CHAPTER II

REVIEW OF LITERATURE

The current chapter presents an epitomic version of each of the several studies on taxation in general and personal income taxation in particular and examines them in order to register a record of the selected seminal works in the past, to identify the gap of the study and also to provide further scope for prospective academic advancement in the area. Hence, on basis of the objectives, the present study classifies the related literature into the following three categories:

1. Studies pertaining to the elasticity and buoyancy of taxation,

2. Literature related to burden, progressivity and income distribution, and

3. Works associated with the determinants of tax revenue

1. Studies Pertaining to Elasticity and Buoyancy of Tax Revenue

One of the earliest attempts in this line was made by R.E. Slitor (1948) in his seminal article "The measurement of progressivity and built-in-flexibility" in which he
introduced simple models of measuring both progressivity and built-in-flexibility of tax revenue. He was followed by Mishan and Dicks-Mireaux (1958) who proved that the elasticity can be calculated adopting the cross-section approach, either by using the data of income and tax payable in different slabs in any year or by using the data of income and tax revenue in different states in a country.

L. Cohen (1959) attempted to measure empirically the built-in-flexibility of individual income tax in the United States. The method used by him for this purpose is to multiply the income assessed in different slabs with the effective rates in those slabs in the reference year and arrive at the tax revenue in each year at constant rate structure. The method is otherwise referred to as constant rate structure method of measuring elasticity.

G.S. Sahota (1961) made the earliest attempt in India to estimate the elasticity of personal income tax revenue with respect to urban income as well as national income. He has to his credit the introduction of the concept of "Buoyancy of taxes" which has become a standard concept in the public finance literature every where and more particularly in developing countries. His study differentiated buoyancy with elasticity and suggested that buoyancy can be increased by expanding the tax base,
minimising tax evasion, rationalising the tax rates and tightening up the tax administration. He calculated the tax revenue at constant rate structure by eliminating the effects of changes in the tax rate or tax base. The personal income tax revenue adjusted, is regressed on urban income lagged one year. The equation is

\[ Y = ax^b \]

Where,

- \( Y \) = adjusted tax collection,
- \( x \) = urban income, and
- \( b \) = elasticity.

Kuldip Gulati (1962) came out in his review article, with his estimate of the elasticity of personal income tax with respect of national income in India. His estimate of elasticity was not accurate, as claimed by himself. He did not explain in detail the method adopted by him to calculate the revenue for 1949-50 at the rates prevailing in 1958-59.

A.R. Prest (1962) attempted to measure the sensitivity of the yield of personal income tax in the United Kingdom. His method consists of adjusting the tax collections on the basis of mainly the budget estimates of the influence of changes in the tax rates. John O. Blackburn (1967) related tax rate reductions with growth, progressive taxes, constant
progressivity and also fixed public share. He calculated elasticity adopting the cross section approach using the data of income and tax payable in different slabs in any year. N.M. Singer (1968) used dummy variables in estimating the income-elasticity of state income tax revenue. This dummy variable method is another important method of measuring elasticity of tax revenue which has been developed by the later writers in these lines.

James Cutt (1969) made an estimate of elasticity of personal income tax with respect to national income for two periods 1955-56 to 1960-61 and 1960-61 to 1964-65. He employed the following formula \( \frac{T}{T_0} \times \frac{Y}{Y_0} \) where, \( T \) is the initial level of tax revenue and \( T_0 \) is the change in it and \( Y \) is the initial level of national income and \( Y_0 \) is the change in national income over the period. His estimate showed that the elasticity was 0.496 for the first period and it was 0.654 for the second period.

Vito Tanzi (1969) tried to measure the sensitivity of the federal income tax from cross-section data using a new approach. He adopted cross section approach using the data of income and tax revenue in different states within the country. David Moravetz (1971) in his note on the sensitivity of the yield of personal income tax in the United Kingdom suggested an alternative method. Charles Y.
Mansfield (1972) in his study related to Paraguay on measuring the elasticity and buoyancy of tax system employed a method consisting of adjustment of tax collections on the basis of mainly the budget estimates of the influence of changes in the tax rates.

Nambiar and Rao (1972) have measured income elasticity and incremental rates of state taxes for 15 states covering the period from 1961-62 to 1967-68. The results show that Kerala, Tamil Nadu and Maharastra have been taxing very near to the potential. Assam, Rajasthan and Andhra Pradesh were not taxing their potential, which is attributed for their inability rather than their unwillingness to tax. Punjab, Mysore, Uttar Pradesh and Bihar, which came under middle ranking in their tax collection are also not taxing to their potential. West Bengal is a unique case with an industrially advanced condition with high untaxed potential.

Atul Sarma, Govinda Rao and Radhakrishna (1973) have examined the growth and composition of state taxes, and elasticity and buoyancy of Gujarat state covering the period between 1960-61 and 1970-71. The elasticity and buoyancy of general sales tax, tax on motor spirit, entertainment tax, electricity duty and goods and passengers duties responded more than proportionately to the growth in income. Land revenue and motor vehicles were relatively inelastic,
general sales tax showed highest elasticity of 1.56 and land revenue showed the least.

Nambiar and Joshi (1974) have analysed the elasticity and buoyancy of central taxes in India during 1960-1970. The results showed that the ratio of tax revenue to national income is substantially lower in the developing states than those in the developed states. In central tax structure the role of direct taxes is static or has a declining trend as compared to that of indirect taxes. In addition, union excise duties have registered substantial increase.

Ronald L. Bonnett (1974) had made an empirical study to measure the built-in-flexibility of the progressive income tax in Barbados, West Indies during 1951-52 to 1962-63. The result contradicts the generally held proposition that progressive income taxation generates tax yield that respond elastically with respect to increasing national income. According to him, it is due to the exemption, exclusion and deduction in the income which lowers the elasticity and buoyancy. Moreover, legal provision relating to zero tax below 3000 dollars created a large growth rate. Further, marginal rate of taxation were erratic and at the same time perverse.

with 1950-51 as the base. He estimated the elasticity to be 0.86 for both the years. On the basis of the results obtained he concluded that the personal income tax failed in siphoning off an increasing proportion of national income into public revenues and has not acted as an effective resource mobiliser in India.

Nurun Choudhry (1975) studied the elasticity of West Malaysian income tax system for the period 1961 to 1970. He also used the method which multiplied the income assessed in different slabs with the effective rates in those slabs in a reference year and arrive at the tax revenue in each year at constant rate structure.

Anupam Gupta (1975) estimated the elasticity of personal income tax on the basis of the data of assessed income tax or tax payable. He has used the regression technique involving the use of data of all the years in the period for which elasticity is calculated. The period of the study was from 1951-1965. Log linear regression equations are estimated where the coefficient of the independent variables directly gives the elasticity.

D.K. Srivastava (1975) developed a model for forecasting personal income tax revenue and applied it to Indian data for the period 1961-1973. He arrived at an
estimate of elasticity of income tax revenue with respect to national income. He used the technique of multiple regression and tried different combinations of independent variables to explain the variation in tax revenue. To overcome the problem of multicollinearity he has fitted tax rat functions for different years.

D.N. Dwivedi (1976) in his article had measured elasticity of union excise duty in India. Out of 115 excisable commodities, 35 commodities have been selected for the study. Elasticity and buoyancy for those commodities have been estimated by log linear regression model. He categorised the commodities into four, according to their relevance in consumption, viz., i) essential consumer goods ii) non-essential consumer goods, iii) commercial-cum-consumer goods and iv) intermediate goods. He found that the essential goods responded proportionately to the enhancement of excise duty. He inferred that the lower is the degree of non-essentiality of a commodity, the lower will be the buoyancy of excise revenue. Consumer-cum-commercial goods are highly buoyant and elastic, and they have high revenue potential. The intermediate goods had buoyancy and elasticity higher than unity. On the whole, 21 out of 35 commodities are fairly buoyant and highly elastic and only two commodities have lower buoyancy and elasticity.
M.C. Purohit (1978) empirically analysed the buoyancy and income elasticity of state taxes for all the states in India. The study period was from 1960-61 to 1970-71. The responsiveness of tax has been calculated for estimating both the buoyancy and the income elasticity of state taxes. This has been calculated by proportional adjustment method. The findings showed that Gujarat, Karnataka, Andhra Pradesh, Maharastra, Tamil Nadu, West Bengal, Punjab and Haryana had elastic tax structure. Andhra Pradesh is the only state which falls under the category of under developed state which had income elasticity greater than unity.

Hutton and Lambert (1980) have given an exact formula for calculating the elasticity of income tax and was applied to the United Kingdom for the period from 1973 to 1978. They developed a simplified model of the United Kingdom income tax which enables the variations in elasticity from year to year to be broken down into component indentifiable with income growth and discretionary changes by combining the linear tax schedule for most tax payers with a Pareto distributional assumption for higher rate tax payers.

I.K Khadye (1981) estimated the responsiveness of the tax revenue to national income in India for the period from 1960-61 to 1978-79. He found that the estimated elasticity
was 0.77 for the period 1960-61 to 1974-75, but it was 0.88 for the period 1960-61 to 1978-79.

John Creedy and Norman Gemmel (1982) produced a model capable of indentifying some of the general properties of a progressive income tax system. The model gives schedules of total revenue, effective marginal rates and revenue elasticities as income increases. This allows the effects of discretionary changes in the tax system at different average income levels to be isolated. The study provided a method of examining and comparing various progressive income tax structures. The model was a 'non-linear log-normal' model. It was shown that effective average tax rate schedules are sigmoid in shape. These schedules can be used to identify the effects of discretionary tax changes. The extent to which the revenue elasticity and effective marginal rate vary as mean income varies was examined for a variety of tax structures. It was shown that for each structure the elasticity falls, and effective marginal rate rises, as mean income increases. However, the rate of change varies considerably across tax structures.

Ganti Subramanyam (1983) recommends the use of exponential forms on the specification of tax revenue functions in estimating income elasticity of taxes. His suggestions on 'some implications of the popular approach to
tax elasticity estimating' are useful in developing a new approach to elasticity estimation.

M.M. Sury (1985) examined the elasticity and buoyancy of union excise duty between 1950-51 to 1980-81. He subdivided the period into two sub groups between 1950-51 to 1964-65 and 1965-66 to 1980-81. The estimated elasticity and buoyancy is on the basis of proportional adjustment method. Union excise duty between 1965-66 to 1980-81 had a buoyancy co-efficient of more than unity which shows that union excise revenue grew more than proportionately to national income. But during the same period the elasticity coefficient was less than unity reflecting in a lack of inherent response of union excise revenue to change in national income.

Hunter and Scott (1986) wanted to find empirical support for the fiscal illusion hypothesis by determining whether relatively elastic tax structure explains strong expenditure growth. But they reasoned that if there is evidence that tax rate reductions occur often in states where tax structure is more elastic; then there is indirect evidence that voter tax payers exercise well informed control over the fiscal process.

Ganti Subramanyam, Kamaiah and Swamy (1986) employed past growth rate technique, the simplest of the parametric
method available in the field of tax revenue forecasting. They called it 'Black Box' approach. It projects the future values of a given variable based on its compound growth rate in the past. They found that the income elasticity methodology constitutes an attempt to transform the alleged cause-and-effect relationship of the theoretical world between the tax yield and its base into the stylized forms of buoyancies and elasticities of the empirical world of tax forecasting. But until we succeed in rigorously establishing the pervasive character and durable nature of the tax base and state income relationship, the income elasticity methodology would remain as no more than an instrument of pure prediction devoid of any explanatory power.

Ganti Subramanyam and Balaiah (1986) in another article narrate in detail the superiority of Divisia Index method in estimating tax elasticity. They explain in detail the other three methods of estimating elasticity and buoyancy and empirically prove that the Divisia index method is very reliable particularly in identifying discretionary measures.

Krishna Rao (1987) attempted to estimate the elasticity of personal income tax on the basis of time series data. The period chosen by him was from 1953-54 to 1974-75. He used the data of assessed personal income tax or tax
payable. He employed the following equation to estimate the elasticities:

\[ \log Y = \log a + b_1 \log X_1 + b_2 \log X_2 + \ldots + b_n \log X_n + e \]

Where,

- \( Y \) = dependent variable,
- \( X_1, X_2, \ldots, X_n \) = independent variables,
- \( b_1, b_2, \ldots, b_n \) = elasticities of the corresponding variables, and
- \( e \) = error term.

He also estimated the elasticity of personal income tax based on cross section data, almost in the line of Vito Tanzi (1969), who estimated the elasticity of personal income tax in United States of America on the basis of the data of different states. Krishna Rao's estimates showed that there is considerable difference between results of time series data and cross section data. But he did not satisfactorily explain the causes for such a difference.

Parthasarathi Shome (1988) concentrated on the study of buoyancy and elasticity of the tax systems of developing countries with particular reference to Asia. He discusses the impediment of an traumatic response and elasticity of taxes revenue to economic growth. He presents a framework
for estimating the buoyancy and elasticity of taxes and then provides some estimates of these measures from selected Asian economies. He argued that there is some built-in-flexibility in raising the elasticity of a typical tax system. He also recommends some measures for improving the system, such as sustained expansion of coverage, judicious use of differentiated rates, regular adjustment for inflation, minimisation of collection lags and increased utilisation of withholding of presumptive taxation.

Pawan K. Aggarwal (1989) made a study relating income inequality and elasticity of Indian personal income tax. He suggested modification of the constant rate base method of estimating elasticity based on data grouped by income classes and quantified the effect of a change in inequality in the distribution of income on the yield of personal income tax. The study revealed that during 1966-67 to 1983-84, inequality in taxable income was marked by a declining trend and this has substantial negative impact on elasticity of the tax. Had the inequality remained unchanged, elasticity of the tax with respect to gross domestic product would have been around 1.33 instead of 1.04. He came out with an opinion that the government policies directed at mitigating inequality in distribution of income seem to dampen growth of yield of the personal income tax. This
perhaps was an important factor in forecasting the tax yield, according to the study.

Kanneth V. Greene and Brian Hawley (1990) addressed their study towards fly paper effect, debt illusion, renter illusion, the complexity of the tax structure and its income elasticity. He established that if there is fiscal illusion, high elasticity of tax will not lead to tax rate reduction. The improved measure of income tax elasticities reveal a positive and significant effect on the likelihood that states will cut their income tax rates. When one controls for the effect of the relative burden of the personal income, it too has marginally significant positive effect on the likelihood of tax reduction and shows doubt on the thesis that fiscal illusion due to high tax elasticities can substantially overstand the size of the public sector. He indicated that there is a limit beyond which automatic tax increase built into a system through progressive income taxation can serve the interests of Leviathan.

Pawan K. Aggarwal (1991a) estimated sensitivity of the personal income tax at three widely different rate schedules for a given period, in India. Sensitivity of the tax is measured in terms of partial a well as total elasticities of the tax with respect to both the national income and taxable income of the income tax payers. The study suggests that
substantial reductions in the high marginal tax rates adopted in some countries, need not necessarily affect the sensitivity of the tax. It also shows that large reductions in the high marginal tax rate in India during the mid seventies and early eighties have had no significant impact on the sensitivity of the tax.

Pawan K. Aggarwal (1991b) in another attempt to correlate income inequality and elasticity of personal income tax, found that during 1966-67 to 1983-84 inequality in taxable income was marked by a declining trend and this had substantial negative impact on elasticity of the personal income tax. A rise (decline) in the inequality increases (decreases) the tax yield. The negative impact of inequality in income distribution on the tax yield has implications for forecasting the tax yield. If the inequality in income distribution can be held constant, then the total elasticity of the personal income tax with respect to gross domestic product can be taken to be around 1.33 and if it is expected to decline at a rate lower than in the reference period, then it would be in the range of 1.04 to 1.33. Further, if the inequality is expected to decline at a rate higher than that then the elasticity of the tax may be well below 1.04.
G.S. Sahota (1991) examined the tax payer responsiveness to change in income tax rates in India. Tax payer responsiveness to changes in tax rates is computed by separating it out from the effects of dynamic progressivity, the income growth effect, and the technical (as distinguished from behavioural) effect of the tax rate changes. Year-to-year calculations of responsiveness thus calculated for three decades, from 1961 through 1989 for India, produced an overwhelming evidence of a negative relationship between tax payer responsiveness and changes in the rates. A sensible prediction from this finding is that revenue will probably increase with further cuts in the marginal tax rates at the upper end. A top marginal tax rate not exceeding 40 per cent, a rate suggested in several writings by Dr. Chelliah for India, finds ample support from the findings of the study. The indicated tax payer response is consistent with received theory.

Sham Bhat and Kannabiran (1992) estimated elasticity and buoyancy of tax revenue in Tamil Nadu employing Divisia index approach. They found that during the period of 1965-66 to 1988-89, taxes such as land tax, state excise, sales tax and entertainment tax are largely buoyant and elastic constituting 81.8 per cent of the total tax revenue in Tamil Nadu. Further, discretionary measures taken by the government of Tamil Nadu had a negative influence on the tax
revenue except the state excise and sales tax. Hence, it calls for taking more efforts to improve administration of taxes so as to realise all the potential tax revenue instead of depending on the centre to meet the growing demands of state expenditure.

2. Literature Related to Burden and Distribution of Tax

Kautilya (4th century B.C.) who was the Chief Minister of Chandragupta Maurya (who ruled the mighty Indian empire in the fourth century B.C.) brought out the ever first treatise on economic ideas in India. His Arthashastra is a collection of political and economic ideas and it contains rare ideas on public finance. According to him tax was regarded as one of the most important sources of state revenue. The rate of tax was determined by the public authority according to the dictates of the Hindu religion. Taxes were levied very cautiously, not to prove a heavy burden on the tax payers. "The tax system should be such as not to prove a great burden on the public, the king should act like the bee which collects honey without inconveniencing the plant". The two principles that were followed in connection with the realisation of taxes were:
(i) A tax should be levied once a year, and should not prove burdensome, (ii) Taxes should be levied according to the ability to pay. Wealthy persons who had to contribute more
towards the expenses of the state, were respected and given a prominent place in the society. In so far as the sources of revenue are concerned, these included taxes on land, forests, monopoly property, customs and excise duties, fines, profits from state monopolies etc. It should be added that Kautilya favoured the income from the participation of the state in industries rather than the income through taxes because the state it was less burdensome (Srivastava, 1970).

Adam Smith (1776) explained the principles of taxation. His canon of equality underlines the principle of equity. He says: "The subjects of every state ought to contribute towards the support of the government, as nearly as possible, in proportion of their respective abilities, that is; in proportion to the revenue which they respectively enjoy under the protection of the state." It implies that a person should be taxed on the proportional rates of taxation. At another place he pointed out that richer citizens should not only pay in proportion to their wealth, but more than that proportion, which means progressive taxation.

Seligman (1894) advocated the theory of marginal sacrifice and suggested for an exemption limit for "socially necessary expenses". By giving exemption to the low income
class of tax payers, the state can tax the high income class progressively to satisfy the principle of equity.

J.S. Mill (1896) argued for exemption of subsistence income because it is necessary to provide the individual with the requisites of life and health and with protection against habitual bodily suffering but not with indulgence. Mill substantiates that people below certain level of income should be exempt from taxes, since their marginal sacrifice by taxation is very high.

Henry C. Simons (1938) observed that the case of drastic progression must be rested on the case against inequality - on the ethical and aesthetic judgment that prevailing distribution of wealth and income reveals a degree of inequality which is distinctly evil or unlovely.

Elmer D. Fagan (1938) and S.J. Chapman (1943) studied the elements of progressive taxation related to United states of America and critically examined various contemporary theories present in their days. Chapman made an additional attempt to study the utility of income taxation and its progressivity.

William Vickrey (1947) suggested large number of slabs of income ranges each having smaller width, particularly at the lower income ranges. The size should be evenly
graduated and it is appropriate that the ratio of the upper limit of each bracket to the lower limit fluctuate as little and as smoothly as possible, from one bracket to the next. The ratio may be fairly steady or show a rising or falling trend with the tax base. Unnecessary sudden jumps should be avoided he added.

Lutz (1947) and later Harold Grooves (1948) examined the rate structure of the taxation in relation to distribution aspect of such taxation. Lutz wrote in the context of the American economy that a few large fortunes would appear to be small price to pay to gain the full benefit for all the creative and productive capacity which can be stimulated most effectively and most certainly by allowing those who succeed to keep the fruits of their success. Grooves observed that high marginal tax rates have to be avoided in a developing economy in order to achieve rapid economic growth. He said that taxation is like dairy farming not meat production, it should milk the cow but should draw the line at killing off the animal.

Musgrave and Thin (1948) examined the income tax progression for the period from 1929 to 1948. They distinguished four types of local measures of progression, (i) average rate progression, (ii) marginal rate progression (iii) liability progression and (iv) residual income
progression. In addition to these local measures, they also introduced a global measure of progression called 'effective progression'. This method measures the extent to which a given tax structure results in a shift in the distribution of income towards equality. It is equal to the ratio between the co-efficient of equality of the distribution of income after tax and the coefficient of equality before tax.

Commenting on burden, Dalton (1954) suggested a global measure of the degree of progression based on the dispersion of the average tax rates at different levels of income. He also suggested another global measures of the degree of progression of the rate structure on its effect on the inequalities of incomes.

Musgrave (1959) examined the relation between the progressivity and economic growth. Economic growth depends on multiple factors such as quantity and quality of work effort, rate of capital formation which in turn depends on rate of saving and investment. The rates of tax applicable to different levels of income influence these determinants of growth. He adds that tax rates may not affect apriori the incentives to save and invest. It all depends on the strength of the income distribution before and after taxation.
Radhika Dass (1966) maintained that it was only after the advent of socialist thinking the tax on income occupied its prominence. In socialist countries redistribution of income is mainly brought about by direct methods and not through taxation. China does not have a tax on income. In Soviet it does not yield more than ten per cent of total revenues. Therefore, the progressivity and distribution aspect of tax has its own role only in capitalist countries.

Sabine (1966) indicated that when Pitt introduced income tax in 1799, he had proposed graduated tax. The idea was nothing but the equity aspect, burden and redistribution.

Ved P. Gandhi (1970) made a study in the area of personal income taxation and income distribution for the period 1950-51 to 1963-64. He calculated the tax payable as a percentage of the assessed income of individuals for the said years. He found that this percentage to be declining over the years and came to the conclusion that the income tax as a tool for controlling the growth in income inequalities has become less effective to-day than it was a decade and half ago. He also proved that the personal income tax was less effective as an equity measure.

Atkinson (1970) came out with some theoretical suggestions on the measurement of inequality, which was
developed by Mirlees (1971) in his seminal attempt 'An exploration in the theory of optimal income taxation'. Relevant tools were developed and employed by Allingham and Sandmo (1972) and Sheshinski (1972). Due acknowledgment is given to the above writers by Sen (1973), in the areas of measurement of inequality and distribution aspect of personal income tax at the global level.

Bardhan (1974) conducted a study on the pattern of income distribution in India. His study was supplemented by Srinivasan (1974) on similar lines. Their findings revealed that there were inequalities in income distribution and they have to be tackled by proper fiscal policy of the government, in addition to other policy measures such as land reforms, ceiling of property, industrial policy and pricing and distribution. According to them fiscal policy is the most effective instrument to bring about the income distribution. Kakwani (1977) studied the trends in tax progressivity in Australia, Canada, the United Kingdom and United states. He found that tax progressivity has declined in all the four countries during the period of analysis and that amongst these countries, there is a substantial variation in the tax progressivity.

Anupam Gupta and Pawan Aggarwal (1982) measured distribution of income and incidence of income tax in India
for the period from 1953-54 to 1976-77. In equality in income after tax depends on inequality in income before tax, besides the effective tax rate and the progressivity of income tax structure. They employed Kakwani and Lorenz ratios. Their study showed that the distribution of gross income among the individual assessees tended towards greater equality in the study period. They also indicated that changes in distribution of gross income of the assessees do not provide any idea about changes in the distribution of income in the country as such, because with inflation, new assessees come under taxation and with an upward revision of exemption limit a certain number of people go out of the tax paying group. The progressivity of the tax on individual does not show any clear trend of increase or decrease. However, the results indicated that the efficiency of the personal income tax in reducing the concentration of income among the assessees only marginally increased in course of time.

Formby and Sykes (1984) studied the trends in progressivity of personal income taxes in selected states of the United States of America. They have shown that almost all the decline in the tax progressivity in North Carolina can be explained in terms of inflation, real growth in per capita income ad the binary variables representing the tax changes.
Ch. Krishna Rao (1987) examined the impact of personal income tax and income distribution in India during the period 1953-54 to 1974-75. The concentration ratios developed by him provided a clear picture of the changing effectiveness of income tax as a redistributive measure. It shows a varying trend. There was a declining trend in the ratio upto 1968-69. Since then the trend has reversed with the ratio increasing upto 1971-72 but reaching a level in 1972-73 and 1974-75. He related the varying trend of the concentration ratio with respective governments in power at the centre during the study period. He concluded that the income tax proved to be more effective instrument of reducing the inequalities of income among the income tax payers particularly during the year 1974-75.

Shekhar Mehta (1989) examined the relation between the tax evasion and income distribution. It is often argued that the tax evasion is responsible for worsening income distribution. Tax evasion may improve vertical equity among income brackets if the evasion is more widespread in lower income brackets than in higher income brackets. Opening with an objective to test the above hypothesis he arrives at a conclusion that evasion may either improve or worsen vertical equality contrary to the expectations. Further, the analysis showed that the effects of evasion on income
distribution depend firstly, on the prevailing pre-tax and pre-evasion income distribution; secondly on the proportion of tax evaded by different income groups; and thirdly, on government policy regarding the distribution of transfer payments among different income groups. In addition, it may be noted that evasion does not adversely affect horizontal equity in all cases.

Pulin B. Nayak and Satya Paul (1989) examined the structure of personal income tax in India and their redistributive effects with alternative income tax schedules. Their study revealed that the personal income tax in India has been indeed progressive. Since personal income tax covers less than one per cent of the total population, there are obvious limits with which the personal income tax may be expected to play the redistributive role. It is very effective with honest people and is the least effective under parallel economy in operation.

Pawan K. Aggarwal (1989) in his study brought inequality and elasticity into relation. His study reveals that during 1966-67 to 1983-84 inequality in taxable income was marked by a declining trend and this had substantial negative impact on elasticity of the tax. Had the inequality remained unchanged, elasticity of the tax with respect of gross domestic product would have been greater.
Pawan K. Aggarwal (1990a) in his empirical analysis presented a model to isolate empirically the effect of income inequality from the effect of tax parameters, on the redistributive impact of personal income tax. Inequality in the distribution of income is found to significantly influence distributive impact of the tax. For a given tax structure, a rise (fall) in inequality in the distribution of income increases (decreased) redistributive impact of the tax. Similarly, for a given distribution of income a rise (fall) in tax level or tax progressivity increases (decreases) redistributive impact of the tax. The study upheld that during 1961-62 to 1983-84, while the decline in tax progressivity and income inequality among the tax payers have tended to decrease, the rise in tax level has tended to increase the redistributive impact of the Indian personal income tax.

In another attempt Pawan K. Aggarwal (1990b) introduced a new measure and explored applications of local measures in tax design. The study suggested specific forms of tax design or structure which on equi-proportional change in pre-tax incomes of all the tax payers would result in desired effects on redistributive impact of the tax. It also provided a technique to neutralise the resultant change in the redistributive impact of the tax.
John Formby, James Smith and Paul Thistle (1990) re-examined the controversy that existed over the last decade on the measurement of global tax progressivity. They found that the debate did not reflect irrevocable conceptual differences but was a consequence of the failure to fully recognise the role of average tax burden on the relationship between global progressivity and welfare. They demonstrated that controlling the effects of tax height plays a critical role in the welfare analysis of taxes. They showed that once the average tax burden was properly controlled for, the Dalton/Musgrave-Thin and Kakwani/Suits approaches to global tax progressivity measures must rank tax systems consistently with one another and with welfare theory. If the welfare effect of tax heights are not controlled, the two approaches are neither consistent with each other nor fully consistent with welfare theory.

Thomas Stratman (1990) derived implications from Atkinson's measures of inequality of equally distributed equivalent income. He diagrammatically represented inequality in several dimension using Lorenz curves. This technique allows us to judge which distribution associated with crossing Lorenz curves in preferably to society in terms of total welfare.
John Fitzgerald and Tim Maloney (1990) studied the impact of Federal income taxes and cash transfers on the distribution of lifetime household income for the period 1969-1981. The study used longitudinal sample of stable household to assess the impact of federal taxes and cash transfers. After controlling the upward movement in age-income profile across birth year cohorts, earned lifetime incomes are found to be more equally distributed than earned incomes. The overall tax and transfers system is found to have a larger redistributive effect on lifetime incomes. While taxes are relatively more important than transfers in reducing lifetime income inequality among married couple, the opposite is true for single-headed households. Taxes and transfers also redistribute lifetime income from married couples to single headed households.

Pawan K. Aggarwal (1991a) proposed a new global measures of tax progressivity in terms of inequality index of pre-tax income and tax defined on the basis of concept of equally distributed equivalent level of income. It is found invariant to tax scale. The new measure seems more suitable as a measure of tax progressivity or graduation in the tax schedule. The new measure is found to help in understanding changes in redistributive impact of the tax. The study revealed that comparison of tax progressivity or redistributive impact over time or across different tax
schedules had to be associated with measures of progressivity or the welfare function associated with the relevant inequality indices.

In another study on the New Hybrid measure of Tax Progressivity Pawan K. Aggarwal (1991b) proposed a new measure called relative tax share progressivity measure. He insisted that it was as simple and informative as the existing relative income share progressivity measure. The two measures were complementary. The new measure could be used in comparing tax progressivity of different tax structures. It helps in better understanding of the redistributive impact of a tax schedule.

In yet another attempt Pawan K. Aggarwal (1992) suggested two models for isolating empirically the effects of the income inequality and the tax parameters from their combined effect on the progressivity of real world personal income taxes. The inequality in the distribution of income and the graduation in the tax rates are found significantly influencing the progressivity of the tax. It is depicted that in an economy with low or high level of income inequality, income redistribution policies would lead to greater changes in the progressivity of the tax compared to that in an economy with moderate level of income inequality. In an economy with higher level of graduation in the tax
rates, a further increase in the graduation will not enhance the progressivity. Therefore, the developing countries cannot rely much on the steep graduation in the tax rates for their economic reforms.

Government of India (1992) Tax Reforms committee's final report observed that evasion of tax by particular sections of potential tax payers was an important cause of inequity. There are inequities between honest and dishonest tax payers and between those who mainly receive monetary salaries on the one hand and others with prerequisites on the other hand. Several anomalies and inequities are inherent in the tax structure and interaction of the progressive system with inflation in any case causes inequities and disincentives that need to be minimised.

Raja Chelliah (1994) observes that although direct taxes formed less than three per cent of gross domestic product, they exerted a profound influence on economic decisions. The impact of the direct taxes on the economy was disproportionate to their relatively small share in total tax revenue. The system of direct taxation was unnecessarily complicated, deficient in terms of horizontal equity and destructive of incentive, because of high combined marginal rates of personal income and wealth taxation. Erosion of horizontal equity arose through
unjustified concessions, provision of tax shelters in the form of untaxed perquisites and weak enforcement which made it possible for a large section of the tax payable population to get away with no or little payment of tax.

Amaresh Bagchi (1995) in his suggestion in strengthening direct taxes noted with strong emotions that the revenue from direct taxes has shown impressive growth. The ratio of direct taxes collection to gross domestic product in India is still poor with that in other developing countries. Rough calculations suggest that the 'tax gap' continues to be quite large and the personal income tax is able to capture only about 50 per cent of its potential. The tax reforms committee has laid out a two-pronged strategy to improve the yield of income tax - widening the tax base combined with moderation in rates on the one hand and strengthening the administration on the other. Several measures have been taken to implement these recommendations, but much still remains to be done.

3. Works Associated with Determinants of Tax Revenue

One of the pioneering attempts was made by Williamson (1961), who related the difference in revenue share in Gross Domestic Product across countries to their respective levels of development as represented by the per capita income.
The validity of per capita income as the most important determinant in the context of developing countries was questioned by Hinrichs (1966). His analysis was multiple regression equation covering a period from 1957 to 1960 for sixty countries. He contended that it is the degree of openness as measured by the ratio of imports to Gross National Product which is a more relevant determinant of tax revenue in these countries.

Thorn (1967) used a sample of 32 countries where he found out that the per capita income to be significant determinant of the Tax ratio. Further, he found that import ratio to be an insignificant determinant. In addition, he used dummy variables to show that revenue share to Gross National Product was greater for former British colonies and smaller for highly decentralised government structure regardless of the level of their per capita income and import ratio which he attributed for 'cultural style'.

Musgrave (1969) in his empirical analysis took a sample of forty countries with different levels of per capita income to investigate the determinants of tax ratio. He used a five yearly average data for the period 1953-1958. The dependent variable was tax revenue as a ratio of Gross National Product and regressed it on per capita income and openness of the economy. For the group of countries as a
whole, he found that the per capita income had a significant explanatory power for tax revenue but for low income countries (less than 300 dollars), per capita income and degree of openness did not give a good fit. Regarding the structure of tax revenues he was of the view that there is a close relationship between tax structure and available bases particularly in the early stages of development. He proved the hypothesis that the ratio of indirect taxes was related inversely to per capita income.

Weiss J. Steran (1969) examined the determinants of revenue share by including urbanisation, literacy rate, percentage of employment in agriculture, index of degree of mass communication, and socio-political and cultural factors represented by dummy variables as the independent variables. The findings showed that general cultural homogeneity and a relatively representative political system had a significant positive impact on the revenue share.

Based on data for the period 1964-65 to 1968-69, Nambiar and Govinda Rao (1972) made a study of the important variables influencing tax revenue represented by GNP in 30 developing countries. The explanatory variables included were per capita income, degree of openness and degree of monetisation of the country. The analysis indicated the degree of monetisation to be the major determinant, with the
influence of the remaining variable being weak on revenue share of these countries.

Sarma, Rao and Radhakrishna (1973) examined the determinants of individual taxes in Gujarat state, covering a period 1960-61 to 1970-71. The independent variables considered for the analysis were state income, agricultural income, non-agricultural income, income from industrial sector, number of motor vehicles on road and legislative changes represented by dummy variable. The results revealed the following - Variations in land revenue were more explained by income from agricultural sector. The major determinant of general sales tax was income from industrial and non-agricultural sectors. The number of motor vehicles on road was the major determinant of motor vehicles tax revenue. Non-agricultural income and number of cinema halls had greater influence on entertainment tax. However, the impact of legislative changes on the revenue from the various taxes was significant in all cases.

M.C. Purohit (1978) has examined the determinants of tax revenue explaining the variations in tax yield in India. The study relates agricultural income tax and land revenue to state income from agriculture. General sales tax has been related to the state income from industrial sector and to the state income from non-agricultural sector. Goods and
passengers tax to the state income from transport sector and to the number of motor vehicles in the state. Motor vehicles tax has been related to the state income from non-agricultural sector and to the number of motor vehicles. Entertainment tax has been related to the state income from non-agricultural sector. Electricity duty has been related to the consumption of electricity. In order to analyse the legislative changes, dummy variable had been introduced. Agricultural income tax and land revenue were better explained by income originated from the agricultural sector. But the sales tax on motor spirit were better explained by income originating from non-agricultural sector. Passenger and goods tax had a closer relationship with the income originating from the transport sector. However, the relationship was still closer with the number of motor vehicles registered in the state. Motor vehicles tax was more related to non-agricultural income than compared to total state income. It was still more directly related with number of vehicles. Entertainment tax and electricity duty were better explained by state income. The introduction of dummy variable did not have significant impact on any tax.

The impact of the ideological leanings and stability of political parties in power on revenue from selected individual taxes was examined by Govinda Rao (1979) in the
context of four Indian states, viz., Kerala, Karnataka, Orissa and West Bengal. The data used ranged between 1951-52 to 1971-72 for Orissa and West Bengal and 1957-58 to 1971-72 for Kerala and Karnataka. The independent variables included were primary sectoral contribution, per capita income, consumer price index and political parties. The findings demonstrated that party's ideological leanings had insignificant influence on tax revenue. Besides, more stable state governments were able to exert higher tax efforts on the people.

M.M. Ansari (1982) attempted to identify the determinants of tax ratio of less developed countries. The determinant factors taken into account for this study are real Gross Domestic Product, size of overseas trade measured by the share of exports plus imports in National income and the demographic pressure measured by the density of population. His main conclusion is that the three explanatory variables such as real per capita Gross Domestic Product, size of overseas trade and measure of demographic conditions could explain differences in the inter-country tax ratios to a significant extent as compared to earlier studies. While the coefficients had the expected sign and where generally significant at one per cent level of confidence. The density of population showed the expected negative sign and it is significant at one per cent level,
it emerged inversely related to the efforts made by the countries in exploiting the existing taxable capacity which is contrary to our priori reasoning.

Charles T. Clotfelter (1983) investigates the relationship between marginal tax rates and tax evasion. The data set used in this paper is internal revenue service's Tax Payer Compliance Measurement Programme (TCMP) survey for 1969, consists of observations of actual tax return data of individuals. The findings suggest that marginal tax rates have a significant effect on the amount of tax evasion. Further, results suggest that tax rates should be considered along with enforcement, tax simplicity and information reporting as valid instruments for influencing tax evasion.

Edgar K. Browning (1989) developed a theoretical analysis of the responsiveness of tax revenue to a change of tax rates on labour income. The model incorporates three features and they are progressive change in marginal tax rates, non-comprehensive tax base and presence of capital income tax. The central finding is that tax revenue is likely to be less responsive to higher tax rates.

Similar observations were made by Sham Bhat and Nirmala (1993) in their study of political economy of tax revenue
determinants in 22 Indian states. The study was for the financial year 1988-89. Ten independent variables were taken into account to separately identify the important determinants of five main items of per capita tax revenue, viz., a) total tax revenue, b) states' own tax revenue c) share in central tax revenue, d) tax revenue from property and capital transaction and e) tax revenue from commodities and services. The states covered in the study were 22 and the study did not include newly formed states. The analysis reveals that per capita debt, percentage of urban population to total population, per capita income and per capita expenditure have a positive influence on per capita tax revenue, while the percentage of Scheduled caste and Scheduled Tribe population in total population has a negative impact. The effect of such variables was similar on per capita state's own tax revenue. The state's per capita share in central taxes tends to increase with a rise in its per capita debt, percentage of Scheduled Caste and Scheduled Tribe population in total population and per capita expenditure, which is likely to decrease with an increase in per capita grants, primary sectoral contribution and per capita income. Tax on property and capital transaction responded positively to a rise in per capita grants, while its response to a decline in literacy rate and percentage of Scheduled Caste and Scheduled Tribe population
in total population emerged negative. The study also found that the political party in power is not found to be a significant determinant of the states' tax revenue and that although the ideologies of the political parties differ from one another, they have little impact on the determination of tax revenue in practice.

Concluding Remarks

The current chapter presented a concise examination of the several generative literature that emerged over the years in the field of taxation in general and personal income taxation, in particular. The review is classified into three groups - studies pertaining to elasticity and buoyancy of taxation, literature related to burden and distribution of tax and works associated with determinants of tax revenue.

Studies related to elasticity and buoyancy traced back to 1948, when the term 'built-in-flexibility' was used in the place of elasticity. It was Sahota who introduced the concept of buoyancy of taxes first in 1961. Though the earliest work on 'built-in-flexibility' was related to personal income tax, there were works available on the income elasticity of other taxes as well. Following Sahota, several attempts were made in India to study the elasticity and buoyancy of personal income tax in the country.
However, these studies did not employ the most reliable Divisia index method to estimate the elasticity and buoyancy of personal income taxation in India and they did not take into account the influence of structural changes in the political economy of the country on elasticity and buoyancy of personal income tax.

Literature related to burden and distribution of tax is available since 4th century B.C. Kautilya's Arthashastra is a monumental work on public finance and burden of taxation. In modern days, several seminal attempts have been made in the area of measuring the burden of income distribution of personal income taxation. However, these works confined themselves to analysis of the burden and income distribution in respect of total personal income tax payable over the years. They did not satisfactorily explain average and marginal tax burdens across different income ranges, the study of which is very academically rewarding in the modern context. Similarly, no attempt was made in the earlier works to bring the impact of structural and political factors in relation to changing burden of personal income taxation. Besides, attempts pertaining to the determinants of impact of personal income taxation on distribution of income, which are immensely useful from the policy point of view were not also made.
The works associated with determinants of tax revenue are mostly general and very few studies are available in the area of personal income taxation and their determinants. Besides, multiple explanatory variables that include socio-economic, demographic and political factors, were not reasonably linked with the study of the determinants of personal income tax revenue.

In the light of the above gaps in the study of personal income taxation, the present study meticulously prepared the ground for a satisfactory and relatively more fruitful analysis of the personal income taxation in India. In the following chapters, a sincere attempt is made to present the above mentioned unexposed dimensions of personal income taxation in India by employing more appropriate and reliable tools available.
REFERENCES


