INTRODUCTION

1 Tax Evasion and Compliance: The Genesis

In today's world, every individual is affected in one way or the other by the tax policy followed by his government. Tax policy and its closely related issues are very sensitive and crucial for the government as well as its citizens. Politically and economically, few issues are as important and thought provoking as the taxation and its enforcement. In early times the role of a State or the government was of very limited nature. It was generally confined to safeguarding of its territorial boundary and maintenance of law and order within its territory. These days, a government besides the above mentioned functions needs to undertake many developmental projects and welfare schemes for its citizens. The scope of the government in modern times, has indeed enlarged tremendously. Obviously, the governments need huge funds and resources to finance the program of public expenditure and transfer they wish to carry out. Successful resource mobilization, especially through a good tax policy and its effective implementation has become the
critical need of every government. Many governments, in recent times, using various new formulations and policy measures have tried to meet this need. In fact, quite evidently tax collections have increased manifold in many countries.\(^1\) There seems to be a general belief amongst quite a few economists and researchers that the increase in the scope of government and its large tax revenue collection have produced a tax revolt, higher levels of tax evasion, a growth in the underground economy and a welfare back-lash.\(^2\)

In many countries, the phenomenon of tax evasion and its allied activities has become so conspicuous and is operating at such an alarming scale that it has started threatening the normal functioning of the system. Not surprisingly, the tax evasion issue has, in recent times, hogged many a headlines and captured the center-stage of the minds of many scholars and state governments.

Song and Yarbrough (1978, p.442) have expressed very aptly the popular and cynical attitude of the people towards the effort and actual rise in the revenue collection of the government in the following words: "Remote and intangible government benefits, vast as they may be are less likely to be appreciated than the immediate benefits individuals receive for their money in the private market". Kolm (1973)\(^3\) also considers the above attitude to be one of the main reasons for the widespread presence of tax evasion in many (especially Latin American) economies. Cowell
(1990) attributes the above attitude to the prevalence of a kind of myopic self-centered rationality amongst the people. Seeing the basic tendency and general attitude of individuals wanting to be free-riders, Cowell (1990, p.38) warns, "Unless the community develops powerful social codes or institutions to correct it, this myopia will lead to anti-social behavior even in a community of like minded individuals; it is likely to be exacerbated in a community formed of uneasy coalitions of individuals with different tastes, resources and aspirations". Certainly, a government which relies mainly on tax revenue for its funding will be hard-pressed for funds if tax evasion is rampant in that society. Listhaug and Miller (1985, p.266) had rightly pointed out that the ability of the government would be under tremendous stress if majority of the citizens participate in illegal activities aimed at avoiding the payment of taxes that are legally due to the government. Tax evasion, besides harming the interests of the general public at large, also impairs the means by which the State can look after its citizens interests.

One school of thought gives a rational explanation for the way in which the public responds to taxation. According to it, people react to the objective elements of taxation politics. Their argument assumes that the resistance to taxation represents a rational process by which the individuals weigh their tax burdens against the benefits
received from the government. People are assumed to be aware of taxation levels or rates and when the scales start tipping against them, they become adverse to it and start resisting.

Another school, the Symbolic Politics school of thought, treats the tax revolts as the result of "more enduring ideological predispositions, disaffection from politics in general and the result of social mobilization by the anti-government protagonist" (Listhaug-Miller, p.266). This school is of the opinion that those who resist taxation, not necessarily have understood the issue of taxation nor their act was to maximize their personal utilities in the short run. Listhaug and Miller (1985) provides a strong support for the Symbolic Politics model. In their study, it was also found that political attitudes and values have their strongest and most consistent impact among the politically uninvolved which further substantiated the Symbolic Politics model.

The self-interest rational model predicts that negative attitudes towards taxes will be higher in countries where the level of taxation is higher. Tax cheating would be seen as both an instrumental means of protesting against taxes which the citizens see as unacceptably high and as an escape from such an excessive taxation. Mason-Calvin (1984) in a survey study found that a higher proportion of dissatisfied honest taxpayers believed that people cheat because taxes
are too high.

In the absence of intolerable authoritarianism or in a tax system based largely on voluntary compliance, taxation operates through a kind of social consent. Voluntary compliance, including self-assessment of taxation obligations and eventual payment is in Song-Yarbrough’s (1978, p.444) viewpoint, largely determined by three factors: "the overall legal environment, the citizen’s tax ethics and other situational factors operating at a particular time and place". According to them, the overall legal environment would in turn be structured by legitimacy of the laws of the state, the effectiveness of the law enforcement process and the citizen’s understanding and acceptance of legal obligations. One can expect citizens to get involved in a relatively higher degree of voluntary compliance in a system of high tax ethics. The role or the significance of tax ethics in the tax compliance also comes out clearly in Thurman’s (1991) work. In fact those who lay great stress on existing social ethics for the smooth functioning of a tax system are of the opinion that no amount of effort on enforcement will be sufficient or fruitful in an economy of low tax ethics where majority of the citizens are already evading taxes. According to them, the first and foremost task cut-out for the authority in such circumstances should be to clean up the social environment and raise the standards of prevailing tax ethics.
and then go for other measures of enforcement. The situational factors which may influence compliance level include level of income, the unemployment rate, tax rate, the existing penalty system, the effectiveness of the tax administration, etc.

Very often the majority of the citizens, in public, might genuinely support the government's public economic framework. But in pursuance of their own private interests, those very citizens act or try to act contrary to their public personality. They neglect the public purse in spite of knowing that they would be the ultimate beneficiaries of it. In this context, Cowell (1990) remarked that consent (or willingness to pay) should therefore be buttressed by routine policing of the citizenry on behalf of their own interests. In fact, many people see the fear of detection and subsequent prosecution for evasion to be one of the main factors which induce people to comply to tax laws. Mason-Calvin (1989) believed that both satisfied and dissatisfied taxpayers remain honest from the fear of getting apprehended and prosecuted. Rodgers found that among students responding positively to the question, "Do you think people should always obey the law?", two-thirds of the students based their behavior on punishment avoidance or rule-conformity considerations rather than on an internalized ethical standard governing their compliance (Song-Yarbrough, 1978, p.444). If the
above hypothesis is true, one can expect tax evasion to be rampant in a society where majority of its citizens believe that the administration is very inefficient in enforcing tax laws and also immoral in the sense of being hand in glove with the tax cheats. Tittle and Logan (1973, p.371) have emphasized that beliefs in probability of apprehension and certainty of punishment are more important than the sanctions actually imposed. Generally, people do tend to refrain from committing forms of tax evasion, visible or most easily detectable in the auditing process. Henszey-Roadermel (1981), while analyzing state individual tax enforcement procedures, concluded that better enforcement in the form of increasing the severity of criminal penalties and rigorous audit techniques would increase the tax collection.

2 The tax structure and tax compliance
In the ultimate analysis, the emergence and development of tax evasion within an economy may be traceable to the tax structure. But it is often people's perception of their taxes that matters in determining their responses to the fiscal system, rather than the actual base. Along with this is the concept of people's perception of the justice of the prevalent taxes. People's sense of justice may get offended by what they perceive about the tax structure and its unfairness in relation to income, wealth or special needs.
Peacock-Shaw (1982) saw tax compliance to be a function of the perceived equity of the tax system and according to them, if the tax authorities are unable to detect and eradicate evasion, whatever existing compliance level might also get eroded. In such cases the taxpayer's own standpoint in the system, rather than a common concern may be the driving force. The sense of distributional justice gives an additional leverage to other more selfish motives for evading taxes.

The idea that perceived equity in exchange is an important factor in determining behavior is lent credence by StrumpteI's (1969) analysis that positive attitudes towards the tax system, including perception of equity contribute towards tax compliance. Spicer-Becker (1980), in an experimental study, found that in a situation of fiscal inequity, victims of the situation increase their evasion while the beneficiaries decrease theirs. Gerroms-Wilmots (1985) in their work also found evidence supporting the above thought. According to Spicer-Lundstedt (1976), tax evasion may be seen partly as an attempt by some taxpayers to adjust their terms of trade with the government in response to dissatisfaction stemming from a perceived inequity in their terms of trade when compared to other taxpayers. The social stigma attached to evasion activities has also been suggested to be a factor for compliance (Witte-Woodbury, 1983). The degree to which tax evasion is
a stigma or whether it might be a badge of honor is likely to stem from the individual's attitude towards the government's activities financed by the revenue. The work of Schwartz-Orleans (1967) suggests the importance of norms relative to coercion in affecting taxpayer behavior while Vogel's analysis (1974) suggests the importance of groups in the transmission of norms. But Spicer-Hero (1985) did not find any significant influence of the group on taxpayer's behavioral pattern. In their study, they felt the presence of an "availability effect" in the taxpayer's compliance behavior.

The experimental works on tax evasion, undertaken by Friedland-Maital-Rutenberg (1978), Spicer-Becker (1980) and Spicer-Thomas (1982) suggest that tax evasion is higher among those who feel disadvantaged by tax inequalities and who perceive the chances of getting caught as low. Kinsey (1984) in an examination of the data from the Internal Revenue Service - Tax Compliance Measurement Program (IRS-TCMP) found that non-compliance increased in years when the public became less supportive of paying taxes. Mason-Calvin (1984), found evidence of an increase in non-compliance, being accompanied by increased reports of the systems being unfair. Song - Yarbrough (1978) saw that the taxpayer complaint was more about the unequal opportunities being provided to different income groups for reducing the tax burden. The effect of the above situation has been
succinctly captured in a columnist's observation as quoted in Song-Yarbrough (1978, p.451), "Every loophole, every inconsistency, every example of a non-taxpaying millionaire encourages the dutiful American to be a tax cheat. The tax law, with its high rates and its countless subterfuges for avoiding them, has become the greatest corrupter of the citizenry, encouraging the spreading sentiment that it is better to lie, trim and pad than to be a sucker and a pauper".

3 Tax Evasion and Equity
Equity theory [Adams (1963, 1965)] is a psychological and sociological theory that conceptualizes human behavior in a manner whereby social exchanges are equated to economic exchanges in which people are influenced by the ratio of rewards to costs and outcomes to investments. Equity theory posits that individuals feel a sense of equity when the relationship between the individual's inputs and outcomes is in harmony with the equivalent relationship of the inputs and outputs of a comparable persons(s). Basic to the equity theory is the notion of distributive justice. On the question of distribution of tax burden among citizens, there are two leading principles in contention - principle of ability to pay\(^1\) and the benefits received principle. The ability to pay principle calls for a distribution of the tax burden in line with the economic capacity of the taxpayer.
Thus it takes into account both the horizontal and the vertical equity i.e. taxpayers with equal ability to contribute equally while taxpayers with greater ability to contribute more. This approach encompasses the redistributive tax-transfer function. The logical flow from this principle is the progressive tax system. The countries fighting against the malaise of economic disparity amongst its citizens are likely to support this system. The benefit principle calls each taxpayer to contribute in line with the benefits from public services. Thus, this principle links the expenditure and tax sides of the budget policy. But it has the disadvantage of excluding redistributional considerations. Also, it is not readily implemented since evaluation of public services by the consumers is not known to the tax authority but must be resolved through the political process.

Equity theory states that individuals become distressed when they find themselves participating in inequitable relationship (Walter et. al., 1973). Spicer-Becker’s (1980) work on tax compliance found evidence, supporting the theory. Hite (1990) on the other hand, suggested the applicability of the theory only in situations where there is a broad consensus about inequity. Equity perceptions are dependent on personal experiences and situational factors. One’s prior orientation affects the subject’s perception of equity [Carell-Dittrich (1978)]. Vogel (1974) and Hite
(1990) have noted that some people under the disguise of inequitability might rationalize their act of evasion. Whether it is in the context of equity or inequity, the prevalence of tax evasion will undermine public confidence in the tax structure. It is so because firstly a successful tax evader will land up with a higher post-tax income than that of an honest taxpayer, even though their pre-tax ability may have been the same. Secondly, the tax evader who is apprehended is treated differently from the successful tax evader. Thus, both horizontal and vertical equities are violated during tax evasion. Also clearly the differences in opportunities of evasion in different sources of income produces both the types of inequities.

Earlier, tax evasion was viewed as a typical white-collar crime defined by Sutherland (1949, p.9) as "a crime committed by a person of respectability and high social status in the course of his occupation". But it is any sort of income from non-withholding sources (and such incomes are not only confined to a small circle of people of high status or income but is available to a large section of the people) which provides greatest opportunities to be underreported or concealed completely. No doubt, the big non-withholding sources of income is still concentrated in the hands of the affluent, even then one should not overlook the various low paying occupations which also furnish sources of non-withholding income. In fact, Mason-Calvin
(1978) found that higher percentages of people with low income admitted to indulgence in tax-evasion. Evasion was found to be apparently practiced with comparable frequency throughout the occupational hierarchy [Tittle and Villemez (1977)].

4 Tax evasion as Decision making under uncertainty

Gary Becker's (1968) pioneering work on application of economic analysis on crime and punishment was based upon traditional expected utility theory. The economics-of-crime approach was first applied to tax evasion by Allingham-Sandmo (1972). Here, a rational individual is being viewed as weighing the expected utility of the benefits from successful tax evasion with the uncertain prospect of detection and punishment and an individual pays taxes because he or she is afraid of getting caught and fined. The work analyses the behavior of an isolated taxpayer (who is assumed to be a greedy amoral individual) playing a game against nature. In fact, the decision regarding tax evasion for an individual has been worked out as a problem of portfolio choice under uncertainty. This approach permitted an assessment of the partial equilibrium effect of altering the various situational factors/tax parameters (including the tax rate, probability of detection, fines, the income levels on the taxpayer etc.) for evasion. The relation between the compliance level and
the income level of the taxpayer was found to be dependent on the degree of risk-averseness of the individual concerned. The two policy tools of enforcement, the probability of audit and detection and the fine rate were found to be substitutes for each other and an increase in either of them induced a higher reported income. The effect of marginal tax rate on reported income was in general, found to be ambiguous. The explanation was that of the possibility of forces of income effect and substitution effect operating simultaneously in opposite directions and hence there could be a positive or negative effect depending upon the relative strength of the two forces. They also studied an audit system where an apprehended tax evader’s history of compliance is checked till he had last acted honestly or the previous audit and all retroactive penalties are collected. In the above system, a taxpayer starting with a partial declaration was found to be moving towards full declaration.

Since Allingham-Sandmo’s (1972) path-breaking work, a vast literature on tax evasion problem has come up based on their basic model. Amongst the early works in the line of simple portfolio selection are Kolm (1973) Srinivasan (1973), Singh (1973) and Yitzhaki (1974). Amongst the later generations of models with endogenous labor supply, the works of Anderson (1977), Baldry (1979), Isachsen and Strom (1980), Sandmo (1981), Cowell (1985), Watson (1985), Sproule
(1989) and Alm-Bahl-Murray (1990) are the empirical works which have tried to study the basic theoretical propositions thrown up in literature. There is another set of papers which deals with the tax amnesty policy, resorted to by many economies to combat or at least cope up with tax evasion phenomena. The works of Lerman (1986), Crane-Nourzad (1990), Alm-Beck (1990), Andreoni (1991), Malik-Schwab (1991), Stella (1991), Dubin-Graetz-Wilde (1992) are some of the papers which have discussed the economics of tax amnesty.

The mainstream literature on tax evasion (theoretical as well as empirical) have explicitly or implicitly assumed that the tax auditors are all honest lot whereas it is the taxpayers who are the cheats. Virmani (1987) has noted that such a clear "moral" asymmetry is seldom observed in developing countries. There are very few literature which have analysed the tax evasion issue in a corrupt atmosphere. In this regard the following works may be mentioned: Lui (1986), Virmani (1987) Goswami-Gang-Sanyal (1990), Chu (1990).

Now, we shall have a brief look at some of the papers to see the direction along which the basic model has been elaborated and extended and to get to know the main findings.
5 Tax Evasion: Results

(i) Some works in the portfolio choice framework: Srinivasan (1973) studied the case of a taxpayer concerned with expected income within a progressive tax system and progressive system of penalties. The compliance level was found to be positively related to probability of audit and detection as expected; if the probability of audit is taken to be independent of the taxpayer’s income \((Y)\) or exogenously determined, then compliance level goes down with personal income, \(Y\) but in case of probability of audit, \(p\) being an increasing function of income level, movement of compliance level \((\alpha)\) becomes indeterminate. But if a constant marginal rate is introduced in the later case, then compliance rate \((\alpha)\) is found to increase with \(Y\). Under the penalty structure of Yitzhaki (1974) where penalty is imposed on the tax evaded sum, a cut in tax rate induces a risk averse taxpayer to enlarge his tax evasion, both in absolute terms and as a proportion of taxable income. Koskela (1983a) also studied the case of a taxpayer with decreasing absolute risk aversion placed in a progressive taxation. It is shown that under the minimum income guarantee, an increase in the marginal tax rate will enlarge the tax evasion if penalty is charged on concealed income whereas tax evasion will be reduced in the Yitzhaki penalty form. Taking up the Srinivasan model, Fishburn (1981) discusses the effect of price inflation by examining,
in effect, the exogenous deflation of real income with the tax rate fixed in nominal terms. The basic problem of tax collectors in such situations is pointed out to be dealing with the higher evasion levels of the individuals with greater relative risk aversion. Crane-Nourzad (1986), in their analysis of effect of inflation on aggregate tax evasion in the U.S. over the period 1947-81, found that tax evasion in both absolute and relative terms is positively related to the inflation rate. Christiansen (1980) and Koskela (1983b) show that a large fine is always a more effective deterrent than a high probability of detection. Even in the simulated study of Friedland-Maital-Rutenberg (1978), large fines were found to be more effective deterrent than frequent audits. McCaleb (1976), Stern (1978) have suggested the strategy of low probability and inordinately high fines as an effective deterrent to evasion as it involves a minimal resource cost but such a policy will most likely reduce the expected utility to taxpayers. In general, there will be some trade-off between severe penalties which impose ex ante costs on all risk averse tax evaders and greater auditing and detection programs which entail more government costs [Polinsky-Shavell (1979)]. Cowell suggests to look out for options other than a uniform probability of audit combined with a severe penalty to ensure compliance. Rickard-Russell-Howroyd (1982) shows that allowing retroactive penalties is much more effective in
deterring evasion in a multi-period model.

(ii) Punishment as a deterrent: some recent theories

At this juncture it will not be out of place to have a look at some of the recent works on punishment theories. Punishments are imposed on the offenders with the main objective of deterring them as well as others in indulging in the same kind of crime in the future. Polinsky-Shavell (1984) examined the use of fines and imprisonment to deter individuals from engaging in harmful activities. They conclude that if only fines are used on risk-neutral individuals, then from the social welfare point of view, some under-deterrence in case of identical individuals and heftier fines for wealthier people are desirable. But in case of using imprisonment alone, the optimal term for a wealthier individual may be shorter or longer than his poor cousin. The explanation is that on the one hand, a given level of deterrence can be achieved by a shorter imprisonment term imposed on wealthy individuals. On the other hand, because of this, it is socially cheaper to achieve a given level of deterrence for the higher wealth group and therefore it may be worthwhile to employ imprisonment to a greater extent for that group. When fines and imprisonment are used together, it is desirable to use the fine to its maximum feasible extent before supplementing it with an imprisonment term. It is also pointed out that in general, lower sanctions and higher probability of
apprehension is desirable for greater risk-averse individuals in order to reduce the bearing of risk. Dickens (1986), confirming the conjecture of Akerlof-Dickens (1982), cautions against the use of severe punishments as these might prove counter-productive on the ground of cognitive dissonance. But in a study of non-compliance behavior of risk-averse firms under the minimum wage law, Chang (1992) found the imposition of stiffer penalty fees to be very effective strategy for motivating those firms to comply with the law. In a system where imposition of non-monetary (as opposed to monetary) sanctions is socially costly, Shavell (1987) suggests for the design of the system of sanctions to be such that sanctions are imposed infrequently. If courts possess perfect information, the optimal system is such that sanctions are never imposed and all who can be deterred will be. But realistically, court’s information will be imperfect and sanctions will be imposed. In this case, the optimal sanction will be such that the marginal social cost of raising sanctions, in terms of sanctions actually imposed equals the net marginal social benefits due to deterrence of additional parties. Since the great work of Becker (1968), punishment theories in general have accepted that the optimal fine of a crime ought to be a multiple of its social cost. The above seems to be valid in the static set-up. Leung (1991) points out that a dynamic set-up would be more appropriate to search for optimal fine in corporate form of
crime where the flow of the gains from the crime continues till the time one is detected and fined and also that the hazard rate of arrest depends on time. Working with a dynamic model, Leung shows that the optimal fine multiplier need not be greater than unity. Polinsky-Rubinfield (1991) point out that the severity of the fine for repeat offenders should depend on the level of social gains attributed to the harmful act, the composition of the society in terms of the offenders with variable offense propensity and the likely difference in probability of apprehension between them and the first time offenders. BenZion-Kawasaki-Spiegel (1993) advocates for reverse discrimination in the deterrence policy for unsuccessful criminals against their successful counterparts. They argued that a risk averse criminal will be deterred to a greater degree if an unsuccessful crime results in a higher probability of being arrested and a more severe punishment.

(iii) Tax evasion: A game-theoretic approach

There is another set of papers on the analysis of the evasion problem which have used the game theoretic approach. These papers have accounted for the interaction amongst agents involved in the tax game. Instead of viewing enforcement policies as exogenous parameters, this literature studies the endogenous choice of these policies by government officials. It may be noted that though decision regarding tax compliance or evasion of a taxpayer
is a problem of choice under uncertainty, he is playing against a living authority and not nature. The return to the taxpayer may decidedly get altered by a change in the investigation or audit policy of the government. In such situations, it may happen that the tax authority uses the information provided by the taxpayer to tailor its investigation policy and the taxpayer, recognizing that the distribution of returns is influenced by his actions, responds correspondingly. But at the same time, the authority might be handicapped by some information problem. The information problem enters the analysis through two important routes (i) a fundamental influence on the design of underlying tax system and (ii) its influence or role on the scope for official enforcement and control. Cowell (1990) pointed out, "... because of the structures of many economic relationships, there is an inherent advantage to individuals in behaving dishonestly and in providing false information". Distortion of information lies at the heart of the state's problem of exercising control and authority in the economy.

The literature which have dealt the strategic interaction between the tax authority and individual taxpayers may be broadly categorized into two classes on the basis of special relationships between the players in the game (Mookherjee, 1990). In the first one, the problem has been analyzed under the principal-agent framework.
Here, the tax authority or the government commits itself to a prior announced audit policy and the taxpayers condition their reporting decision on the announced policy.

Papers in this tradition are Townsend (1979, 1988) Reinganum-Wilde (1985), Border-Sobel (1987), Mookherji-Png (1989). The principal acts as a Stackleberg leader. In the other class of work, institutional structures within the systems have been accounted for. The government delegates the tax enforcement job to some authority. The revenue authority are presumed as not able to commit to any pre announced audit policy. The tax auditor chooses its audit rule simultaneously with or subsequently to the filing of reports by taxpayers.

The models in which the audit policy is dependent on the reported income implies that the tax auditor is using the information provided by the taxpayer to tailor its investigation policy. But as long as the taxpayer is assumed to be informed about the investigation rule the authorities are applying, the analysis goes through much as in the basic portfolio models of Allingham-Sandmo (1972) and not much insight is obtained than the ones already. It is so because even with the additional element, the problem remains that of choice amongst events with some fixed probabilities. Several models e.g. that of Srinivasan (1973), Nayak (1979), Sproule-Komus-Tsang (1980) etc. are along this line.
Normally in principal-agent models, the government seeks maximization of some measure of social welfare that incorporates efficiency and equity objectives. In such models, the government simultaneously chooses all the three policy parameters i.e. tax structure, audit policy and penalty structure freely. In the other equilibrium model case, auditing is delegated to another agent say tax auditor by the government. The tax auditor chooses the audit policy in a setting where tax and penalty structure are exogenously given and tries to maximize revenue, net of audit costs.

In a principal-agent formulation or full commitment setting, the purpose of auditing is to deter all forms of evasion. A policy that succeeds in deterring is ex post wasteful i.e. if it is common knowledge that all taxpayers report truthfully, then audits do not reveal any useful information and at the same time, involves dead-weight costs. Authorities, lacking the ability to commit, will be tempted to deviate from the stated audit policy to reduce the ex post waste. Anticipating such deviations, taxpayers will significantly evade. Equilibrium in no-commitment contexts will consequently be characterized by mixed strategies, both on the part of the taxpayers and the tax auditors i.e. a fraction of taxpayers will evade and the tax auditor will audit a certain fraction of reports. In contrast most principal-agent models are characterized by an audit policy that completely deters all forms of evasion.
A notable shortcoming of the entire principal-agent models is that very little institutional structures on tax enforcement process have been accounted for while postulating high degrees of coordination between the formulation of a tax policy and its implementation. As pointed out in Mookherjee (1991) the model is inadequate to such question as 'how do we efficiently reduce the present high levels of tax evasion?'; also they are not useful in comparing regimes associated with differing amounts of evasion as in principal-agent solution there is no evasion (by revelation principle). Its usefulness lies rather in defining the highest welfare achievable in the presence of institutional constraints on the formulation and implementation of policies.

Graetz-Reinganum-Wilde (1984) and Reinganum-Wilde (1984a, 1984b) exploit the possibility of endogenising probability of audit \( p \) in a particularly interesting fashion. The authority does not pre-commit itself to any audit rule. They examine the possibility that by adopting a particular investigation rule that is contingent upon the signal provided by the taxpayer's report, the authorities may actually be able to enforce truthful reporting. Within the necessarily simplified framework that they use, some interesting results emerge; within a class of taxpayers more resources should be devoted to investigating taxpayers reporting low income; higher audit costs may imply more
evasion and more auditing.

Corchon (1984) examines the interrelationship between the taxpayer and the tax auditor in a two by two game theoretic model: two players with two pure strategies, evade/not evade and investigate/not investigate. Corchon's modelling of the strategy options differs from Reinganum-Wilde in an important respect. The latter requires that a report be made by the taxpayer to the tax auditor stating an amount of income. Corchon lets each player choose a dichotomous decision variable in the absence of any further information from the other. The Reinganum-Wilde approach seems to be slightly more appropriate for self-declared income on tax returns and the other for decision whether or not to work in the black economy.

Corchon shows that there is no equilibrium in pure strategies but that at a Nash equilibrium in mixed strategies, the expected payment by the taxpayer actually equal official tax burden and government revenue is strictly increasing with the tax burden.

Benjamani-Maital (1985) and Schlicht (1985) concern themselves in the interaction between the individual taxpayer and the rest of the community. Their approach is prompted by the observation that a person's propensity to engage in evasion or work in the black economy seems to be strongly affected by the number of other people who are
already doing the same. The relevant objective function in
their scheme becomes \( V(E, \Sigma E') \) where \( V \) is a function of the
decision variable \( E \) (evasion) that obviously depends also on
the tax and enforcement parameters and \( \Sigma E' \) denotes evasion
by everyone else. Reasonable assumption regarding this
function seems to be \( V(E,0) < 0 \) (i.e. stigma if no one else
is evading), \( V_{12} > 0 \) (evasion becomes less conscience-
searing the more the other people do it). Under these
circumstances and also with \( V_2(0, \Sigma E') > 0 \), the model may
have multiple stable equilibria.

(iv) Audit policies and their effectiveness
Scotchmer (1987) discusses the equity implications of
practices of audit policies based on characteristics that
are easily observable like age, marital status, own house or
rented etc. apart from the reported income. In so far as
individuals with identical true incomes are audited
differently based on these factors, a violation of
horizontal equity is created. On the other hand, Scotchmer
demonstrates that conditioning on such information may
improve vertical equity.

Scotchmer (1989) and Reinganum-Wilde (1989) have
explored models where taxpayers strategically decide whether
to seek professional advice or help in preparing returns.
The Reinganum-Wilde paper deals with the strategic decision
of the IRS to condition audits on whether or not the return
was filed by a practitioner.
experimental study by Alm-Cronshaw-McKee (1993) provide strong support for strategic selection of tax returns.

(v) Tax evasion and Labor supply
The standard evasion model also got extended in another form which tried to capture the situations of the moonlighter or of the dishonest self-employed worker. These kinds of agents seem to combine the decision on the amount of activity closely with the decision on the proportion of available time to be spent in work (of any sort) as opposed to leisure. The difficulty with this version of the tax evasion model [Baldry (1979), Pencavel (1979)] is that one has a portfolio allocation problem combined with a conventional labor-supply model which together may give perverse or ambiguous results.

In spite of the complexity in such kind of models, some progress has been made by explicitly modeling legal and illegal work as distinct non-substitute activities or imposing some further structure on the utility functions. Sandmo (1981) shows that increase in penalty rate leads to increase of labor in the regular market but not by as much as the decrease in supply of labor in irregular market. Cowell (1985), allowing the taxpayer's income to be endogenously determined examines the effect of government on the incentives to participate in legal and illegal work activities. It is shown that many results of the basic evasion model including the simplest and obvious one of
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activities. It is shown that many results of the basic
evasion model including the simplest and obvious one of
harsher penalty improving compliance becomes a suspect. He shows the possibility of cases where greater penalty encourages people to devote more time to illegal work. Watson (1985) also found that many of the standard results were very sensitive to the assumptions of attitudes of the evaders towards risk-taking. Isachsen-Strom (1980) shows that a wage-hike in official market increases the supply of registered labor. With the assumption of leisure time remaining unaffected the above implies a corresponding reduction in unregistered work time. An increase in probability of being caught in tax evasion will have a positive impact on the registered supply of labor. A higher marginal tax rate has the expected incentive of reducing the amount of labor offered in open or registered market.

The change in relative wage brings about motivated occupational shifts e.g. if $\lambda = W_u/W_R$ where $W_u$ is the wage in the hidden market and $W_R$, the wage in the registered market, then an increase in $\lambda$ means a higher wage rate in the hidden market relative to the rate in the open market. In economic terms, it may pay the academic to become a craftsman, even if the registered wage rate is higher in academic occupations. The reason is simple: unreported labor income is considerably larger for the craftsman.

If tax evasion is positively related to marginal tax rate, efficiency cost of increasing the income tax will consist of two parts: the conventional measure of the fall
in labor-supply as the net wage drops and the additional cost of stepped up evasion activities to avoid the higher taxes.

Weiss (1976) and Stiglitz (1980) have suggested that tax evasion may reduce rather than exacerbate the distributionary effect of an existing tax on labor income. For some utility functions, the extra source of uncertainty of future income involved in evasion induces individuals to supply more labor than otherwise, thereby alleviating the initial distortionary fall in labor-supply caused by the tax.

In Pestieau-Possen (1991) model, individuals are only differentiated according to their attitudes towards risk. Risky works are associated with possibly high returns and accessibility to the evasion option. The more risk averse go for safe occupations which are characterized by relatively low returns and no scope of tax evasion. In such a scenario, the control of tax evasion will tend to discourage risk-taking i.e. people will be less inclined to take up the jobs with possibly high returns. Whether control of tax evasion is desirable for the economy as a whole is dependent on the objective function of the government. An audit policy is shown to have conflicting effects on the tax revenue, per capita income and social welfare.
(vi) Tax Aversion: Avoidance cum Evasion

There is another set of papers which have incorporated other means to reduce taxes, the legal tax avoidance besides the illegal tax evasion [Geeroms-Wilmots (1985), Alm (1988), Waud (1988), Alm-Bahl-Murray (1990), Alm-McCallin (1990) etc.].

Major findings are severe penalties and more certain detection of evasion may not increase the tax base as the individuals in such situations may earnestly start exploring and availing the income avenues where tax avoidance is possible. Tax rate reductions may be a powerful tool for generating tax base increases because reductions make both evasion and avoidance less attractive; individual substitutes between avoidance and evasion in a way that depends upon their relative returns and risks and finally greater tax complexity appears to generate more tax revenues.

(vii) Tax Amnesties and Tax Revenues

In recent times, quite a few works have appeared on the topic of tax amnesty, its economic meaning and implications. Under a tax amnesty, all those who owe past taxes, are allowed to pay without fear of penalty or criminal prosecutions. A tax amnesty is a one-time program that lasts for a relatively short period of time and is not expected to be repeated. Since 1982, many states in the United States have offered tax amnesties [Stella (1991)]. Australia, Belgium, France, Ireland and Italy offered
amnesties in the last decade while Argentina, Bolivia, Colombia, Chile, Ecuador, Mexico, India, Panama, Peru and the Philippines have all tax moratoria or amnesties more than once in recent past.

Lerman (1986) rightly pointed out that the arguments for and against amnesty must be based on equity and on long-term compliance effects. If amnesty does permanently return people to the tax system and raises revenue for an extended period of time, the equity argument could tilt in favor of amnesty. It may be mentioned here that the urgent need for enlargement in tax enforcement efforts has been felt by all.

The arguments which have been cited in favor of amnesty policy are: (i) the government gains past evaded taxes, at essentially no resource cost to itself; (ii) after the amnesty period, the government can more easily switch over to a stricter enforcement regime or a new tax-regime. Thus, an amnesty may be perceived as a useful, equitable and necessary tool when major changes are made in a tax system or when a major effort to improve compliance is undertaken.

On the other hand, Lerman [1986] citing the data published by Internal Revenue Service (1983) points out that in most of the systems the estimated tax gap arising from the illegal sector and due to collection problem forms quite a large portion of the total tax gap and this portion of the gap is not likely to be reduced meaningfully by the tax
amnesty. Furthermore, there is the time consistency of such a strategy. Taxpayers know that the authorities will always have an incentive to declare an amnesty in any given year, so that preferred counter strategy of the taxpayer is not to pay taxes until the next amnesty, provided he can escape the stepped up enforcement. Also there is always the danger of sense of injustice and frustration creeping into the minds of the honest taxpayers on seeing by their very own eyes that the tax evaders are being allowed to go scot free as a matter of public policy and this has negative consequences on future tax compliance. Lerman emphasizes the potential risks and down plays the size of the possible revenue gain of the tax auditor.

Alm-Beck (1990) also talks about the dependence of the overall impact of tax amnesties on tax collections on prevailing conditions and accompanying packages. Stella (1991) strongly argued that in the absence of an increase in expected tax enforcement, amnesty would be unlikely to generate a significant positive impact on revenues and thus would fail in the primary goal of raising revenue. Also, due to the very nature of the tax enforcement problem, the public's beliefs will likely be slow to change unless it is clearly apparent that enhanced enforcement is rational from the stand point of economic efficiency.

Thus, Stella (1991, p.399) is of the opinion that, "In situations where the preconditions for a successful
improvement in tax enforcement are lacking, temporary amnesties would appear to have little to offer and risk damaging both the administration's credibility and future tax compliance". Andreoni (1991) is optimistic about the positive impact of tax amnesty and in fact finds a strong possibility for a permanent tax amnesty to actually increase rather than decrease the efficiency and equity of the system. Besides their positive effect on short term revenues and long term revenues, he also feels that amnesties do create conditions to ease the political transition to stiffer penalties.

Malik-Schwab (1991) argued that amnesties are irrelevant in the standard tax evasion model as the taxpayers were already optimizing their act. But in a model under the adaptive utility framework where consumers are not certain about the disutility from tax evasion when they file their tax returns and would like to become more honest than they have been after learning about the consequences and disutility involved in evasion, everyone gains from amnesty. Amnesty may bring about an improvement in future tax compliance from the fact that the need to evade taxes to hide past evasion will not be there any longer. But at the same time, Malik-Schwab (1991) reminded the danger inherent in any amnesty policy to anger honest taxpayers and its negative impact on their future compliance in the following words: "No one wants to feel foolish for having paid their
taxes if it so turns there is no gain from having done so".

Dubin-Graetz-Wilde (1992) came out with the evidence indicating that the states ran the amnesty programs at a time which they thought it ripe for generating higher yield or returns from it.

(viii) Some empirical works and their findings
The fundamental problem of unreliable or unavailable data makes it almost impossible for the construction of empirical models of evasion. To circumvent the above problem, quite a lot of empirical works have used data generated from experimental set-up or surveys. The merits and demerits of using experimental method for the study of the taxpayer compliance has been well discussed in the works of Alm-Jackson-McKee (1992) and Alm-Cronshaw-McKee (1992). For detailed discussion of survey methods in compliance research, see Klepper-Nagin (1989). The results of a study by Hite (1987) indicate that framing of the questionnaires is crucial and may affect the findings of the compliance studies. A group of randomly selected taxpayers was asked to read a scenario about the tax evaders. The respondents who were asked to assume that they were the tax evaders responded significantly differently than those who were asked to assume someone else was the tax evader. Nevertheless, making use of the information that becomes available to the tax auditor in the course of investigation of potential evaders, quite a few empirical works in regard to some
countries have been carried out. In fact, till date most of the empirical models of tax evasion have been based on data provided by Tax Compliance Measurement Program (TCMP).

By the nature of available data, an appropriate empirical version of the model ought to have tax and enforcement parameters, personal income and indicators of the type of income recipient as explanatory variables and the dependent variable could be some measure of underreported income. The model could be estimated for different categories of taxpayers or for taxpayers in general. One might use such an empirical model to test some of the elementary hypotheses in the relationship between evasion and tax enforcement parameters.

In the above specification of the model, certain problems like rationing of evasion i.e. unequal opportunities for evasion amongst individuals, problems of bias in sample selection (since the system of intensive audits exclude those individuals who do not file a tax return at all) are no doubt present. Despite these reservations, the empirical works carried out on these models provide valuable evidences on the determinants of taxpayer dishonesty in practice.

Clotfelter (1983) produced the first micro-economic estimates of the relationship between tax rates and under-statement of income by taxpayers, based on data from Tax Compliance Measurement Program (1969). He found
statistically significant positive effects of both marginal tax rates and the level of after tax income on tax evasion. Clotfelter, to avoid a possible simultaneity problem, did not include audit rates in his model. So quite clearly his model becomes mis-specified if audit rates do in fact really affect compliance. Hence, his findings should be read and used with caution in the above context. Another microeconometric analysis, by Slemrod (1985), did not find any statistically significant marginal tax rate effect distinguishable from the income effect. Using aggregate time series data, Crane-Nourzad (1986) estimated a significant positive influence of the weighted average marginal tax rate upon aggregate tax evasion. A sophisticated microeconometric study by Alexander-Feinstein (1986) using a sub-sample of the 1982 Tax Compliance Measurement Program (TCMP) micro-data also suggests a positive relation between marginal tax rates and evasion but like Slemrod, it reports difficulties to disentangle the tax rate and income effects. A stronger finding of the study is that the source of an individual's income is the primary determinant of his evasion activity. The study also found that Internal Revenue Service (IRS) examiners differ considerably in their relative abilities to detect evasion and much evasion goes undetected. Poterba (1987), using the time series movements in voluntary reporting rates for one type of income, capital gains between 1965 and 1982

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provides another evidence of positive effect of marginal tax rates on noncompliance.

Klepper-Nagin (1989) analysed the nature of taxpayer perceptions concerning detection risk and penalties and the effect of these perceptions on behavior using non-compliance data compiled by Internal Revenue Service (IRS) in its Tax Compliance Measurement Program (TCMP) (1982). Findings suggest that compliance behavior conforms closely to the incentives and deterrents created by the enforcement environment. The compliance levels appear to be systematically related to the difficulty of establishing non compliance and the penalties for detected noncompliance. The influence of the endogeneity of detection risk and penalty is found to be pervasive. A methodological implication of this study is that perceived detection risk and penalties being function of the level of noncompliance (and not exogenous), the practice of survey researchers of asking respondents genetic questions about their perceptions of risk of detection and severity of penalties if detected is ill-conceived.

Witte-Woodbury (1985) analyze the effects of audit rates and sanction levels on compliance. Only a weak relationship was found in each of the cases. Because of the endogeneity problem of many of the agency variables, the model used, seems quite mis-specified. It has also been pointed out that aggregate bias is likely to be present in
the relationships obtained. Dubin-Wilde (1988) focus their analysis (using the 1969 cross-section data) on the deterrent effects of audit and their endogeneity. They found that audits have an unambiguous deterrent effect on non-compliance, but at least for low and high income taxpayers, audits themselves respond to the pattern of noncompliance. The Internal Revenue Service seems to direct its resources to those areas in which compliance is worst. If fact, this effect is so strong to result in a negative relationship between auditing and compliance (in equilibrium) at times. Several socio-economic factors, having no direct impact on auditing have dramatic effects on compliance e.g. increases in percentage of non-white population were found to reduce compliance levels.

Dubin-Graetz-Wilde (1987) analysed a time series data.29 The results obtained were broadly consistent with Dubin-Wilde's cross-section results: the endogeneity and deterring effect of the audit rates, but the dominance of Internal Revenue Service's incentive to audit according to expected yield in equilibrium; compliance increasing with per capita income but at a decreasing rate, peaking below the maximum per capita income; audit rate being positively related to individual collections per return.30

The empirical works that have considered tax rates have obtained mixed results, ranging from no effect [e.g. Geerom-Wilmots [1985], Slemrod (1985), Klepper-Nagin (1989) ...]
to a significant positive effect [Clotfelter (1983), Crane-Nourzad (1986), Alexander-Feinstein (1986)]. Till date, one prediction that has not been supported empirically is that higher taxes lead to lower evasion. On the other hand, the theoretical models which have been considered till now either state that higher tax rates lead to reduced evasion or that the effect is indeterminate. Thus, there exist a significant discrepancy on the effect of marginal tax rate on evasion between the theoretical findings of the basic standard model and its extensions and the evidences available. This apparent conflict seems to have been resolved in some recent works which have modelled the tax evasion phenomenon in a general equilibrium framework [Watson (1985), Alm (1985), de Gijsel (1985), Hansson (1985), Fortin-Hung (1989)]. These works have yielded consistent results with the empirical positive relations between the tax rates and tax evasion. Even some recent extensions to portfolio models have produced positive evasion responses with wage equilibrating or general equilibrium effects [Cowell-Gordon (1988), Fluet (1987)]. Using a more standard portfolio model with two sectors, Fluet (1987, p.3) finds that tax evasion will be positively associated with high tax rate over some range whenever there is a cost in evading tax payments in the sense that the gross returns to the undeclared activity is less than the gross return to the declared activity. Kesselman (1989),
using an inter-sectoral approach showed the possibility of a positive evasion response even in the case of criminal activities case, with gross returns higher in the undeclared activity. In Kesselman's model, although the undeclared activity pays more, there is real and psychic costs to engaging in evasion which more than offset the wage premium for incipient entrants to the criminal evading sector. Kesselman further shows that a general equilibrium model can produce a positive evasion response over a wider range of circumstances.

(ix) Tax evasion and corruption

All the main-stream studies\textsuperscript{32} on tax evasion have more or less presupposed an untainted bureaucratic system in which tax evasion takes place. If the bureaucratic system itself is corrupt, as is particularly evident in most developing countries,\textsuperscript{33} it is only natural that tax evading strategies on the part of the public will be different. It is quite surprising that in spite of the obviousness of the above fact, there is little literature on the subject of tax evasion in a corrupt atmosphere.

Corrupt tax officials played a significant role in the rampant practices of tax evasion. Lui (1986) warns against an excessively lenient policy or temporary neglect of the problem of corruption by the government, for such a thing might have undesirable consequences. He shows that an economy in such situations might attain a very high
stationary equilibrium level of corruption. If \( B(t) \) is the proportion of corrupt officials within the entire population of officials at time \( t \), then it may be mentioned that at a stationary equilibrium level \( B^* \), \( B(t) = B^* \) for all \( t \). In that case lowering down of corruption level might be possible only at a very high cost. Lui works with a dynamic model wherein it has been assumed that the decision to get corrupted or not depends on the inter-temporal differences on expected penalties and the more corrupt a system the more costly will be an effective audit of the tax auditor. Lui presents a case study of contemporary China to give empirical support to the model.

Chu (1990) observes that corruption is common, (if not widespread) in most of the developing economies where market structure are not very well developed. In a survey study of Taipei undertaken by him, it was found that 94% of taxpayers polled, admitted of having bribed the government tax officials in exchange for their collusion in tax evasion. Given this inordinately high percentage, the functions of bribery in the practice of tax evasion ought not to be overlooked.

The effectiveness of conventional counteracting measures such as increasing penalty or raising the probability of audit comes under doubt once bribery is taken into consideration. Chu shows that instead of enhancing individual's tax compliance, those conventional policies may
only serve to encourage corrupt practices of tax officials. To remedy the situation, other policy alternatives such as anti-corruption measure, computerization of auditing procedure etc. have been suggested.

In the conventional analysis, an increase in probability of audit (p) raises the marginal disutility of an evasion inducing a greater compliance. However, in a corrupt tax system, Chu shows that an increase in probability of audit, p would also further increase the taxpayer to bribe tax officials at any given compliance level. In case, the bribing effect dominates over the enhanced marginal disutility of evasion, then an increase in probability of audit will fail to increase people’s optimal income declaration. The survey study [Chu (1990)] points towards the conclusion that the increased probability of audit would only encourage taxpayer to further patronize the tax officials. A higher p failing to raise compliance level would imply that it has resulted in aggravation of the corruption of the tax system. Seeing that bribery and evasion are two complementary crimes, Chu suggests ‘to combat corruption which decreases the marginal productivity of tax-related bribery’ as an alternative evasion-counteracting policy.

Goswami-Gang-Sanyal (1991) shows that in a corrupt atmosphere, raising the penalty rate for evasion may yield a lower net revenue to the government. Also, with corruption
and superaudits, a truth revealing audit may not be optimal for the government. This will never be the case with honest auditors.

Virmani (1987) shows how corruption depends on the type of corruption detection mechanism in society. He distinguishes corruption where its prevalence has no effect on evasion but leads to transfer of revenues from the government to the tax evaders and the tax auditors and another where its existence leads to increase of evasion. The possibility to incorporate certain incentive schemes in the tax system to ensure honesty or increase net revenue is also shown. It sheds light on why heavy fines may not be effective as deterrence in a corrupt society.

6 Results: A Commentary
The underlying idea of the theoretical models that people act out of semi-enlightened self-interest rather than out of strong personal conviction, seems to have a powerful appeal. Most tax evaders surely do it for the money rather than for fun or perversity. The theoretical models in the above line may be bracketed into two groups: the one in which an individual's attitude towards risk is accounted for (i.e. the expected utility approach) and the other in which the individual is considered to be risk-neutral (i.e. the expected income approach). In a static framework, the expected net income approach seems more appropriate because
in this approach, the inter-temporal differences in the need of money is not considered and also it is easier to compare two different situations in terms of their respective expected net incomes rather than in terms of expected utilities. There are conceptual and practical difficulties involved in the notion of utility and particularly the attempts to describe it as a number which may be used as a basis for numerical comparison of utilities for one person or comparison between different persons. Also, the notions of utility and preference being purely verbal definitions, the use of it in quantitative study of the behavior of a taxpayer does not yield meaningful results in many instances.

The total utility which an individual derives from his income depends on his efficiency in allocating it into various uses. In the expected utility approach, the exercise may be seen to be solving a maximization problem of expected utility with the assumption that the concerned individual uses his money efficiently. But with this assumption of efficiency in allocation, an individual with higher expected income will experience greater total utility or satisfaction. In this light, the expected income approach may be viewed as if we are trying to limit our exercise to maximization of income only and leaving out the allocation problem altogether. Clearly, an individual's attitude towards risk differs in cases involving varying sums of
money, even if other factors are not taken into account. The overlooking of this fact is seen to be a major drawback with expected income approach.  

7 An overview of the later chapters

The study follows the following scheme: In chapter II, we study the compliance behavior of a taxpayer who is only concerned with maximizing his expected income. The behavioral pattern has been studied under three different audit schemes combined with various penalty schedules. In the first scheme, the probability of audit is taken to be exogenously given. In the second one, the taxpayer believes that the probability of audit is negatively related to his compliance level whereas in the third scheme, probability of audit is seen to be directly linked to his income level. The combination of these three audit schemes with four plausible penalty schedules provides us a good number of possible tax situations to study. The compliance behavior of the taxpayer is studied in each of the cases.

In chapter III, the expected revenue maximizing behavior of a government in the face of rational taxpayers has been examined. It is assumed that the whole tax paying population can be divided into a finite number of economic classes, the categorization being solely based on the individual's income level. Firstly, we studied the case of a multi-class system with no resource or political
constraints imposed on the government. Secondly, the study is done for a two class system where the government faces a resource-constraint. In both cases, we could determine the optimum probability audits\textsuperscript{36} for each economic class and hence for the whole system. In comparative statics, we bring out the required adjustments in probability of audit (if there is any change in the tax situations) for the system to retain optimality.

In chapter IV, we study the behavioral pattern of a taxpayer and a corrupt auditor in a bribe situation. The system under consideration in the previous two chapters involves just two parties namely the taxpayers and the tax auditors. But, in this case of a corrupt system, a third party namely the superauditors is brought in. We first characterize a bribe situation and the terms of negotiation or the bribe rule, agreeable to the two parties of taxpayers and tax auditors. Then, given the bribe rule, we study the expected income maximizing behavior of both the parties.

Finally, in chapter V, we study the expected revenue maximizing behavior of a government in the presence of corrupt auditors. We consider two possible forms of the tax game for which the government has to frame audit rules (inclusive of superaudit) to maximize its expected net revenue. The two forms of the game, considered are (i) where the taxpayer and the tax auditor have already played their cards or have already decided their declaration and
exposure levels respectively and it is at this stage, the government needs to frame the rule and (ii) where the tax-payer and the tax auditor are waiting for the announcement of audit (and superaudit) policy by the government so that they can play their moves in consideration to the announced policy.

In the concluding chapter, we collect all the findings of our study, along with certain inferences from them.
NOTES

1. Anderson-Wallace-Warner (1986), employing a multi-variable causality tests show that increases in expenditure ultimately lead to increases in taxes. Their study did not support Milton Friedman's hypothesis that increased revenues lead to even larger increases in expenditure. Manage-Marlow (1986) had also examined the causality between tax receipts and expenditures over the period 1929-82. According to them, proposal that endorse tax increases to close the federal budget deficit do not necessarily offer permanent solutions to underlying fiscal problems. They further opined that a tax increase may not even offer a temporary solution.

2. Citrin (1979, p.114) "Although antagonism towards taxes is a long standing phenomenon resentment about the size of the burden has grown" from below 50% in the early 1960's to 72% in 1976. Hibbs and Madsen (1981, p.411) emphatically state '.... There is little doubt that public resistance to the growth of taxation and state expenditure has increased in many Western industrial societies during the last decade'. Pham Chung (1976), Rose (1984), Ladd et al (1979) have also talked about the rising anti-tax sentiment.

3. In the context of France, where the estimated under reported income tax-base touches one-third, Kolm (1973, p.270) writes , ".... Most citizens are small evaders, therefore, there is a majority to oppose strong detection, enforcement and penalty since everyone sees clearly what he would loose in tax but only dimly that he could gain through the global budget".
4. The interests of the general public is being presumed to be the pursuance of social justice and efficiency. Persson-Pehr (1984) shows that in the presence of tax evasion, the government policy aimed at reducing the degree of inequality can sometimes be counter-productive. Policy measures that seem egalitarian in the sense that they make the distribution of officially reported income more even might very well make total income less evenly distributed.

5. Here, the means stands for the tax revenue as well as the adjustments in the macroeconomic policy to steer the economy to a desirable direction to secure social justice and efficiency of the society. Presence of tax evasion creates uncertainty about the actual effect of the standard macro-adjustments. Also the economic indicators of performances etc. become very unreliable.

6. Alm-Jackson-McKee (1992), in an experimental study, found the compliance level of a taxpayer to be greater when he received something for his taxes. They suggested to use the programs that make individuals aware of the benefits financed by their tax payments as a tool for generating compliance. In the same study, greater compliance was observed for lower tax rates.

7. Wilesky (1976), Ladd et al. (1979), Hibbs-Madsen (1981), Rose (1984), have forwarded arguments with regards to public response to tax-hike from this side of school.

8. Tax ethics, hereby means the norms of behavior governing citizens as tax payers in their relationship with the government.

9. The common definition given to tax as a compulsory levy by the government on the peoples' income or wealth without a direct quid pro quo clearly speaks out the importance of tax ethics in voluntary compliance.
10. Thurman (1991) found non-compliance to be related to past tax cheating behavior, favorable orientation to risk-taking and the ability to defend one’s deviant actions based upon the reliance on extenuating circumstances.

11. It covers the government policies and programs for providing collective goods, for distributing income, for managing the economy, etc.

12. All individuals may not necessarily exhibit this behavior. In fact, Alm et.al. (1992a, 1992b) found evidence of individuals paying taxes because they value the public goods that their taxes finance. It is suggested that programs that make individuals aware of the benefits financed by their tax payments may be one tool for generating compliance.

13. Overweighing of the low probability of audit has been cited in Alm et.al. (1992) as the probable reason for compliance in a situation of low probability of audit, combined with a high penalty. Thurman (1988) in a survey work comments, "... high audit rates and lengthy prison terms are perceived as key inhibitors to taxpayers' non-compliance among individuals...". Alm-Jackson-McKee (1992) also found the tax compliance level to increase with greater audit and penalty rates (though the responses were not large).

14. Smith, Adam, The Wealth of Nations, Vol. 2, Ed. Edwin Cannan, 429-30: "In those corrupt governments where there is at least a general suspicion of much unnecessary expence and great misapplication of public revenue, the laws which guard it are little respected".

15. Vogel (1974): In a survey study, three-fourth of the respondents were of the opinion that "since tax evasion is so common one can't be blamed for evasion".
16. It is the phenomenon of *once bitten, twice shy*. Those taxpayers who have been audited earlier are more likely to assess the probability of audit and detection as higher and therefore lower their levels of evasion.

17. The importance of the link between the varying opportunities of non-compliance within a system and norms and ethics is pointed out in Klepper-Nagin (1989).

18. The study by Milliron et al (1989) also supported the relevance of a fairness criterion in influencing taxpayer opinion. On the other hand, Mason-Calvin (1978) and Yankelovich et al. (1984) did not find any significant correlation between perceptions of fairness and self-reports of tax compliance [refer Hite (1990, p.92)].

19. We have got strong advocates of this principle in Adam Smith and J.S. Mill.

20. $\frac{d\alpha}{dY} = \frac{\partial \alpha}{\partial Y} + (\frac{\partial \alpha}{\partial p})(\frac{\partial p}{\partial Y})$

   where $\frac{\partial p}{\partial Y} > 0$, $\frac{\partial \alpha}{\partial p} > 0$ and $\frac{\partial \alpha}{\partial Y} < 0$

   Thus, here two forces come into play: the direct negative force of increase in income on $\alpha$ and the indirect positive force.

21. Adjustments done in the tax parameters so that either expected revenue of the government or the expected utility of the taxpayer is held constant.


23. Penalty systems can often be looked upon as corrective measures established in order to eliminate or reduce costly externalities generated by optimizing economic agents. The costly externalities imposed on society by individuals under reporting their true income may be summarized in terms of two factors: interference with socially desirable net income distribution and lower
government revenue.

24. In fact when it does pursue tax evaders, after the amnesty is over there is a smaller pool of evaders to investigate, enabling more intensive audits.

25. According to Andreoni (1991), permanent amnesty opens out the possibility of addition of many former non-filers to the rolls.

26. In the latter situation, participants become better-off and the government collects additional revenues.

27. States which offer amnesty were the ones with high per capita income and high growth rates in real state income tax collections, preceded by decade long fall in federal tax enforcement activities.

28. This empirical work was based on the California Amnesty data.

29. The data used, were the ones assembled for the Annual Report of Commissioner of Internal Revenue for the year 1977 through 1985.

30. In their study, surprisingly no significant time trend were observed in spite of the presence of a significant negative trend in the audit rate and in compliance.

31. It should be noted that the analytical findings of the elementary economic model in which tax evasion is treated just as a simple form of gambling are quite compatible with the findings from the empirical work and also make lots of economic sense. Rational gamblers take fewer risks if the odds are worsened, therefore simple adjustments to enforcement parameters have the desired effect. Rich gamblers (evaders) stake more than those of modest means and the reckless more than the cautious.

32. The studies, here refer to both theoretical as well as empirical works on tax evasion.

33. This fact is mentioned in the works of Virmani (1987), Goswami et al (1990), Cyrus Chu (1990).
34. Lui (1986, p.230) also notes that corruption more easily thrives in an environment with lots of market distortions.

35. Normally, the assumption of decreasing risk averseness is considered in the study of choice under uncertainty if one’s attitude towards risk has also to be taken into account. The implication of this assumption is that the decision maker attaches a smaller risk premium to any given risk, the greater his assets or in other words, with larger income, an individual becomes more willing to take up risks.

36. Slemrod-Yitzhaki (1987) derived that at the optimal size of a tax collection agency, the marginal cost of increasing enforcement is equal to the saving of excess burden due to the decline in exposure to risk. The increased revenue gained from stricter enforcement does not enter in the above expression because it merely represents a transfer among the economy’s agents. But in our case, where the objective of the government is considered to be its net revenue collection, the marginal condition for optimality is the equality of marginal increase in cost and marginal gain in revenue.