyze the data. Graphs, charts and diagrams were also used as necessary. From that research, he had conducted that income tax from individual sector had provided maximum contribution in income tax structure and about 80% of total revenue was collected through taxation. Tax evasion had increased due to poor tax administration and delay in tax assessment process. Lastly, he had recommended levying tax on agriculture

income, tax holiday should be given to the firms and administration should be sound and efficient.

Mr. Shiva Narayan Shahu had conducted a research on the topic, "*Contribution of Income Tax in National Revenue of Nepal*" in the year 1995. His research problems were the increasing resource gap and how income tax can be the means for resource mobilization. The main objective of this research were; to show the contribution of income tax in government revenue, to show the resource gap in Nepalese finance, to highlight the importance of income tax as a source to avoid financial deficit, to find out the rate and per capita burden of income tax and trend and structure of income tax in Nepal.

His research design was historical cum descriptive. He had used only secondary data of 21 years from 1974/75 to 1994/95. Data collection and analysis procedures were; consulting the required governmental and non-governmental offices, and simple arithmetic rule, chart and diagrams were applied to analyzed data. From that research he had found out and concluded that income tax can be the vital source for internal resource mobilization to fulfill resource gap. Only 0.35% of total population came under the categories of taxpayers in Nepal during his research period. He found that collection of income tax was gradually growing and the contribution of income tax in total tax revenue and total national revenue were 9.95% and 7.94% respectively. Similarly, he also conducted that individual taxpayer had higher contribution in income tax than salary taxpayer.

In 1995, *Mr. Krishna Kumar Shakya* had presented his thesis entitled, "*Income Tax and Tax Structure of Nepal*" and had tried to give origin and meaning of income tax with its historical review, structure of government revenue in Nepal, importance of income tax, contribution of income tax to total tax revenue and total revenue.

In his study, he stated that structure of the government revenue in Nepal is a composition of the tax revenue and non-tax revenue. The tax revenue is the most important sources of government revenue that occupies 80% share in the total government revenue in the year 1993/94. The ratios of income tax to GDP, total revenue, total tax revenue and direct tax revenue had an increasing trend. But the increasing rate was low in comparison to other countries. He further added that the change in tax rate and exemption limit had made the assessment of income tax more complicated, which had given plenty of opportunities to evade income tax, which exist as a major problem.

Lastly, he had recommended many suggestions for the sound and effective income tax such as honest and effective income tax administration, scientific method in tax collection and encouragement of self-assessment of tax.

Mr. Parmeshwor Pant had presented a thesis entitled, "*A Study on Income Tax Management in Nepal*" in 1996. His main objectives of research were to find out the share of income tax to government revenue, to review the income tax system and to identify the problem of income tax management. His research was based upon secondary as well as primary data. The primary data were collected within Kathmandu valley through interview, questionnaire etc.

He had conducted that income tax was a major sources of internal resource mobilization; the income tax system and income tax assessment was not efficient. Evasion of income tax was major constraint for resource mobilization. He also added that corporate tax rate was found high and exemption limit was not sufficient.

Lastly, he had recommended that income tax rate should be widened, tax assessment procedure must be improved and income from agriculture and capital gain should be taxed.

Mr. Bharat Kumar Lamsal had presented his thesis entitled "*A Study on Contribution of Income Tax on Government Revenue in Nepal*" in 2001. In this study, he had presented administrative aspect of income tax and focused his empirical study towards tax evasion as one of the greatest challenge to taxation system of Nepal. Though his study is conducted after implementation of newly *Income Tax Act*, he had ignored it and based his study solely on previous *Income Tax Act*.

Mr. Keshav K. Budhathoki, in his thesis entitled "*Contribution of Income Tax on Government Revenue with reference to Nepal Telecom-2004*" had explained the conceptual framework of public enterprises and the Nepal Telecom, conceptual framework of income tax, contribution of income tax to the public revenue and share of Nepal Telecom to the income tax. His suggestion was about the income tax system, promotion and reward to efficient and honest personnel, motivation to personnel, tax education to tax payer and officers, strict action to corruption, increase in public participation.

Mr. Himlal Pokhrel had presented a thesis entitled, "*A Study on Role of Income in Revenue Collection of Nepal*", in 2005. His research had mainly focused on the removing and controlling income tax evasion for better resource mobilization. As his main objective was to analyze the impact of income tax evasion in government revenue of Nepal, he set further objective which were; to identify the ways and causes of income tax evasion, to estimate the volume and tendency of income tax evasion in small trade sectors and to examine the role of income tax in utilizing the resources in Nepal.

Mr. Pokhrel had conducted that research analytical as well as descriptive research design. Most of data were from secondary sources and some were from primary sources. Primary data were collected through opinion survey, field visit and interviews. Simple statistical tools used as for data analysis.

From that research he had concluded that there was widespread evasion of income tax in Nepal and income tax is a suitable means for raising domestic resources. He had recommended for controlling tax evasion by controlling illegal business activities, increasing penalties and fines to tax evades, compulsory maintenance of accounts etc.

In 2009, **Mr. Sudish Kumar Kushawaha** had conducted research entitle "*Taxation under Business Income in Nepal: past and resent*". The main objectives of this research were: i) To analyze the effectiveness of business taxation in income tax revenue. ii) To study the contribution of income tax on tax revenue. iii) To study the target and collection of income tax and iv) To study change in tax liabilities of business companies due to change in tax law. Some remarkable findings and conclusions of this research are: a) the contribution of income tax to GDP is not satisfactory. The research shows it was not exceeded 2.15% since FY 2057/58 to 2063/64. b) the share of tax revenue in GDP also not found satisfactory. From FY 2057/58 to FY 2063/64, average tax revenue/ GDP ratio was 8.96% which is very low in comparison to other developing countries. c) when income tax act, 2031 was effective, percentage of tax collection in comparison to target was in decreasing trend but after income tax act, 2058 became effective from the FY 2059/60, percentage of tax collection in comparison to target was increasing trend. It was 123.18% of target in FY 2064/65.

From that research he had concluded that in the beginning year of implementation of new income tax act, 2058 due to lack of awareness about new income tax act, target set for income tax collection couldn't be achieved. But after completion of 5 years of its implementation, the target was easily achieved.

2.2.2   Review of Books, Research Reports and Articles

In 1980, **_Dr. Govinda Ram Agrawal_** had written a book entitled "_Resource Mobilization in Nepal_" published by CEDA. The book was mainly concerned with resource mobilization in Nepal, especially through the reform of income tax. The book had been divided into eight chapters; the first chapter deals with resource mobilization through taxation in developing nations with special reference to Nepal. The second chapter deals with fiscal policies in developing nations and Nepal and third chapter looks at income tax in Nepal from the historical perspective.

The fourth chapter deals with structure of Nepalese taxation. In the fourth chapter related to tax structure, the writer had concluded that taxation trend in Nepal have shown that role of indirect taxes have been predominant in the tax structure. More than 60% of tax revenue was derived from foreign trade alone. However, since 1974/75 the role of income tax had been increasing.

He further added that the design of tax structure must take into account the tax objectives. The tax structure of Nepal has failed to take account of the prevailing economic structure and patterns of income distribution. The low share of direct tax is a clear indication of the ineffective use being made to taxes to effective equitable distribution. This is the result of policy decisions taken in the past as to design the tax structure.

Dr. Agrawal had made an empirical study taking tax policy makers, tax experts, tax administration, tax lawyers and accountants and taxpayers of different parts of Nepal. From that study he had concluded that Nepalese taxpayers were favorably disposed to income tax. However, the major constraints in the effective functioning of tax system seem to be administrative deficiencies, poor tax paying habits, lack of tax payers education, complex procedures and defective tax information system.

Bidhyadhar Mallik had written a book entitled "*Nepalko Adhunik Ayakar Pranali* in 2003. This book especially deals with the through analysis of *Income Tax Act, 2058* with example. Every section of income tax act has been clarified with suitable examples. He had written about the development of existing income tax and need and importance of income tax system in Nepal. The new provision made by *Income Tax Act, 2058* about tax base, computation of income, tax-exempt amount, deduction allowable, accounting of tax, capital gain, retirement saving and tax, dividend tax, international taxation and tax auditing have been clarified precisely in his book. Similarly, the book had also explained about tax administration, documentation, information collection, payment of tax, installment tax, income statements, tax-assessment, tax collection, review and appeal, fees and interest, fine and penalties, tax rate and determination of provision of depreciation etc.

K.P. Aryal and *S.P. Poudel* had written a book entitled "*Taxation in Nepal*" in 2004. They had explained about the income tax system in Nepal along with house and land tax and value added tax. The book has been designed based on the curriculum of B.B.S. It has been divided in to three parts. In the first part of the book introduction and development of income tax, capital and revenue, nature of expenses and income items, entity and retirement saving, dividend tax, computation of income from business, remuneration and investment have been explained with numerical and theoretical examples. House and land tax and value added tax have been explained in the second part and third part respectively. The book also included proper bibliography and adequate appendix where various income tax, house and land rent and VAT related forms, schedules and format had been described.

In 2003, *Dr. Chandramani Adhikari* presented a book entitled "*Modern Taxation in Nepal*". Dr. Adhikari has described the provisions and related to income taxation of Nepal according to new *Income Tax Act, 2058.* He has been

described about income taxation in Nepal, heads and sources of income, employment or remuneration income, retirement fund and contribution, tax on pension income, international taxation, provisions of advance tax, tax administration and rights of tax administrators, legal remedy appeal etc.

In 2006, *Dr. Puspa Raj Kandel* presented a book entitled "*Tax Laws and Tax Planning*". This book is based on *Income Tax Act, 2058.* It had described about tax, features of *Income Tax Act, 2058*, major provision of *Income Tax Act 2058*, taxation of employment, business income & investment income, treatment of losses, special provision for: individual, banking & insurance, retirement saving and entities, house & land tax, value added tax, heads & sources of income, classification of tax payers, tax administration: rights of tax payers, powers of Director General and Other officers, offence, penalty and appeal and tax laws and tax planning: tax management & different ways of minimizing the tax liabilities to tax payers.

Dr. Puspa Raj Kandel had written an article entitled "*Are Tax Incentives Useful? If so, which one?*" published in Journal of Finance and Development, 'Rajaswa', Volume 1, 2004 April. In that article he had tried to seek the answer from the survey of various empirical studies earlier done in Nepal, India, Pakistan and other western countries. He found that the tax incentives are still the controversial matter whether they promote the investment or not. But he argued that most of the developing countries needed tax incentives.

As per the empirical studies done in various countries the conclusion is that among different types of tax incentives, investment allowance or investment tax credit and accelerated depreciation are superior to other types of tax incentives. Tax holiday is the most inferior type of tax incentive that causes revenue losses without enhancing the investment environment. Meanwhile,

most of the researchers have opposed the tax holiday system both within Nepal and outside Nepal.

He further added that the survey of the studies indicate that accelerated depreciation system had positive impact on investment. The work of reducing tax rate, especially, followed after 1990s to such lowest rate was not a proper decision. That is why, if Nepal wants to go to tax incentives again, it should adopt investment allowance or investment tax credit, not the full tax holiday in future.

2.3   Research Gap

There is the gap between this research and previous researches. Most of the previous research studies were based on laws, provisions, tax evasion and avoidance, administrative aspect and structure of tax. Majority of the research were based on theoretical aspects of the tax administration. Most of the previous researches were not applied proper tools for analysis of data.

Now a days, there is growing serious research gap and fiscal gap due to lack of internal resource mobilization. To mobilize internal sources to the maximum possible extent, government of Nepal has widened the scope of taxes for the rapid economic development. In keeping the policy of government in mind, this research has attempted to highlight the real situation of contribution of income tax to the government revenue of Nepal.

This study has been undertaken analytically and intensively to analyze the contribution of income tax to government revenue of Nepal. Projection of future trend of income tax has been done. This research will be equally beneficial to the policy makers, planners, tax administration researchers, students and the persons interested in income tax of Nepal.

Chapter– 3

RESEARCH METHODOLOGY

This chapter is dedicated to a detailed discussion of the methodology used in this study by covering the procedure of getting research problem's answer as per the objectives. There are six parts as research design, population and sampling, sources of data, procedure of data collection, data analysis procedure and presentation and analytical tools.

3.1   Research Design

The research topic entitled "*A Study on Contribution of Income Tax to Government Revenue of Nepal*" is abstracted from the socio-economic environment of Nepal. As the income tax system and structure is based on various rules, regulations and acts that are always setting on different countries own socio-economic infrastructure, descriptive research design is more suitable to analyze Nepalese tax structure. For contribution of income tax, the studies need to analyze its past performance in different time period with respective indicators. So, historical as well as descriptive research design is used.

3.2   Population and Sampling

The targeted whole area relating to government revenue or national revenue is set for the research population and income tax is taken as sample size.

3.3   Sources of Data

Most of data are collected from secondary sources. The major sources of data are as follows:

a) Annual report of IRD/N of different years.

b) Economic Survey of various years, published by MOF.

c) Nepal Rastra Bank's Economic Bulletin of various times.

d) Central Bureau of Statistics etc.

3.4   Data and Information Collection Procedure

Various numerical data and information are collected as per the objective of the study and research questions. Firstly, laws, rules, regulations and policies related to income tax are studied to get more information about income tax including book related to public finance. Secondly, different libraries such as Chamber of Commerce, FNCCI, and NRB are also consulted. Thirdly, the numerical data are collected from the publication of annual reports of IRD/N, economic bulletin of NRB, Economic survey of MOF, publication of security board, CBS, publication of CEDA TU, Budget speeches etc. Lastly, various journals, national newspapers are also reviewed. Respective parties are consulted while analyzing the research questions.

3.5   Data Analysis Procedure

The collected data are classified, tabulated and analyzed in descriptive and analytical way as per the subject matter. Likewise, the required accounting

principle, mathematical approaches and legal provisions of ITA, 2058 are taken into consideration in data analysis procedure.

3.6   Presentation and Analytical Tools

Various tools are applied while conducting this study, which are table, percentage, average, correlation and time series analysis procedure.

a)   **Table:** Various tables are formulated to tabulate the data. A master table is also presented in the Appendix I.

b)   **Charts and Diagrams:** These tools are used for visually description of the data. Trend lines, bar diagrams are used for this purpose.

c)   **Correlation:** Correlation may be defined, as the degree of linear relationship existing between two or more variables. Two variables are said to be correlated when the change in the value of one variables are accompanied by the change of another variable. Correlation analysis is defined as the statistical technique, which measure the degree and direction of relationship between/among the variables. In the other words, it helps in studying the covariance of two or more variables, which lies between ±1. If the value of correlation (r) is near to +1, this relationship is said to be perfectly positively correlated and vice-versa. We can compute the correlation simply by using direct method:

$$r = \frac{N\Sigma XY - \Sigma X.\Sigma Y}{\sqrt{N\Sigma X^2 - (\Sigma X)^2} \ \sqrt{N\Sigma Y^2 - (\Sigma Y)^2}}$$

Where,

N = No. of observation

X = Variables

Y = Variables

Determinant of correlation coefficient

$$r^2 = \frac{[N\Sigma XY - \Sigma X . \Sigma Y]^2}{[N\Sigma X^2 - (\Sigma X)^2] [N\Sigma Y^2 - (\Sigma Y)^2]}$$

d) **Analysis of time series:** A series formed form a set of statistical data arranged in accordance with their time of occurrence is said to be a time series. A time series shows the relation between two variables one being the time. The size of the population in every decade, the price level of the different in every month the volume of population in every indicated the relation between the time changes and the changes in the value of other variables. Time series analysis is mostly used in business and economics, by which we can predict the value of variable for the future. Mathematically, a time series is defined as the functional relationship Y=f(t), where Y is the value of the variable consideration in time. The time 'T' may be yearly, quarterly, monthly, weekly etc. There are various method of analyzing time series, least square method is chosen as the best method in showing trend and prediction in our research.

A widely and most commonly used method to describe the trend line and predication is the method of least square. Under this method, a trend line is fitted to data satisfying $\Sigma(Y-Y_C) = 0$, and $\Sigma(Y-Y_c)^2$ is least where, Y is the actual value and Y_c the computed value of Y. From that the line obtained by this method is the line of best fit.

Trend line $Y = a + bx$.

Where,

a) $\quad = \quad \dfrac{\Sigma X^2 \Sigma Y - \Sigma X . \Sigma XY}{N\Sigma X^2 - (\Sigma X)^2}$

b) $\quad = \quad \dfrac{N\Sigma XY - \Sigma X . \Sigma Y}{N\Sigma X^2 - (\Sigma X)^2}$

Where,

$Y =$ Dependent variable and $X =$ Independent variable

Chapter- 4

PRESENTATION AND ANALYSIS OF DATA

4.1   Tax Structure of Nepal

Modern economic planning of Nepal had started with the initiation of first economic planning in 1959. Since then, taxes have been used for the achievement of national economic goals. So, taxes play vital role to the economic development of Nepal. Tax structure of any country comprises both direct and indirect taxes.

4.1.1 Composition of Total Revenue

Total revenue of Nepal is composed of both tax revenue and non-tax revenue when the Gov. of Nepal presented first national budget in 1951/52.

Table 4.1.1 shows the composition of total revenue of government, which includes tax and non-tax revenue from FY 1998/99 to 2007/08. It seems that the share of tax revenue has always been greater than the share of non-tax revenue. In FY 2007/08, the share of tax revenue and non-tax revenue was 79.12% and 20.88 % respectively as compared with 77.19% and 22.81% in the FY 1998/99. This indicates that the role of tax revenue is very much important in revenue mobilization of Nepal and to meet the increasing government expenditure. Tax revenue has been placed as a major source of government revenue in Nepal.

The composition of total revenue from the fiscal year 1998/99 to 2007/08 has been given below.

Table 4.1.1

**Composition of Tax and Non-tax Revenue on Total Revenue of Nepal
From F/Y 1998/99 to 2007/08 (Rs. in million)**

Fiscal Year	Total Revenue	Total Tax Revenue	Total Non-tax Revenue	Tax Revenue as % of Total Revenue	Non-tax Revenue as % of Total Revenue
1998/99	37,251.00	28,752.90	8,498.10	77.19	22.81
1999/00	42,893.70	33,152.10	9,741.60	77.29	22.71
2000/01	48,893.90	38,865.10	10,028.80	79.49	20.51
2001/02	50,445.60	39,330.60	11,115.00	77.97	22.03
2002/03	56,229.70	42,587.00	13,642.70	75.74	24.26
2003/04	62,331.00	48,173.00	14,158.00	77.29	22.71
2004/05	70,122.70	54,104.70	16,018.00	77.16	22.84
2005/06	72,282.10	57,430.40	14,851.70	79.45	20.55
2006/07	87,712.20	71,126.70	16,585.50	81.09	18.91
2007/08	107,622.50	85,155.50	22,467.00	79.12	20.88
Average	63,578.44	49,867.80	13,710.64	78.44	21.56

Source: Appendix-I, Master Table

Forecasted Data (Base Year 2003/04)

2008/09	101,216.66	80,407.17	20,809.51	79.44	20.56
2009/10	108,059.97	85,959.76	22,100.22	79.55	20.45
2010/11	114,903.29	91,512.36	23,390.92	79.64	20.36

Source: Appendix-V: Table V-2, V-4 & V-3.

The above table reflects that the tax revenue was gradually increasing in every year since 1998/99 amounting Rs. 28,752.80 million to Rs. 85,155.50 million in the year 2007/08. But the percentage contribution of tax revenue on the total government revenue was found fluctuation in different years. The contribution of tax revenue to total revenue was maximum 81.08% in FY 2006/07 and minimum was 75.74% in FY 2002/03 during the study period and the average contribution was 78.44%. The non-tax revenue collection was also

in the increasing trend in those 10 years i.e. Rs. 8,498.10 million in 1998/98 to Rs. 22,467.00 million in 2007/08. The non-tax collection in the year 2005/06 was decreased to Rs. 14,851.70 million as compared with Rs. 16,018.00 million in the FY 2004/05. Then after, it was in the increasing trend.

The tax revenue collection was seen to be in the gradually increasing trend. The contribution portion of non-tax revenue to total revenue was fluctuating during the study period. It was decreased to 18.91% in FY 2006/07 and was increased up to 24.26% in FY 2002/03 and average contribution was 21.56% during the study period. Taking the FY 2003/04 as base year the projection has been made for three years. It shows that both the tax and non-tax revenue will increase in the future. It is also clear that major portion of government revenue will be covered by tax revenue. The contribution of tax and non-tax revenue on total revenue has been shown in the following trend line.

Figure 4.1.1

Trend Line showing Tax and Non-tax Revenue
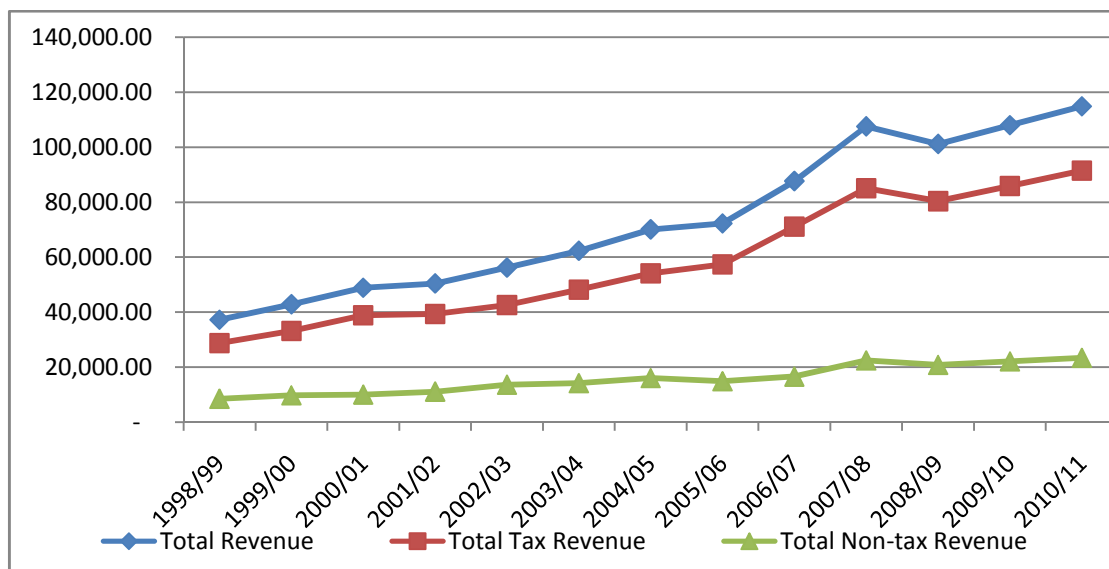
4.1.2 Composition of Tax Revenue

Tax revenue is composed of direct and indirect tax. The structure of Nepalese tax revenue can be presented in terms of consumption, income and capital based tax. Taxes on consumption are known as indirect taxes. Import custom duties, Export custom, Excise, VAT and Indian excise refund are included in indirect tax. Similarly, Land tax, House & Land registration tax, and Urban House & Land Rent tax, Income tax and Vehicle tax are included in direct tax. The composition of Nepalese tax revenue is presented in the table 4.1.2 in terms of direct and indirect tax revenue from FY 1998/99 to 2007/08.

From the table 4.1.2, it is clear that the whole Nepalese tax structure is dominated by indirect tax. The average share of direct tax revenue in total tax revenue for the period of 1998/99 to 2007/08 was 25.74% and the average share of indirect tax revenue was 74.26%. The composition of tax revenue has been shown as below:

Table 4.1.2

Contribution of Direct and Indirect Tax on Total Tax Revenue
From F/Y 1998/99 to 2007/08 (Rs. in million)

Fiscal Year	Total Tax Revenue	Total Direct Tax	% share of Direct Tax to Total Tax Revenue	Total Indirect tax Revenue	% share of Indirect Tax to Total Tax Revenue
1998/99	28,752.90	7,516.10	26.14	21,236.80	73.86
1999/00	33,152.10	8,951.50	27.00	24,200.60	73.00
2000/01	38,865.10	10,159.40	26.14	28,705.70	73.86
2001/02	39,330.60	10,597.50	26.94	28,733.10	73.06
2002/03	42,587.00	10,105.80	23.73	32,481.20	76.27
2003/04	48,173.00	11,912.60	24.73	36,260.40	75.27
2004/05	54,104.70	13,071.80	24.16	41,032.90	75.84
2005/06	57,430.40	13,968.10	24.32	43,462.30	75.68
2006/07	71,126.70	18,980.30	26.69	52,146.40	73.31
2007/08	85,155.50	23,087.70	27.11	62,067.80	72.89
Average	49,867.80	12,835.08	25.74	37,032.72	74.26

Source: Appendix-I, Master Table.

Forecasted Data (Base Year 2003/04)

2008/09	80,407.15	20,789.05	25.85	59,618.09	74.15
2009/10	85,959.76	22,235.23	25.87	63,724.52	74.13
2010/11	91,512.36	23,681.41	25.88	67,830.96	74.12

Source: Appendix-V: Table V-4 & V-6.

From the above table, we find that there has been simultaneous increase in direct tax, indirect tax and total tax revenue in absolute terms. In 1998/99, these amount were Rs. 7,516.00 million, Rs. 21,236.80 million and 28,752.90 million respectively and during the period of ten years these amounts became Rs. 23,087.70 million, Rs. 62,067.80 million and Rs. 85,155.50 million respectively.

The contribution of direct tax to total tax revenue in 1998/99 was Rs. 7,516.10 million, which increased to Rs. 23,087.70 million in the FY 2007/08

and direct tax contribution percentage to total tax revenue was 26.14% in FY 1998/99 and increased up 27.11% in FY 2007/08 which was decreased down to 23.73% in FY 2002/03. And the contribution of indirect income tax in 1998/99 wax 73.86% amounting Rs. 21,236.80 million which increased to 76.27% in FY 2002/03 and Rs. 62,067.80 in FY 2007/08. But contribution percentage to total tax revenue of both direct and indirect tax revenue was fluctuating in the period of study.

The above forecasted data reflects that the total amount of direct tax revenue and indirect tax revenue will be increase in future. The total amount indirect tax will be increase, but percentage to total revenue will slightly decrease. The direct tax revenue will be Rs. 20,789.05 million, 22,235.23 million and 23,681.41 million in FY 2008/09, 2009/10 and 2010/11 respectively with the contribution percentage of 25.85%, 25.87% and 25.88% in the respective year. Likewise, the indirect tax revenue will also be increase to Rs. 59,618.09 million, 63,724.52 million and 67,830.96 million for FY 2008/09, 2009/10 and 2010/11 respectively with the contribution percentage of 74.15%, 74.13% and 74.12% for the respective year.

The contribution of direct tax and indirect tax revenue on total tax revenue is shown in the following trend line.

Figure 4.1.2

Trend Line showing tax revenue, indirect tax revenue and direct tax revenue
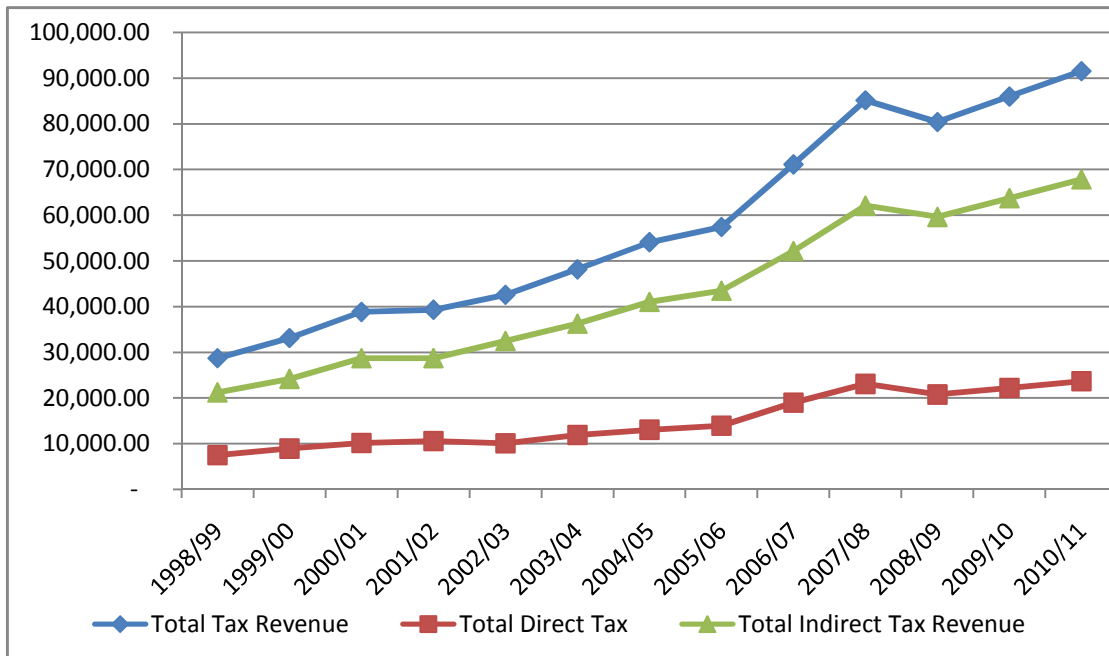
4.1.3 Composition of Indirect Tax

Nepalese tax structure is heavily dependent on indirect taxes, which constituted 72.89% of total tax revenue in FY 2007/08. Nepalese tax revenue is dependent mainly on international trade and sales tax/ VAT on goods and service supplemented by taxes on income and property to some extent.

The major components of indirect tax in Nepalese tax structure constitutes Export custom duty, Import custom duty, excise duty, VAT, Indian excise refund etc. Share and composition of indirect taxes is given in table 4.1.3 which is given as follows:

Table 4.1.3

Components of Indirect Tax and Their Relative Percentage to Total Indirect Tax Revenue
From F/Y 1998/99 to 2007/08 (Rs. in million)

Fiscal Year	Total Indirect Tax Revenue	Total %	Import Custom	As % of IDT	Export Custom	As % of IDT	Indian Excise Refund	As % of IDT	Excise	As % of IDT	VAT	As % of IDT	Other Indirect Tax	As % of IDT
1998/99	21236.8	100	7,698.3	36.2	378.0	1.8	1,206.0	5.7	2,953.2	13.9	8,765.9	41.3	235.4	1.1
1999/00	24200.6	100	8,959.9	37.0	432.5	1.8	1,331.7	5.5	3,127.6	12.9	10,259.7	42.4	89.2	0.4
2000/01	28705.7	100	10,391.9	36.2	492.6	1.7	1,456.2	5.1	3,771.2	13.1	12,382.4	43.1	211.4	0.7
2001/02	28733.1	100	9,678.4	33.7	917.4	3.2	1,700.9	5.9	3,807.0	13.2	12,267.3	42.7	362.1	1.3
2002/03	32481.2	100	10,567.7	32.5	855.6	2.6	2,370.6	7.3	4,785.1	14.7	13,459.7	41.4	442.5	1.4
2003/04	36260.4	100	10,666.9	29.4	527.1	1.5	3,882.7	10.7	6,226.7	17.2	14,478.9	39.9	478.1	1.3
2004/05	41032.9	100	12,299.1	30.0	697.9	1.7	2,188.3	5.3	6,445.9	15.7	18,885.4	46.0	516.3	1.3
2005/06	43462.3	100	11,744.6	27.0	625.6	1.4	2,314.4	5.3	6,507.6	15.0	21,610.7	49.7	659.4	1.5
2006/07	52146.4	100	13,626.1	26.1	708.7	1.4	1,896.5	3.6	9,343.2	17.9	26,095.6	50.0	476.3	0.9
2007/08	62067.8	100	17,128.2	27.6	445.6	0.7	2,997.1	4.8	11,189.6	18.0	29,815.7	48.0	491.6	0.8
Av.	37032.7	100	11,276.1	31.6	608.1	1.8	2,134.4	5.9	5,815.7	15.2	16,802.1	44.5	396.2	1.1

Source: Appendix- IV, Indirect Income Tax Table

Forecasted Data (Base Year 2003/04)

2008/09	59618.1	100	15684.7	26.3	682.1	1.1	3045.7	5.1	10505.0	17.6	29046.0	48.7	657.7	1.1
2009/10	63724.5	100	16486.3	25.9	695.6	1.1	3211.4	5.0	11357.5	17.8	31272.1	49.1	701.7	1.1
2010/11	67831.0	100	17287.8	25.5	709.0	1.0	3377.1	5.0	12210.1	18.0	33498.2	49.4	748.7	1.1

Source: Appendix- V: Table V-5, V-18, V-19, V-20, V-21, V-22 & V-23

Table 4.1.3 reflects that the Import custom and VAT occupies major portion in indirect tax. In FY 1998/99 the contribution of Import custom duty was 36.20% and 27.60% in FY 2007/08, which fluctuated between 26.10% and 37.00%. The average percentage contribution of import custom duty to indirect tax was 31.60% during the study period. The projected data shows that the import duties will also increase in the future,

The VAT has become an important source of overall tax revenue with increasing trend, which contributed 48.00% to indirect tax in FY 2007/08 as compared with 41.30% in FY 1998/99. Its average contribution was 44.50% during the study period, which is not satisfactory and it needs to increase in the future. The share of excise duties was 13.0 % in FY 1998/99 and it has gradually increased to 18.00% in the FY 2004/04.

The total amount collected from excise duty has increased continuously during study period, which was Rs. 2,953.20 millions in FY 1998/99 has raised to 11,189.60 million in the FY 2007/08. However, its contribution percentage to total indirect tax revenue was fluctuated 12.90% to 18.00%. The average contribution of excise duty was 15.20% during the study period.

Likewise, the share of Indian excise refund was 5.70% in FY 1998/99, which has increased up to 10.70% in FY 2003/04 and it fluctuated 3.60% to 10.70% during the study period. The average contribution percentage to total indirect tax revenue of Indian excise duty refund was 5.90%. The total amount of Indian excise refund was Rs. 1,206.00 million in FY 1998/99 and Rs. 2,997.10 million in FY 2007/08. The average amount of Indian excise duty was Rs. 2,134.40 million during the study period.

The average contribution of export custom duty to total indirect tax revenue were Rs. 378.00 millions and 1.80% and Rs. 445.60 million and 0.70% in FY 2007/08. Its contribution to total indirect tax revenue was Rs. 378.00 millions to Rs. 917.4 million and 0.70% to 3.20% during the study period. The average amounts of export custom duty to total indirect tax revenue were Rs. 608.10 million and 1.80%. The projected data shows amount of all components of indirect tax revenue will be increase in FY 2008/09, 2009/10 and 2010/11.

The composition of sources of indirect taxes and their relative contribution to total indirect tax income has shown in the following bar graphs.

Chart 4.1.1

Bar Graph showing contribution of sources of indirect taxes
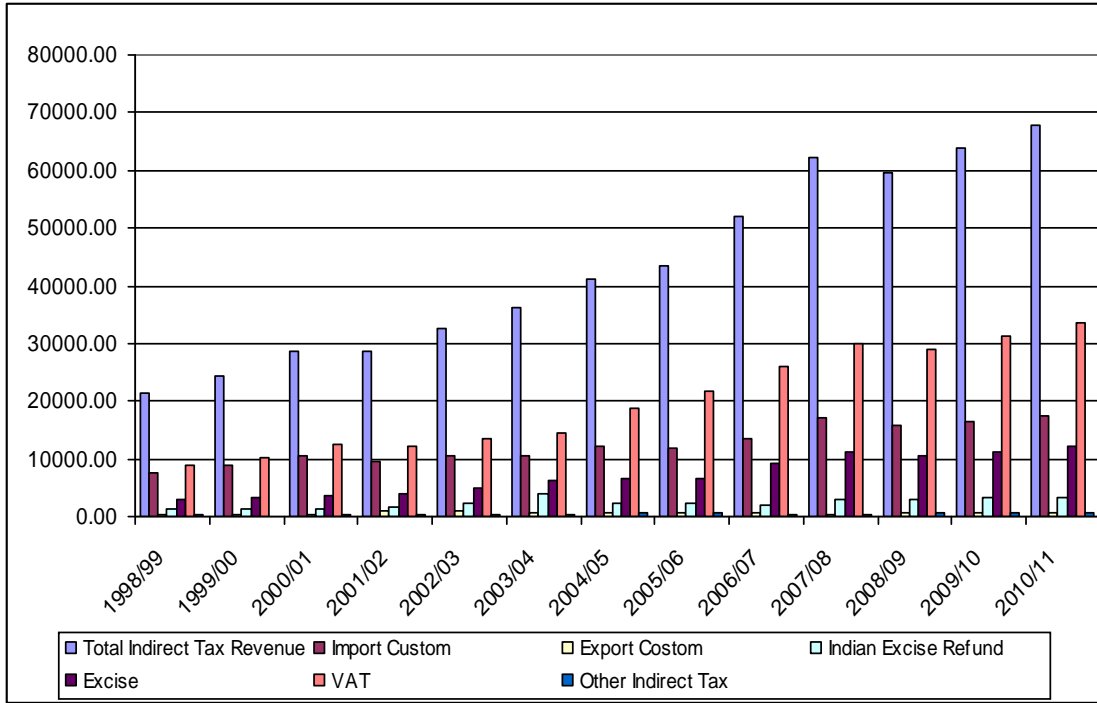
4.1.4 Composition of Direct Tax

The major components of direct tax are Income tax, Land tax, House & Land Registration tax, Urban House & Land Rent Tax and Vehicle Tax. The share of major components of direct tax has given following table.

Table 4.1.4

Components of Direct Tax and Their Relative Percentage to Total Direct Tax Revenue From F/Y 1998/99 to 2007/08 (Rs. in million)

Fiscal Year	Total Direct Tax Revenue	Total %	Land Revenue & Registration	As % of DT	Urban House & Land Rent Tax	As % of DT	Income Tax	As % of DT	Vehicle Tax	As % of DT
1998/99	7516.10	100	1,003.10	13.35	123.30	1.64	6,170.30	82.09	219.40	2.92
1999/00	8951.50	100	1,015.90	11.35	118.50	1.32	7,420.60	82.90	396.50	4.43
2000/01	10159.40	100	612.90	6.03	2.90	0.03	9,114.00	89.71	429.60	4.23
2001/02	10597.50	100	1,131.80	10.68	2.30	0.02	8,903.70	84.02	559.70	5.28
2002/03	10105.80	100	1,414.30	13.99	-	-	8,131.80	80.47	559.70	5.54
2003/04	11912.60	100	1,697.50	14.25	-	-	9,514.50	79.87	700.60	5.88
2004/05	13071.80	100	1,799.20	13.76	-	-	10,466.10	80.07	806.50	6.17
2005/06	13968.10	100	2,118.10	15.16	-	-	11,002.40	78.77	847.60	6.07
2006/07	18980.30	100	2,253.50	11.87	-	-	15,731.80	82.88	995.00	5.24
2007/08	23087.70	100	2,940.70	12.74	-	-	19,077.80	82.63	1,069.20	4.63
Average	12835.08	100	1598.70	12.32	24.70	0.30	10553.30	82.34	658.38	5.04

Source: Appendix- II, Direct Income Tax Table

Forecasted Data (Base Year 2003/04)

2008/09	20789.05	100	2795.80	13.45	-	-	16881.89	81.21	1152.01	5.54
2009/10	22235.23	100	3013.45	13.55	-	-	18032.55	81.10	1241.76	5.58
2010/11	23681.41	100	3231.11	13.64	-	-	19183.20	81.01	1331.52	5.62

Source: Appendix-V: Table V-6, V-24, V-25 & V-26

Table 4.1.4 shows that the contribution of income taxes to total direct tax was higher than other tax and it occupied the largest share in the direct tax. The percentage share of income tax to direct tax in FY 1998/99 was 82.09% amounting Rs. 6,170.30 million and 82.63% amounting Rs. 19,077.80 million in FY 2007/08, which fluctuated from 78.77% to 89.71%, and amounting Rs. 6,170.30 million to 19,077.80 million during the study period. And average

contribution percentage to total direct income tax was 82.34% and Rs. 10,553.30 million.

The share of Land Revenue & registration tax in the FY 1998/99 was 13.35% amounting Rs. 1,003.10 million and 12.74% amounting Rs. 2,940.70 in FY 2007/08. Percentage contribution of Land Revenue & registration tax to total direct tax income fluctuated from 6.03% to 15.16% but despite of FY 2000/01 gradually increased.
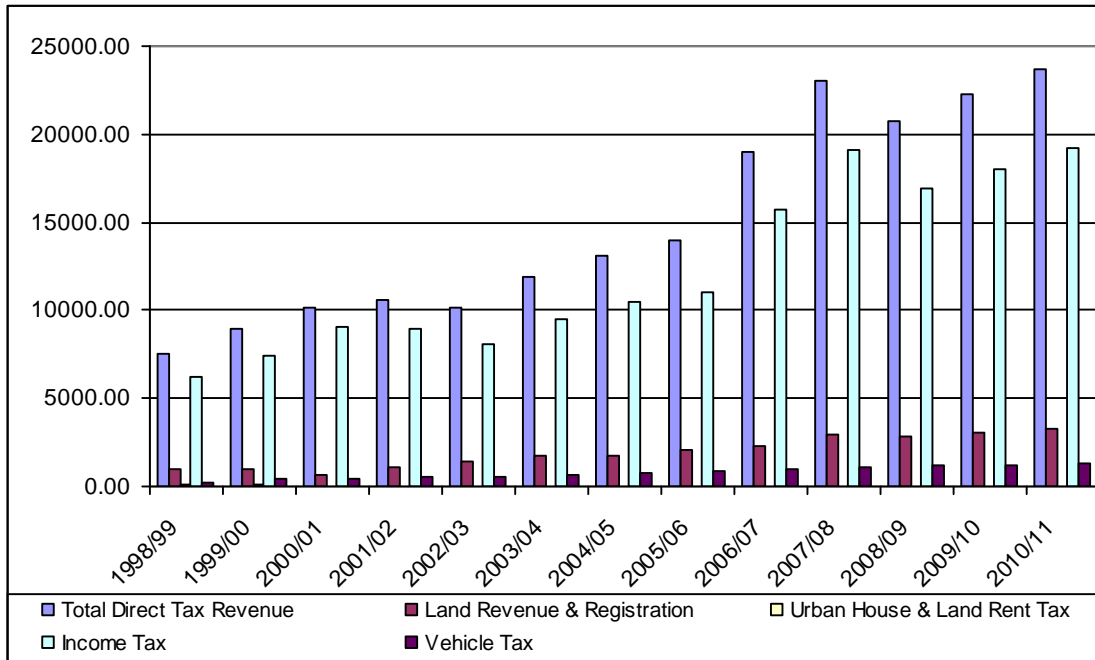
The contribution of Urban House & Land rent to total direct tax revenue was 1.64% amounting Rs. 123.30% and it was gradually decreased down to FY 2001/02 and reached to zero since FY 2002/03. But Vehicle tax contribution to direct tax was gradually increasing trend. In FY 1998/99, contribution of Vehicle Tax to total direct income tax was 2.92% amounting Rs. 219.40 million and 4.63% amounting Rs. 1069.20 million in FY 2007/08. The average contribution of Vehicle tax to total direct tax income was 5.04% amounting Rs. 658.38 million.

The projection has made taking the FY 2003/04 as base year. The study predicts that the composition of direct tax will be dominate by income tax. The total income tax and its contribution to direct tax will also increases in the future. Income tax will be Rs. 16,861.89 million, 18,032.55 million and 19,183.20 million with contribution percentage of 81.21%, 81.10% and 81.01% in FY 2008/09, 2009/10 and 2010/11 respectively.

The composition of direct tax and their percent to direct tax has been shown in following bar graphs.

Chart 4.1.2

Bar Graph showing contribution of sources of direct taxes

Legend		
☐ Total Direct Tax Revenue	■ Land Revenue & Registration	☐ Urban House & Land Rent Tax
☐ Income Tax	■ Vehicle Tax	

4.1.5 Contribution of Direct tax as percent to GDP, Total Revenue and Total Tax Revenue

The contribution of direct tax as percent of GDP, total revenue and total tax revenue have been shown in table 4.1.5.

Table 4.1.5

Contribution of Direct Tax to GDP, Total Revenue and Total Tax Revenue
From F/Y 1998/99 to 2007/08 (Rs. in million)

Fiscal Year	Total Direct Tax	GDP	Direct Tax as % of GDP	Total Revenue	Direct Tax as % of Total Revenue	Total Tax Revenue	Direct Tax as % of Total Tax Revenue
1998/99	7,516.10	330,018.00	2.28	37,251.00	20.18	28,752.90	26.14
1999/00	8,951.50	366,251.00	2.44	42,893.70	20.87	33,152.10	27.00
2000/01	10,159.40	413,429.00	2.46	48,893.90	20.78	38,865.10	26.14
2001/02	10,597.50	430,397.00	2.46	50,445.60	21.01	39,330.60	26.94
2002/03	10,105.80	460,325.00	2.20	56,229.70	17.97	42,587.00	23.73
2003/04	11,912.60	500,699.00	2.38	62,331.00	19.11	48,173.00	24.73
2004/05	13,071.80	548,485.00	2.38	70,122.70	18.64	54,104.70	24.16
2005/06	13,968.10	611,089.00	2.29	72,282.10	19.32	57,430.40	24.32
2006/07	18,980.30	676,210.00	2.81	87,712.20	21.64	71,126.70	26.69
2007/08	23,087.70	756,756.00	3.05	107,622.50	21.45	85,155.50	27.11
Average	12,835.08	509,365.90	2.47	63,578.44	20.10	49,867.80	25.70

Source: Appendix-I, Master Table.

Forecasted Data (Base Year 2003/04)

2008/09	20,789.05	755,809.00	2.75	101,216.66	20.54	80,407.17	25.85
2009/10	22,235.23	800,616.84	2.78	108,059.97	20.58	85,959.76	25.87
2010/11	23,681.41	845,424.67	2.80	114,903.29	20.61	91,512.36	25.88

Source: Appendix-V: Table V-6, V-1, V-2 & V-4.

From the above table it is clear that the contribution of direct tax revenue to total tax revenue was 26.14% in FY 1998/99 and 27.11% 2007/08. The average contribution to direct tax revenue to total revenue was 25.70%. The share of direct tax to GDP seems to be very low. It was 2.28% in the FY 1998/99 and 3.05% in FY 2007/08 and average contribution to GDP was 2.47%. On the other hand, the share of direct tax to total revenue was 20.18% in FY 1998/99 and 21.45% in FY 2007/08 and it was fluctuated between 17.97% and 21.64% during the study period. In this study period, amount of direct tax

was increasing trend but its contribution percentage to GDP, total revenue & total tax revenue was fluctuated.

The projected data shows direct tax and its contribution to GDP, total revenue and total direct tax revenue will be increase in future.

The contribution of direct tax to GDP, total revenue and total tax revenue has been shown following bar diagram.

Chart 4.1.3

Bar Graph showing contribution of direct taxes to GDP, Total Revenue & Total Tax Revenue
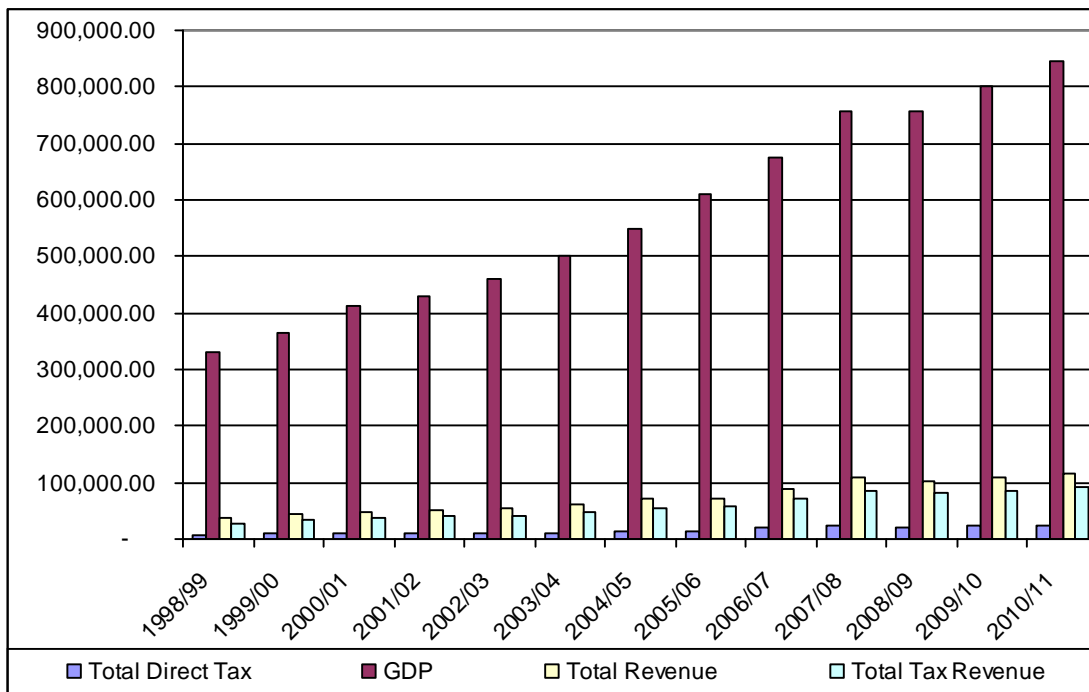
4.1.6 Contribution of Income Tax in Nepal.

Nepal has late started practicing of income tax. The idea of introduction of income tax in Nepal has originated along with the first budget in 1951. Finally in 1959, *Business Profit and Remuneration Tax Act, 1960* was introduced. At that time, income tax had levied only on business profits and

salaries. After about three years experience of income tax, the government replaced the prevailing tax act by *Income Tax Act, 1962*. In 1974, *Income Tax Act, 1974 (2031)* was enacted. However, this act had replaced by *Income Tax Act, 2002 (2058)*. The contribution of income tax on various revenues has given in following table 4.1.6.

Table 4.1.6

Contribution of Income Tax to GDP, Total Revenue and Total Tax Revenue
From F/Y 1998/99 to 2007/08 (Rs. in million)

Fiscal Year	Total Income Tax	GDP	Income Tax as % of GDP	Total Revenue	Income Tax as % of Total Revenue	Total Tax Revenue	Income Tax as % of Total Tax Revenue	Total Direct Tax Revenue	Income Tax as % of Total Direct Tax Revenue	Total Indirect Tax Revenue	Income Tax as % of Total Indirect Tax Revenue
1998/99	6,170.30	330,018.00	1.87	37,251.00	16.56	28,752.90	21.46	7,516.10	82.09	21,236.80	29.05
1999/00	7,420.60	366,251.00	2.03	42,893.70	17.30	33,152.10	22.38	8,951.50	82.90	24,200.60	30.66
2000/01	9,114.00	413,429.00	2.20	48,893.90	18.64	38,865.10	23.45	10,159.40	89.71	28,705.70	31.75
2001/02	8,903.70	430,397.00	2.07	50,445.60	17.65	39,330.60	22.64	10,597.50	84.02	28,733.10	30.99
2002/03	8,131.80	460,325.00	1.77	56,229.70	14.46	42,587.00	19.09	10,105.80	80.47	32,481.20	25.04
2003/04	9,514.50	500,699.00	1.90	62,331.00	15.26	48,173.00	19.75	11,912.60	79.87	36,260.40	26.24
2004/05	10,466.10	548,485.00	1.91	70,122.70	14.93	54,104.70	19.34	13,071.80	80.07	41,032.90	25.51
2005/06	11,002.40	611,089.00	1.80	72,282.10	15.22	57,430.40	19.16	13,968.10	78.77	43,462.30	25.31
2006/07	15,731.80	676,210.00	2.33	87,712.20	17.94	71,126.70	22.12	18,980.30	82.88	52,146.40	30.17
2007/08	19,077.80	756,756.00	2.52	107,622.50	17.73	85,155.50	22.40	23,087.70	82.63	62,067.80	30.74
Average	10,553.30	509,365.90	2.04	63,578.44	16.57	49,867.80	21.18	12,835.08	82.34	37,032.72	28.55

Source: Appendix-I, Master Table.

Forecasted Data (Base Year 2003/04)

2008/09	16,881.89	755,809.00	2.23	101,216.66	16.68	80,407.15	21.00	20,789.05	81.21	59,618.09	28.32
2009/10	18,032.55	800,616.84	2.25	108,059.97	16.69	85,959.76	20.98	22,235.23	81.10	63,724.52	28.30
2010/11	19,183.20	845,424.67	2.27	114,903.29	16.70	91,512.36	20.96	23,681.41	81.01	67,830.96	28.28

Source: Appendix-V: Table V-25, V-1, V-2,V-4, V-6 & V-5.

Table 4.1.6 shows that the contribution of income tax to GDP, Total revenue and Total tax revenue. Total income tax in FY 1998/99 was Rs. 6,170.30 million and it was increased to Rs. 19,077.80 million for the FY 2007/08. The share of income tax to GDP of Nepal was very low. It laid 1.77% to 2.52% during the study period. It was 1.87% in FY 1998/99, which was fluctuated up to 2.52%.

The share of income tax to total revenue was fluctuated from 14.46% to 18.64% during the study period. It was 16.56% in FY 1998/99, which was increased considerably to 18.64% in FY 2000/01. Thereafter, it was decreased to 14.46% in FY 2002/03 and then again increased gradually up to FY 2007/08.

Similarly, contribution of income tax to tax revenue was 21.46% in FY 1998/99 and 22.40% in the FY 2005/08. The average contribution to total tax revenue was 21.18%. The contribution of income tax to indirect tax income was 29.05% in FY 1998/99 and 30.74% in FY 2007/08. It was fluctuated between 25.04% and 31.75% during the study period and it is clear that the contribution of income tax to direct tax was the maximum, which occupied average 82.34% during the study period. It was 82.09% in FY 1998/99 and 82.63% in FY 2007/08 and it was fluctuated between 78.77% to 89.71% during the study period.

The projected data shows that the income tax will increase in the low proportionate within three years. It will be Rs. 16,881.89 million, 18,032.55 million and 19,183.20 million for the FY 2008/09, 2009/10 and 2010/11 respectively. The contribution percentage to GDP will be 2.23%, 2.25% and 2.27% for the respective years, which will not meet the target of government to increase the income tax at 3.00% of GDP. Likewise, the contribution of income tax to total revenue, total tax revenue, direct tax revenue and indirect tax revenue will be increase in the future. Contribution percentage to total revenue

will also increase but contribution to total tax revenue, total tax revenue and total indirect tax revenue will be decrease slightly in FY 2008/09, 2009/10 and 2010/11.

The contribution of income tax to GDP, total revenue, total tax revenue, direct tax revenue and indirect tax revenue has shown following trend line.

Chart 4.1.4

Bar Graph showing contribution of Income tax to GDP, Total Revenue, Direct tax Revenue & Indirect tax Revenue
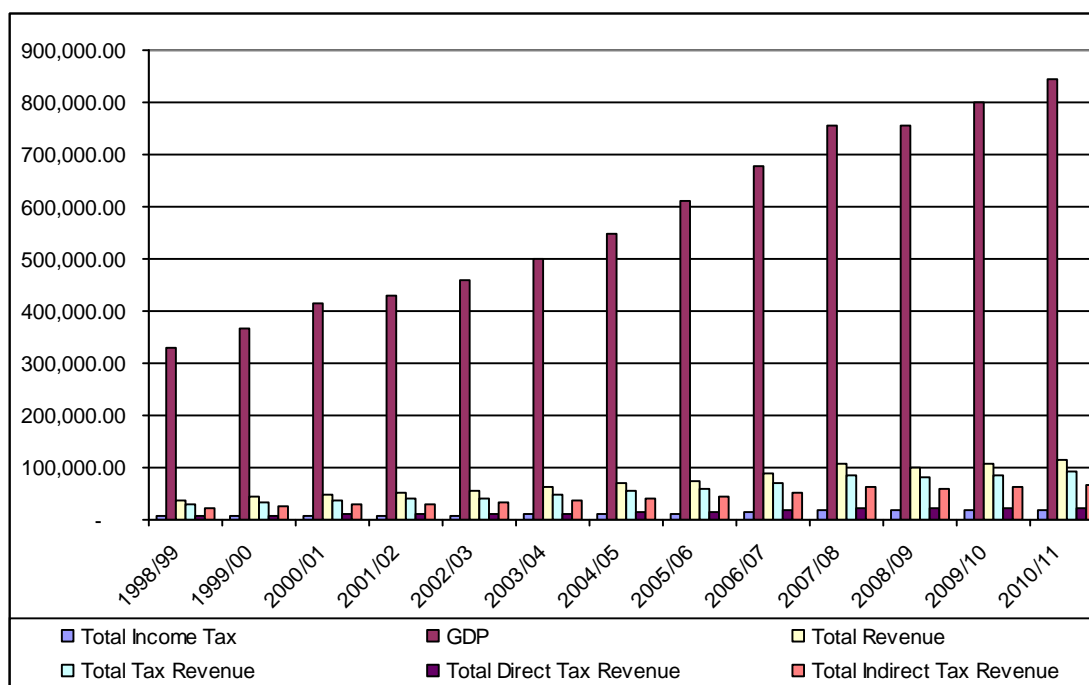
4.1.7 Structure of Income Tax in Nepal

Income tax revenue has divided into corporate income tax, individual income tax, House & land rent tax and interest income tax. Corporate income tax is collect from government enterprises, public and private enterprises and individual income tax is collect from remuneration, business, profession or vocation. Interest tax has paid from banks and financial institutions that pay

interest for all types of deposits and house and land rent tax is levied on income obtained from renting house and land in urban areas. The structural composition of income tax has been presented below in table.

Table 4.1.7

Composition of Income Tax
From F/Y 1998/99 to 2007/08 (Rs. in million)

Fiscal Year	Total Income Tax	Total %	Corporate Income Tax	% of Corporate Income Tax	Individual Income Tax	% of Individual Income Tax	House & Land Rent Tax	% of House & Land Rent Tax	Interest Income Tax	% of Interest Income Tax
1998/99	6,170.30	100	3,461.50	56.10	2,185.10	35.41	204.20	3.31	319.50	5.18
1999/00	7,420.60	100	4,438.30	59.81	2,317.90	31.24	250.00	3.37	414.40	5.58
2000/01	9,114.00	100	5,982.30	65.64	2,407.80	26.42	260.00	2.85	463.90	5.09
2001/02	8,903.70	100	4,351.95	48.88	3,735.53	41.95	348.52	3.91	467.70	5.25
2002/03	8,131.80	100	3,655.30	44.95	3,230.79	39.73	381.71	4.69	864.00	10.62
2003/04	9,514.50	100	4,838.68	50.86	3,539.14	37.20	403.28	4.24	733.40	7.71
2004/05	10,466.10	100	5,328.34	50.91	3,884.45	37.11	496.31	4.74	757.00	7.23
2005/06	11,002.40	100	5,287.05	48.05	4,431.39	40.28	509.06	4.63	774.90	7.04
2006/07	15,731.80	100	11,523.02	73.25	2,554.51	16.24	599.37	3.81	1,054.90	6.71
2007/08	19,077.80	100	10,531.47	55.20	6,737.33	35.32	721.10	3.78	1,087.90	5.70
Average	10,553.30	100	5,939.79	55.36	3,502.39	34.09	417.36	3.93	693.76	6.61

Source: Appendix-II, Income Tax Revenue Table.

Forecasted Data (Base Year 2003/04)

2008/09	16,881.89	100	9,735.09	57.67	5,285.71	31.31	710.95	4.21	1,150.25	6.81
2009/10	18,032.55	100	10,425.15	57.81	5,609.95	31.11	764.33	4.24	1,233.12	6.84
2010/11	19,183.20	100	11,115.20	57.94	5,934.18	30.93	817.72	4.26	1,316.10	6.86

Source: Appendix-V: Table V-25, V-7, V-11, V-13 & V-12.

Table 4.1.7 shows that the share of corporate income tax was 56.10% in FY 1998/99, which has increased to 65.64% in the FY 2000/01, and it was

gradually decreased to 44.95% in FY 2002/03. Again, it was started to increase and reached to 50.91% in FY 2004/05. It was fluctuated from 44.95% to 73.25% in study period. Tax collection from corporate sector was found to be highly fluctuated during the study period, which was red signal for the corporate sector.

Individual income tax collection amount and percentage to total income tax seems fluctuation during study period. Amount of individual income tax and percentage to total income tax was Rs. 2,185.10 million and 35.41% in FY 1998/99 and Rs. 6,737.33 million and 35.32% in FY 2007/08. The average amount and percentage to income tax was 3,502.39 million and 34.09 % in the study period. The contribution of house & land rent tax was fluctuated between 2.85% to 4.74%. In the FY 1998/99, percentage contribution to total income of house & land rent tax was 3.31% and 3.78% in FY 2007/08. The average contribution of house & land rent tax was 3.93%. In this study period, contribution of house & land rent tax was found to be gradually increased but percentage to total income tax was fluctuated. The share of interest tax was Rs. 319.50 million and 5.18% in FY 1998/99 and Rs. 1087.90 and 5.70% in F 2007/08. It seems in this study, the contribution of interest income tax, both amount and percentage to total income tax was increasing trend. The average interest income tax was Rs. 693.76 million and 6.61%.

The projected data reflects that income tax revenue will be Rs. 16,861.89 million, 18,032.55 million and 19,183.20 million for the FY 2008/09, 2009/20 and 2010/11 respectively. The CITR amount and percentage contribution to total income tax will also increase in the future. The amount of CITR for FY 2008/09, 2009/10 and 2010/11 will be Rs. 9,735.09 million, 10,425.15 million and 11,115.20 million with the contribution of 57.67%, 57.81% and 57.94%. Individual income tax will be Rs. 5,285.71 million, 5,609.95 million and

5,934.18 million with the contribution percentage of 31.31%, 31.11% and 30.93% for the FY 2008/09, 2009/10 and 2010/11 respectively.

Likewise, house and land rent tax, interest tax will be increase, and their contribution percentage to income tax will be increase as per the projected data.

The composition of income tax has been shown graphically as follows.

Figure 4.1.3

Trend Line showing composition of income tax
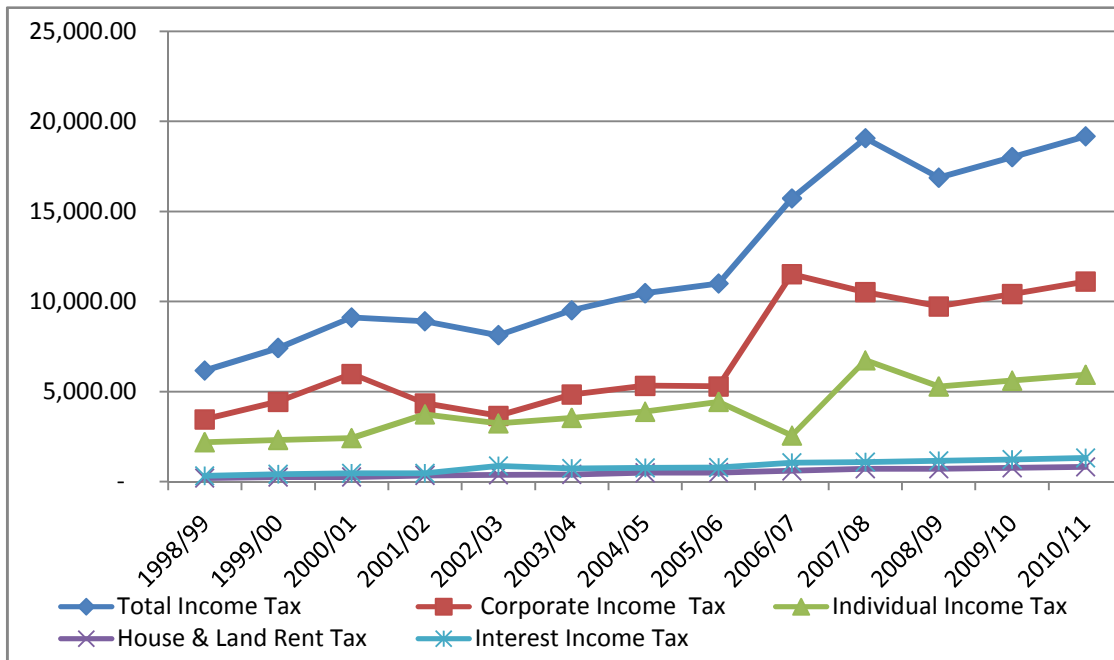
4.2   Resource Mobilization and Problems of Resource Gap

The resource mobilization is the main challenge in the economic development of the country. The internal resource plays vital role in economic development to the country. Government collects the resources from different ways. The tax structure is major source of revenue for the government. Government has imposed two types of tax like direct and indirect tax. In the

present tax structure, the government revenue comes more from indirect taxes rather than direct tax. Tax policy has to be made a part of the instrument of the development goals.

The resource mobilization has been a major problem in financing of growing government expenses. Since the beginning of planned development of Nepal, there has been tremendous increment in the size of government expenditure. The development works have to be carried out by the government in the initial stage. An increase in government expenditure creates additional demand in the economy through multiplier effects and thereby induces arise in aggregate output. The government resources have been concentrated more on expanding economic overhead in the form of transport, power and communication, which will stimulate agriculture, industry and transport in the private sectors.

The government expenditure is the main source of gross national investment and capital formation. Many studies have been attempted to examine the problem of resource gap and prospect of internal resource gap. (i). Domestic resource gap and (ii). Overall resource gap. Domestic resource gap is the amount of excluding net foreign grants and loans. But the overall resource gap includes the contributions made by foreign grants and loans in the financing public expenditure.

The problem of resource gap was increased from one year to another which has been recovered through massive inflow of external capital. Regular expenditure is fulfilled by internal resources whereas development expenditure is mostly depending on external resources. The dependence on foreign aid and deficit finance was not shown any declining trend. If the resource gap is minimized through the over dependence of foreign loans, it can further creates the resource problem in the near future.

The problem of resource mobilization and resource gap is related to the saving and investment. The level of income and the rate of interest influence the saving structure. The low rate of saving is prevailing in the country as a result of low level of income of the people. The low level of income creates the problem of resource mobilization for undertaking investment programs in the large scale by both government and private sector. The pattern of domestic resource gap has been shown in Table 4.2.1.

Table 4.2.1

Domestic Resource Gap Pattern of Nepal
From F/Y 1998/99 to 2007/08 (Rs. in million)

Fiscal Year	Total Govt. Expenditure (A)	Total Govt. Revenue (B)	Resource Gap (A-B)	% of Resource Gap to Total Expenditure
1998/99	59,579.00	37,251.00	22,328.00	37.48
1999/00	66,272.50	42,893.70	23,378.80	35.28
2000/01	80,483.30	48,893.90	31,589.40	39.25
2001/02	80,802.44	50,445.60	30,356.84	37.57
2002/03	83,939.90	56,229.70	27,710.20	33.01
2003/04	89,601.90	62,331.00	27,270.90	30.44
2004/05	104,184.40	70,122.70	34,061.70	32.69
2005/06	120,993.70	72,282.10	48,711.60	40.26
2006/07	133,604.40	87,712.20	45,892.20	34.35
2007/08	161,350.00	107,622.50	53,727.50	33.30
Average	98,081.15	63,578.44	34,502.71	35.36

Source: Appendix- I, Master Table

Forecasted Data (Base Year 2003/04)

2008/09	153,601.89	101,216.66	52,385.23	34.10
2009/10	163,696.57	108,059.97	55,636.60	33.99
2010/11	173,791.25	114,903.29	58,887.96	33.88

*Source: Appendix- V: Table V-14 & V-2.*

From the above table 4.2.1, it is found that during the last ten years period, there were 30.44% to 40.26% and an average 35.36% resource gap in Nepal. The amount of resource gap was in increasing trend up to FY 2000/01, amounting Rs. 31,589.40 million which amount was decreased to 27,270.90 million in FY 2004/04 and then increased up to Rs. 53,727.50 million in FY 2007/08. Taking the fiscal year 2003/04 as base year, the forecasted resource gap will also in the increasing trend, which will be Rs. 52,385.23 million, Rs 55,636.60 million and 58,887.96 million for the FY 2008/09, 2009/10 and 2010/11 respectively.

The resource gap has been also shown in the following bar graphs and trend line.

Chart 4.2.1

Bar Graph showing Resource Gap
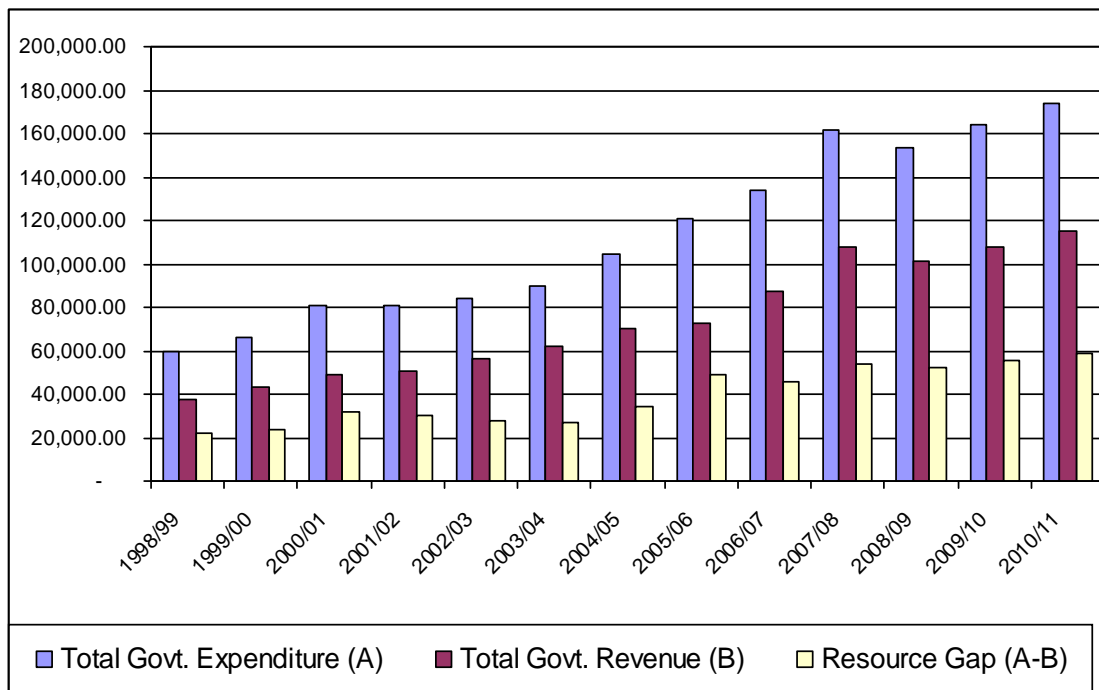
Figure 4.2.1

Trend Line showing Resource Gap
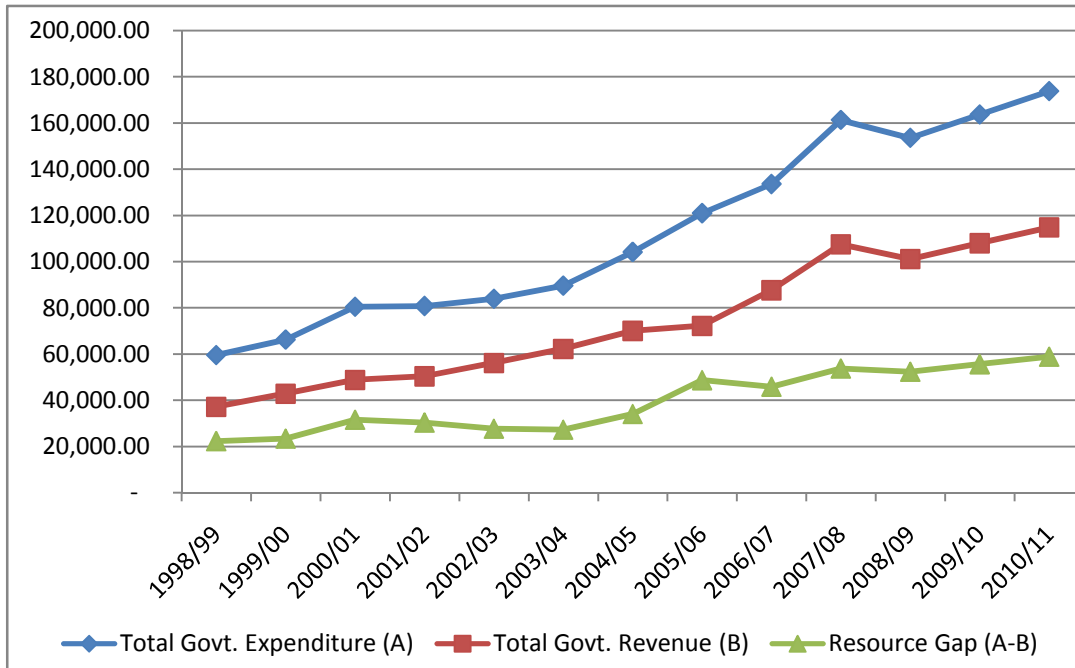
The above trend line shows that the resource gap was gradually increased and it will increase in future too.

4.2.1 Revenue – Expenditure

Revenue – Expenditure gap is known as resource gap. In this context, three types of gaps are measured and used in the analysis of resource gap. Overall resource gap has been shown in table 4.2.2.

Table 4.2.2

Overall Resource Gap Pattern of Nepal
From F/Y 1998/99 to 2007/08 (Rs. in million)

Fiscal Year	Total Govt. Expenditure	Total Govt. Revenue	Resource Gap[1]	Foreign Grants	Resource Gap[2]	Foreign Loan	Resource Gap[3]
	A	B	A-B	C	A-(B+C)	D	[A-(B+C+D)]
1998/99	59,579.00	37,251.00	22,328.00	4,336.60	17,991.40	11,852.40	6,139.00
1999/00	66,272.50	42,893.70	23,378.80	5,711.70	17,667.10	11,812.20	5,854.90
2000/01	80,483.30	48,893.90	31,589.40	6,753.40	24,836.00	12,044.00	12,792.00
2001/02	80,802.44	50,445.60	30,356.84	6,686.20	23,670.64	7,698.60	15,972.04
2002/03	83,939.90	56,229.70	27,710.20	11,339.10	16,371.10	4,546.40	11,824.70
2003/04	89,601.90	62,331.00	27,270.90	11,283.40	15,987.50	7,629.00	8,358.50
2004/05	104,184.40	70,122.70	34,061.70	14,391.20	19,670.50	9,266.10	10,404.40
2005/06	120,993.70	72,282.10	48,711.60	13,827.50	34,884.10	8,214.30	26,669.80
2006/07	133,604.40	87,712.20	45,892.20	15,800.80	30,091.40	10,053.50	20,037.90
2007/08	161,350.00	107,622.50	53,727.50	20,320.70	33,406.80	8,979.90	24,426.90
Average	98,081.15	63,578.44	34,502.71	11,045.06	23,457.65	9,209.64	14,248.01

Source: Appendix-I, Master Table.

Forecasted Data (Base Year 2003/04)

2008/09	153,601.89	101,216.66	52,385.23	20,142.07	32,243.16	7,558.75	24,684.41
2009/10	163,696.57	108,059.97	55,636.60	21,796.08	33,840.52	7,258.58	26,581.94
2010/11	173,791.25	114,903.29	58,887.96	23,450.08	35,437.88	6,958.42	28,479.46

Source: Appendix-V: Table V-14, V-2, V-15 & V-16.

1.   Resource Gap[1] (A-B)

The gap between revenue and expenditure rose from 22,328.00 million in FY 1998/99 to Rs. 53,727.50 million in FY 2007/08, which was about 2.4 times more than the FY 1998/99. This figure shows the poor performance of domestic resource mobilization. The forecasted data also reflects the increasing pattern of resource gap.

2.   Resource Gap^2 [A-(B+C)]

This type of resource gap was Rs. 17,991.40 million for the FY 1998/99 which was gradually increased to Rs. 24,836.00 million for the FY 2000/01. Then after it was decreased to Rs. 15,987.50 million in FY 32003/04 due to the low proportionate increment in total revenue and foreign grants. From FY 2004/05 the amount of resource gap was gradually increased. This gap was Rs. 33,406.80 million in FY 2007/08. The forecasted data also shows that the annual increment in foreign grants Rs. 20,142.07 in FY 2008/09 to Rs. 23,450.08 million in FY 2010/11 and resource gap will increase 32,243.16 to Rs. 35,437.88 million for the respective year. This shows that foreign grants should be encouraged to increase for minimizing the resource gap.

3.   Resource Gap^3 [A-(B+C+D)]

This resource gap is taken as the difference between total expenditure and total revenue plus foreign grants and loan. In FY 1998/99, the gap was Rs. 6,139.00 million which was increased to Rs. 15,972.04 million for FY 2001/02 and it was decreased to Rs. 8,358.50 million in FY 2003/04. Then after it was started to increased and reached to Rs. 24,426.90 million in FY 2007/08. The resource gap in FY 2007/08 was 4 times greater than FY 1998/99. It measures the internal indebtedness of the government. The forecasted data reflects that the foreign loan will be Rs. 7,558.75 million, Rs. 7,258.58 million and 6,958.42 million for the FY 2008/09, 2009/10 and 2010/11 respectively. It shows the small portion of amount is decreasing every year. As the loan taken amount will decrease simultaneously, the resource gap will increase consequently from 24,684.41 million, 26,581.94 million and 28,479.46 million for the FY 2008/09, 2009/10 and 2010/11 respectively. Moreover, foreign loan largely depends on the fiscal policy adopted by the nation.

If any government has a resource gap, it has to resort a deficit budged. There was a large portion of foreign grants to meet the budget deficit in the early year budgets in Nepal. But in recent years, percentage of foreign loans is rising and percentage of grants is decreasing. It is not a desirable direction for our country in self- reliance. Moreover, foreign loan creates extra burden to the economy because debt-servicing charge increases every year. The foreign loan should be taken as a complementary resource to mobilize internal resource properly.

Overall Resource Gap pattern of Nepal is shown in following trend line.

Figure 4.2.2

Trend Line showing overall resource gap of Nepal
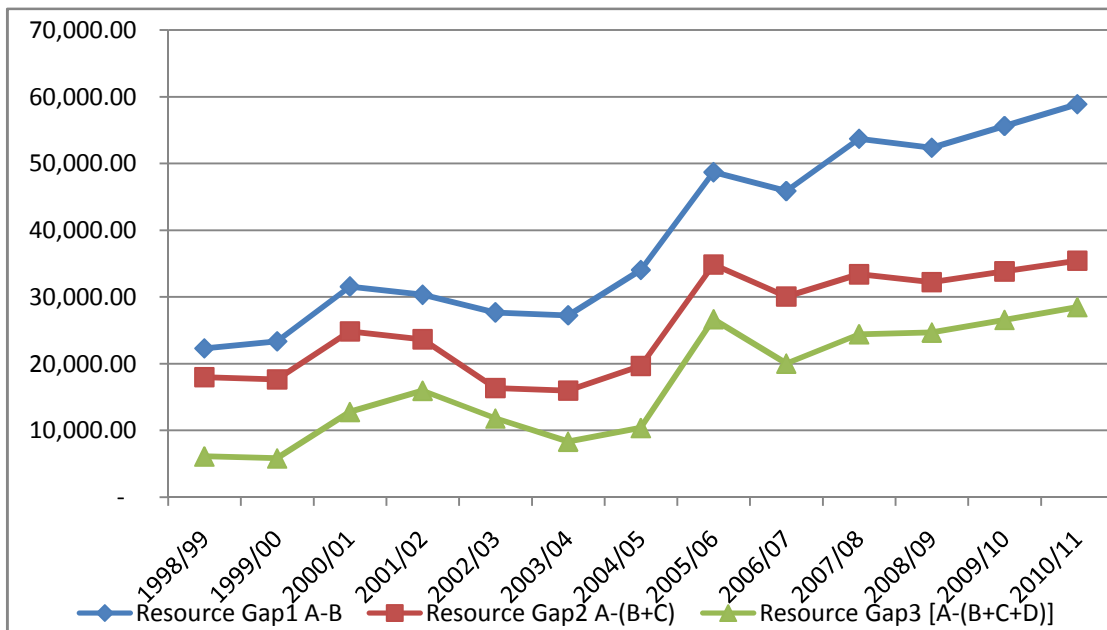
4.2.2 Problems in Public Expenditure

Government expenditure is increasing along with its expanding activities in development and social activities. The increasing trend of government expenditure can be fulfilled either by internal resources or through inflow of

foreign aid. The increasing rate of growth in government expenditure creates many problems in public expenditure management. As a result, deficit financing takes place in the economy. On the one hand, the resource gap problem was increasing and on the other hand it has grown the inflation and price unstablilization in the economy. There is two ways relationship between resource mobilization and expansion in budgetary size in developing country. Government policy should be reformed for maximum resource mobilization in accordance with the expansion in economy that has taken place through the investment of public sector in development activities.

Development expenditure is mostly prepared in accordance with commitment of the donor agencies. But the disbursement of foreign aid has not been as per the commitment. The lack of funding compels to delay the completion of the development activities. In the same way, the donor agencies are too much involved in the decision making which creates many problems in implementation and for the completed project by the funding agencies. The problems stand to the government on the operation and maintenance of the project.

The share of government revenue, foreign aids and corporate income tax revenue in public expenditure has shown in table 4.2.3 as follows.

Table 4.2.3

Share of Government Revenue, Foreign Aid and CITR in Public Expenditure
From F/Y 1998/99 to 2007/08 (Rs. in million)

Fiscal Year	Total Govt. Expenditure	Total Govt. Revenue	Total Revenue as % of T.E.	Foreign Aid	Foreign Aid as % of T.E.	CITR	CITR as % of T.E.
1998/99	59,579.00	37,251.00	62.52	16,189.00	27.17	3,461.50	5.81
1999/00	66,272.50	42,893.70	64.72	17,523.90	26.44	4,438.30	6.70
2000/01	80,483.30	48,893.90	60.75	18,797.40	23.36	5,982.30	7.43
2001/02	80,802.44	50,445.60	62.43	14,384.80	17.80	4,351.95	5.39
2002/03	83,939.90	56,229.70	66.99	15,885.50	18.92	3,655.30	4.35
2003/04	89,601.90	62,331.00	69.56	18,912.40	21.11	4,838.68	5.40
2004/05	104,184.40	70,122.70	67.31	23,657.30	22.71	5,328.34	5.11
2005/06	120,993.70	72,282.10	59.74	22,041.80	18.22	5,287.05	4.37
2006/07	133,604.40	87,712.20	65.65	25,854.30	19.35	11,523.02	8.62
2007/08	161,350.00	107,622.50	66.70	29,300.60	18.16	10,531.47	6.53
Average	98,081.15	63,578.44	64.64	20,254.70	21.32	5,939.79	5.97

Source: Appendix- I, Master Table & Appendix- III, Income Tax Revenue Table

Forecasted Data (Base Year 2003/04)

2008/09	153,601.89	101,216.66	65.90	27,700.82	18.03	9,735.09	6.34
2009/10	163,696.57	108,059.97	66.01	29,054.66	17.75	10,425.15	6.37
2010/11	173,791.25	114,903.29	66.12	30,408.50	17.50	11,115.20	6.40

Source: Appendix- V: Table V-14, V-2 & V-17.

Table 4.2.3 indicates the contribution of the government revenue in financing public expenditure. It was 64.64% on an average. Government revenue share was 67.31% of maximum in FY 2004/05 and 59.74% of minimum in FY 2005/06 during the study period. Similarly, the contribution made by foreign aid comprising both foreign grants and loans came to 21.32% on an average.

It is also clear from the table that contribution made by CITR to government expenditure was fluctuated between 4.35% and 8.62%. It was 5.81% in FY 1998/99, which grew up and reached to 7.43% in FY 2000/01. Then after it was fluctuated. Its maximum contribution was 8.62% in FY 2006/07. The contribution of CITR to government expenditure was 6.53% in FY 2007/08 and 5.97% in average during the study period.

The forecasted data indicates that the total revenue amount will increase each year and its percentage to total expenditure will also increase. Foreign aid will increase in low ratio but its contribution percentage to total expenditure will gradually decrease. Foreign aid amount will be Rs. 27,700.82 million, 29,054.66 million and 30,408.50 million for the FY 2008/09, 2009/10 and 2010/11 respectively and its contribution percentage to total expenditure will be 18.03%, 17.75% and 17.50% for the respective year. CITR amount and its contribution percentage to total expenditure will also increase. The CITR will be Rs. 9,735.09 million, 10,425.15 million and 11,115.20 million for the FY 2008/09, 2009/10 and 2010/11 and its percentage to total expenditure will be 6.34%, 6.37% and 6.40% respectively. This figure indicates the importance of CITR in meeting the need to fulfill total expenditure.

Conclusion from the above analysis is that government dissaving is increasing every year. Government expenditure is increasing at a higher rate than the growth of government revenue. The growth rate of domestic saving was not increased substantially even the external capital inflow has been increasing in higher rate. As a consequence of which the resource gap is highly increasing instead of minimizing. In this context, the small amount or percentage of average 5.97% contribution by CITR will have the dwindling importance to fulfill resource gap from the internal source.

The share of Government revenue, Foreign aids and CITR in Public expenditure has been shown in following bar graphs.

Chart 4.2.2

Bar Graph showing share of government revenue, foreign aids & CITR in public expenditure
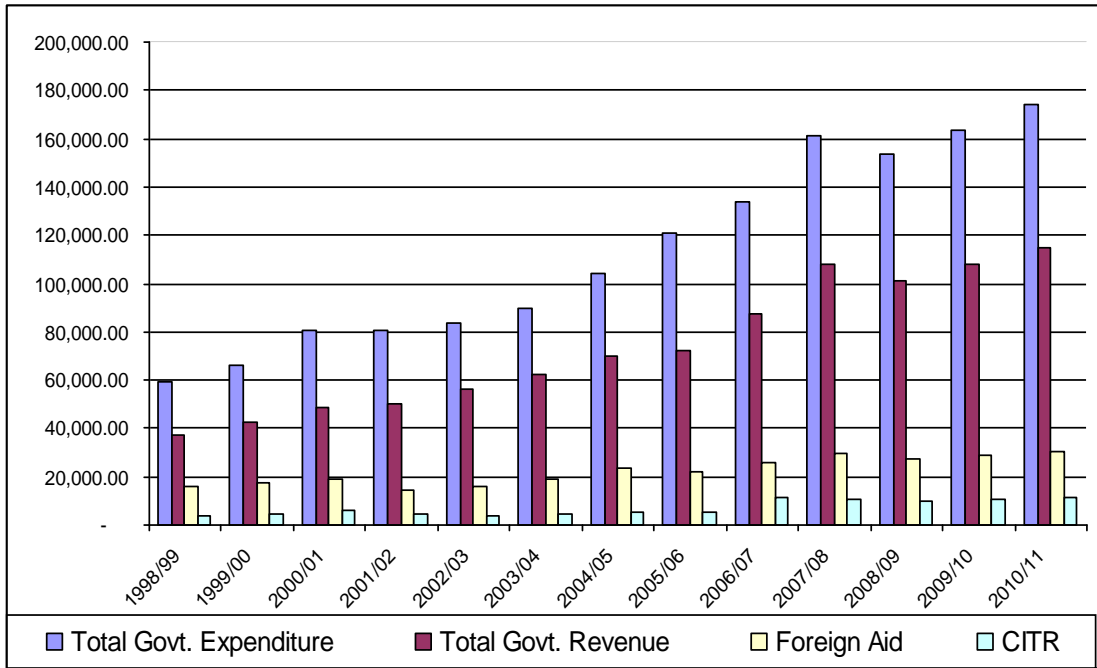
4.3 Contribution of Corporate Income Tax

Contribution of corporate income tax on total revenue, tax revenue, direct tax revenue, income tax revenue, its composition and its trend line for 10 years has been drawn in this sub-chapter. Taking the FY 2003/04 as the base year, projections have been made for next three years. The relationship of CITR with other taxes and revenue and its coverage portion have been examined in this sub-chapter.

4.3.1 Contribution of Corporate Income Tax on Total revenue

Corporate income tax plays an important role in Nepalese government revenue. The composition of national revenue/ government revenue has been shown in master table in appendix-I and the composition of corporate tax revenue in appendix-III. As per master table, the following table has been drawn to show the contribution of portion of CITR in different time periods in percentage and amounts also.

Table 4.3.1

Contribution of CITR on Total Government Revenue
From F/Y 1998/99 to 2007/08 (Rs. in million)

Fiscal Year	Total Govt. Revenue	Total CITR	% of CITR on Total Revenue	Corporate Income Tax					
				Govt. Sector	% on total Revenue	Public Sector	% on total Revenue	Private Sector	% on total Revenue
1998/99	37,251.00	3,461.50	9.29	1,526.50	4.10	1,155.00	3.10	780.00	2.09
1999/00	42,893.70	4,438.30	10.35	2,198.80	5.13	1,339.50	3.12	900.00	2.10
2000/01	48,893.90	5,982.30	12.24	2,928.00	5.99	1,924.30	3.94	1,130.00	2.31
2001/02	50,445.60	4,351.95	8.63	1,769.30	3.51	1,412.00	2.80	1,170.65	2.32
2002/03	56,229.70	3,655.30	6.50	1,251.00	2.22	1,236.30	2.20	1,168.00	2.08
2003/04	62,331.00	4,838.68	7.76	2,056.60	3.30	1,531.30	2.46	1,250.78	2.01
2004/05	70,122.70	5,328.34	7.60	1,332.40	1.90	2,467.80	3.52	1,528.14	2.18
2005/06	72,282.10	5,287.05	7.31	195.70	0.27	3,404.30	4.71	1,687.05	2.33
2006/07	87,712.20	11,523.02	13.14	1,019.70	1.16	5,717.10	6.52	4,786.22	5.46
2007/08	107,622.50	10,531.47	9.79	204.60	0.19	7,186.50	6.68	3,140.37	2.92
Average	63,578.44	5,939.79	9.26	1,448.26	2.78	2,737.41	3.90	1,754.12	2.58

Source: Appendix- I, Master Table & Appendix- III, Income Tax Revenue Table

Forecasted Data (Base Year 2003/04)

2008/09	101,216.66	9,735.09	9.62	304.35	0.30	5,930.38	5.86	3,500.37	3.46
2009/10	108,059.97	10,425.15	9.65	96.36	0.09	6,510.92	6.03	3,817.87	3.53
2010/11	114,903.29	11,115.20	9.67	-	-	7,091.46	6.17	4,135.37	3.60

Source: Appendix- V: Table V-2, V-7, V-8,V-9 & V-10.

Table 4.3.1 reflects that the contribution percentage of corporate income tax to total revenue during the study period was fluctuated between 7.31% and 13.14%. The share of corporate income tax revenue was 9.29% amounting Rs. 3,461.50 million in FY 1998/99 in which 4.10% of total revenue was covered only by government sector. Later on, the share of CITR to total revenue was slowly increased up to 12.24% and amounting Rs. 5,982.30 in FY 2000/01 FY 2000/01. Then after gradually decreased and reached to 7.31% in FY 2005/06. The maximum percentage of contribution of CITR to total revenue was 13.14% in FY 2006/07 and percentage contribution of CITR was 9.79% in FY 2007/08.

In the FY 1998/99, contribution to total revenue of government sector, public sector and private sector were 4.10%, 3.10% and 2.09% amounting Rs. 1,526.50 million, 1,155.00 million and 780.00 million and 0.19%, 6.68% and 2.92% amounting Rs. 204.60 million, 7,186.50 million and 3,140.37 million in FY 2007/08. The average contribution were 2.78%, 3.90% and 2.58% amounting Rs. 1,448.26 million, 2,737.41 million and 1,754.12 million in this study period.

Total revenue/ national revenue were in increasing trend which was not only the cause of better implementation of fiscal policy and positive macro-economic indicator but it was also due to expansion of taxation and revenue net. This table also shows that the private sector's tax collection was in increasing trend. But private sector contribution percentage to total revenue was only around 2% since last 10 years except in FY 2006/07 although Nepal has liberalized the economy. Likewise, tax collection from public enterprises seems to be increasing trend which contribution was 3.10% amounting Rs. 1,155.00 in FY 1998/99 and 6.68% amounting Rs. 7,186.50 in FY 2007/08. This study cleared that public sector income tax dominated to CITR.

Nevertheless, Nepalese corporate sector is contributing to total revenue about 9.26%, which seems to be very small portion comparing to other developing countries.

The contribution pattern of corporate income tax to total revenue has been shown in following bar diagram and trend line.

Chart 4.3.1

Bar Graph showing CITR and Total Revenue
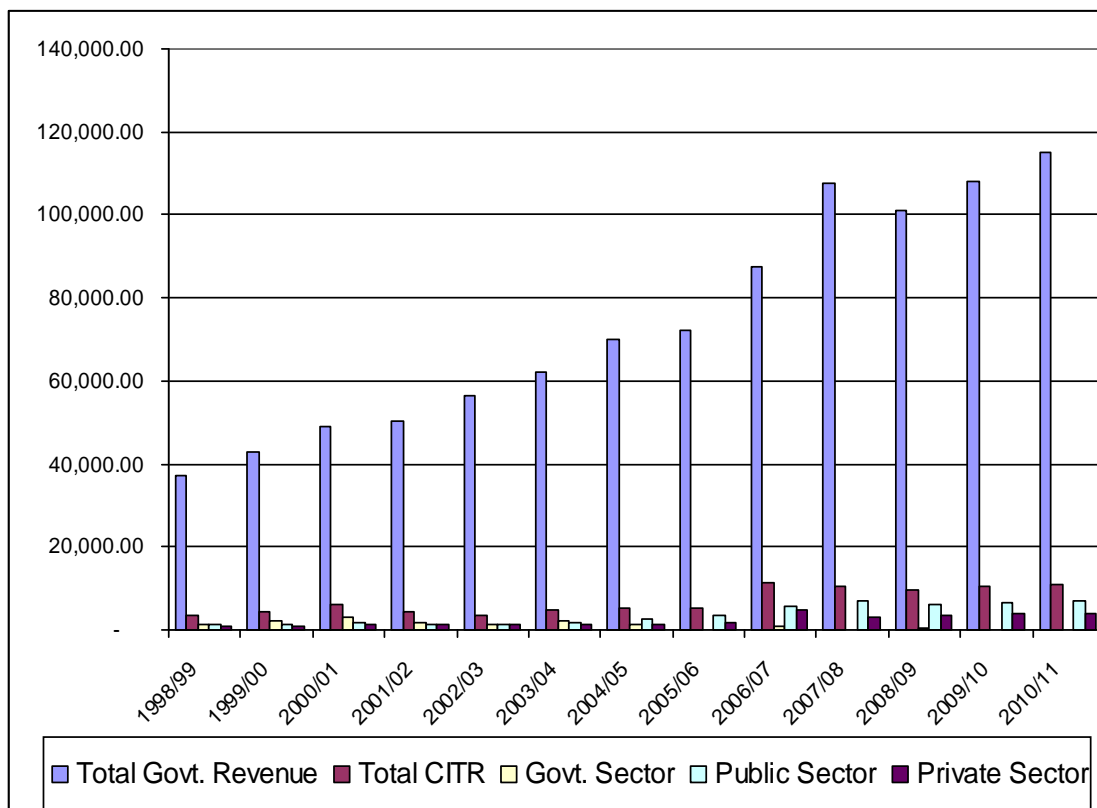
In this bar diagram, total revenue is shown Y-axis and fiscal year in X-axis. Comparing with total revenue, corporate income tax revenue seems to be very low. The intra-structural composition of corporate tax seems to be slightly changed. It has also known that the contribution of private and public sector was increased comparing to beginning year of the study period.

Figure 4.3.1

Trend Line showing Corporate Income Tax and Total Revenue
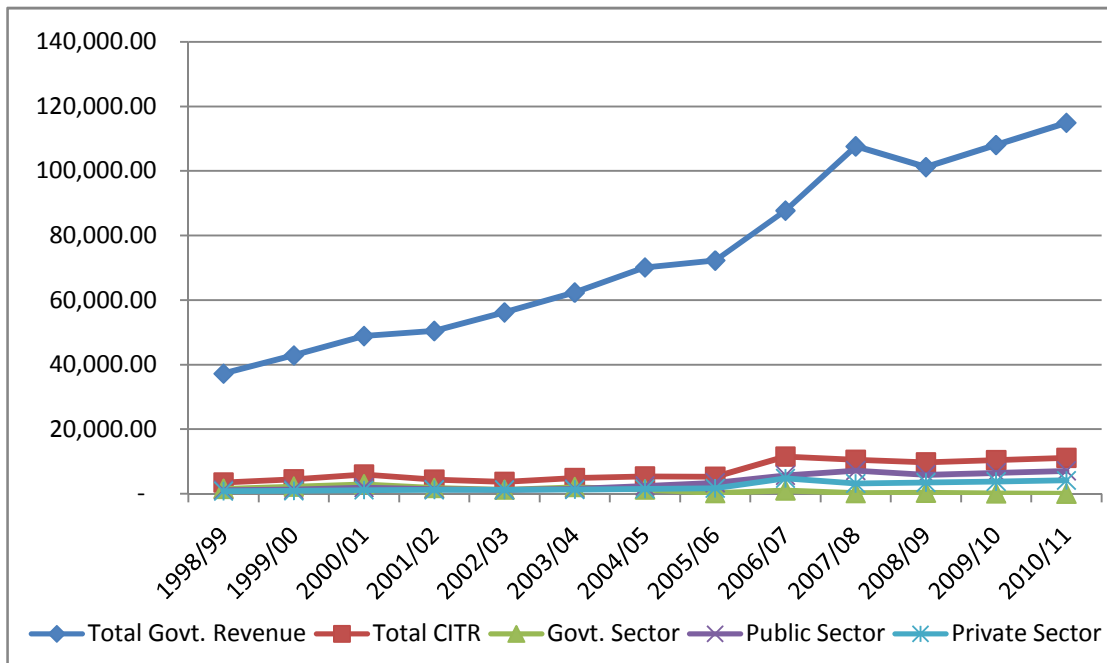
The trend line shows that the total revenue was in the increasing trend. But the CITR up to FY 2000/01 which was decreased to FY 2002/03 and up to FY 2005/06 was constant trend.

Taking the fiscal year 2003/04 as a base year, the projection of total revenue and CITR have been made. The total revenue will reached to Rs. 101,216.66 million, 108,059.97 Million and 108,059.97 million in the FY 2008/09, 2009/10 and 2010/11 respectively. CITR will reached to Rs. 9,735.09 million, 10,425.15 million and 11,115.20 million which will contribute 9.62%, 9.65% and 9.67% respectively in total revenue in the FY 2008/09, 2009/10 and 2010/11.

The correlation between total revenue and CITR from FY 1998/99 to 2007/08 was 0.85 (Appendix V: page-XXXIII), which indicates the positive

relation between them. Out of the tax contribution, CITR's explains 72.25% of total revenue and remaining other 27.75% was covered by other tax revenue.

4.3.2 Contribution of Corporate Income tax on Total Tax Revenue

Total tax revenue is composed of direct tax and indirect tax which has been shown in the table 4.3.2. Total tax revenue is mostly affected by CITR and its enhancement by the country. The following table 4.3.2 has been drawn to show the Nepalese CITR's contribution portion to total tax revenue.

Table 4.3.2

Contribution of CITR on Total Tax Revenue

From F/Y 1998/99 to 2007/08 (Rs. in million)

Fiscal Year	Total Tax Revenue	%	Total CITR	% on Total Tax Revenue	Corporate Income Tax					
					Govt. Sector	% on Total Tax Revenue	Public Sector	% on Total Tax Revenue	Private Sector	% on Total Tax Revenue
1998/99	28,752.90	100	3,461.50	12.04	1,526.50	5.31	1,155.00	4.02	780.00	2.71
1999/00	33,152.10	100	4,438.30	13.39	2,198.80	6.63	1,339.50	4.04	900.00	2.71
2000/01	38,865.10	100	5,982.30	15.39	2,928.00	7.53	1,924.30	4.95	1,130.00	2.91
2001/02	39,330.60	100	4,351.95	11.07	1,769.30	4.50	1,412.00	3.59	1,170.65	2.98
2002/03	42,587.00	100	3,655.30	8.58	1,251.00	2.94	1,236.30	2.90	1,168.00	2.74
2003/04	48,173.00	100	4,838.68	10.04	2,056.60	4.27	1,531.30	3.18	1,250.78	2.60
2004/05	54,104.70	100	5,328.34	9.85	1,332.40	2.46	2,467.80	4.56	1,528.14	2.82
2005/06	57,430.40	100	5,287.05	9.21	195.70	0.34	3,404.30	5.93	1,687.05	2.94
2006/07	71,126.70	100	11,523.02	16.20	1,019.70	1.43	5,717.10	8.04	4,786.22	6.73
2007/08	85,155.50	100	10,531.47	12.37	204.60	0.24	7,186.50	8.44	3,140.37	3.69
Average	49,867.80	100	5,939.79	11.81	1,448.26	3.57	2,737.41	4.96	1,754.12	3.28

Source: Appendix- I, Master Table & Appendix- III, Income Tax Revenue Table

Forecasted Data (Base Year 2003/04)

2008/09	80,407.15	100	9,735.09	12.11	304.35	0.38	5,930.38	7.38	3,500.37	4.35
2009/10	85,959.76	100	10,425.15	12.13	96.36	0.11	6,510.92	7.57	3,817.87	4.44
2010/11	91,512.36	100	11,115.20	12.15	-	-	7,091.46	7.75	4,135.37	4.52

*Source: Appendix- V: Table -4, V-7, V-8, V-9 & V-10.*

The above table 4.3.2 shows that the CITR's contribution to total tax revenue was fluctuated during the study period. It was 12.04% in the FY 1998/99, which was gradually increased and reached to 15.39% in FY 2000/01. But contribution was decreased sharply within five years and reached to 9.21% in FY 2005/06. The highest contribution to total tax revenue was 16.20% in FY 2006/07 and 12.37% in FY 2007/08. The lower contribution of CITR to total tax revenue was 8.58% during the study period. Such kind of lower contribution was due to the lower collection of corporate income tax, which might be the result of political instability, unfriendly environment for operating industry, trade and business. Moreover, CITR has been contributing 11.81% on average to total tax revenue, which regards the small but important portion contributing on total tax.

The structural composition of corporate income tax seems to be changed during this study period. In the FY 1998/99, about half portion of CITR was covered by only by government sector and rest of the half was covered by public sector and private sector. Within 10 years, in the FY 2007/08 tax contribution from public sector was increased and reached to 8.44%, which was 4.02% in FY 1998/99. Contribution of private sector in FY 1998/99 was 2.71% and remained around 3% in this study. However, in FY 2006/07, contribution to total tax revenue reached to 6.73% then again decreased to 3.6% in FY 2007/08. The contribution of government sector was highly fluctuated in this study period. In FY 1098/99, contribution to total tax revenue was 5.31% and increased gradually up to 7.53% in FY 2000/01 then after began to decrease and reached to 0.24% in FY 2007/08. In this study period, contribution of government sector was highly fluctuated and decreasing trend, which reached near 0%. From this study, we can see that contribution of government sector is very poor and it is not good for the Nepalese and developing country.

The contribution of CITR to total tax revenue has been shown in bar diagram and trend line as bellow.
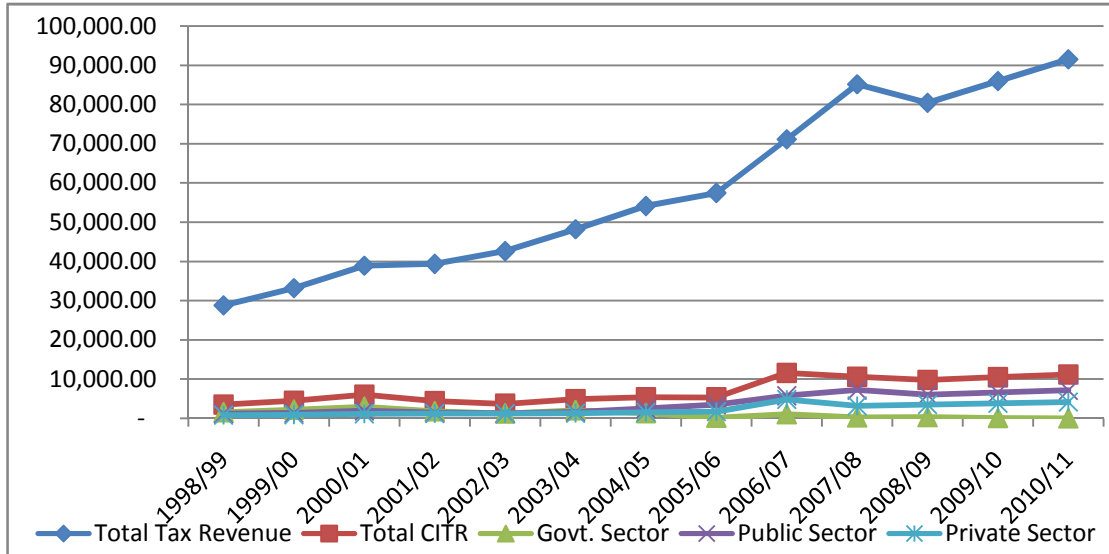
Chart 4.3.2

Bar Graphs showing CITR and Total Tax Revenue
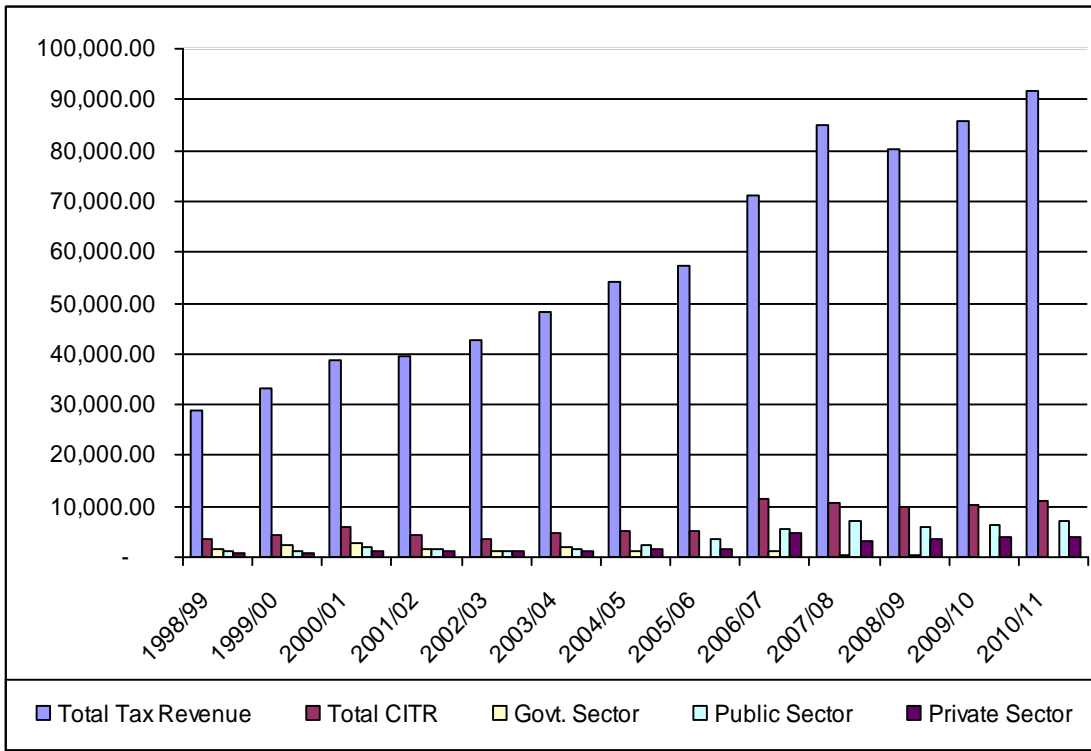
In the above bar diagram of various years are shown in X-axis and total tax revenue is shown in Y-axis.

Figure 4.3.2

Trend Line showing CITR and Total Tax Revenue

The above trend line shows the increasing trend of tax revenue and CITR including the projected data. The total tax revenue seems to be increasing forever during the study period. But CITR was fluctuated during the study period. The highest contribution of CITR to total tax revenue was in FY 2006/07.

The correlation between CITR and total tax revenue for the 10 year from FY 1998/99 to 2007/08 was 0.87 (Appendix V: page-XXXII), which indicated the positive correlation between them. The value of correlation coeffiecient was explained 75.69% by CITR and remaining 24.31% by other taxes.

Taking the FY 2003/04 as the base year, the projected total tax revenue will be Rs. 80,407.15 million, 85,959.76 million and 91,512.36 million for the FY 2008/09, 2009/10 and 2010/11 respectively. Likewise the CITR contribution to total tax revenue will be 12.11%, 12.13% and 12.15% for the respective years.

4.3.3 Contribution of Corporate Income Tax on Direct Tax Revenue

Direct tax is composition of income tax, land revenue & registration, urban house & land rent and vehicle tax, which has been shown in detail in master table Appendix-II. In the following table 4.3.3, position of direct tax revenue, CITR and its contribution in direct tax revenue of CITR has been shown.

Table 4.3.3

Contribution of CITR on Direct Tax Revenue
From F/Y 1998/99 to 2007/08 (Rs. in million)

Fiscal Year	Total Direct Tax Revenue	%	Total CITR	% on Direct Tax Revenue	Corporate Income Tax					
					Govt. Sector	% on Direct Tax Revenue	Public Sector	% on Direct Tax Revenue	Private Sector	% on Direct Tax Revenue
1998/99	7,516.10	100	3,461.50	46.05	1,526.50	20.31	1,155.00	15.37	780.00	10.38
1999/00	8,951.50	100	4,438.30	49.58	2,198.80	24.56	1,339.50	14.96	900.00	10.05
2000/01	10,159.40	100	5,982.30	58.88	2,928.00	28.82	1,924.30	18.94	1,130.00	11.12
2001/02	10,597.50	100	4,351.95	41.07	1,769.30	16.70	1,412.00	13.32	1,170.65	11.05
2002/03	10,105.80	100	3,655.30	36.17	1,251.00	12.38	1,236.30	12.23	1,168.00	11.56
2003/04	11,912.60	100	4,838.68	40.62	2,056.60	17.26	1,531.30	12.85	1,250.78	10.50
2004/05	13,071.80	100	5,328.34	40.76	1,332.40	10.19	2,467.80	18.88	1,528.14	11.69
2005/06	13,968.10	100	5,287.05	37.85	195.70	1.40	3,404.30	24.37	1,687.05	12.08
2006/07	18,980.30	100	11,523.02	60.71	1,019.70	5.37	5,717.10	30.12	4,786.22	25.22
2007/08	23,087.70	100	10,531.47	45.62	204.60	0.89	7,186.50	31.13	3,140.37	13.60
Average	12,835.08	100	5,939.79	45.73	1,448.26	13.79	2,737.41	19.22	1,754.12	12.72

Source: Appendix- I, Master Table & Appendix- III, Income Tax Revenue Table

Forecasted Data (Base Year 2003/04)

2008/09	20,789.05	100	9,735.09	46.83	304.35	1.46	5,930.38	28.53	3,500.37	16.84
2009/10	22,235.23	100	10,425.15	46.89	96.36	0.43	6,510.92	29.28	3,817.87	17.17
2010/11	23,681.41	100	11,115.20	46.94	-	-	7,091.46	29.95	4,135.37	17.46

*Source: Appendix- V: Table V-6, V-7, V-8, V-9 & V-10*

From the above table, we can see that the contribution of CITR to direct tax revenue was fluctuated between 36.17% and 60.71% during study period. Its contribution percentage was 46.05% amounting Rs. 3,461.50 million in the FY 1998/99 which increased up to 58.88% in FY 2000/01. But there after, it was gradually decreased to 37.85% in FY 2005/06. Then after, in FY 2006/07 its contribution grew up drastically to 60.71%. That possible might be due to the business friendly environment and seizes fire in the country. Unfortunately, that situation did not long lasted. It was decreased to 45.62% in FY 2007/08. The contribution of CITR to total direct tax was Rs. 10,531.47 million and average was Rs. 5,939.79 million.

This table has also shown the structural composition of corporate tax and its contribution to direct tax revenue. In this table, we can see that percentage contribution to direct tax of CITR from public sector was increasing trend and private sector was around constraint position but government sector was highly fluctuated and decreasing trend. In the FY 1998/99, contribution to direct tax revenue of income tax revenue from government sector, public sector & private sector were 20.31%, 15.37%, 10.38% and amounting Rs. 1,526.50 million, 1,155.00 million and 780.00 million. And 0.89%, 31.13%, 13.60% and amounting Rs. 204.60 million, 7,186.50 million and 3,140.37 million.

The contribution of CITR to direct tax revenue has been shown in bar diagram and trend line as follows:
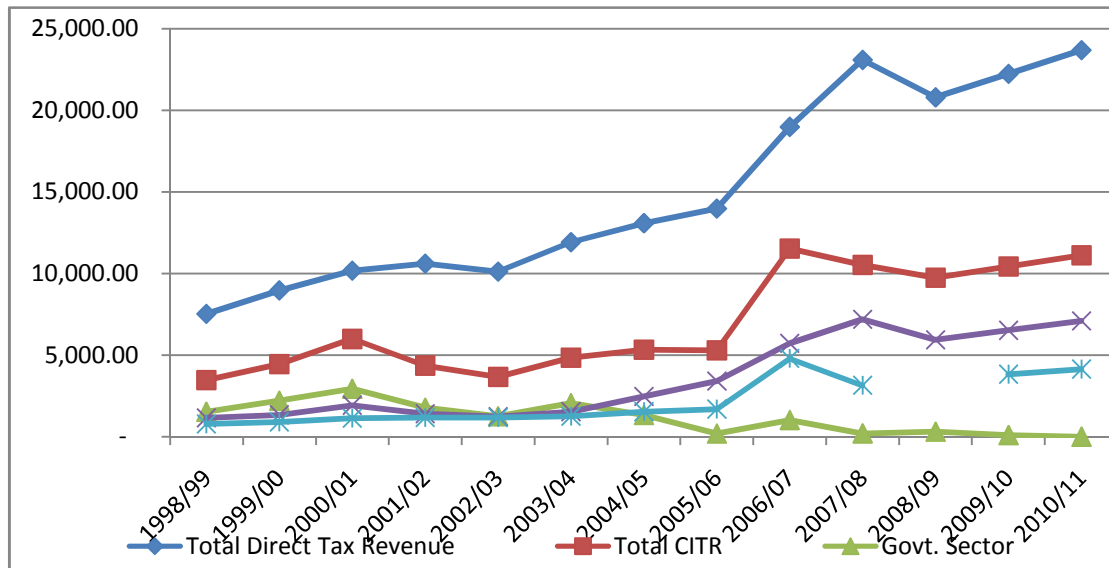
Chart 4.3.3

Bar Graph showing CITR and Direct Tax Revenue
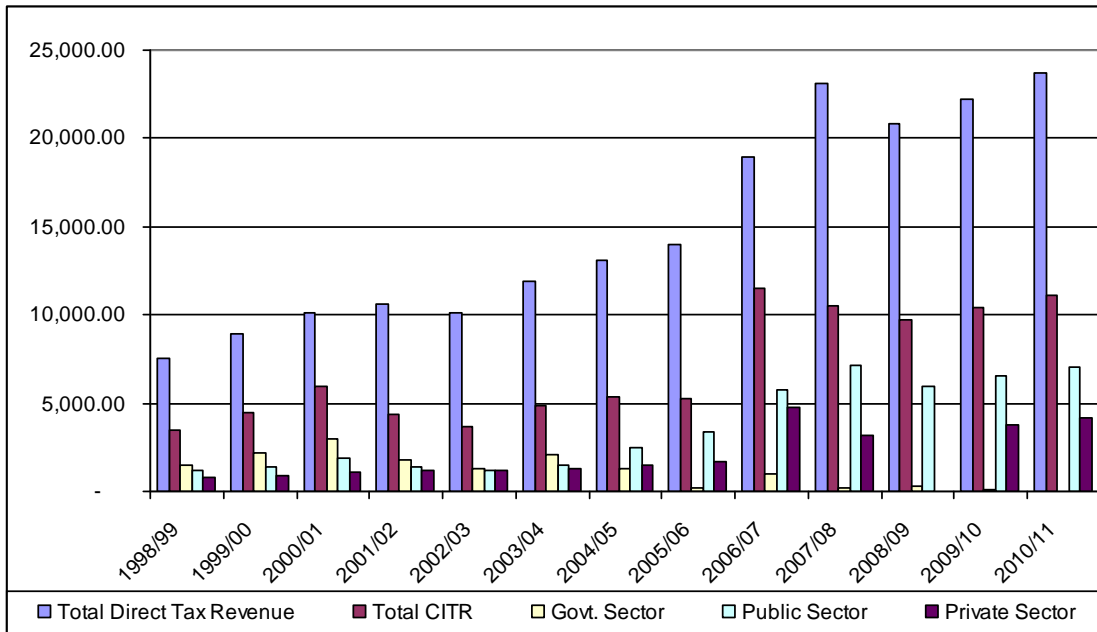
In the above bar graph, X-axis shows the different FY from 1098/99 to 2007/08 and Y-axis shows the total direct tax revenue, CITR and its components. It shows the direct tax revenue was increased continuously during the study period except FY 2002/03.

Figure 4.3.3
Trend Line Showing CITR and Direct Tax revenue

The above trend line shows that the direct tax revenue has been increasing up to FY 2001/02 and decreased in FY 2002/03 and then after started to increase. Contribution of CITR to direct tax revenue was also increasing trend up to FY 2000/01 but it was sharply decreased with in two years and after FY 2003/04, its trend was increasing. The trend line of public sector and private sector also seems to be slightly increasing trend but government sector was highly fluctuated and decreasing trend.

The correlation between direct tax revenue and CITR was 0.87 (Appendix V: page-XXXIV), which is known as positively correlated taking the data of FY 1998/99 to 2007/08. The value of the correlation coefficient was explained 82.81% by CITR in the direct tax revenue and other 17.19% was by other indirect tax revenue.

Taking the FY 2003/04 as base year the next three year's direct tax revenue will be Rs. 20,789.05 million, 22,235.23 million and 23,681.41 million respectively. The CITR will also Rs. 9,735.09 million, 10,425.15 million and 11,115.20 million for the FY 2008/09, 2009/10 and 2010/11 respectively. Though the amount of DTR and CITR will increase, CITR contribution percentage of DTR will be neutral during these three years. There will be slightly increase in the contribution percentage i.e. 46.83%, 46.89% and 46.94% in the respective year.

4.3.4 Contribution of Corporate Income Tax Revenue on Income Tax Revenue

Income tax revenue is composition of corporate income tax, individual income tax, house & land rent tax and interest tax. The size of income tax revenue largely depends upon the size of corporate sector. Higher size of corporate sector higher will be the CITR and total income tax revenue and vice-versa. So, CITR in Nepal has played a vital role in income tax revenue, which has been presented in the following table projecting for three subsequent years.

Table 4.3.4

Contribution of CITR on Income Tax Revenue
From F/Y 1998/99 to 2007/08 (Rs. in million)

Fiscal Year	Total Income Tax Revenue	%	Total CITR	% on Income Tax Revenue	Corporate Income Tax					
					Govt. Sector	% on Income Tax Revenue	Public Sector	% on Income Tax Revenue	Private Sector	% on Income Tax Revenue
1998/99	6,170.30	100	3,461.50	56.10	1,526.50	24.74	1,155.00	18.72	780.00	12.64
1999/00	7,420.60	100	4,438.30	59.81	2,198.80	29.63	1,339.50	18.05	900.00	12.13
2000/01	9,114.00	100	5,982.30	65.64	2,928.00	32.13	1,924.30	21.11	1,130.00	12.40
2001/02	8,903.70	100	4,351.95	48.88	1,769.30	19.87	1,412.00	15.86	1,170.65	13.15
2002/03	8,131.80	100	3,655.30	44.95	1,251.00	15.38	1,236.30	15.20	1,168.00	14.36
2003/04	9,514.50	100	4,838.68	50.86	2,056.60	21.62	1,531.30	16.09	1,250.78	13.15
2004/05	10,466.10	100	5,328.34	50.91	1,332.40	12.73	2,467.80	23.58	1,528.14	14.60
2005/06	11,002.40	100	5,287.05	48.05	195.70	1.78	3,404.30	30.94	1,687.05	15.33
2006/07	15,731.80	100	11,523.02	73.25	1,019.70	6.48	5,717.10	36.34	4,786.22	30.42
2007/08	19,077.80	100	10,531.47	55.20	204.60	1.07	7,186.50	37.67	3,140.37	16.46
Average	10,553.30	100	5,939.79	55.36	1,448.26	16.54	2,737.41	23.36	1,754.12	15.46

Source: Appendix- III, Income Tax Revenue Table

Forecasted Data (Base Year 2003/04)

2008/09	16,881.89	100	9,735.09	57.67	304.35	1.80	5,930.38	35.13	3,500.37	20.73
2009/10	18,032.55	100	10,425.15	57.81	96.36	0.53	6,510.92	36.11	3,817.87	21.17
2010/11	19,183.20	100	11,115.20	57.94	-	-	7,091.46	36.97	4,135.37	21.56

*Source: Appendix- V: Table V-25, V-7, V-8, V-9 & V-10*

Table 4.3.4 reflects that contribution of CITR to income tax revenue seems to be in decreasing trend during the study period. It was 56.10% amounting Rs. 3,461.50 million in FY 198/99, which was increased to 65.64% amounting Rs. 5,982.30 million in FY 2000/01. But its contribution started to decreased and reached to 44.95% during study period except FY 2006/07. Contribution to income tax revenue in FY 2006/07 was 73.25%. The CITR has

been contributing 55.36% amounting Rs. 5,939.79 million in average in study period.

The structural composition of corporate sector seems to be changed during study period. In FY 1998/99, the contribution to total income tax revenue of government sector, public sector and private sector were 24.74%, 18.72%, 12.64% amounting Rs. 1,526.50 million, 1,155.00 million, 780.00 million and 1.07%, 37.67%, 16.46% amounting Rs. 204.60 million, 7,186.50 million and 3,140.37 million in FY 2007/08. We can see in this table that contribution to total income tax revenue from public sector and private sector were increasing trend but government sector was highly decreasing trend in the study period.

The CITR and income tax revenue position has been shown in the following bar diagram and trend line.

Chart 4.3.4
Bar Graph showing CITR and Income Tax Revenue
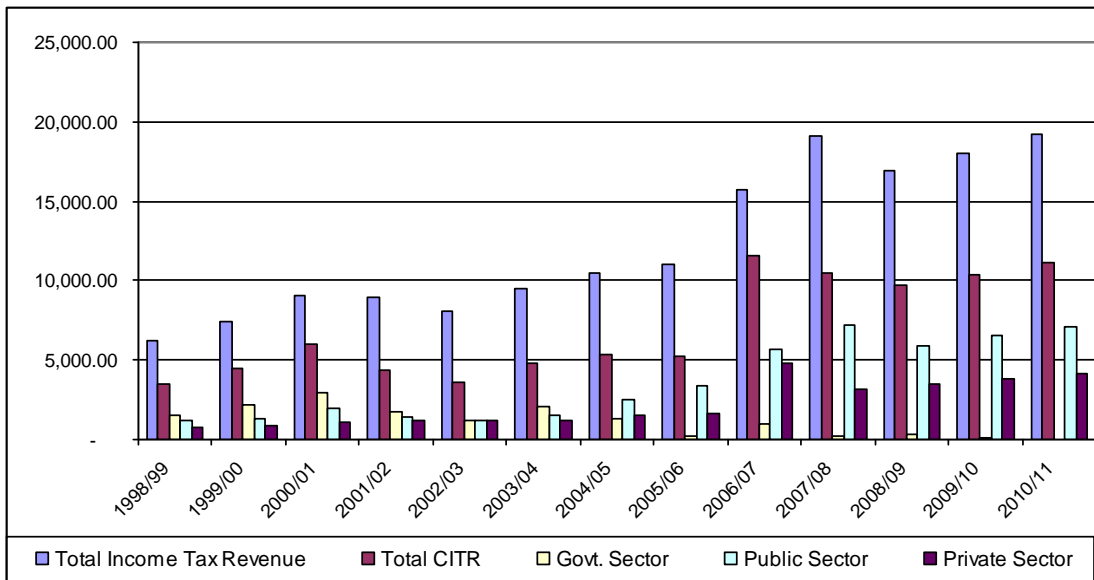
In the above bar diagram, different years are shown in X-axis and total income tax revenue is shown in Y-axis. In which, we can see the contribution of CITR to income tax revenue was increasing trend except FY 2002/03 and public sector and private sector also increasing trend in study period but government sector was decreasing trend.

Figure 4.3.4
Trend Line showing CITR and Income Tax Revenue
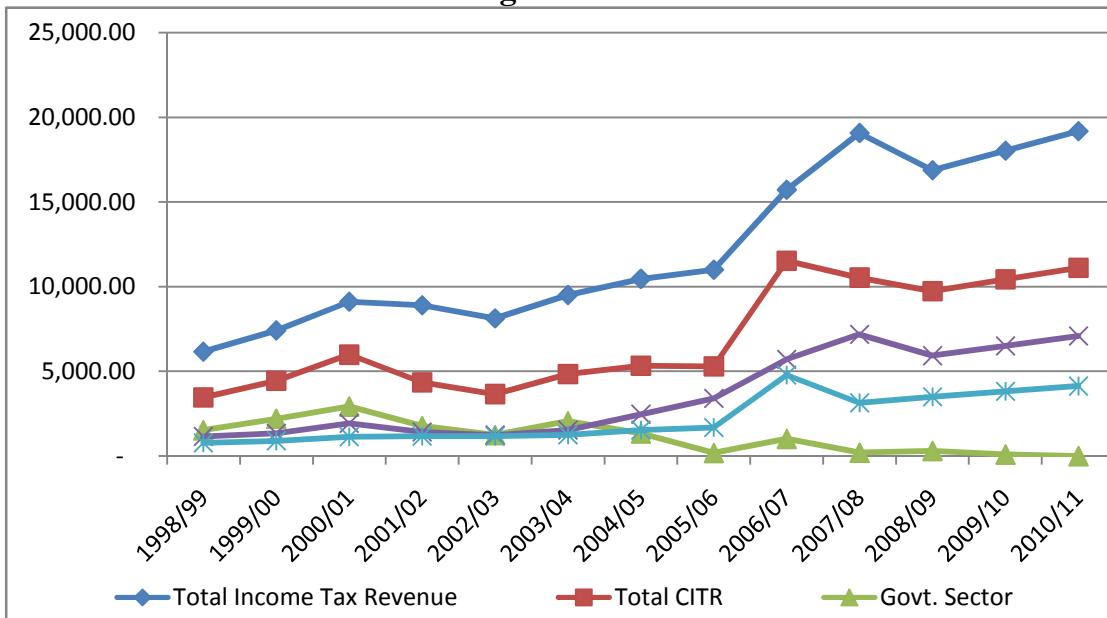
The above trend line shows that the income tax revenue was increasing regularly except FY 2002/03. Contribution of CITR to total tax revenue was increasing trend but it was fluctuated during study period.

The relationship between CITR and income tax revenue from the FY 1998/99 to 2007/08 was 0.93(Appendix V: page-XXXV), which indicates the highly positive correlation. Out of tax contribution, CITR explains 86.49% and remaining 13.51% by explained by individual income tax, interest tax and house & land rent tax.

85

Taking the FY 2003/04 as the base year, the projection have been made for three years. The projected amount of income tax was Rs. 16,881.69 million, 18,032.55 million and 19,183.20 million and corporate income tax was Rs. 9,735.09 million, 10,425.15 million and 11,115.20 million for the FY 2008/09, 2009/10 and 2010/11 respectively. Total amount and percentage contribution of CITR to income tax will be 57.67%, 57.81% and 57.94% in the respective years.

4.3.5 Structural Composition of Corporate Income Tax

The corporate income tax structure comprises of government sector, public sector and private sector. Corporation taxable income is calculated by adding all the taxable income and deducting all the allowable expenses. After enactment of Income Tax Act 2058, the books of account of corporate sector have been kept a little bit differently. From the FY 2002/03, the total corporate sector income tax is computed by adding government, public and private sectors income tax, including individual and sole trading firm and income from other institutions too. The following table has been drawn to show the structural composition of corporate income tax from the FY 1098/99 to 2007/08.

Table 4.3.5

Structural Composition of Corporate Income Tax
From F/Y 1998/99 to 2007/08 (Rs. in million)

Fiscal Year	Total CITR	%	Govt. Sector	% on Total CITR	Public Sector	% on Total CITR	Private Sector	% on Total CITR
1998/99	3,461.50	100	1,526.50	44.10	1,155.00	33.37	780.00	22.53
1999/00	4,438.30	100	2,198.80	49.54	1,339.50	30.18	900.00	20.28
2000/01	5,982.30	100	2,928.00	48.94	1,924.30	32.17	1,130.00	18.89
2001/02	4,351.95	100	1,769.30	40.66	1,412.00	32.45	1,170.65	26.90
2002/03	3,655.30	100	1,251.00	34.22	1,236.30	33.82	1,168.00	31.95
2003/04	4,838.68	100	2,056.60	42.50	1,531.30	31.65	1,250.78	25.85
2004/05	5,328.34	100	1,332.40	25.01	2,467.80	46.31	1,528.14	28.68
2005/06	5,287.05	100	195.70	3.70	3,404.30	64.39	1,687.05	31.91
2006/07	11,523.02	100	1,019.70	8.85	5,717.10	49.61	4,786.22	41.54
2007/08	10,531.47	100	204.60	1.94	7,186.50	68.24	3,140.37	29.82
Average	5,939.79	100.00	1,448.26	29.95	2,737.41	42.22	1,754.12	27.83

Source: Appendix- III, Income Tax Revenue Table

Forecasted Data (Base Year 2003/04)

|								
2008/09	9,735.09	100	304.35	3.13	5,930.38	60.92	3,500.37	35.96
2009/10	10,425.15	100	96.36	0.92	6,510.92	62.45	3,817.87	36.62
2010/11	11,115.20	100	-	-	7,091.46	63.80	4,135.37	37.20

Source: Appendix- V: Table V-7, V-8, V-9 & V-10

The above structural composition of corporate tax shows that major portion was covered by government sector in starting period but ending period of study dominated by public sector. In the average, public sector covered major portion of corporate income tax income. The contribution to total corporate income tax income from government sector, public sector and private sector in FY 1998/99 were 44.10%, 33.37%, 22.53% amounting Rs. 1,526.50 million, 1,155.00 million, 780.00 million and 1.94%, 68.24%, 29.82% amounting Rs. 204.60 million, 7,186.50 million and 3,140.37 million in FY

2007/08. The average contributions to total corporate income tax income from government sector, public sector and private sector during study period were 29.95%, 42.22%, 27.83% amounting Rs. 1,448.26 million, 2,737.41 million and 1,754.12 million. From the above table 4.3.5, we can see that public sector & private sector contributions were increasing trend but government sector was decreasing trend. The overall positions of all sectors were fluctuated during study period. And total CITR was increasing trend from FY 1999/99 to FY 2007/08.

The structural composition of CITR has been presented in bar graph and trend line as follows:
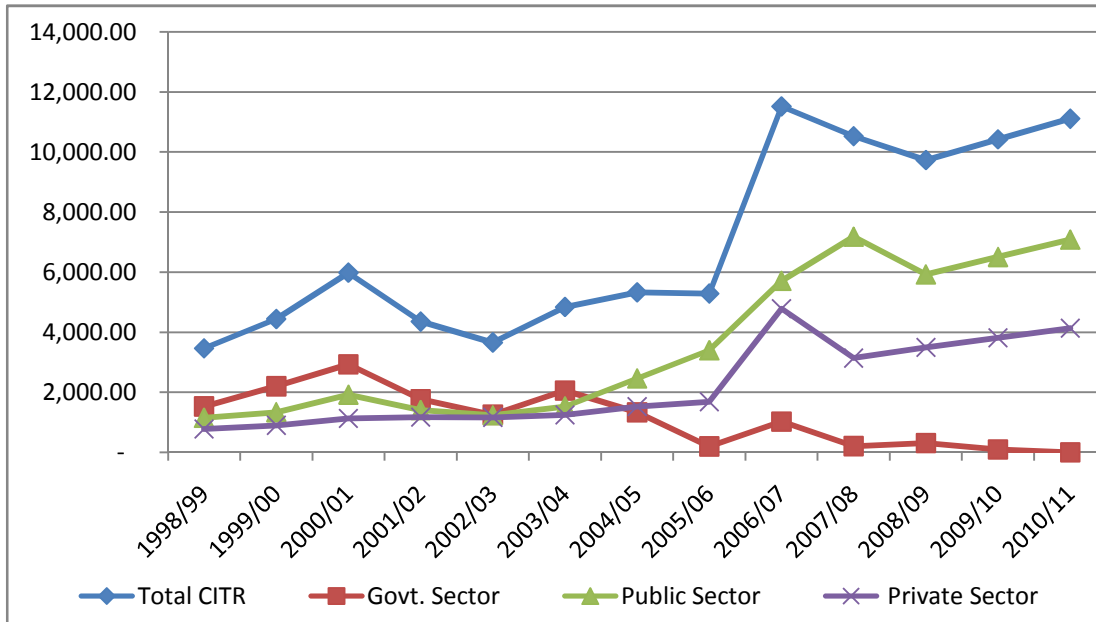
Chart 4.3.5
Bar Graph showing CITR and its Composition
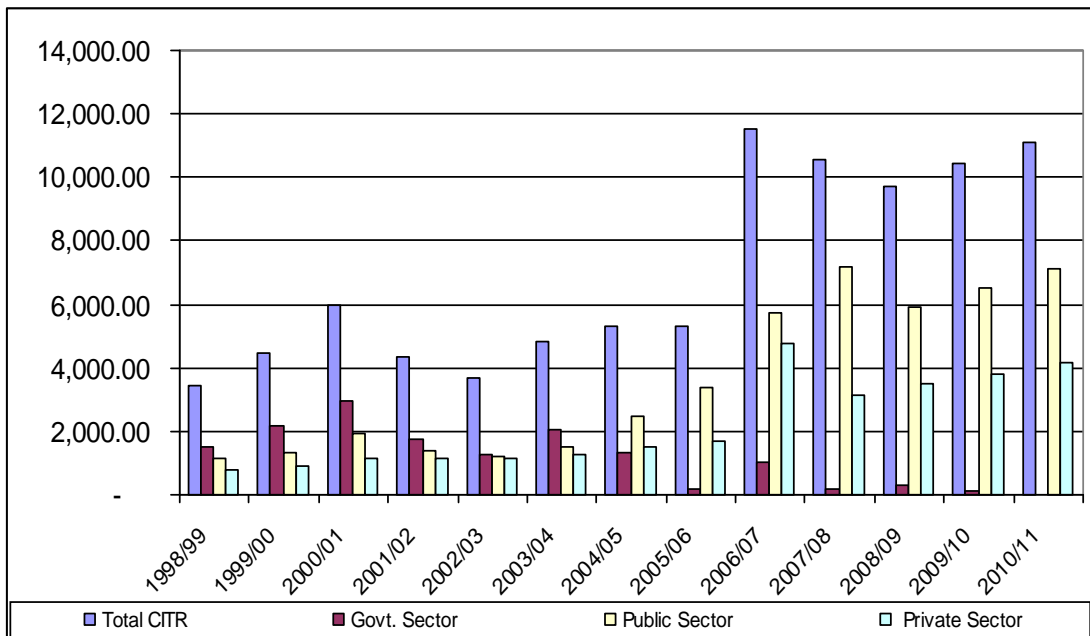
In the above bar diagram, different years are shown in X-axis and composition of CITR is shown in Y-axis considering three years forcasted tata.

Figure 4.3.5
Trend Line showing CITR and Its Composition

The above trend line represents the CITR, government sector, public sector and private sector separetly. It shows *that* the CITR, government sector, public sector and private sector were mostly fluctuated during the study period. It seems in figure 4.3.5, CITR, public sector and private sector income tax were increasing trend but government sector was decreasing trend.

Taking the FY 2003/04 as base year, the projction have been made for three subseqent years. The total CITR will be Rs. 9,735.09 million, 10,425.15 million and 11,115.20 million for the FY 2008/09, 2009/10 and 2010/11 respectively. The contribution percentage from public and private sector will increase except from government sector. The contribution percentage of public sector to CITR will be 60.92%, 62.45% and 63.80% amounting Rs. 5,930.38 million, 6,510.92 million, and 7,091.46 million in FY 2008/09, 2009/10 and 2010/11. The contribution of private sector will be 35.96%, 36.62% and 37.20% amounting

Rs. 3,500.37 million, 3,817.87 million and 4,135.37 million in FY 2008/09, 2009/10 and 2010/11.

The relationship between CITR and government enterprises; CITR and public sector and CITR and private sector were -0.43 (Appendix V: page-XXXVI), 0.94 (Appendix V: page-XXXVII) and 0.95 (Appendix V: page-XXXVIII) respectively during the study period. Out of tax contribution, government sector, public sector and private sector will cover 18.49%, 88.36% and 90.25% and the remaining was covered by other taxes. This means that public sector and private sector relation to CITR is highly positive but relation to CITR of government sector is negative.

4.4 Analysis of Income Tax Growth and its relation

Analysis of income tax growth in Nepal, comperision of income tax growth with GDP growth, development expenditure growth and analysis of income tax growth, GDP growth in relation of development expenditure for 10 years has been drawn in this sub-chapter. Taking the FY 2003/04 as the base year, projection have been made for next three years.

4.4.1 Income Tax Growth in Nepal

The structure and growth of income tax of Nepal has presented in table 4.1.1 from the FY 1998/99 to 2007/08 and taking the FY 2003/04 as the base year, projections have been made for next three years. Income tax includes CITR, Individual income tax, House & land rent tax and Interest tax.

Table 4.4.1 shows that total income tax was increased in every fiscal year except in the year 2001/02 and 2002/03. Growth of income tax was 20.3% and amounting Rs. 1,250.3 million in FY 1999/00 and 21.3% amounting Rs. 3,346.0 million in FY 2007/08. The highest growth of income tax was 43% in FY 2006/07 and lowest growth was -8.7% in FY 2002/03. The growth of CITR, Individual income tax, House & Land rent tax & Interest tax were 28.2%, 8.1%, 22.4% and 28.7% and -8.6%, 163.7%, 20.3% and 3.1% in FY 2007/08. Growth of all component of income tax were fluctuating 163.7% to less than zero except House & land rent tax.

The forecasted data shows that all components of income tax will be less than zero in FY 2008/09 and thenafter will be in positive value.

Table 4.4.1

Growth of Income Tax Revenue
From F/Y 1998/99 to 2007/08 (Rs. in million)

Fiscal Year	Income Tax Revenue	Growth of Income Tax		Total CITR	Growth of CITR		Individual Income Tax	Growth of individual Income Tax		House & Land Rent Tax	Growth of House & Land Rent tax		Interest tax	Growth of Interest Tax	
		Amt.	%		Amt.	%		Amt.	%		Amt.	%		Amt.	%
1998/99	6,170.3	-	-	3,461.5	-	-	2,185.1	-	-	204.2	-	-	319.5	-	-
1999/00	7,420.6	1,250.3	20.3	4,438.3	976.8	28.2	2,317.9	132.8	6.1	250.0	45.8	22.4	414.4	94.9	29.7
2000/01	9,114.0	1,693.4	22.8	5,982.3	1,544.0	34.8	2,407.8	89.9	3.9	260.0	10.0	4.0	463.9	49.5	11.9
2001/02	8,903.7	-210.3	-2.3	4,352.0	-1630.4	-27.3	3,735.5	1,327.7	55.1	348.5	88.5	34.0	467.7	3.8	0.8
2002/03	8,131.8	-771.9	-8.7	3,655.3	-696.65	-16.0	3,230.8	-504.7	-13.5	381.7	33.2	9.5	864.0	396.3	84.7
2003/04	9,514.5	1,382.7	17.0	4,838.7	1,183.4	32.4	3,539.1	308.4	9.5	403.3	21.6	5.7	733.4	-130.6	-15.1
2004/05	10,466.1	951.6	10.0	5,328.3	489.7	10.1	3,884.5	345.3	9.8	496.3	93.0	23.1	757.0	23.6	3.2
2005/06	11,002.4	536.3	5.1	5,287.1	-41.3	-0.8	4,431.4	546.9	14.1	509.1	12.8	2.6	774.9	17.9	2.4
2006/07	15,731.8	4,729.4	43.0	11,523.0	6,236.0	117.9	2,554.5	-1876.9	-42.4	599.4	90.3	17.7	1,054.9	280.0	36.1
2007/08	19,077.8	3,346.0	21.3	10,531.5	-991.6	-8.6	6,737.3	4,182.8	163.7	721.1	121.7	20.3	1,087.9	33.0	3.1
Average	10,553.3	1,290.8	-	5,939.8	707.0	-	3,502.4	455.2	-	417.4	51.7	-	693.8	76.8	-

Source: Appendix- I, Master Table & Appendix- III, Income Tax Revenue Table

Forecasted Data (Base Year 2003/04)

2008/09	16,881.9	-2195.9	-11.5	9,735.1	-796.4	-7.6	5,285.7	-1451.6	-21.5	710.9	-10.2	-1.4	1,150.3	62.3	5.7
2009/10	18,032.6	1,150.7	6.8	10,425.2	690.1	0.1	5,610.0	324.2	6.1	764.3	53.4	7.5	1,233.1	82.9	7.2
2010/11	19,183.2	1,150.7	6.4	11,115.2	690.1	0.1	5,934.2	324.2	5.8	817.7	53.4	7.0	1,316.1	83.0	6.7

Source: Appendix- V: Table V-25, V-7, V-11, V-13 & V-12.

4.4.2 Comparision of Income Tax with GDP growth and Development Expenditure Growth

Table 4.4.2 present the comperision of Income tax growth with GDP and Development expenditure growth. Taking FY 1998/99 as base year, Income tax growth was 20.26% and GDP and Development expenditure growth were 10.98% and 10.82% in FY 1999/00. In FY 2000/00, income tax growth was increased from 20.26% to 22.82% and GDP and development expenditure

growth also increased from 10.98% to 12.88% and 10.82% to 11.09%. From FY 2001/02 to 2002/03, income tax, GDP and development expenditure growth were decreased. In the FY 2007/08, income tax growth was 21.27% and GDP and development expenditure growth were 11.91% and 34.70%. From the table 4.4.2, we can see that the relation of income tax with GDP and development expenditure were positive.

The forcasted data shows that income tax, GDP and developing expenditure growth will be increase from FY 2008/09 to FY 2010/11.

Table 4.4.2

Comparison of Income Tax Growth with GDP and Development Expenditure Growth
From F/Y 1998/99 to 2007/08 (Rs. in million)

Fiscal Year	Income Tax	Growth of Income Tax		GDP	Growth of GDP		Dev. Expenditure	Growth of Dev. Expenditure	
		Amount	%		Amount	%		Amount	%
1998/99	6,170.30	-	-	330,018.00	-	-	22,992.10	-	-
1999/00	7,420.60	1,250.30	20.26	366,251.00	36,233.00	10.98	25,480.70	2,488.60	10.82
2000/01	9,114.00	1,693.40	22.82	413,429.00	47,178.00	12.88	28,307.20	2,826.50	11.09
2001/02	8,903.70	-210.3	-2.31	430,397.00	16,968.00	4.10	24,773.40	-3533.80	-12.48
2002/03	8,131.80	-771.9	-8.67	460,325.00	29928	6.95	22,356.10	-2417.30	-9.76
2003/04	9,514.50	1,382.70	17.00	500,699.00	40,374.00	8.77	23,095.60	739.50	3.31
2004/05	10,466.10	951.60	10.00	548,485.00	47,786.00	9.54	27,340.70	4,245.10	18.38
2005/06	11,002.40	536.30	5.12	611,089.00	62,604.00	11.41	29,606.60	2,265.90	8.29
2006/07	15,731.80	4,729.40	42.99	676,210.00	65121.00	10.66	39,729.90	10,123.30	34.19
2007/08	19,077.80	3,346.00	21.27	756,756.00	80,546.00	11.91	53,516.10	13,786.20	34.70
Ave.	10,553.30	1,290.75	-	509,365.90	42,673.80	-	29,719.84	3,052.40	-

Source: Appendix- I, Master Table & Appendix- III, Income Tax Revenue Table

Forecasted Data (Base Year 2003/04)

2008/09	16,881.89	-2195.91	-11.51	755,809.00	-947.00	-0.13	42,699.80	-10816.3	-20.21
2009/10	18,032.55	1,150.66	6.82	800,616.84	44,807.84	5.93	45,059.79	2,359.99	5.53
2010/11	19,183.20	1,150.65	6.38	845,424.67	44,807.83	5.60	47,419.79	2,359.99	5.24

Source: Appendix-V: Table V-25, V-1 & V-27.

4.4.3 Analysis of Income tax and GDP in relation to Development Expenditure

Correlation may be defined, as the degree of linear relationship existing between two or more variables. Two variables are said to be correlated when the change in the value of one variables are accompanied by the change of another variable. Correlation analysis is defined as the statistical technique, which measure the degree and direction of relationship between/among the variables. In the other words, it helps in studying the covariance of two or more variables, which lies between ±1. If the value of correlation (r) is near to +1, this relationship is said to be perfectly positively correlated and vice-versa.

The relationship between income tax and GDP for the 10 years from FY 1998/99 to FY 2007/08 was 0.95 (Appendix V: page-XXXIX), which indicates the highly positive relation between them. The relation between income tax and development expenditure was 0.96 (Appendix V: page-XL), which is khown as positively correlated taking the data of FY 1998/99 to FY 2007/08.

The relation between income tax and GDP, keeping the effect of development expenditure constant was 0.90(Appendix V: page-XLII), which is highly positive relation between income tax, GDP and development expenditure. From this figure, we can say that if 100 percent change of the value of development expenditure, the value of income tax and GDP will be change by 90 percent. From this analysis, we should increase the amount of development expenditure in coming fiscal years for increment of total income tax and GDP.

The correlation of income tax to GDP and development expenditure is shown below.

Relation of income tax to GDP	0.95
Relation of income tax to development expenditure	0.96
Relation of income tax and GDP, keeping development expenditure constant	0.90

4.5   Major Finding of the Study

On the basis of data presentation and analysis in the above mentioned sub-chapters, some important findings of the study are summarized below:

1.   The study shows that the average contribution of tax revenue to total revenue was 78.44% and that of non-tax revenue was 21.56% during the study period. It shows that taxation has been a major source of government revenue. But the contribution of tax revenue has fluctuating trend. Its contribution was 77.19% in FY 1998/99 and 79.12% in FY 2007/08 on total revenue. The highest contribution on total revenue was 81.09% in FY 2006/07 and lowest contribution was 75.74% in FY 2002/03. And average contribution to total revenue of tax revenue and non-tax revenue were 78.44% and 21.56%.

2.   Nepalese tax revenue is composed of boh direct and indirect tax revenue. There is dominant role of indirect tax revenue in Nepalese tax revenue. The composition of direct tax and indirect tax to total tax revenue was 26.14% and 73.86% respectively in FY 1998/99 which became 27.11% and 72.89% respectively in FY 2007/08. Average contribution of direct tax revenue to total tax revenue was 25.74% and indirect tax revenue was 74.26%. Both direct and indirect tax revenue were fluctuating but indirect tax revenue was increasing and direct tax revenue was decreasing trend.

3. The contribution of import custom duty, export custom duty, indian excise refund, excise duty, value added tax and other indirect tax on indirect tax were 36.25%, 1.78%, 5.68%, 13.91%, 41.28% and 1.11% respectively in FY 1998/99 and the contribution of each taxes reached to 27.60%, 0.72%, 4.83%, 18.03%, 18.03% and 0.79% respectively in FY 2007/08 and average contribution to total indirect tax were 31.6%, 1.8%, 5.9%, 15.2%, 44.5% and 1.1%. It shows that excise duty and value added tax were in increasing trend and import custom, export custom, indian excise refund and other indirect tax were in decreasing trend.

4. The contribution of land revenue & registration, urban house and land rent tax, income tax and vehicle tax to direct tax revenue in FY 1998/99 were 13.35%, 1.64%, 82.09% and 2.92% respectively which reached to 12.74%, 0%, 82.63% and 4.63% respectively in FY 2007/08. And average contributions were 12.32%, 0.3%, 82.34% and 4.63%. In the composition of direct tax, income tax was the giant one which contribution seems to be increasing trend and vehicle tax also increasing trend. Contribution of land revenue & registration tax and urban house & land rent tax were decreasing trend. The contribution of income tax to government revenue is increasing trend. So the income tax in future will also contribute very well.

5. The income tax/GDP ratio, income tax/total revenue ratio, income tax/total tax revenue ratio, income tax/ total direct tax revenue ratio and income tax/total indirect tax revenue ratio were 1.87%, 16.56%, 21.46%, 82.09% and 29.05% respectively in FY 1998/99 which were increased to 2.52%, 17.73%, 22.40%, 82.63% and 30.74% respectively for the FY 2007/08 and 2.04%, 16.57%, 21.18%, 82.34%, 28.55% in average during 10 years.

6. Income tax is composed of corporate income tax, individual income tax, house & land rent tax and interest income tax. All those taxes contribution were in increasing trend but was fluctuation. Among them corporate income tax contributed maximum 55.36% on average to the income tax while individual income tax, house & land rent tax and interest income tax contributed on an average 34.09%, 3.93% and 6.61% respectively. In FY 1998/99, contribution of these components of income taxes were 56.10%, 34.42%, 3.31% and 5.18% and 55.20%, 35.32%, 3.78% and 5.70% in FY 2007/08.

7. The resource gap has been increasing every year which was Rs. 22,328.00 million in FY 1998/99 and increased to Rs. 53,727.50 million in FY 2007/08 and Rs. 34,502.71 million in average during the sdudy period. The average percentage of resource gap to total expenditure was 35.36%. It is also found from the projected data that the resource gap will also increased in the future which will be 58,88796 million in FY 2010/11, which is not desirable for economy.

8. On the average, contribution of the government revenue in financing public expenditure was 64.64% during the study period. Government revenue was 69.56% in FY 2003/04 at maximum level and it was 59.74% at lowest level in FY 2005/06. Similarly, the contribution made by foreign aid comprising both grants and loans as 21.32% on an average. This indicates the internal indebtedness of the country.

9. The contribution made by CITR to total expenditure was 5.97% on an average. Its contribution was 8.62% of maximum in FY 2006/07 and 4.35% of minimum in FY 2002/03. The drastic fluctuation in contribution percentage of corporate sector was mainly due to the

unfriendly business environment created by unstable political and economic situation of the country.

10. The contribution of CITR to total revenue was 13.14% of maximum in FY 2006/07 and 6.50% of minimum in FY 2002/03. The average contribution was 9.26% during the study period and will be 9.67% in FY 2010/11. This contribution is important but not satisfactory for developing country like Nepal.

11. On an average, CITR had contributed 11.81% to total tax revenue. The contribution trend was fluctuating from 16.20% of maximum in FY 2006/07 to 8.58% of minimum in FY 2002/03. Similarly, CITR's contribution in direct tax revenue was also found in increasing trend up to 60.71% at highest level in FY 2006/07, which was sharply decreased to 36.17% in FY 2002/03 at lowest level and 45.73% in average. This indicates the low portion of resource mobilization from domestic source.

12. CITR portion in income tax revenue was 73.25% of maximum in FY 2006/07 which was gradually decreased to 44.95% of lowest in FY 2002/03 and it was 55.20% in FY 2007/08. On the average, CITR had contributed 55.36% to total income tax revenue. This shows that CITR occupied major portion in income tax. But massive fluctuation in CITR collection and its percentage contribution was due to the effect of unfriendly political and economic environment and lack of developing competency by public and private sector.

13. In the structural composition of CITR, public sector has dominated the structure. The average portion covered by government, public and private sector were 29.95%, 42.22% and 27.83% respectively. The contribution of government sector, public sector and private sector to total CITR were 44.10%, 33.37%, 22.53% in FY 1998/99 and 1.94%

68.24%, 2783% in FY 2007/08. The study shows that the contribution of public sector and private sector to CITR were increasing trend but government sector was decreasing trend. The forecasted data also shows that, the increment in CITR and public sector and private sector contribution will be increase to 63.80% and 37.20%.

14. During the 10 years study period from FY 1998/99 to FY 2007/08, income tax revenue was increased year by year and forcasted data also shows that it will be increase but drastic fluctuation was in its percentage growth.

15. The relation of CITR with total revenue, tax revenue, direct tax revenue and income tax revenue were 0.85, 0.87, 0.87 & 0.93 (Appendix V: page-XXXII to XXXV) which indicates highly positive relation with them.

16. The correlation of CITR with it's components, government sector, public sector and private sector were -0.43, 0.94 & 0.95 (Appendix V: page-XXXVI to XXXVIII) respectively. It indicates that there was no relation between government sector and CITR but public sector and private sector with CITR were highly positive.

17. From the study, it seems that positive impact of annual increament of income tax growth to annual growth of GDP and Development expenditure. In FY 1999/00, percentage growth of income tax was 20.26% and GDP growth & Develpoment Expenditure growth were 10.98% and 11.82%. In FY 2000/01, income tax growth reached to 22.82% and also GDP growth and development expenditure increased to 12.88% and 11.09%. And in FY 2001/02, income tax income growth decreased to -2.31%, GDP & development expenditure growth also decreased and reached to 4.10% and -12.48%.

18. In FY 1998/99 to FY 2007/08, relation of income tax to GDP and Development expenditure were 0.95 (Appendix V: page-XXXIX) % & 0.96 (Appendix V: page-XL) which indicates the highly positive relations between them. Relation of income tax and GDP with Development expenditure also highly positive. It was 0.90 (Appendix V: page-XLII) during 10 years study period.

Chapter- 5

Summary, Conclusion and Recommendations

5.1   Summaary

In the developing countries like Nepal, lack of sufficient financial resources is the main constraint for national ecoconomic development. A lot of fund is required to meet the additional financial requirement for the development activities of the country. Nepal has been suffering from capital shortage to accelerate the economic growth. The expenditure of Nepalese government is increasing year by year. To meet the additional capital requirements, Nepalese government has been using external and internal resources. Internal resources are preferable for sustainable economic development. Nepal has been unable for proper mobilization of internal resources. Thus, fiscal deficit and resource gap of Nepal have been increasing every year.

To solve this problem, income tax is the most important source for internal revenue generation in which corporate taxation occupies the major portion. Regarding this fact, this study attempts to analyze the importance and contribution of corporate sector to the Nepalese government revenue. After identifying introduction about it, review of literature has been observed to address core elements like income tax and its development, coporate tax and its development in nepal.

Discriptive and historical research design has been used to search its objectives, whole area relating to government revenue is set for the research population and corporate income tax is taken as sample size. Different four interactions method and strategy have been used to collect secondary data, analytical tools such as tables, percentage, bar graph, trend lines, time series,

average and correlations are used for research methodology. Projenctions have been made for the next three subsequent years taking 2003/04 as base year.

As the corporate income tax has been separaed from individual income tax since 1993/94. Corporate income tax collection has been increasing continuously except few years. In the government revenue, tax revenue has contributed 75% and within the tax structure, indirect tax revenue has contributed more than 70%. But all the developing countries like Nepal have equal importance of direct tax. The major portion of direct tax was covered by income tax, which is 82.63% in FY 2007/06 and within the income tax, corporate income tax contributed 55.36% on an average. This figure shows the importance and contribution of corporate sector to government revenue in Nepal like developing countries.

The intra-structural composition of corporate income tax seem to be dominated by public sector. The average contribution of government, public and private sector were found 29.95%, 42.22% and 27.83% respectively during the study period. All the relationship between CITR and total tax revenue, CITR and total revenue were found to be positively correlated. As per the projection of data, tax collection from various tax heads will increase. But the contribution percent of government sector will slightly decreased.

During the study period the resource gap has been increasing every year except few years and projection also shows it will increase in future too. In the FY 1998/99, the overal resource gap was Rs. 6,139.00 million, which was increased to Rs. 24,426.90 million in FY 2007/08 and average resource gap was Rs. 14,248.01 million in the study period. The domestic resource gap pattern of Nepal was found on an average 35.36% to total expenditure and the share of CITR to total expenditure was 5.97% on average.

5.2   Conclusion

From the analysis of data and major finding of the study, it is to be concludes that there is significant contribution of income tax to government revenue of Nepal. Following are conclusions:

The study shows that tax revenue has been major source of government revenue which was slowly fluctuating year to year. The tax revenue contributes sum total of direct and indirect taxes. Indirect tax revenue plays vital role on tax revenue compared to direct tax. Indirect tax revenue is ¾ of total tax revenue and rest is direct tax, where excise duty and VAT are in increasing trend and other indirect tax variables are in decreasing trend. Income tax is an important companent of tax revenue of Nepal. The contribution of direct tax revenue and indirect tax revenue are 25.74% and 74.26% in average during the study period.

The main components of income tax are corporate income tax, individual income tax, house & land rent tax and interest income tax. Their average contribution during the study period is found 55.36%, 34.09%, 3.93% and 6.61% respectively.

The various ratio related to income tax such as income tax to GDP, income tax to total revenue ratio, income tax to direct tax revenue ratio, income tax to indirect tax ratio are in increasing trend. This study find them 2.4%, 16.57%,21.18%, 82.34% and 28.55% respectively in average.

Income tax has been considered as suitable source for mobilizing internal resources. It can be used as a positive instrument to boost up government revenue collection to develop the economic conditions of

Nepalese people and promote distributive justice and to cure resource gap problem.

The main reason of drastic increment of resource gap of Nepal is mainly the highly fluctuating and low proportion of corporate income tax to govenrnment revenue due to unfriendly business environment created by unstable political and economic situation of the country.

The correlation income tax and GDP, keeping the effect of development expenditure constant is 0.90 which is highly positively correlated. This means the increment of 100 million development expenditure increases the probability of extra 90 million income tax and GDP. Hence, the government should increase the amount of development expenditure for increment of total income tax and GDP.

Corporate income tax is a most important component of income tax. It's contribution to income tax is 55.36% in average and it is highest contribution among it's components. From this study, the prediction shows that the contribution of corporate income tax will be increased up to FY 2010/11.

5.3   Recommendation

On the basis of findings mentioned above the major areas of recommendations are mentioned as follows:

1.   To recoup the growing resource gap problem, government should mobilize internal resources through effetive implementation of revenue collection from income tax. Through the income tax education, the feeling amoung the tax payers should change that they should pay the tax in order to strengthen the government and the economy. It can be done through various media such on radio, FM, TV & newspaper by informing tax payers about the tax policies and timely assessment of income tax.

2.   Government should reduce resource gap by increasing internal revenue and subsidies. Likewise government should only take the foreign loan for productive sector or purpose, which has high revenue generating possibility.

3.   The tax/GDP ratio range of Nepal is less than other developing countries. To improve the tax/GDP ratio, revenue collection from income tax should be increased by encouraging people for the payment of income tax through self-assessment tax system and motivating taxpayers in the payment of tax by providing certain percent tax discount and rebates.

4.   Government should make a clear-cut distinction between the role of public and private sector. It should take an endeavor to motivate, facilitate and regulate to accelerate the private sector.

5.   Proper tax incentives should be given for revival of sick industrial unit. Provisions should be made under the Income Tax Act for carry forward

and set off of accumulated losses and unabsorbed depreciation of sick units if it is amalgamated with another company.

6. Contribution of income tax to government revenue and it's growth has drastic fluctuation. So, there is urgent of strong political commitment, stability and security of investment to increase revenue from income tax in Nepal.

5. To raise the revenue from income tax, the government should broaden the income tax base including agricultural income after providing certain exemption limit.

6. There is very weak inforcement in revenue collection. So, to reform the revenue collection from income tax, the income tax administration and management must be strengthen the revenue collection enforcement through effective application of fine and penalties.

7. The study shows the highly positive relation of development expenditure with income tax and GDP. So, to mimimize resource gap by increasing government revenue, the government should increase in amount of development expenditure for increment of income tax.

8. Now, Nepal has been facing the problem of stable peace through a new constitution. After implementation of new constitution, political and economic environment will be stable and friendly for competative business environment. Hence, corporate income tax contribution to total income tax will be increased smoothly. So, it will help to minimize resource gap through increment of the contribution of corporate income tax for which income tax policy should be in priority sector and be formulated according to the growing new economic possibilities of the economy.

APPENDIX - I

Master Table

Fiscal Year	Total GDP	Total Revenue	Total Non Tax Revenue	Total Tax Revenue	Total Indirect Tax Revenue	Total Direct Tax Revenue	Total Expenditure	Capital/ Development Expenditure	Recurent Expenditure
1	2	3=4+5	4	5=6+7	6	7	8= 9+10+11	9	10
1998/99	330,018.00	37,251.00	8,498.10	28,752.90	21,236.80	7,516.10	59,579.00	22,992.10	31,944.20
1999/00	366,251.00	42,893.70	9,741.60	33,152.10	24,200.60	8,951.50	66,272.50	25,480.70	35,579.10
2000/01	413,429.00	48,893.90	10,028.80	38,865.10	28,705.70	10,159.40	80,483.30	28,307.20	46,485.50
2001/02	430,397.00	50,445.60	11,115.00	39,330.60	28,733.10	10,597.50	80,802.44	24,773.40	49,594.14
2002/03	460,325.00	56,229.70	13,642.70	42,587.00	32,481.20	10,105.80	83,939.90	22,356.10	52,024.30
2003/04	500,699.00	62,331.00	14,158.00	48,173.00	36,260.40	11,912.60	89,601.90	23,095.60	55,711.40
2004/05	548,485.00	70,122.70	16,018.00	54,104.70	41,032.90	13,071.80	104,184.40	27,340.70	63,310.40
2005/06	611,089.00	72,282.10	14,851.70	57,430.40	43,462.30	13,968.10	120,993.70	29,606.60	77,122.30
2006/07	676,210.00	87,712.20	16,585.50	71,126.70	52,146.40	18,980.30	133,604.40	39,729.90	77,122.20
2007/08	756,756.00	107,622.50	22,467.00	85,155.50	62,067.80	23,087.70	161,350.00	53,516.10	91,447.00

Source:

Economic Survey of various years, MOF/GOV. of Nepal, Budget Speeches of various years.

Reports Published by Inland Revenue Department, Lazimpat.

1   Total Revenue = Non Tax Revenue + Tax Revenue

2   Tax Revenue = Indirect Tax Revenue + Direct Tax Revenue

3   Indirect Tax Revenue = Import Custom + Export Custom + Indian Excise Refund + Excise + VAT

4   Direct Tax Revenue = Land Tax + House & Land Registration Tax + Urban House & Land Rent Tax + Income Tax + Vehicle Tax

5   Income Tax = Corporate Income Tax + Individual Income Tax + Interest Income Tax

6   Corporate Income Tax = Government Enterprises Income Tax + Publec/ Private Enterprises Income Tax

7   Individual Income Tax = Remuneration + Industry, Business, Proffession or Vocation Income Tax

9.

APPENDIX - II

Direct Tax Revenue Table

(Rs. in million)

Fiscal Year	Total GDP	Total Direct Tax Revenue	Land Revenue & Registration	Urban House & Land Rent Tax	Income Tax	Vehicle Tax
1	2	7=15+16+17+18	15	16	17	18
1998/99	330,018.00	7,516.10	1,003.10	123.30	6,170.30	219.40

1999/00	366,251.00	8,951.50	1,015.90	118.50	7,420.60	396.50
2000/01	413,429.00	10,159.40	612.90	2.90	9,114.00	429.60
2001/02	430,397.00	10,597.50	1,131.80	2.30	8,903.70	559.70
2002/03	460,325.00	10,105.80	1,414.30	-	8,131.80	559.70
2003/04	500,699.00	11,912.60	1,697.50	-	9,514.50	700.60
2004/05	548,485.00	13,071.80	1,799.20	-	10,466.10	806.50
2005/06	611,089.00	13,968.10	2,118.10	-	11,002.40	847.60
2006/07	676,210.00	18,980.30	2,253.50	-	15,731.80	995.00
2007/08	756,756.00	23,087.70	2,940.70	-	19,077.80	1,069.20

Source:

Economic Survey of various years, MOF/GOV. OF NEPAL
Budget Speeches of various years.
Reports Published by Inland Revenue Department, Lazimpat.

10.

APPENDIX - III

Income Tax Revenue Table

			Corporate Income Tax				Indi
Fiscal Year	Total GDP	Total Income Tax	Total Carporate Income Tax	Govern ment Enterprises Tax	Public Enterprises Tax	Private Enterprises Tax	Total Individual Tax
1	2	11=19+23+26+27	19=20+21+22	20	21	22	23=24+25
1998/99	330,018.00	6,170.30	3,461.50	1,526.50	1,155.00	780.00	2,185.10
1999/00	366,251.00	7,420.60	4,438.30	2,198.80	1,339.50	900.00	2,317.90
2000/01	413,429.00	9,114.00	5,982.30	2,928.00	1,924.30	1,130.00	2,407.80
2001/02	430,397.00	8,903.70	4,351.95	1,769.30	1,412.00	1,170.65	3,735.53
2002/03	460,325.00	8,131.80	3,655.30	1,251.00	1,236.30	1,168.00	3,230.79
2003/04	500,699.00	9,514.50	4,838.68	2,056.60	1,531.30	1,250.78	3,539.14
2004/05	548,485.00	10,466.10	5,328.34	1,332.40	2,467.80	1,528.14	3,884.45
2005/06	611,089.00	11,002.40	5,287.05	195.70	3,404.30	1,687.05	4,431.39
2006/07	676,210.00	15,731.80	11,523.02	1,019.70	5,717.10	4,786.22	2,554.51

| 2007/08 | 756,756.00 | 19,077.80 | 10,531.47 | 204.60 | 7,186.50 | 3,140.37 | 6,737.33 |

Source:

Economic Survey of various years, MOF/GOV. OF NEPAL

Budget Speeches of various years.

Reports Published by Inland Revenue Department, Lazimpat.

11.

APPENDIX - IV

Indirect Income Tax Table

(Rs. in million)

Fiscal Year	Total GDP	Total Indirect Tax	Import Custom	Export Custom	Indian Excise Refund	Excise	VAT	Other Indirect Tax
1	2	6=28+29+30+31+32+33	28	29	30	31	32	33
1998/99	330018.0	21,236.80	7,698.30	378.00	1,206.00	2,953.20	8,765.90	235.40
1999/00	366251.0	24,200.60	8,959.90	432.50	1,331.70	3,127.60	10,259.70	89.20
2000/01	413429.0	28,705.70	10,391.90	492.60	1,456.20	3,771.20	12,382.40	211.40
2001/02	430397.0	28,733.10	9,678.40	917.40	1,700.90	3,807.00	12,267.30	362.10
2002/03	460325.0	32,481.20	10,567.70	855.60	2,370.60	4,785.10	13,459.70	442.50
2003/04	500699.0	36,260.40	10,666.90	527.10	3,882.70	6,226.70	14,478.90	478.10
2004/05	548485.0	41,032.90	12,299.10	697.90	2,188.30	6,445.90	18,885.40	516.30
2005/06	611089.0	43,462.30	11,744.60	625.60	2,314.40	6,507.60	21,610.70	659.40
2006/07	676210.0	52,146.40	13,626.10	708.70	1,896.50	9,343.20	26,095.60	476.30
2007/08	756756.0	62,067.80	17,128.20	445.60	2,997.10	11,189.60	29,815.70	491.60

Source:

Economic Survey of various years, MOF/GOV. OF NEPAL

Budget Speeches of various years.

Reports Published by Inland Revenue Department, Lazimpat.

12.

13.   Appendix-V
14.   Fitting trend line by Least Square Method

15.   Let the trend line between the dependent variable Y and the independent variable X i.e. time be represented by Y= a+bx ………. (i). Since, the number of years are 10, i.e. even number. So, the deviations are taken from the fiscal year 2003/04.

16.   Table V-1

Fiscal Year	Total GDP (Y)	Mid-Value X= x-2003/04	X^2	XY
1998/99	330018.00	-5	25	-1650090.00
1999/00	366251.00	-4	16	-1465004.00
2000/01	413429.00	-3	9	-1240287.00
2001/02	430397.00	-2	4	-860794.00
2002/03	460325.00	-1	1	-460325.00
2003/04	500699.00	0	0	0
2004/05	548485.00	1	1	548485.00
2005/06	611089.00	2	4	1222178.00
2006/07	676210.00	3	9	2028630.00
2007/08	756756.00	4	16	3027024.00
N= 10	Y= 5093659.00	X= – 5	X^2= 85	XY= 1149817.00

17.
18.
19.
20.

$$a = \frac{X^2 . Y - X . XY}{N X^2 - (X)^2} \qquad b = \frac{N. XY - X. Y}{N X^2 - (X)^2}$$

21.
22.

$$= \frac{85 \times 5093659 - (-5) \times 1149817 \times 5093659}{10 \times 85 - (-5)^2} \qquad = \frac{10 \times 1149817 - (-5) \times 5093659}{10 \times 85 - (-5)^2}$$

23.
24.
25.
26.
27.
28.

$$= \frac{432961015 + 5749085}{850 - 25} \qquad = \frac{11498170 + 25468295}{850 - 25}$$

29.
30.
31.
32.

$$= \frac{438710100}{825} \qquad = \frac{36966465}{825}$$

33.
34.   a = 531769.82   b = 44807.84
35.
36.   Y= a+bx   = 531769.82 + 44807.84x

37.   For, 2008/09 = 531769.82 + 44807.84 × 5   = 755809.00

38.   For, 2009/10 = 531769.82 + 44807.84 × 6   = 800616.84

39.   For, 2010/11 = 531769.82 + 44807.84 × 7   = 845424.67

40.   Table V-2

41.

Fiscal Year	Total Revenue (Y)	Mid-Value X= x-2003/04	X^2	XY

1998/99	37251.00	-5	25	-186255.00
1999/00	42893.70	-4	16	-171574.80
2000/01	48893.90	-3	9	-146681.70
2001/02	50445.60	-2	4	-100891.20
2002/03	56229.70	-1	1	-56229.70
2003/04	62331.00	0	0	0
2004/05	70122.70	1	1	70122.70
2005/06	72282.10	2	4	144564.20
2006/07	87712.20	3	9	263136.60
2007/08	107622.50	4	16	430490.00
N= 10	Y= 635784.40	X= − 5	X^2= 85	XY= 246681.10

42.
43.
44. $a = \dfrac{X^2.\ Y - \ X.\ XY}{N\ X^2 - (\ X)^2}$ $b = \dfrac{N.\ XY - \ X.\ Y}{N\ X^2 - (\ X)^2}$
45.
46.
47. $= \dfrac{85 \times 635784.4 - (-5) \times 246681.1 \times 635784.4}{10 \times 85 - (-5)^2}$ $= \dfrac{10 \times 246681.1\ - (-5)}{10 \times 85 - (-5)^2}$
48.
49.
50.
51. $= \dfrac{54041674 + 1233405.5}{850 - 25}$ $= \dfrac{2466811 + 3178922}{850 - 25}$
52.
53.
54.
55. $= \dfrac{55275079.5}{825}$ $= \dfrac{5645733}{825}$
56.
57.
58.
59. a =   67000.1   b = 6843.31
60.
61. Y= a+bx   = 67000.1 + 6843.31 x
62. For, 2008/09 = 67000.1 + 6843.31 $\times$ 5   = 101216.66
63. For, 2009/10 = 67000.1 + 6843.31 $\times$ 6   = 108059.97
64. For, 2010/11 = 67000.1 + 6843.31 $\times$ 7   = 114903.29
65.
66.

67.   Table V-3
68.

Fiscal Year	Total Non-tax Revenue (Y)	Mid-Value X= x-	X^2	XY

		2003/04		
1998/99	8498.10	-5	25	-42490.50
1999/00	9741.60	-4	16	-38966.40
2000/01	10028.80	-3	9	-30086.40
2001/02	11115.00	-2	4	-22230.00
2002/03	13642.70	-1	1	-13642.70
2003/04	14158.00	0	0	0
2004/05	16018.00	1	1	16018.00
2005/06	14851.70	2	4	29703.40
2006/07	16585.50	3	9	49756.50
2007/08	22467.00	4	16	89868.00
N= 10	Y= 137106.40	X= − 5	X^2= 85	XY= 37929.90

69.
70.
71.
72.

$$a = \frac{\sum X^2 . \sum Y - \sum X . \sum XY}{N \sum X^2 - (\sum X)^2} \qquad b = \frac{N. \sum XY - \sum X . \sum Y}{N \sum X^2 - (\sum X)^2}$$

73.
74.

$$= \frac{85 \times 137106.4 - (-5) \times 37929.9}{10 \times 85 - (-5)^2} \qquad = \frac{10 \times 37929.9 - (-5) \times 137106.4}{10 \times 85 - (-5)^2}$$

75.
76.
77.
78.

$$= \frac{11654044 + 189649.5}{850 - 25} \qquad = \frac{379299 + 685532}{850 - 25}$$

79.
80.
81.
82.

$$= \frac{11843693.5}{825} \qquad = \frac{1064831}{825}$$

83.
84.
85.
86.   a =   14355.99   b = 1290.70
87.
88.   Y= a+bx   = 14355.99 + 1290.70x

89.   For, 2008/09 = 14355.99 + 1290.70 $\times$ 5   = 20809.51

90.   For, 2009/10 = 14355.99 + 1290.70 $\times$ 6   = 22100.22

91.   For, 2010/11 = 14355.99 + 1290.70 $\times$ 7   = 23390.92

92.
93.
94.

95.   Table V-4

96.

Fiscal Year	Total Tax Revenue (Y)	Mid-Value X= x-2003/04	X^2	XY
1998/99	28752.90	-5	25	-143764.50
1999/00	33152.10	-4	16	-132608.40
2000/01	38865.10	-3	9	-116595.30
2001/02	39330.60	-2	4	-78661.20
2002/03	42587.00	-1	1	-42587.00
2003/04	48173.00	0	0	0
2004/05	54104.70	1	1	54104.70
2005/06	57430.40	2	4	114860.80
2006/07	71126.70	3	9	213380.10
2007/08	85155.50	4	16	340622.00
N= 10	Y= 498678.00	X= − 5	X^2= 85	XY= 208751.20

97.
98.
99.
100.

$$a = \frac{X^2 . Y - X . XY}{N X^2 - (X)^2} \qquad b = \frac{N . XY - X . Y}{N X^2 - (X)^2}$$

101.
102.

$$= \frac{85 \times 498678 - (-5) \times 208751.2 \times 498678}{10 \times 85 - (-5)^2} \qquad = \frac{10 \times 208751.2 - (-5)}{10 \times 85 - (-5)^2}$$

103.
104.
105.
106.
107.
108.

$$= \frac{42387630 + 1043756.1}{850 - 25} \qquad = \frac{2087512 + 2493390}{850 - 25}$$

109.
110.

$$= \frac{43431386.1}{825} \qquad = \frac{4580902}{825}$$

111.
112.
113.

114.   a =   52644.1   b = 5552.61

115.

116.   Y= a+bx   = 52644.1 + 5552.61x

117.   For, 2008/09 = 52644.1 + 5552.61x × 5   = 80407.15

118.   For, 2009/10 = 52644.1 + 5552.61x × 6   = 85959.76

119.   For, 2010/11 = 52644.1 + 5552.61x × 7   = 91512.36

120.
121.

122. Table V-5

Fiscal Year	Indirect Tax Revenue (Y)	Mid-Value X= x- 2003/04	X^2	XY
1998/99	21236.80	-5	25	-106184.00
1999/00	24200.60	-4	16	-96802.40
2000/01	28705.70	-3	9	-86117.10
2001/02	28733.10	-2	4	-57466.20
2002/03	32481.20	-1	1	-32481.20
2003/04	36260.40	0	0	0
2004/05	41032.90	1	1	41032.90
2005/06	43462.30	2	4	86924.60
2006/07	52146.40	3	9	156439.20
2007/08	62067.80	4	16	248271.20
N= 10	Y= 370327.20	X= − 5	X^2= 85	XY= 153617.00

124.
125.
126. $a = \dfrac{X^2.\ Y - \ X.\ XY}{N\ X^2 - (\ X)^2}$ $b = \dfrac{N.\ XY - \ X.\ Y}{N\ X^2 - (\ X)^2}$
127.
128.
129. $= \dfrac{85 \times 370327.2 - (-5) \times 153617 \times 370327.2}{10 \times 85 - (-5)^2}$ $= \dfrac{10 \times 153617\ - (-5)}{10 \times 85 - (-5)^2}$
130.
131.
132.
133. $= \dfrac{31477812 + 768085}{850 - 25}$ $= \dfrac{1536170 + 1851636}{850 - 25}$
134.
135.
136.
137. $= \dfrac{32245897}{825}$ $= \dfrac{3387806}{825}$
138.
139.
140.
141. a = 39085.94   b = 4106.43
142.
143. Y= a+bx   = 39085.94 + 4106.43x

144. For, 2008/09 = 39085.94 + 4106.43 × 5   = 59618.09

145. For, 2009/10 = 39085.94 + 4106.43 × 6   = 63724.52

146. For, 2010/11 = 39085.94 + 4106.43 × 7   = 67830.96

147.
148.

149.

151.

Fiscal Year	Direct Tax Revenue (Y)	Mid-Value X= x-2003/04	X²	XY
1998/99	7516.10	-5	25	-37580.50
1999/00	8951.50	-4	16	-35806.00
2000/01	10159.40	-3	9	-30478.20
2001/02	10597.50	-2	4	-21195.00
2002/03	10105.80	-1	1	-10105.80
2003/04	11912.60	0	0	0
2004/05	13071.80	1	1	13071.80
2005/06	13968.10	2	4	27936.20
2006/07	18980.30	3	9	56940.90
2007/08	23087.70	4	16	92350.80
N= 10	Y= 128350.80	X= − 5	X²= 85	XY= 55134.20

152.
153.
154.
155.

$$a = \frac{X^2.\ Y - \ X.\ XY}{N\ X^2 - (\ X)^2} \qquad b = \frac{N.\ XY - \ X.\ Y}{N\ X^2 - (\ X)^2}$$

156.
157.
158.
159.

$$= \frac{85 \times 128350.8 - (-5) \times 55134.2 \times 128350.8}{10 \times 85 - (-5)^2} \qquad = \frac{10 \times 55134.2 - (-5)}{10 \times 85 - (-5)^2}$$

160.
161.
162.
163.

$$= \frac{10909818 + 275671}{850 - 25} \qquad = \frac{551342 + 641754}{850 - 25}$$

164.
165.
166.
167.

$$= \frac{11185489}{825} \qquad = \frac{1193096}{825}$$

168.

169. a = 13558.17   b = 1446.18

170.

171. Y= a+bx = 13558.17 + 1446.18x

172. For, 2008/09 = 13558.17 + 1446.18 × 5 = 20789.05

173. For, 2009/10 = 13558.17 + 1446.18 × 6 = 22235.23

174. For, 2010/11 = 13558.17 + 1446.18 × 7 = 23681.41

175.

176.

178.

Fiscal Year	CITR (Y)	Mid-Value X= x-2003/04	X²	XY
1998/99	3461.50	-5	25	-17307.50
1999/00	4438.30	-4	16	-17753.20
2000/01	5982.30	-3	9	-17946.90
2001/02	4351.95	-2	4	-8703.90
2002/03	3655.30	-1	1	-3655.30
2003/04	4838.68	0	0	0
2004/05	5328.34	1	1	5328.34
2005/06	5287.05	2	4	10574.10
2006/07	11523.02	3	9	34569.06
2007/08	10531.47	4	16	42125.88
N= 10	Y= 59397.91	X= − 5	X²= 85	XY= 27230.58

179.
180.
181. $a = \dfrac{X^2 . Y - X . XY}{N X^2 - (X)^2}$ $b = \dfrac{N. XY - X. Y}{N X^2 - (X)^2}$
182.

183.
184. $= \dfrac{85 \times 59397.91 - (-5) \times 27230.58 \times 59397.01}{10 \times 85 - (-5)^2}$ $= \dfrac{10 \times 27230.58 - (-5) \times 59397.91}{10 \times 85 - (-5)^2}$
185.

186.

187.
188. $= \dfrac{504882235 + 136152.90}{850 - 25}$ $= \dfrac{272305.8 + 296989.55}{850 - 25}$
189.
190.

191.
192. $= \dfrac{5184975.25}{825}$ $= \dfrac{569295.35}{825}$
193.
194.

195.
196. a = 6284.82   b = 690.05
197.
198. Y= a+bx   = 6284.82 + 690.05x

199. For, 2008/09 = 6284.82 + 690.05 × 5   = 9735.09

200. For, 2009/10 = 6284.82 + 690.05 × 6   = 10425.15

201. For, 2010/11 = 6284.82 + 690.05 × 7   = 11115.20

202.

203.

205. Table V-8

206.

Fiscal Year	Government sector (Y)	Mid-Value X= x-2003/04	X²	XY
1998/99	1526.50	-5	25	-7632.50
1999/00	2198.80	-4	16	-8795.20
2000/01	2928.00	-3	9	-8784.00
2001/02	1769.30	-2	4	-3538.60
2002/03	1251.00	-1	1	-1251.00
2003/04	2056.60	0	0	0
2004/05	1332.40	1	1	1332.40
2005/06	195.70	2	4	391.40
2006/07	1019.70	3	9	3059.10
2007/08	204.60	4	16	818.40
N= 10	Y= 14482.60	X= − 5	X²= 85	XY= -24400.00

207.
208.
209. $$ a = \frac{\sum X^2. \sum Y - \sum X. \sum XY}{N \sum X^2 - (\sum X)^2} \qquad b = \frac{N. \sum XY - \sum X. \sum Y}{N \sum X^2 - (\sum X)^2} $$
210.

211.
212.
$$ = \frac{85\times14482.6 - (-5)\times(-24400)}{10\times85 - (-5)^2} \qquad = \frac{10 \times (-24400) - (-5) \times 14482.6}{10\times85 - (-5)^2} $$
213.

214.

215.
216.
217.
218. $$ = \frac{1231021 - 122000}{850 - 25} \qquad = \frac{-244000 + 72413}{850 - 25} $$

219.

220.
221.
222. $$ = \frac{1109021}{825} \qquad = \frac{-171587}{825} $$

223.

224. a = 1344.27   b = −207.98

225.

226. Y= a+bx   = 1344.27 − 207.98x

227. For, 2008/09 = 1344.27 − 207.98 × 5   = 304.35

228. For, 2009/10 = 1344.27 − 207.98 × 6   = 96.36

229. For, $2010/11 = 1344.27 - 207.98 \times 7 = -111.62$

230.
231.

233. Table V-9
234.

Fiscal Year	Public Sector (Y)	Mid-Value X= x-2003/04	X²	XY
1998/99	1155.00	-5	25	-5775.00
1999/00	1339.50	-4	16	-5358.00
2000/01	1924.30	-3	9	-5772.90
2001/02	1412.00	-2	4	-2824.00
2002/03	1236.30	-1	1	-1236.30
2003/04	1531.30	0	0	0
2004/05	2467.80	1	1	2467.80
2005/06	3404.30	2	4	6808.60
2006/07	5717.10	3	9	17151.30
2007/08	7186.50	4	16	28746.00
N= 10	Y= 27374.10	X= – 5	X²= 85	XY= 34207.50

235.
236.
237. $a = \dfrac{X^2. \; Y - \; X. \; XY}{N \; X^2 - (\; X)^2}$ $b = \dfrac{N. \; XY - \; X. \; Y}{N \; X^2 - (\; X)^2}$
238.

239.
240.

241. $= \dfrac{85 \times 27374.1 - (-5) \times 34207.5}{10 \times 85 - (-5)^2}$ $= \dfrac{10 \times 34207.5 - (-5) \times 27374.1}{10 \times 85 - (-5)^2}$
242.

243.
244.

245. $= \dfrac{2326798.5 + 171037.5}{850 - 25}$ $= \dfrac{324075 + 136870.5}{850 - 25}$
246.

247.

248. $= \dfrac{2497836}{825}$ $= \dfrac{478945.5}{825}$

249.
250.

251.

252. $a = 3027.68$ $b = 580.54$

253.

254. $Y= a+bx = 3027.98 + 580.54x$

255. For, $2008/09 = 3027.98 + 580.54 \times 5 = 5930.68$

256. For, 2009/10 $= 3027.98 + 580.54 \times 6 = 6510.92$

257. For, 2010/11 $= 3027.98 + 580.54 \times 7 = 7091.46$

258.

259.

260.

261. Table V-10

262.

Fiscal Year	Private Sector (Y)	Mid-Value X= x-2003/04	X^2	XY
1998/99	780.00	-5	25	-3900.00
1999/00	900.00	-4	16	-3600.00
2000/01	1130.00	-3	9	-3390.00
2001/02	1170.65	-2	4	-2341.30
2002/03	1168.00	-1	1	-1168.00
2003/04	1250.78	0	0	0
2004/05	1528.14	1	1	1528.14
2005/06	1687.05	2	4	3374.10
2006/07	4786.22	3	9	14358.66
2007/08	3140.37	4	16	12561.48
N= 10	Y= 17541.21	X= − 5	X^2= 85	XY= 17423.08

263.
264.
265. $a = \dfrac{X^2 . \ Y - \ X. \ XY}{N \ X^2 - (\ X)^2}$ $\quad$ $b = \dfrac{N. \ XY - \ X. \ Y}{N \ X^2 - (\ X)^2}$
266.
267.
268. $= \dfrac{85 \times 17541.21 - (-5) \times 17423.08 \times 17541.21}{10 \times 85 - (-5)^2}$ $\quad$ $= \dfrac{10 \times 17423.08 \ - (-5) \times 17541.21}{10 \times 85 - (-5)^2}$
269.
270.
271.
272.
273. $= \dfrac{1491002.85 + 87115.4}{850 - 25}$ $\quad$ $= \dfrac{174230.8 + 87706.05}{850 - 25}$
274.
275.
276. $= \dfrac{1578118.25}{825}$ $\quad$ $= \dfrac{261936.85}{825}$
277.
278.
279.
280. a = 1912.87 $\quad$ b = 317.50
281.
282. Y= a+bx $\quad$ = 1912.87 + 317.50x

119

283.   For, $2008/09 = 1912.87 + 317.50 \times 5$ $= 3500.37$

284.   For, $2009/10 = 1912.87 + 317.50 \times 6$ $= 3817.87$

285.   For, $2010/11 = 1912.87 + 317.50 \times 7$ $= 4135.37$

286.

287.

288.

289.   Table V-11

290.

Fiscal Year	Individual Income Tax (Y)	Mid-Value $X = x - 2003/04$	X^2	XY
1998/99	2185.10	-5	25	-10925.50
1999/00	2317.90	-4	16	-9271.60
2000/01	2407.80	-3	9	-7223.40
2001/02	3735.53	-2	4	-7471.06
2002/03	3230.79	-1	1	-3230.79
2003/04	3539.14	0	0	0
2004/05	3884.45	1	1	3884.45
2005/06	4431.39	2	4	8862.78
2006/07	2554.51	3	9	7663.53
2007/08	6737.33	4	16	26949.32
N= 10	Y= 35023.94	X= – 5	X^2= 85	XY= 9237.73

291.
292.
293. $a = \dfrac{X^2.\ Y -\ X.\ XY}{N\ X^2 - (\ X)^2}$ $b = \dfrac{N.\ XY -\ X.\ Y}{N\ X^2 - (\ X)^2}$
294.

295.
296. $= \dfrac{85 \times 35023.94 - (-5) \times 9237.73 \times 35023.94}{10 \times 85 - (-5)^2}$ $= \dfrac{10 \times 9237.73\ - (-5)}{10 \times 85 - (-5)^2}$
297.
298.

299.
300. $= \dfrac{2977034.9 + 46188.65}{850 - 25}$ $= \dfrac{92377.3 + 175119.7}{850 - 25}$
301.
302.
303.

304. $= \dfrac{3023223.55}{825}$ $= \dfrac{267497}{825}$
305.
306.
307.

308. $a = 3664.51$ $b = 324.25$

309.

310. $Y = a + bx$ $= 3664.51 + 324.25x$

311. For, 2008/09 $= 3664.51 + 324.25 \times 5$ $= 5285.71$

312. For, 2009/10 $= 3664.51 + 324.25 \times 6$ $= 5609.95$

313. For, 2010/11 $= 3664.51 + 324.25 \times 7$ $= 5934.18$

314.

315.

316. Table V-12

317.

Fiscal Year	Interest Tax Revenue (Y)	Mid-Value X= x- 2003/04	X^2	XY
1998/99	319.50	-5	25	-1597.50
1999/00	414.40	-4	16	-1657.60
2000/01	463.90	-3	9	-1391.70
2001/02	467.70	-2	4	-935.40
2002/03	864.00	-1	1	-864.00
2003/04	733.40	0	0	0
2004/05	757.00	1	1	757.00
2005/06	774.90	2	4	1549.80
2006/07	1054.90	3	9	3164.70
2007/08	1087.90	4	16	4351.60
N= 10	Y= 6937.60	X= − 5	X^2= 85	XY= 3376.90

318.
319.
320. $a = \dfrac{X^2. \ Y - \ X. \ XY}{N \ X^2 - (\ X)^2}$ $b = \dfrac{N. \ XY - \ X. \ Y}{N \ X^2 - (\ X)^2}$
321.

322.
323. $= \dfrac{85 \times 6937.6 - (-5) \times 3376.9}{10 \times 85 - (-5)^2}$ $= \dfrac{10 \times 3376.9 - (-5) \times 6937.6}{10 \times 85 - (-5)^2}$
324.
325.

326.
327. $= \dfrac{589696 + 16884.5}{850 - 25}$ $= \dfrac{33769 + 34688}{850 - 25}$
328.
329.

330.

331. $= \dfrac{606580.5}{825}$ $= \dfrac{68457}{825}$
332.
333.

334.

335. a =   735.25 b = 82.98

336.

337. $Y = a+bx = 735.25 + 82.98x$

338. For, $2008/09 = 735.25 + 82.98 \times 5 = 1150.14$

339. For, $2009/10 = 735.25 + 82.98 \times 6 = 1233.12$

340. For, $2010/11 = 735.25 + 82.98 \times 7 = 1316.10$

341.

342.

343.

344. Table V-13

345.

Fiscal Year	House & Land Rent Tax (Y)	Mid-Value $X= x-2003/04$	X^2	XY
1998/99	204.20	-5	25	-1021.00
1999/00	250.00	-4	16	-1000.00
2000/01	260.00	-3	9	-780.00
2001/02	348.52	-2	4	-697.04
2002/03	381.71	-1	1	-381.71
2003/04	403.28	0	0	0
2004/05	496.31	1	1	496.31
2005/06	509.06	2	4	1018.12
2006/07	599.37	3	9	1798.11
2007/08	721.10	4	16	2884.40
N= 10	Y= 4173.55	X= – 5	X^2= 85	XY= 2317.19

346.
347.
348. $a = \dfrac{X^2 . Y - X . XY}{N X^2 - (X)^2}$
349.
$b = \dfrac{N. XY - X. Y}{N X^2 - (X)^2}$

350.
351. $= \dfrac{85 \times 4173.55 - (-5) \times 2317.19}{10 \times 85 - (-5)^2}$
352.
353.
$= \dfrac{10 \times 2317.19 - (-5) \times 4173.55}{10 \times 85 - (-5)^2}$

354.
355.
356.
357. $= \dfrac{354751.75 + 11585.95}{850 - 25}$
358.
$= \dfrac{23171.9 + 20867.75}{850 - 25}$

359.
360. $= \dfrac{366337.7}{\quad}$
$= \dfrac{44039.65}{\quad}$

361.   825   825

362.

363.   a =   444.05   b = 53.38

364.

365.   Y= a+bx   = 444.05 + 53.38x

366.   For, 2008/09 = 444.05 + 53.38 × 5   = 710.95

367.   For, 2009/10 = 444.05 + 53.38 × 6   = 764.33

368.   For, 2010/11 = 444.05 + 53.38 × 7   = 817.72

369.

370.

371.   Table V-14

372.

Fiscal Year	Total Expenditure (Y)	Mid-Value $X = x - 2003/04$	X^2	XY
1998/99	59579.00	-5	25	-297895.00
1999/00	66272.50	-4	16	-265090.00
2000/01	80483.30	-3	9	-241449.90
2001/02	80802.44	-2	4	-161604.88
2002/03	83939.90	-1	1	-83939.90
2003/04	89601.90	0	0	0
2004/05	104184.40	1	1	104184.40
2005/06	120993.70	2	4	241987.40
2006/07	133604.40	3	9	400813.20
2007/08	161350.00	4	16	645400.00
N= 10	Y= 980811.54	X= − 5	X^2= 85	XY= 342405.32

373.
374.
375.
376.

$$a = \frac{X^2 . Y - X . XY}{N X^2 - (X)^2} \qquad b = \frac{N . XY - X . Y}{N X^2 - (X)^2}$$

377.
378.

$$= \frac{85 \times 980811.54 - (-5) \times 34205.32}{10 \times 85 - (-5)^2} \qquad = \frac{10 \times 342405.32 - (-5) \times 980811.54}{10 \times 85 - (-5)^2}$$

379.
380.
381.
382.
383.
384.

$$= \frac{83368980.9 + 1712026.6}{850 - 25} \qquad = \frac{3424053.2 + 4904057.7}{850 - 25}$$

385.

386.   85081007.5   8328110.9

387.

388. $= \dfrac{}{825}$ $\qquad\qquad = \dfrac{}{825}$

389.

390. a = 103128.49 $\qquad\qquad$ b = 10094.68

391.

392. Y= a+bx $\qquad$ = 103128.49 + 10094.68x

393. For, 2008/09 = 103128.49 + 10094.68 × 5 $\qquad$ = 153601.89

394. For, 2009/10 = 103128.49 + 10094.68 × 6 $\qquad$ = 163696.57

395. For, 2010/11 = 103128.49 + 10094.68 × 7 $\qquad$ = 173791.25

396.

397.

398.

399. Table V-15

400.

Fiscal Year	Grants (Y)	Mid-Value X= x-2003/04	X^2	XY
1998/99	4336.60	-5	25	-21683.00
1999/00	5711.70	-4	16	-22846.80
2000/01	6753.40	-3	9	-20260.20
2001/02	6686.20	-2	4	-13372.40
2002/03	11339.10	-1	1	-11339.10
2003/04	11283.40	0	0	0
2004/05	14391.20	1	1	14391.20
2005/06	13827.50	2	4	27655.00
2006/07	15800.80	3	9	47402.40
2007/08	20320.70	4	16	81282.80
N= 10	Y= 110450.60	X= – 5	X^2= 85	XY= 81229.90

401.
402.
403. $a = \dfrac{X^2.\ Y - \ X.\ XY}{N\ X^2 - (\ X)^2}$ $\qquad\qquad$ $b = \dfrac{N.\ XY - \ X.\ Y}{N\ X^2 - (\ X)^2}$
404.
405.
406. $= \dfrac{85 \times 110450.6 - (-5) \times 81229.9}{10 \times 85 - (-5)^2}$ $\qquad\qquad$ $= \dfrac{10 \times 81229.9 - (-5) \times 110450.6}{10 \times 85 - (-5)^2}$
407.
408.
409.
410. $= \dfrac{9388301 + 406149.5}{850 - 25}$ $\qquad\qquad$ $= \dfrac{812299 + 552253}{850 - 25}$
411.
412.

413.

414. $\dfrac{9794450.5}{825}$ $\qquad\qquad$ $=\dfrac{1364552}{825}$

415. 416.

417.

418. $a = 11872.06$ $\qquad\qquad$ $b = 1654.00$

419.

420. $Y = a + bx = 11872.06 + 1654.00x$

421. For, $2008/09 = 11872.06 + 1654.00 \times 5 = 20142.07$

422. For, $2009/10 = 11872.06 + 1654.00 \times 6 = 21796.08$

423. For, $2010/11 = 11872.06 + 1654.00 \times 7 = 23450.08$

424.
425.

426. Table V-16

427.

Fiscal Year	Foreign Loan (Y)	Mid-Value X= x-2003/04	X^2	XY
1998/99	11852.40	-5	25	-59262.00
1999/00	11812.20	-4	16	-47248.80
2000/01	12044.00	-3	9	-36132.00
2001/02	7698.60	-2	4	-15397.20
2002/03	4546.40	-1	1	-4546.40
2003/04	7629.00	0	0	0
2004/05	9266.10	1	1	9266.10
2005/06	8214.30	2	4	16428.60
2006/07	10053.50	3	9	30160.50
2007/08	8979.90	4	16	35919.60
N= 10	Y= 92096.40	X= – 5	X^2= 85	XY= -70811.60

428.
429.
430. $a = \dfrac{X^2 . Y - X . XY}{N X^2 - (X)^2}$ $\qquad$ $b = \dfrac{N. XY - X. Y}{N X^2 - (X)^2}$
431.

432.
433. $= \dfrac{85 \times 92096.4 - (-5) \times (-70811.6)}{10 \times 85 - (-5)^2}$ $\qquad$ $= \dfrac{10 \times (-70811.6) - (-5) \times 92096.4}{10 \times 85 - (-5)^2}$
434.
435.

436.
437. $= \dfrac{7828194 - 354058}{}$ $\qquad\qquad$ $= \dfrac{-708116 + 460482}{}$
438.

439. 850 – 25   850 – 25

440.

441.   7474136   −247634

442.   = ─────────   = ─────────
443.   825   825

444.

445.   a =   9059.56   b = −300.16

446.

447.   Y= a+bx   = 9059.56 – 300.16x

448.   For, 2008/09 = 9059.56 – 300.16 × 5   = 7558.75

449.   For, 2009/10 = 9059.56 – 300.16 × 6   = 7258.58

450.   For, 2010/11 = 9059.56 – 300.16 × 7   = 6958.42

451.

452.

453.

454.   Table V-17

455.

Fiscal Year	Foreign Aids (Y)	Mid-Value $X= x-2003/04$	X^2	XY
1998/99	16189.00	-5	25	-80945.00
1999/00	17523.90	-4	16	-70095.60
2000/01	18797.40	-3	9	-56392.20
2001/02	14384.80	-2	4	-28769.60
2002/03	15885.50	-1	1	-15885.50
2003/04	18912.40	0	0	0
2004/05	23657.30	1	1	23657.30
2005/06	22041.80	2	4	44083.60
2006/07	25854.30	3	9	77562.90
2007/08	29300.60	4	16	117202.40
N= 10	Y= 202547.00	X= − 5	X^2= 85	XY= 10418.30

456.
457.
458. $a = \dfrac{X^2.\ Y - \ X.\ XY}{N\ X^2 - (\ X)^2}$ $b = \dfrac{N.\ XY - \ X.\ Y}{N\ X^2 - (\ X)^2}$
459.

460.
461. $\dfrac{85\times 202547 - (-5)\times 10418.3}{}$ $10 \times 10418.3\ - (-5) \times$ 202547
462.   = ─────────────────────────   = ─────────────────
463. $10\times85 - (-5)^2$ $10\times85 - (-5)^2$

126

464.

465.

466. $$= \frac{17216495 + 52091.5}{850 - 25} \qquad\qquad = \frac{104183 + 1012735}{850 - 25}$$

467.

468.

469. $$= \frac{17268586.8}{825} \qquad\qquad\qquad = \frac{116918}{825}$$

470.

471.

472.

473. a = 20931.62   b = 1353.84

474.

475. Y= a+bx   = 20931.62 + 1353.84x

476. For, 2008/09 = 20931.62 + 1353.84 × 5   = 27700.82

477. For, 2009/10 = 20931.62 + 1353.84 × 6   = 29054.66

478. For, 2010/11 = 20931.62 + 1353.84 × 7   = 30408.50

479.

480.

481.

482.   Table V-18

483.

Fiscal Year	Import Custom (Y)	Mid-Value X= x-2003/04	X^2	XY
1998/99	7698.30	-5	25	-38491.50
1999/00	8959.90	-4	16	-35839.60
2000/01	10391.90	-3	9	-31175.70
2001/02	9678.40	-2	4	-19356.80
2002/03	10567.70	-1	1	-10567.70
2003/04	10666.90	0	0	0
2004/05	12299.10	1	1	12299.10
2005/06	11744.60	2	4	23489.20
2006/07	13626.10	3	9	40878.30
2007/08	17128.20	4	16	68512.80
N= 10	Y= 112761.10	X= − 5	X^2= 85	XY= 9748.10

484.

485.

486. $$a = \frac{X^2.\ Y -\ X.\ XY}{N\ X^2 - (\ X)^2} \qquad\qquad b = \frac{N.\ XY -\ X.\ Y}{N\ X^2 - (\ X)^2}$$

487.

488.

489.

490. $= \dfrac{85 \times 112761.1 - (-5) \times 9748.1}{112761.1}$ $= \dfrac{10 \times 9748.1 - (-5) \times}{}$

491. $\dfrac{}{10 \times 85 - (-5)^2}$ $\dfrac{}{10 \times 85 - (-5)^2}$

492.

493. $= \dfrac{9584693.5 + 48740.5}{}$ $= \dfrac{97481 + 563805.5}{}$

494.

495. $\dfrac{}{850 - 25}$ $\dfrac{}{850 - 25}$

496.

497. $\dfrac{9633434}{}$ $\dfrac{661286.5}{}$

498.

499. $= \dfrac{}{825}$ $= \dfrac{}{825}$

500.

501.   a = 11676.89   b = 801.56

502.

503.   Y= a+bx   = 11676.89 + 801.56x

504.   For, 2008/09 = 11676.89 + 801.56 × 5   = 15684.69

505.   For, 2009/10 = 11676.89 + 801.56 × 6   = 16486.25

506.   For, 2010/11 = 11676.89 + 801.56 × 7   = 17287.81

507.

508.

509.   Table V-19

510.

Fiscal Year	Export Custom (Y)	Mid-Value X= x-2003/04	X^2	XY
1998/99	378.00	-5	25	-1890.00
1999/00	432.50	-4	16	-1730.00
2000/01	492.60	-3	9	-1477.80
2001/02	917.40	-2	4	-1834.80
2002/03	855.60	-1	1	-855.60
2003/04	527.10	0	0	0
2004/05	697.90	1	1	697.90
2005/06	625.60	2	4	1251.20
2006/07	708.70	3	9	2126.10
2007/08	445.60	4	16	1782.40
N= 10	Y= 6081.00	X= − 5	X^2= 85	XY= -1930.60

511.
512.
513. $a = \dfrac{X^2. \ Y - \ X. \ XY}{N \ X^2 - (\ X)^2}$ $b = \dfrac{N. \ XY - \ X. \ Y}{N \ X^2 - (\ X)^2}$
514.

515.

516.

517. $\dfrac{6081}{—} = \dfrac{85 \times 6081 - (-5) \times (-1930.6)}{10 \times 85 - (-5)^2}$ $= \dfrac{10 \times (-1930.6) - (-5) \times}{10 \times 85 - (-5)^2}$

518.

519.

520.

521. $= \dfrac{516885 - 9653}{850 - 25}$ $= \dfrac{-19306 + 30405}{850 - 25}$

522.

523.

524.

525. $= \dfrac{507232}{825}$ $= \dfrac{11099}{825}$

526.

527.

528. a = 614.83 b = 13.45

529.

530. Y= a+bx = 614.83 + 13.45x

531. For, 2008/09 = 614.83 + 13.45 × 5 = 682.09

532. For, 2009/10 = 614.83 + 13.45 × 6 = 695.55

533. For, 2010/11 = 614.83 + 13.45 × 7 = 709.00

534.

535.

536.

537.   Table V-20

538.

Fiscal Year	Indian Excise Refund (Y)	Mid-Value X= x-2003/04	X^2	XY
1998/99	1206.00	-5	25	-6030.00
1999/00	1331.70	-4	16	-5326.80
2000/01	1456.20	-3	9	-4368.60
2001/02	1700.90	-2	4	-3401.80
2002/03	2370.60	-1	1	-2370.60
2003/04	3882.70	0	0	0
2004/05	2188.30	1	1	2188.30
2005/06	2314.40	2	4	4628.80
2006/07	1896.50	3	9	5689.50
2007/08	2997.10	4	16	11988.40
N= 10	Y= 21344.40	X= − 5	X^2= 85	XY= 2997.20

539.

540. X^2. Y − X. XY N. XY − X. Y

541. $a = \dfrac{}{N \, X^2 - (\, X)^2}$ $b = \dfrac{}{N \, X^2 - (\, X)^2}$

543.

544. 21344.4

545. $= \dfrac{85 \times 21344.4 - (-5) \times 2997.2}{10 \times 85 - (-5)^2}$ $= \dfrac{10 \times 2997.2 - (-5) \times 21344.4}{10 \times 85 - (-5)^2}$

546. $\underline{}$

547.

548.

549. $= \dfrac{1814274 + 14986}{850 - 25}$ $= \dfrac{29972 + 106722}{850 - 25}$

550.

551.

552. $ 1829260 136694$

553. $= \dfrac{1829260}{825}$ $= \dfrac{136694}{825}$

554.

555.

556. $a = 2217.28$ $b = 165.69$

557.

558. $Y = a + bx = 2217.28 + 165.69x$

559. For, $2008/09 = 2217.28 + 165.69 \times 5 = 3045.73$

560. For, $2009/10 = 2217.28 + 165.69 \times 6 = 3211.42$

561. For, $2010/11 = 2217.28 + 165.69 \times 7 = 3377.11$

562.

563.

564. Table V-21

565.

Fiscal Year	Excise Duty (Y)	Mid-Value X= x-2003/04	X²	XY
1998/99	2953.20	-5	25	-14766.00
1999/00	3127.60	-4	16	-12510.40
2000/01	3771.20	-3	9	-11313.60
2001/02	3807.00	-2	4	-7614.00
2002/03	4785.10	-1	1	-4785.10
2003/04	6226.70	0	0	0
2004/05	6445.90	1	1	6445.90
2005/06	6507.60	2	4	13015.20
2006/07	9343.20	3	9	28029.60
2007/08	11189.60	4	16	44758.40
N= 10	**Y= 58157.10**	**X= − 5**	**X²= 85**	**XY= 41260.00**

566.

567.
568. $a = \dfrac{\Sigma X^2 . \Sigma Y - \Sigma X . \Sigma XY}{N \Sigma X^2 - (\Sigma X)^2}$ $b = \dfrac{N . \Sigma XY - \Sigma X . \Sigma Y}{N \Sigma X^2 - (\Sigma X)^2}$
569.

570.
571. $= \dfrac{85 \times 58157.1 - (-5) \times 41260}{10 \times 85 - (-5)^2}$ $= \dfrac{10 \times 41260 - (-5) \times 58157.1}{10 \times 85 - (-5)^2}$
572.
573.

574.
575. $= \dfrac{4943353.5 + 206300}{850 - 25}$ $= \dfrac{412600 + 290785.5}{850 - 25}$
576.
577.

578.
579. $= \dfrac{5149653.5}{825}$ $= \dfrac{703385.5}{825}$
580.
581.

582.
583. a = 6242.00 b = 852.59
584.
585. Y= a+bx = 6242.00+ 852.59x

586. For, 2008/09 = 6242.00+ 852.59 × 5 = 10504.95

587. For, 2009/10 = 6242.00+ 852.59 × 6 = 11357.54

588. For, 2010/11 = 6242.00+ 852.59 × 7 = 12210.12

589.
590.

591.

592.   Table V-22

593.

Fiscal Year	VAT (Y)	Mid-Value $X = x-2003/04$	X^2	XY
1998/99	8765.90	-5	25	-43829.50
1999/00	10259.70	-4	16	-41038.80
2000/01	12382.40	-3	9	-37147.20
2001/02	12267.30	-2	4	-24534.60
2002/03	13459.70	-1	1	-13459.70
2003/04	14478.90	0	0	0
2004/05	18885.40	1	1	18885.40
2005/06	21610.70	2	4	43221.40
2006/07	26095.60	3	9	78286.80
2007/08	29815.70	4	16	119262.80
N= 10	Y= 168021.30	X= – 5	X^2= 85	XY= 99646.60

594.

595.

596. $a = \dfrac{X^2.\ Y\ -\ X.\ XY}{N\ X^2 - (\ X)^2}$ $b = \dfrac{N.\ XY\ -\ X.\ Y}{N\ X^2 - (\ X)^2}$

597.

598.

599.

600. $= \dfrac{85\times 168021.3\ -\ (-5)\times 99646.6}{10\times 85 - (-5)^2}$ $= \dfrac{10 \times 99646.6\ -\ (-5) \times 168021.3}{10\times 85 - (-5)^2}$

601.

602.

603.

604. $= \dfrac{14281810.5 + 498233}{850 - 25}$ $= \dfrac{996466 + 840106.5}{850 - 25}$

605.

606.

607. $= \dfrac{14780043.5}{825}$ $= \dfrac{1836572.5}{825}$

608.

609.

610.

611.   a = 17915.20   b = 2226.15

612.

613.   Y= a+bx   = 17915.20 + 2226.15x

614.   For, 2008/09 = 17915.20 + 2226.15 × 5   = 29045.95

615.   For, 2009/10 = 17915.20 + 2226.15 × 6   = 31272.10

616.   For, 2010/11 = 17915.20 + 2226.15 × 7   = 33498.24

617.

618.

619.   Table V-23

620.

Fiscal Year	Other Indirect Tax (Y)	Mid-Value X= x-2003/04	X^2	XY
1998/99	235.40	-5	25	-1177.00
1999/00	89.20	-4	16	-356.80
2000/01	211.40	-3	9	-634.20
2001/02	362.10	-2	4	-724.20
2002/03	442.50	-1	1	-442.50
2003/04	478.10	0	0	0
2004/05	516.30	1	1	516.30
2005/06	659.40	2	4	1318.80
2006/07	476.30	3	9	1428.90
2007/08	491.60	4	16	1966.40
N= 10	Y= 3962.30	X= − 5	X^2= 85	XY= 1895.70

621.
622.
623. $$a = \frac{\sum X^2 . \sum Y - \sum X . \sum XY}{N \sum X^2 - (\sum X)^2}$$ $$b = \frac{N \sum XY - \sum X . \sum Y}{N \sum X^2 - (\sum X)^2}$$
624.

625.
626.
627. $$= \frac{85 \times 3962.3 - (-5) \times 1895.7}{10 \times 85 - (-5)^2}$$ $$= \frac{10 \times 1895.7 - (-5) \times 3962.3}{10 \times 85 - (-5)^2}$$
628.

629.
630.
631. $$= \frac{336795.5 + 9478.5}{850 - 25}$$ $$= \frac{18957 + 19811.5}{850 - 25}$$
632.

633.

634.
635. $$= \frac{346274}{825}$$ $$= \frac{38768.5}{825}$$
636.

637.

638. a = 419.73 b = 46.99

639.

640. Y= a+bx = 419.73+ 46.99x

641. For, 2008/09 = 419.73+ 46.99 × 5 = 654.69

642. For, 2009/10 = 419.73+ 46.99 × 6 = 701.68

643. For, 2010/11 = 419.73+ 46.99 × 7 = 748.67

644.

645.

646.

647. Table V-24

648.

Fiscal Year	Land Revenue & Reg. (Y)	Mid-Value X= x-2003/04	X^2	XY
1998/99	1003.10	-5	25	-5015.50
1999/00	1015.90	-4	16	-4063.60
2000/01	612.90	-3	9	-1838.70
2001/02	1131.80	-2	4	-2263.60
2002/03	1414.30	-1	1	-1414.30
2003/04	1697.50	0	0	0
2004/05	1799.20	1	1	1799.20
2005/06	2118.10	2	4	4236.20
2006/07	2253.50	3	9	6760.50
2007/08	2940.70	4	16	11762.80
N= 10	Y= 15987.00	X= − 5	X^2= 85	XY= 9963.00

133

649.

650.

651. $a = \dfrac{\sum X^2 . \sum Y - \sum X . \sum XY}{N \sum X^2 - (\sum X)^2}$ $b = \dfrac{N. \sum XY - \sum X . \sum Y}{N \sum X^2 - (\sum X)^2}$

652.

653.

654.

655. $= \dfrac{85 \times 15987 - (-5) \times 9963}{10 \times 85 - (-5)^2}$ $= \dfrac{10 \times 9963 - (-5) \times 15987}{10 \times 85 - (-5)^2}$

656.

657.

658. $= \dfrac{1358895 + 49815}{850 - 25}$ $= \dfrac{99630 + 79935}{850 - 25}$

659.
660.

661.

662. $= \dfrac{1408710}{825}$ $= \dfrac{179565}{825}$

663.
664.

665.

666. $a = 1707.53$ $b = 217.65$

667.

668. $Y = a + bx = 1707.53 + 217.65x$

669. For, 2008/09 $= 1707.53 + 217.65 \times 5 = 2795.80$

670. For, 2009/10 $= 1707.53 + 217.65 \times 6 = 3013.45$

671. For, 2010/11 $= 1707.53 + 217.65 \times 7 = 3231.11$

672.

673.

674. Table V-25

675.

Fiscal Year	Income Tax (Y)	Mid-Value X= x-2003/04	X^2	XY
1998/99	6170.30	-5	25	-30851.50
1999/00	7420.60	-4	16	-29682.40
2000/01	9114.00	-3	9	-27342.00
2001/02	8903.70	-2	4	-17807.40
2002/03	8131.80	-1	1	-8131.80
2003/04	9514.50	0	0	0
2004/05	10466.10	1	1	10466.10
2005/06	11002.40	2	4	22004.80
2006/07	15731.80	3	9	47195.40
2007/08	19077.80	4	16	76311.20
N= 10	$\sum$Y= 105533.00	$\sum$X= – 5	$\sum X^2$= 85	$\sum$XY= 42162.40

676.

677.

678. $a = \dfrac{\sum X^2 . \sum Y - \sum X . \sum XY}{}$ $b = \dfrac{N. \sum XY - \sum X . \sum Y}{}$

679. $N \sum X^2 - (\sum X)^2$ $\qquad$ $N \sum X^2 - (\sum X)^2$

680.

681.

$$= \frac{85 \times 105533 - (-5) \times 42162.4}{105533}$$

$$= \frac{10 \times 42162.4 - (-5) \times 105533}{}$$

682.

683.

$$\frac{}{10 \times 85 - (-5)^2} \qquad\qquad \frac{}{10 \times 85 - (-5)^2}$$

684.

685.

686.

687.

$$= \frac{8970305 + 210812}{850 - 25} \qquad\qquad = \frac{421624 + 527665}{850 - 25}$$

688.

689.

$$= \frac{9181117}{825} \qquad\qquad = \frac{949289}{825}$$

690.

691.

692.

693. $\quad a = \quad 11128.63 \qquad\qquad b = 1150.65$

694.

695. $\quad Y = a + bx \quad = 11128.63 + 1150.65x$

696. For, 2008/09 $= 11128.63 + 1150.65 \times 5 \quad = 16861.89$

697. For, 2009/10 $= 11128.63 + 1150.65 \times 6 \quad = 18032.55$

698. For, 2010/11 $= 11128.63 + 1150.65 \times 7 \quad = 19183.20$

699.

700.

701.

702.

703. Table V-26

704.

Fiscal Year	Vehicle Tax (Y)	Mid-Value X= x-2003/04	X^2	XY
1998/99	219.40	-5	25	-1097.00
1999/00	396.50	-4	16	-1586.00
2000/01	429.60	-3	9	-1288.80
2001/02	559.70	-2	4	-1119.40
2002/03	559.70	-1	1	-559.70
2003/04	700.60	0	0	0
2004/05	806.50	1	1	806.50
2005/06	847.60	2	4	1695.20
2006/07	995.00	3	9	2985.00
2007/08	1069.20	4	16	4276.80
N= 10	$\sum Y$= 6583.80	$\sum X$= − 5	$\sum X^2$= 85	$\sum XY$= 4112.60

705.

706.

707. $\quad a = \dfrac{\sum X^2 . \sum Y - \sum X . \sum XY}{} \qquad\qquad b = \dfrac{N. \sum XY - \sum X . \sum Y}{}$

135

708. $N\sum X^2 - (\sum X)^2$ $N\sum X^2 - (\sum X)^2$

709.
710.
711. $$= \frac{85 \times 6583.8 - (-5) \times 4112.6}{10 \times 85 - (-5)^2} \qquad = \frac{10 \times 4112.6 - (-5) \times 6583.8}{10 \times 85 - (-5)^2}$$
712.

713.
714.
715. $$= \frac{559623 + 20563}{850 - 25} \qquad = \frac{41126 + 32919}{850 - 25}$$
716.

717.
718.
719. $$= \frac{580186}{825} \qquad = \frac{74045}{825}$$
720.

721.
722. $a = 703.26$ $b = 89.75$

723.
724. $Y = a + bx \qquad = 703.26 + 89.75x$

725. For, 2008/09 $= 703.26 + 89.75 \times 5 \qquad = 1152.01$

726. For, 2009/10 $= 703.26 + 89.75 \times 6 \qquad = 1241.76$

727. For, 2010/11 $= 703.26 + 89.75 \times 7 \qquad = 1331.52$

728.

729.

730.

731.

732.
733.

734. Table V-27

735.
736.

Fiscal Year	Development Expenditure (Y)	Mid-Value X= x-2003/04	X2	XY
1998/99	22992.10	-5	25	-114960.50
1999/00	25480.70	-4	16	-101922.80
2000/01	28307.20	-3	9	-84921.60
2001/02	24773.40	-2	4	-49546.80
2002/03	22356.10	-1	1	-22356.10
2003/04	23095.60	0	0	0.00
2004/05	27340.70	1	1	27340.70
2005/06	29606.60	2	4	59213.20
2006/07	39729.90	3	9	119189.70
2007/08	53516.10	4	16	214064.40
N= 10	$\sum Y$= 297198.40	$\sum X$= − 5	$\sum X^2$= 85	$\sum XY$= 46100.20

737.
738.

739.
740.
741.

$$a = \frac{\sum X^2 . \sum Y - \sum X . \sum XY}{N \sum X^2 - (\sum X)^2} \qquad b = \frac{N . \sum XY - \sum X . \sum Y}{N \sum X^2 - (\sum X)^2}$$

742.
743.

$$= \frac{85 \times 297198.40 - (-5) \times 46100.20}{10 \times 85 - (-5)^2} \qquad = \frac{10 \times 46100.20 - (-5) \times 297198.40}{10 \times 85 - (-5)^2}$$

744.
745.
746.
747.
748.
749.

$$= \frac{25261864 + 230501}{850 - 25} \qquad = \frac{461002 + 1485992}{850 - 25}$$

750.
751.
752.
753.

$$= \frac{25492365}{825} \qquad = \frac{1946994}{825}$$

754.

755.   a =   30899.84   b = 2359.99

756.

757.   Y = a+bx   = 30899.84 + 2359.99x

758.

759.   For, 2008/09   = 30899.84 + 2359.99 × 5   = 42699.80

760.   For, 2009/10   = 30899.84 + 2359.99 × 6   = 45059.79

761.   For, 2010/11   = 30899.84 + 2359.99 × 7   = 47419.79

762.

763.

764.   <u>Calculation of Correlation</u>

765.   Table V-28

Fiscal Year	CITR (X)	Total Tax Revenue (Y)	XY	X^2	Y^2
1998/99	3461.50	28752.90	99528163.35	11981982.25	826729258.41
1999/00	4438.30	33152.10	147138965.43	19698506.89	1099061734.41
2000/01	5982.30	38865.10	232502687.73	35787913.29	1510495998.01
2001/02	4351.95	39330.60	171164804.67	18939468.80	1546896096.36
2002/03	3655.30	42587.00	155668261.10	13361218.09	1813652569.00
2003/04	4838.68	48173.00	233093731.64	23412824.14	2320637929.00
2004/05	5328.34	54104.70	288288237.20	28391207.16	2927318562.09
2005/06	5287.05	57430.40	303637396.32	27952897.70	3298250844.16
2006/07	11523.02	71126.70	819594386.63	132779989.92	5059007452.89
2007/08	10531.47	85155.50	896812593.59	110911860.36	7251459180.25

| N=10 | X=59397.91 | Y=498678.00 | XY=3347429227.66 | X^2=423217868.60 | Y^2=27653509624.58 |

766.
767.
768.

$$r = \frac{N\sum XY - \sum X. \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2} \ \sqrt{N\sum Y^2 - (\sum Y)^2}}$$

771.
772.
773.

$$r = \frac{10\times3347429227.66 - 59397.91\times498678.00}{\sqrt{10\times423217868.6 - 59397.91^2} \ \sqrt{10\times27653509624.58 - 498678.00^2}}$$

776.
777.
778.

$$r = \frac{3374292276.57 - 29620430962.98}{\sqrt{4232178686.04 - 3528111712.37} \ \sqrt{276535096245.80 - 248679747684.00}}$$

781.
782.
783.

$$r = \frac{3853861313.59}{\sqrt{704066973.67} \times \sqrt{27855348561.80}}$$

786.
787.
788.

$$r = \frac{3853861313.59}{26534.26 \times 166899.22}$$

791.
792.
793.

$$r = \frac{3853861313.59}{4428574274.51}$$

796.
797. $r = 0.87$ or, $r^2 = (0.82)^2 = 0.7569$ i.e. 75.69%

798. Table V-29

799.
800.

Fiscal Year	CITR (X)	Total Revenue (Y)	XY	X^2	Y^2
1998/99	3461.50	37251.00	128944336.50	11981982.25	1387637001.00
1999/00	4438.30	42893.70	190375108.71	19698506.89	1839869499.69
2000/01	5982.30	48893.90	292497977.97	35787913.29	2390613457.21
2001/02	4351.95	50445.60	219536728.92	18939468.80	2544758559.36
2002/03	3655.30	56229.70	205536422.41	13361218.09	3161779162.09
2003/04	4838.68	62331.00	301599763.08	23412824.14	3885153561.00
2004/05	5328.34	70122.70	373637587.32	28391207.16	4917193055.29
2005/06	5287.05	72282.10	382159076.81	27952897.70	5224701980.41

2006/07	11523.02	87712.20	1010709434.84	132779989.92	7693430028.84
2007/08	10531.47	107622.50	1133423130.08	110911860.36	11582602506.25
N=10	X= 59397.91	Y=635784.40	XY=4238419566.63	X^2=423217868.60	Y^2=44627738811.14

801.
802.
803.
804. $$r = \frac{N\sum XY - \sum X . \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2} \ \sqrt{N\sum Y^2 - (\sum Y)^2}}$$
805.
806.
807.
808.
809. $$r = \frac{10 \times 4238419566.63 - 59397.91 \times 635784.40}{\sqrt{10 \times 423217868.6 - 59397.91^2} \ \sqrt{10 \times 44627738811.14 - 635784.40^2}}$$
810.
811.
812.
813.
814. $$r = \frac{42384195666.32 - 37764264570.60}{\sqrt{4232178686.04 - 3528111712.37} \ \sqrt{446277388111.4 - 404221803283.36}}$$
815.
816.
817.
818.
819. $$r = \frac{4619931095.72}{\sqrt{704066973.67} \times \sqrt{42055584828.04}}$$
820.
821.
822.
823.
824.
825. $$r = \frac{4619931095.72}{26534.26 \times 205077.58}$$
826.
827.
828.
829.
830. $$r = \frac{4619931095.72}{4428574274.51}$$
831.
832.
833. $r = 0.85$ or, $r^2 = (0.85)^2 = 0.7225$ i.e. 72.25%

834. Table V-30
835.
836.

Fiscal Year	CITR (X)	Direct Tax Revenue (Y)	XY	X^2	Y^2
1998/99	3461.50	7516.10	26016980.15	11981982.25	56491759.21
1999/00	4438.30	8951.50	39729442.45	19698506.89	80129352.25
2000/01	5982.30	10159.40	60776578.62	35787913.29	103213408.36
2001/02	4351.95	10597.50	46119790.13	18939468.80	112307006.25
2002/03	3655.30	10105.80	36939730.74	13361218.09	102127193.64
2003/04	4838.68	11912.60	57641259.37	23412824.14	141910038.76

139

2004/05	5328.34	13071.80	69650994.81	28391207.16	170871955.24
2005/06	5287.05	13968.10	73850043.11	27952897.70	195107817.61
2006/07	11523.02	18980.30	218710376.51	132779989.92	360251788.09
2007/08	10531.47	23087.70	243147419.92	110911860.36	533041891.29
N=10	X=59397.91	Y=128350.80	XY=872582615.8	X²=423217868.60	Y²=1855452210.70

837.
838.
839.　　　　N∑XY – ∑X. ∑Y

840.　r　=　────────────────────

841.　　　　√N∑X² – (∑X)²　√N∑Y² – (∑Y)²

842.
843.
844.　　　　　10×872582615.8 – 59397.91×128350.80

845.　r　=　─────────────────────────────────────

846.　　　　√10×423217868.6–59397.91²　√10×1855452210.70 –128350.80²

847.
848.
849.　　　　　　8725826157.95 – 7623769266.83

850.　r　────────────────────────────────────　=

851.　　　　√4232178686.04– 3528111712.37　√18554522107.0– 16473860.64

852.

853.　　　　　　　1102056891.12

854.　r　=　───────────────────────

855.　　　　√704066973.67 × √2080594246.36

856.
857.
858.　　　1102056891.12

859.　r　=　──────────────

860.　　　　26534.26 × 45613.53

861.
862.
863.　1102056891.12

864.　r　=　──────────────

865.　　　1210321318.69

866.
867.　r　=　0.87　　　　　r² = (0.82)² = 0.7569 i.e. 75.69%

868.　　Table V-31

869.
870.

Fiscal Year	CITR (X)	Income Tax Revenue (Y)	XY	X²	Y²
1998/99	3461.50	6170.30	21358493.45	11981982.25	38072602.09
1999/00	4438.30	7420.60	32934848.98	19698506.89	55065304.36
2000/01	5982.30	9114.00	54522682.20	35787913.29	83064996.00
2001/02	4351.95	8903.70	38748457.22	18939468.80	79275873.69
2002/03	3655.30	8131.80	29724168.54	13361218.09	66126171.24

2003/04	4838.68	9514.50	46037620.86	23412824.14	90525710.25
2004/05	5328.34	10466.10	55766939.27	28391207.16	109539249.21
2005/06	5287.05	11002.40	58170238.92	27952897.70	121052805.76
2006/07	11523.02	15731.80	181277846.04	132779989.92	247489531.24
2007/08	10531.47	19077.80	200917278.37	110911860.36	363962452.84
N=10	X=59397.91	Y=105533.00	XY=719458573.84	X^2=423217868.60	Y^2=1254174696.68

871.
872.
873. $\quad N\Sigma XY - \Sigma X . \Sigma Y$
874. $r \quad = \quad$ —————————————————
875. $\qquad \sqrt{N\Sigma X^2 - (\Sigma X)^2} \ \sqrt{N\Sigma Y^2 - (\Sigma Y)^2}$
876.
877.
878. $\qquad\qquad 10 \times 719458573.84 - 59397.91 \times 105533.00$
879. $r \quad = \quad$ —————————————————————————————
880. $\qquad \sqrt{10 \times 423217868.6 - 59397.91^2} \ \sqrt{10 \times 1254174696.68 - 105533.00^2}$
881.
882.
883. $\qquad\qquad 7194585738.41 - 6268439636.03$
884. $r \qquad\qquad$ ————————————————————————————— $\qquad =$
885. $\qquad \sqrt{4232178686.04 - 3528111712.37} \ \sqrt{12541746966.80 - 11137214089}$
886.
887. $\qquad\qquad 926146102.38$
888. $r \quad = \quad$ ————————————————————
889. $\qquad \sqrt{704066973.67} \ \times \ \sqrt{1404532877.80}$
890.
891.
892. $\qquad 926146102.38$
893. $r \quad = \quad$ ———————————————
894. $\qquad 26534.26 \times 37477.10$
895.
896.
897. $\quad 926146102.38$
898. $r \quad = \quad$ ———————————
899. $\qquad 994427077.62$
900.
901. $r \quad = \quad 0.93 \qquad r^2 \quad = \quad (0.93)^2 \quad = 0.8649$ i.e. $\quad 86.49\%$

902.   Table V-32

903.
904.

Fiscal Year	CITR (X)	Government Sector (Y)	XY	X^2	Y^2
1998/99	3461.50	1526.50	5283979.75	11981982.25	2330202.25
1999/00	4438.30	2198.80	9758934.04	19698506.89	4834721.44
2000/01	5982.30	2928.00	17516174.40	35787913.29	8573184.00
2001/02	4351.95	1769.30	7699905.14	18939468.80	3130422.49

141

Fiscal Year					
2002/03	3655.30	1251.00	4572780.30	13361218.09	1565001.00
2003/04	4838.68	2056.60	9951229.29	23412824.14	4229603.56
2004/05	5328.34	1332.40	7099480.22	28391207.16	1775289.76
2005/06	5287.05	195.70	1034675.69	27952897.70	38298.49
2006/07	11523.02	1019.70	11750023.49	132779989.92	1039788.09
2007/08	10531.47	204.60	2154738.76	110911860.36	41861.16
N=10	X=59397.91	Y=14482.60	XY=76821921.07	X^2=423217868.60	Y^2=27558372.24

905.
906.
907.
908. $$r = \frac{N\sum XY - \sum X . \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2} \ \sqrt{N\sum Y^2 - (\sum Y)^2}}$$
909.
910.
911.
912.
913. $$r = \frac{10 \times 76821921.07 - 59397.91 \times 14482.60}{\sqrt{10 \times 423217868.6 - 59397.91^2} \ \sqrt{10 \times 27558372.24 - 14482.60^2}}$$
914.
915.
916.
917.
918. $$r = \frac{768219210.70 - 860236171.37}{\sqrt{4232178686.04 - 3528111712.37} \ \sqrt{275583722.40 - 209745702.76}} =$$
919.
920.
921.
922. $$r = \frac{-92016960.67}{\sqrt{704066973.67} \times \sqrt{65838019.64}}$$
923.
924.
925.
926.
927. $$r = \frac{-92016960.67}{26534.26 \times 8114.06}$$
928.
929.
930.
931.
932. $$r = \frac{-92016960.67}{215300662.43}$$
933.
934.
935. $r = -0.43$ $\quad r^2 = (-0.43)^2 = 0.1849$ i.e. 18.49%

936. Table V-33

937.
938.

Fiscal Year	CITR (X)	Public Sector (Y)	XY	X^2	Y^2
1998/99	3461.50	1155.00	3998032.50	11981982.25	1334025.00
1999/00	4438.30	1339.50	5945102.85	19698506.89	1794260.25
2000/01	5982.30	1924.30	11511739.89	35787913.29	3702930.49

2001/02	4351.95	1412.00	6144953.40	18939468.80	1993744.00
2002/03	3655.30	1236.30	4519047.39	13361218.09	1528437.69
2003/04	4838.68	1531.30	7409470.68	23412824.14	2344879.69
2004/05	5328.34	2467.80	13149277.45	28391207.16	6090036.84
2005/06	5287.05	3404.30	17998704.32	27952897.70	11589258.49
2006/07	11523.02	5717.10	65878257.64	132779989.92	32685232.41
2007/08	10531.47	7186.50	75684409.16	110911860.36	51645782.25
N=10	X=59397.91	Y=27374.10	XY=212238995.28	X²=423217868.60	Y²=114708587.11

939.
940.
941. $\quad N\Sigma XY - \Sigma X \cdot \Sigma Y$
942. $\quad r \;=\; \rule{8cm}{0.4pt}$
943. $\qquad \sqrt{N\Sigma X^2 - (\Sigma X)^2} \;\; \sqrt{N\Sigma Y^2 - (\Sigma Y)^2}$
944.
945.
946. $\qquad\qquad 10 \times 212238995.28 - 59397.91 \times 27374.10$
947. $\quad r \;=\; \rule{10cm}{0.4pt}$
948. $\qquad \sqrt{10 \times 423217868.6 - 59397.91^2} \;\; \sqrt{10 \times 114708587.11 - 27374.10^2}$
949.
950.
951. $\qquad\qquad 2122389952.78 - 1625964328.13$
952. $\quad r \; \rule{6cm}{0.4pt} \quad \rule{6cm}{0.4pt} \qquad =$
953. $\qquad \sqrt{4232178686.04 - 3528111712.37} \;\; \sqrt{1147085871.10 - 749341350.81}$
954.
955. $\qquad\qquad 496425624.65$
956. $\quad r \;=\; \rule{8cm}{0.4pt}$
957. $\qquad\qquad \sqrt{704066973.67} \times \sqrt{397744520.29}$
958.
959.
960. $\qquad 496425624.65$
961. $\quad r \;=\; \rule{4cm}{0.4pt}$
962. $\qquad 26534.26 \times 19943.53$
963.
964.
965. $\qquad 496425624.65$
966. $\quad r \;=\; \rule{3cm}{0.4pt}$
967. $\qquad 529186905.26$
968.
969. $\quad r \;=\; 0.94 \qquad r^2 \;=\; (0.94)^2 \;=\; 0.8836$ i.e. 88.36%
970. Table V-34

971.
972.

Fiscal Year	CITR (X)	Private Sector (Y)	XY	X²	Y²
1998/99	3461.50	780.00	2699970.00	11981982.25	608400.00
1999/00	4438.30	900.00	3994470.00	19698506.89	810000.00

2000/01	5982.30	1130.00	6759999.00	35787913.29	1276900.00
2001/02	4351.95	1170.65	5094610.27	18939468.80	1370421.42
2002/03	3655.30	1168.00	4269390.40	13361218.09	1364224.00
2003/04	4838.68	1250.78	6052124.17	23412824.14	1564450.61
2004/05	5328.34	1528.14	8142449.49	28391207.16	2335211.86
2005/06	5287.05	1687.05	8919517.70	27952897.70	2846137.70
2006/07	11523.02	4786.22	55151708.78	132779989.92	22907901.89
2007/08	10531.47	3140.37	33072712.44	110911860.36	9861923.74
N=10	X=59397.91	Y=17541.21	XY=134156952.26	X^2=423217868.60	Y^2=44945571.22

973.
974.
975. $N\Sigma XY - \Sigma X. \Sigma Y$
976. $r \; = \; \dfrac{}{}$
977. $\sqrt{N\Sigma X^2 - (\Sigma X)^2} \quad \sqrt{N\Sigma Y^2 - (\Sigma Y)^2}$
978.
979.
980. $10 \times 134156952.26 - 59397.91 \times 17541.21$
981. $r \; = \; \dfrac{}{}$
982. $\sqrt{10 \times 423217868.6 - 59397.91^2} \quad \sqrt{10 \times 44945571.22 - 17541.21^2}$
983.
984.
985. $1341569522.56 - 1041911212.87$
986. $r \quad \overline{\qquad\qquad\qquad} \quad \overline{\qquad\qquad\qquad} \quad =$
987. $\sqrt{4232178686.04 - 3528111712.37} \quad \sqrt{449455712.18 - 307694048.26}$
988.

989. 299658309.69
990. $r \; = \; \dfrac{}{}$
991. $\sqrt{704066973.67} \times \sqrt{141761663.92}$
992.
993.
994. 299658309.69
995. $r \; = \; \dfrac{}{}$
996. 26534.26×11906.37
997.
998.
999. 299658309.69
1000. $r \; = \; \dfrac{}{}$
1001. 315926741.03
1002.
1003. $r \; = \; 0.95 \qquad r^2 \; = \; (0.95)^2 \; = 0.9025$ i.e. 90.25%
1004. Table V-35
1005.

Fiscal Year	Income Tax (X)	GDP (Y)	XY	X2	Y2
1998/99	6170.30	330018.00	2036310065.40	38072602.09	108911880324.00

1999/00	7420.60	366251.00	2717802170.60	55065304.36	134139795001.00
2000/01	9114.00	413429.00	3767991906.00	83064996.00	170923538041.00
2001/02	8903.70	430397.00	3832125768.90	79275873.69	185241577609.00
2002/03	8131.80	460325.00	3743270835.00	66126171.24	211899105625.00
2003/04	9514.50	500699.00	4763900635.50	90525710.25	250699488601.00
2004/05	10466.10	548485.00	5740498858.50	109539249.21	300835795225.00
2005/06	11002.40	611089.00	6723445613.60	121052805.76	373429765921.00
2006/07	15731.80	676210.00	10638000478.00	247489531.24	457259964100.00
2007/08	19077.80	756756.00	14437239616.80	363962452.84	572679643536.00
N=10	X= 105533	Y= 5093659	XY=58400585948.3	X^2=1254174696.68	Y^2=2766020553983

1006.

1007.

1008. 1009.

$$r = \frac{N\Sigma XY - \Sigma X.\, \Sigma Y}{\sqrt{N\Sigma X^2 - (\Sigma X)^2}\ \sqrt{N\Sigma Y^2 - (\Sigma Y)^2}}$$

1010.

1011.

1012.

1013. 1014.

$$r = \frac{10\times58400585948.3 - 105533\times5093659}{\sqrt{10\times1254174696.68 - 105533^2}\ \sqrt{10\times2766020553983 - 5093659^2}}$$

1015.

1016.

1017.

1018. 1019.

$$r = \frac{584{,}005{,}859{,}483.00 - 537{,}549{,}115{,}247.00}{\sqrt{12{,}541{,}746{,}966.8 - 11{,}137{,}214{,}089}\ \sqrt{27{,}660{,}205{,}539{,}830 - 25{,}945{,}362{,}008{,}281}}$$

1020.

1021.

1022.

1023. 1024.

$$r = \frac{46{,}456{,}744{,}236.00}{\sqrt{1{,}404{,}532{,}877.80} \times \sqrt{1{,}714{,}843{,}531{,}549}}$$

1025.

1026.

1027.

1028. 1029. 1030.

$$r = \frac{46{,}456{,}744{,}236.00}{37{,}477.10 \times 1{,}309{,}520.34}$$

1031.

1032.

1033.

1034. 1035. 1036.

$$r = \frac{46{,}456{,}744{,}236.00}{49{,}077{,}022{,}325.56}$$

1037. $r = 0.95$ $r^2 = (0.95)^2 = 0.9025$ i.e. 90.25%

1038. Table V-36

Fiscal Year	Income Tax (X)	Development Expenditure (Y)	XY	X2	Y2
1998/99	6170.30	22992.10	141868154.63	38072602.09	528636662.41
1999/00	7420.60	25480.70	189082082.42	55065304.36	649266072.49
2000/01	9114.00	28307.20	257991820.80	83064996.00	801297571.84
2001/02	8903.70	24773.40	220574921.58	79275873.69	613721347.56
2002/03	8131.80	22356.10	181795333.98	66126171.24	499795207.21
2003/04	9514.50	23095.60	219743086.20	90525710.25	533406739.36
2004/05	10466.10	27340.70	286150500.27	109539249.21	747513876.49
2005/06	11002.40	29606.60	325743655.84	121052805.76	876550763.56
2006/07	15731.80	39729.90	625022840.82	247489531.24	1578464954.01
2007/08	19077.80	53516.10	1020969452.58	363962452.84	2863972959.21
N=10	X= 105533	Y= 297198.40	XY=3468941849.12	X²=1254174696.68	Y²=9692626154.14

1039.
1040.
1041. $N\Sigma XY - \Sigma X. \Sigma Y$
1042. $r =$
1043. $\overline{\sqrt{N\Sigma X^2 - (\Sigma X)^2}} \ \sqrt{N\Sigma Y^2 - (\Sigma Y)^2}$
1044.
1045.
1046. $10 \times 3468941849.12 - 105533 \times 297198.40$
1047. $r =$
1048. $\sqrt{10 \times 1254174696.68 - 105533^2} \ \sqrt{10 \times 1254174696.68 - 297198.40^2}$
1049.
1050.
1051. $34,689,418,491.20 - 31,364,238,747.20$
1052. $r =$

1053. $\sqrt{12,541,746,966.8 - 11,137,214,089} \ \sqrt{96,926,261,541.40 - 88,326,888,962.56}$
1054.
1055.
1056. $3,325,179,744.00$
1057. $r =$
1058. $\sqrt{1,404,532,877.80} \times \sqrt{8,599,372,578.84}$
1059.
1060.
1061. $3,325,179,744.00$
1062. $r =$
1063. $37,477.10 \times 92,732.80$
1064.
1065.
1066. $3,325,179,744.00$
1067. $r =$
1068. $3,475,356,314.89$

1069.
1070. r = 0.96 r^2 = $(0.96)^2$ = 0.9216 i.e. 92.16%

Fiscal Year	Dev. Exp (X_1)	INCOME TAX (X_2)	GDP (X_3)	$x_1=X1-X1$	$x_2=X2-X2$	$x_3=X3-X3$	X_1X_2	X_2X_3	X_3X_1	
1998/99	22992.1	6170.3	330018	-6727.74	-4383	-179347.9	29487684.42	786081845.70	1206606041	452
1999/00	25480.7	7420.6	366251	-4239.14	-3132.7	-143114.9	13279953.88	448336047.23	606684097.2	179
2000/01	28307.2	9114	413429	-1412.64	-1439.3	-95936.9	2033212.752	138081980.17	135524302.4	199
2001/02	24773.4	8903.7	430397	-4946.44	-1649.6	-78968.9	8159647.424	130267097.44	390614925.7	244
2002/03	22356.1	8131.8	460325	-7363.74	-2421.5	-49040.9	17831296.41	118752539.35	361124437	542
2003/04	23095.6	9514.5	500699	-6624.24	-1038.8	-8666.9	6881260.512	9003175.72	57411625.66	438
2004/05	27340.7	10466.1	548485	-2379.14	-87.2	39119.1	207461.008	-3411185.52	-93069815.6	566
2005/06	29606.6	11002.4	611089	-113.24	449.1	101723.1	-50856.084	45683844.21	-11519123.8	128
2006/07	39729.9	15731.8	676210	10010.06	5178.5	166844.1	51837095.71	864002171.85	1670119452	100
2007/08	53516.1	19077.8	756756	23796.26	8524.5	247390.1	202851218.4	2108876907.45	5886959141	566
N=10	X1= 297198.4	X2= 105533	X3= 5093659	x1= 0	x2= 0	x3= 0	X1X2= 332517974.40	X2X3= 4645674423.60	X3X1= 10210455082	859

1071.
1072.

1073. Table V-37

1074.
1075.
1076.
1077.
1078.
1079.
1080.
1081.
1082.
1083.
1084.
1085.
1086.
1087.
1088. $\overline{X_1}$ = $\dfrac{\sum X_1}{N}$ = $\dfrac{297198.4}{10}$ = 29719.84
1089.
1090.
1091.
1092. $\overline{X_2}$ = $\dfrac{\sum X_2}{N}$ = $\dfrac{105533}{10}$ = 10553.3
1093.
1094.
1095.
1096. X_3 = $\dfrac{\sum X_3}{N}$ = $\dfrac{5093659}{10}$ = 509365.9
1097.
1098.
1099.
1100. Now,
1101.
1102. $\sum X_1.X_2$ 332517944.40

1103. r_{12} = ───────── = ─────────────── =
0.96

1104. $\sqrt{\sum X_1^2} \sqrt{\sum X_2^2}$ $\sqrt{29324.69} \sqrt{11851.30}$

1106.

1107.
1108.
1109. r_{23} = $\dfrac{\sum X_2 X_3}{\sqrt{\sum X_2^2} \sqrt{\sum X_3^2}}$ = $\dfrac{4645674423.60}{\sqrt{11851.30} \sqrt{414106.69}}$ =
0.95

1110.
1111.

1112.

1113.
1114. r_{13} = $\dfrac{\sum X_1 . X_3}{\sqrt{\sum X_1^2} \sqrt{\sum X_3^2}}$ = $\dfrac{10210455081.94}{\sqrt{29324.69} \sqrt{414106.69}}$ =
0.84

1115.
1116.
1117.
1118. Correlation between Income Tax and GDP, keeping Developing Expenditure constant

1119.
1120.

1121.
1122. $r_{23.1}$ = $\dfrac{r_{23} - r_{12} r_{13}}{\sqrt{1 - r_{12}^2} \sqrt{1 - r_{13}^2}}$ = $\dfrac{0.95 - 0.80}{\sqrt{0.08} \sqrt{0.29}}$ =
0.90

1123.
1124.
1125.
1126.
1127.

1128.

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