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TAX EVASION AND TAX COMPLIANCE

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Abstract

This chapter offers an overview of the theoretical and empirical research on tax evasion, delineating the variety of factors affecting noncompliance and examining possible remedies. Particular emphasis is placed on the institutional and procedural rules governing the tax enforcement policy.

JEL classification: K34

Keywords: Tax Enforcement, Compliance, Taxpayer’s Behavior, Tax Gap

1. Introduction

Tax evasion is said to occur when individuals deliberately fail to comply with their tax obligations. The resulting tax revenue loss may cause serious damage to the proper functioning of the public sector, threatening its capacity to finance its basic expenses.

Although tax compliance is a major concern for all governments and analytical investigation of tax evasion can be traced as far back as the work, one of the pioneers of ‘law and economics’, Cesare Beccaria (1764), the problem was long segregated from the main body of economics and left essentially to the attention of tax authorities and jurisprudence. The modern use of economic tools for the analysis of tax compliance can be credited to Allingham and Sandmo ([1972] 1991), who extended the influential work of Becker (1968) on law enforcement to taxation using modern risk theory.

In the decades since, the literature on tax evasion has blossomed (as witnessed by the voluminous bibliography enclosed). Probably no aspect of tax compliance has escaped at least preliminary scrutiny. Detailed introductions to this theme are now available, as in the monographs of Cowell (1990) (theoretically oriented) and Roth, Scholtz and Witt (1989) (an interdisciplinary perspective), and the surveys of Andreoni, Erard and Feinstein (1998) (including a thorough discussion of empirical results) and Slemrod and Yitzhaki (1998) (with large sections devoted to avoidance and administration).

As a complex phenomenon, tax compliance can be addressed from a variety of perspectives. Taxpayers’ stance is influenced by many factors, including their disposition towards public institutions, the perceived fairness of the taxes,
prevailing social norms, and the chances of noncompliance being detected and punished. Without questioning the relevance of ethical and sociological motivations, the economic analysis of tax compliance has focused mainly on how evasion can be deterred through detection and sanctions. The thesis is that the taxpayer's behavior can be fruitfully seen as the result of a rational calculus, a careful assessment of the costs and benefits of evasion. Since even in the simplest tax and enforcement systems the incentives to comply are far from obvious, this economic perspective offers precious insights that can be used to derive suitable policy measures. Yet, given the complexity of the economic set-up in which the taxpayer usually makes compliance decisions, no simple policy prescription should be expected. In fact, as we will see, to date theoretical and empirical research has managed to establish very few firm points. Nevertheless, the general picture of tax compliance is much clearer now than just a few decades ago. At least the literature has shown that evasion is a serious problem, too complex to be solved by simple policy adjustments, and that the set of instruments for controlling it is vast.

This chapter provides an overview of the findings of the theoretical and the empirical literature on tax evasion. Section 2 defines tax evasion, as opposed to tax avoidance and other unlawful activities. In Section 3, Allingham and Sandmo's basic model of tax evasion is presented and discussed, with a brief review of its numerous extensions. Section 4 surveys the empirical evidence on taxpayer compliance. Section 5 deals with optimal tax enforcement policy, and investigates some possible strategies for combating evasion. Section 6 examines additional policy issues, connected with the institutional and procedural aspects of tax enforcement. Section 7 provides some concluding observations.

2. Definition and Extent of Tax Evasion

By distancing effective payments from statutory taxes, tax evasion defines a specific revenue deficiency, known as the 'tax gap' (in the US, for example, the federal income tax gap has been estimated at 17 percent).

Let us emphasize from the outset that the tax gap is not equal to the amount of additional revenue that would be collected by stricter enforcement, for perfect enforcement would significantly affect the economic scenario (some firms would go bankrupt, taxpayers would modify their labor supply, prices and incomes would change, and so on), so the tax base would surely be altered. As a result, at least in theory, net revenue could even turn out to be smaller. Thus standard measures of tax gaps must be interpreted cautiously. They are only roughly suggestive of the likely immediate effects of marginal improvements in enforcement. Also, one should be wary of the cliché that statutory taxes represent the ideal world and tax gaps an intrinsic evil. This is not only because
Taxes may not be ‘just’, but also because statutory taxes themselves are usually determined by a legislature that is perfectly aware that they will only be partially enforced and therefore differ from those that would be optimal under perfect enforcement.

On closer scrutiny, therefore, estimation of the tax gap merely portrays the wedge between economic reality and a purely legal construct called ‘statutory taxes’. Reality and its legal representation may differ for any number of reasons, among which, as we shall see, the willful misrepresentation of tax liabilities is just one.

In economic terms, evasion problems originate in the fact that the variables that define the tax base (incomes, sales, revenues, wealth, and so on) are often not ‘observable’. That is, an external observer cannot usually see the actual magnitude of an individual’s tax base, and hence cannot know his true tax liability. Sometimes this knowledge can be obtained by means of costly audits, in which case we say that the tax base is verifiable (at a cost). In other cases, as when it is related to cash payments, the tax base cannot be verified at all. Taxpayers can take advantage of the imperfect information about their liability and elude taxation.

A related concept is tax avoidance (or reduction), by which individuals reduce their own tax in a way that may be unintended by tax legislators but is permissible by law. Avoidance is typically accomplished by structuring transactions so as to minimize tax liability. In some cases, avoidance is encouraged by legislation granting favorable tax treatment to specific activities in contrast to general taxation principles. From a legal standpoint, evasion differs from avoidance in being unlawful, and hence punishable (at least in theory). As far as economic function is concerned, however, evasion and avoidance obviously have very strong similarities; sometimes, indeed, they can hardly be distinguished (see for instance Feldman and Kay, 1981; Cowell, 1990; McBarnet, 1992). This adds to the difficulty of interpreting the real implications of the tax gap.

Another problem with the measurement of tax evasion relates to its proper delimitation within the broader set of the informal economy. No taxes are generally levied on transactions in the home and criminal sectors, which are usually beyond the reach of authorities and official statistics. Hence, proper determination of the boundaries of evasion is a formidable task, in that evasion is often inextricable from other illegal and unrecorded activities. What, one might ask, is the evaded tax of a hired killer?

Aggregate estimates of evasion must deal with all these problems, in addition to the classic problem of lack of direct data. Various estimation methods have been devised, some based on data collected by fiscal authorities, others - less reliable - on data derived from national accounts and surveys. Their application suggests that in the Western industrialized countries evaded
taxes amount to between 5 percent and 25 percent of potential tax revenue, depending on the technique adopted and the country (see monographs by Feige, 1989; Pyle, 1989, and Thomas, 1992), with higher figures (up to 30-40 percent) for less-developed countries (Tanzi and Shome, 1994).

As noted, one should not attach too much importance to such estimates, which essentially tell us that statutory taxes are not the whole story. What matters is effective taxation, that is, the net tax burden on individuals. This has major implications bearing on the economic consequences of evasion: the main question is not how evasion alters the shape of statutory allocation of the fiscal burden, but how it constrains the set of policies that can be implemented. When taxes can be evaded, taxation will prove to be an imperfect tool for pursuing government aims (be they redistribution, efficiency, or whatever), which will be only partly achieved. Indeed, effective taxation may turn regressive, as the more affluent usually have better opportunities to evade (or avoid) taxes. Also, evasion may be powerfully deleterious to horizontal equity, owing to unequal distribution of opportunities to evade and of the willingness to seize them. This in turn may induce production inefficiencies, because competition would be distorted by the unequal distribution of the tax burden among firms.

The adverse consequences of tax evasion are sometimes exacerbated by laws, or even constitutions, drafted as if the tax base were observable, limiting the set of corrective instruments available to the government (which cannot, for instance, set tax rates according to their presumed degree of enforceability).

In order to evaluate the way in which noncompliance affects the actual tax payment of individuals, one must examine taxpayers’ compliance behavior more closely. This can be done by developing a theoretical model to predict how taxpayers’ behavior is affected by the relevant variables. The following section reviews some models and assesses their fit with observed practise.

3. The Decision to Evade

Compliance with the tax law typically means: (i) true reporting of the tax base, (ii) correct computation of the liability, (iii) timely filing of the return, and (iv) timely payment of the amounts due. The bulk of tax evasion involves the first point. Most evaders either do not declare their liability at all, or declare it only in part. In the following, we concentrate on the problem faced by an individual who has to decide how much of his tax aggregate to report, or whether to report it at all. The focus is on income taxes (which account for a large part of fiscal revenue in most countries). However, the insights provided can be applied to other taxes as well.
3.1 Allingham and Sandmo

A useful model of taxpayers’ evasion decision is that developed by Allingham and Sandmo ([1972] 1991) and Srinivasan (1973), and revised by Yitzhaki (1974). Evasion is viewed as a portfolio allocation problem: the taxpayer must decide what portion of his income \( y \) (postulated as exogenous) to invest in the risky activity labeled ‘tax evasion’. If the taxpayer does not want to take any risk, he reports his income in full; otherwise, he reports only a fraction of it and bears the risk of being caught and fined. The problem is thus to choose the optimal tax return, when the income reported is taxed at a fixed rate \( t \) and evasion is fined at a penalty rate \( f \) proportional to the tax evaded. The probability of an audit, that is, the probability that the true income level will be discovered, is a constant denoted by \( a \). The taxpayer decides the amount to conceal so as to maximize his expected utility from net income. If we call \( y_{NA} \) the net income when the evader is not audited (gross income less taxes on reported income) and \( y_A \) the net income when he is audited (gross income less taxes on true income less the fine), we can write the taxpayer’s expected utility as

\[
EU(e) = (1 - a) u(y_{NA}) + a u(y_A) = (1 - a) u[y! t(y! e)] + a u[y! ty! fte],
\]

where \( e \) denotes the amount of income concealed.

This representation yields some interesting results from the standpoint of comparative statics. On the reasonable assumption that the taxpayer is risk averse, it can be shown that the amount of tax evaded, \( te^* \), varies inversely with the audit rate \( a \) and the penalty rate \( f \), while it depends negatively on the tax rate \( t \) and positively on income \( y \) if and only if the taxpayer’s utility function displays Decreasing Absolute Risk Aversion. Further, the proportion of tax evaded, \( te^*/y \), increases with income if and only if taxpayer’s utility function displays Decreasing Relative Risk Aversion (see Cowell, 1990). Of these results, the least obvious is surely the inverse correlation between the amount of evasion and the tax rate (with DARA). This stems from the fact that both the direct gain from evasion (taxes saved) and the expected fine depend proportionally on \( t \). Hence, an increase in the tax rate does not induce the ‘substitution’ of the risky asset for the safe one, but operates solely through the reduction in disposable income (Yitzhaki, 1974).

Once the optimal amount of underreporting, \( e^* \), has been calculated, one can easily derive the ‘evasion rent’, defined as the monetary benefit accruing to the evader (more precisely, the amount of income that he would be willing to pay to switch from a virtual system of perfect enforcement to the actual, imperfect, one):

\[
\text{Evasion rent} = [1 - a(1 + f)]te^* \cdot RP(e^*),
\]

where \( RP(e^*) \) is the risk premium associated with the audit lottery. The evasion rent is therefore equal to the net return on evasion (evaded taxes less expected sanctions) less the ‘loss’ due to the riskiness associated with random auditing.
Several observations are in order. First, for evasion rent to be positive, the net return on evasion has to be positive (the evasion gamble needs to be ‘better than fair’). That is, for evasion to occur at all, it is necessary that $a(1 + f) < 1$; that is, the penalty and audit rates must be sufficiently low. Second, when the net return on evasion is positive, the only reason why taxpayers may not evade their whole taxes is the fear of uncertainty (the risk premium loss). Indeed, if taxpayers were infinitely averse to risk, they would report their income in full even if the net return on evasion were positive (taxpayers are hyper-pessimists and behave as if they were to be audited for sure). Finally, the risk premium produces a differential between the rent to the taxpayer and the net revenue loss to the tax authorities. Hence, it provides a monetary measure of the ‘deadweight loss’ due to the randomness of tax enforcement (Yitzhaki, 1987).

3.2 Extensions
This basic model gives an account of taxpayers’ evasion decisions in a very simple set-up: taxes and penalties are proportional, the audit rate is constant, only one form of evasion is available. In addition, the taxpayer is assumed to rely on expected utility theory and to be perfectly amoral, that is, to make compliance decisions with exclusive reference to the consequences for net income. All these assumptions are open to criticism, and models based on alternative assumptions have been developed. The following touches briefly on these contributions.

One standard criticism of the Allingham and Sandmo model is grounded in the belief that compliance decisions depend on moral views. This is clearly a problematic issue, one that cannot be captured by the consequentialistic set-up of standard decision theory. Bordignon (1993) makes an interesting attempt to account for non-self-motivated decisions in tax evasion. He develops a compliance model in which taxpayers are guided by suitably defined ‘Kantian principles’, which determine the amount that each taxpayer considers fair to pay. Under this assumption, it turns out that tax evasion is generally lower than under selfish behavior, that compliance depends on the level of public expenditure, and that evasion is likely to increase with tax rates.

Other authors have stressed the ‘social’ factors at the basis of the taxpayers’ decision (see Roth, Scholtz and Witt, 1989, for an excellent account of the sociological research). Economists have emphasized the ‘stigma’ attached to the violation of social norms and shown that tax evasion may have strong spillover effects. Social stigma is likely to give rise to a multiplicity of possible equilibria: when most people evade, the stigma effect is small and evasion is not in fact discouraged; when few evade, the stigma effect is great and evasion is discouraged. The transition from one equilibrium to the other takes the form of a ‘noncompliance epidemic’: if, for some reason, more people start to evade,
the stigma decreases and evasion spreads to an ever larger fraction of the population (see Benjamini and Maital, 1985; Gordon, 1989, and Myles and Naylor, 1996).

Alm and McCallin (1990), Landskroner, Paroush and Swary (1990), Yaniv (1990), and Wrede (1995) have extended Allingham and Sandmo with models in which taxpayers face more complex ‘portfolio’ set-ups offering other risky activities and alternative forms of evasion. Wadhawan (1992) posits that audits detect only a fraction of taxpayers’ evasion, while Das-Gupta (1994) analyses the case in which taxpayers’ income derives from a multiplicity of transactions.

Scotchmer and Slemrod (1989) and Scotchmer (1989) consider the effect of randomness in tax liability assessments. Among other things, both papers conclude that uncertainty over the true liability level or outcome of the audit increases net tax revenue, either because increased uncertainty makes evasion more costly (when taxpayers are risk averse) or because it may lead taxpayers to underreport their income and be subject to a fine (whereas overreporting only yields a rebate of the overpaid tax).

Several authors have tried to extend Allingham and Sandmo’s model to include the labor supply decision, so as to endogenize taxpayers’ gross income (see, among others, Andersen, 1977; Pencavel, 1979; Isachsen and Strom, 1980; Isachsen, SamuelSEN and Strom, 1985, and Cowell, 1985). The problem is that as soon as the labor decision is factored in, the simple comparative statics of Allingham and Sandmo are lost. Depending on the taxpayer’s marginal disutility from labor and her risk-attitudes, all predictions become possible. This problem is usually overcome by imposing strong restrictions on the utility function. Cowell (1985) takes a different course, assuming that decisions are made in two separate stages: first, the taxpayer decides how many hours to work; then he allocates this total labor supply between legal and illegal activities (alternatively, between reported and unreported income). On this assumption, Cowell is able to show that Allingham and Sandmo’s results carry over (with some qualifications) to the extended set-up if taxpayer’s labor supply is forward rising. Perhaps more importantly, he shows that the comparative statics results are strictly dependent on the nature of the evasion choice, as it can be tied either to the amount of income to report (for the self-employed) or to the amount of time to spend in ‘off the books’ activities (for the moonlighter).

The insights drawn from analysis of income tax evasion usually apply to other forms of evasion as well. Different considerations may be relevant, however, when the taxpayer is a firm subject to indirect taxation, as the evasion decision may affect output or pricing policy (tax shifting). However, Marrelli (1984) derives a separability result for the case of a monopolist: the evasion and shifting decisions are independent of one another as long as the audit probability is constant (see also Yaniv, 1995). The same result applies to oligopolistic markets when firms compete à la Cournot (Marrelli and Martina,
1988). Here, the amount of evasion by each firm is shown to depend, apart from the enforcement parameters, on the degree of collusion and on market shares.

Gordon (1990) offers an interesting insight on sales tax evasion. He suggests that under-the-counter cash sales may serve as a means of price discrimination: cash discounts are the best pricing strategy when the demand for cash purchases is highly elastic. The author also shows that, in order to reduce cash sales, a liability on detected cash customers could be imposed, but on the condition that this is an additional liability, and not just a transfer of a part of the supplier’s existing liability onto the consumer.

As is clear from the foregoing, taxpayer noncompliance decisions may be very complex and are likely to be powerfully affected by the practical framework in which decisions are made. This thesis is strongly supported by the empirical evidence, which we now briefly review.

4. Empirical Evidence on Taxpayers’ Behavior

Evidence on taxpayers’ behavior is notoriously difficult to come by. Data on the extent of evasion may be confidential (not available for external analysis) or not completely reliable (such as those derived from national accounting sources). All the same, empirical studies on the determinants of taxpayers’ compliance decisions have proliferated. The most detailed are based on the American Taxpayer Compliance Measurement Program (TCMP), conducted regularly by the IRS and based on a ‘line by line’ audit of a sample of 45,000 to 55,000 tax returns. In addition to statistical estimates, major insights on the dynamics of compliance have been obtained from questionnaires and experimentation.

In his pioneering analysis, Clotfelter (1983) uses TCMP data for 1969 to investigate the determinants of underreporting, which is defined as the difference between the income reported and that assessed by IRS examiners. He finds that both the marginal tax rate and after-tax income have significant effects on individual underreporting. In contrast to Allingham and Sandmo’s prediction, he finds that elasticities with respect to marginal tax rates are positive and range from 0.5 for non-farm business to 0.8 for non-business returns. In line with Allingham and Sandmo, elasticities with respect to after-tax income are positive and range from 0.3 for non-business returns to 0.65 for farm returns. Also, wages, interest and dividends are associated with better compliance and underreporting is higher for the youngest age-groups. Witte and Woodbury (1985) also analyze data from the TCMP for 1969, but focus on the effect of enforcement parameters. They find that the percentage of underreporting is related inversely to the probability of audit (with a lagged effect), and directly to the ‘opportunities’ for tax evasion (absence of withholding and information reporting) and to income, though in a decreasing
Dubin and Wilde (1988) criticize Witte and Woodbury’s results and highlight the potential endogeneity of audit rates. The idea is that audit rates are decided by the IRS in view of their potential yield: a decrease in noncompliance rates reduces the net return from auditing and leads the IRS to devote less effort to auditing. Using the IRS budget per return as an instrumental variable for the audit rates, they find the audit rate to be endogenous in 5 out of 7 audit classes. They also find that audits have a deterrent effect on evasion, and that noncompliance is positively related to the unemployment rate and the nonwhite fraction of the population. Feinstein (1991) uses a sophisticated estimation technique, which allows for partial detection by IRS examiners. His results confirm the great unevenness in compliance attitudes between groups of taxpayers, with ‘own business’ and ‘farm’ filers scoring the lowest compliance rates. Using TCMP data for 1982 and 1985, Feinstein more easily disentangles the effects of marginal tax rates and gross income (taxpayers with identical incomes filing in different years face different marginal tax rates). He finds that the effect of marginal tax rates on evasion is negative and highly significant, while the effect of income is essentially zero. The former finding is consistent with Allingham and Sandmo’s predictions, while the latter is not. Another finding is that greater propensity to evade is accompanied by a higher detection rate (thanks to greater IRS examination effort).

Studies based on IRS data provide a picture of the compliance phenomenon in which many factors come into play: income source, socioeconomic grouping (age, sex, location), detection probability, marginal tax rate and income level. Notably, the severity of the sanction does not seem to play a significant role (partly because in the US sanctions are rarely inflicted). Estimates based on IRS data, however, are subject to several weaknesses. First, by definition, TCMP programs relate to filers only, whereas in 1976, for example, strategic non-filers accounted for an estimated 36 percent of all unreported income. In addition, it is well known that IRS examiners have only limited capacity to detect evasion, especially on income from moonlighting and cash-only businesses. Finally, strong assumptions underlie the choice of instruments and variables as exogenous regressors.

Another important source of information about taxpayers’ attitudes is surveys. Much work has been done in this area, and results cannot be easily generalized (see, among others, Vogel, 1974; Spicer and Lundstedt, 1976; Lewis, 1979; Westat, 1980; Scott and Grasmick, 1981; Mason and Calvin, 1984; Yankelovich, Skelly and White, 1984; Kinsey, 1992; Sheffrin and Triest, 1992; and de Juan, Lasheras and Mayo, 1994). On the whole, though, these studies would support the deterrence hypothesis. Specifically, the following factors have been found to be significant determinants of tax compliance: (1) the perceived probability of detection; (2) the severity of informal sanctions; (3) moral beliefs about tax compliance; (4) experience with other noncompliers and
past experience with IRS enforcement (both encouraging evasion), and, (5)
demographic characteristics (older people seem to be more compliant) (Klepper
and Nagin, 1989). These results are largely concordant with those based on
TCMP data. The main additional insight they provide lies in the importance of
sociological factors, which can hardly be detected by other means.

Survey studies face several problems, however. First, results depend
crucially on the representativeness of the sample, which is often difficult to
assess. Second, respondents are reluctant to report acts of noncompliance (see,
for instance, Elffers, Weigel and Hessing, 1987). Third, causal relationships are
difficult to establish. The finding that respondents who perceive the highest
probability of detection are most compliant, for instance, is consistent both with
the standard ‘deterrence hypothesis’ and with the ‘experiential hypothesis’
whereby taxpayers initially overestimate detection probabilities and evaders
later lower their estimates if they are not detected (Saltzman et al., 1982).
Finally, individuals often seek to provide a consistent image of themselves,
offering ad hoc rationalizations for their behavior (Elffers, Weigel and Hessing,
1987).

A third, increasingly widespread empirical approach is based on
‘laboratory’ experiments (see, for instance, Baldry, 1987); Webley et al., 1991;
Alm, Cronshaw and McKee, 1993; Alm, Jackson, and McKee, 1993; and Alm,
Sanchez and de Juan, 1995). Individuals (often students) are asked to
participate in games simulating tax compliance, where they can underreport
and incur the risk of a penalty. At the end, they receive a real reward
proportional to their laboratory performance. The results tend to be very
sensitive to the particular design of the experiment. In general, this research
suggest that audit rates may play an important role in compliance decisions
(especially for those who have already been audited), and that compliance is an
increasing function of income and a decreasing function of the tax rate, while
it is hardly affected by the size of fines (unless the audit rate is very high).
These experiments also suggest that social norms and ethical attitudes play an
important part in evasion choices, that individuals often take an all-or-nothing
stance, that they tend to overweight low probabilities, and that the structure of
the taxes is important (Baldry, 1987).

While the empirical research is far from conclusive, it does appear to
support the hypothesis that expected punishment (that is, the size of sanctions
discounted by the probability of incurring them) is relevant. Sociological and
ethical factors surely play an important role too, although their effect is subtler
and harder to measure. This suggests that standard enforcement polices based
on apprehension and punishment should not be abandoned. They could be
supplemented by alternative approaches, seeking to appeal to taxpayers’ moral
conscience or to reinforce social cohesion.

The following section treats the question of optimal design of tax
enforcement policy, focusing on detection and punishment of evaders.
5. Evasion and Enforcement

Let us go back to the model of Allingham and Sandmo. While it provides a fairly sophisticated description of taxpayers’ evasion decisions, it leaves very little scope for enforcement policy. The latter is essentially reduced to two parameters: the penalty rate and the audit rate. The main policy prescription implicit in the model and most of its variants is that, in order to curb evasion, audits have to be stepped up and fines increased. And given that raising the audit rate is likely to require public resources while an increase in the penalty rate is not, the end result is likely to be one with Draconian but rare punishment, a rule such as ‘hang evaders with probability (close to) zero’.

This is a difficult prescription to elude. But in fact it is not clear whether curbing or eliminating evasion is always a desirable goal. In general terms, the desirability of perfect enforcement is tied to the “goodness” of the tax to be enforced. For instance, when perfect enforcement of income tax would result in the collapse of the taxed activity, one may well ask whether such unbearable burden represents the right policy.

Even if perfect enforcement were theoretically beneficial, however, it would not be likely to be cost free, as suggested by the Draconian rule. For instance, when adjudication is not perfect and innocent individuals can be convicted, infinite sanctions may entail very high welfare costs. Also, when individuals may engage in activities to avoid conviction, the social cost of enforcement may increase with the penalty (Malik, 1990)).

From a practical point of view, the major impediment to infinite fines derives from taxpayers’ limited wealth. Since convicted evaders cannot be forced to labor, they will be able to foot a penalty at most as great as their own wealth. The Draconian rule thus needs to be rephrased as follows: when strict enforcement is desirable, the optimal penalty is that which expropriates the taxpayer of all his wealth.

Enforcement policies, however, can be much more sophisticated than the combination of two variables, the penalty and the audit rate. The audit probability itself, for instance, need not be the same for all taxpayers. Indeed, a simple way of making audit strategy more effective is to base it on information specific to the taxpayer, which may include any observable characteristic correlated with real tax liability, from compliance records to consumption patterns. Clearly, the relation of an individual’s reported tax liability to the average for similar taxpayers may then become the key to singling out candidates for auditing.

In an important article, Reinganum and Wilde (1985) prove that by making audits conditional on the level of reported liability, the enforcer can increase net revenue. They analyze a simple cut-off rule, whereby an audit is triggered if and only if reported income is ‘too low’. They show that this rule dominates the
random audit rule considered by Allingham and Sandmo, and that it is the most economical way to foster truthful reporting when taxpayers are risk neutral and taxes and fines are lump sum. Scotchmer (1987) and Sanchez and Sobel (1993) extend this result, proving that the cut-off audit rule is the optimal policy for a net revenue-maximizing enforcer when taxes and fines are proportional and taxpayers are risk-neutral. These findings prompt the following observations. First, cost-efficient enforcement requires that audits be used primarily as a deterrent rather than as a means to collect fines. Their function is to foster correct self-reporting by individuals. Indeed, under the optimal policy audits will be performed only on people who are found (ex-post) to be honest - hence no fines will ever be collected. Second, the optimal cut-off level is strictly dependent on the distribution of income among the population: effective auditing requires reliable information on taxpayers’ expected liability. Finally, optimal enforcement is likely to induce a strong regressive bias, as it provides high-income taxpayers with better chances to evade than low-income taxpayers. The idea is that high-income individuals have greater opportunities to misreport, and since it is more costly to dissuade them from evading, one should let them off the hook (on this, see also Scotchmer, 1992). This problem may be alleviated by shaping audit policy according to indexes correlated with true income (Scotchmer, 1987) and, to a lesser extent, by suitably adjusting the tax rate (Cremer, Marchand and Pestieau, 1990).

These considerations indicate that simple models in the Allingham and Sandmo mold are not adequate to the problematic issues underlying the design of an effective enforcement policy. The matter becomes still more complex when one considers the interrelation between optimal enforcement and optimal taxation.

Border and Sobel (1987), Mookherjee and Png (1989), Marhuenda and Ortuno-Ortin (1994), Hindriks (1994), and Chander and Wilde (1998) address the simultaneous definition of the optimal audit and tax schedules, assuming that taxpayers are subject to limited liability and risk neutral, and that the enforcer seeks to maximize net tax revenue. The main finding of this literature is that, at the optimum, effective taxation is regressive and the audit function is non-increasing in reported income. Hence, the repercussions of noncompliance for effective taxation indicated by Scotchmer (1987) and Sanchez and Sobel (1993) carry over to this more general set-up. An interesting insight (Border and Sobel, 1987) is that when sanctions are upper-bounded and taxpayers are risk neutral, it is optimal to audit taxpayers with a very small probability and to provide infinite rewards for truthful reporting.

The so-called ‘principal-agent’ approach to enforcement discussed in the foregoing paragraphs constitutes one of the most general frameworks for analyzing tax evasion and its relation to public policy. The main pitfall is its extremely demanding assumptions concerning the enforcer’s ability to devise
and execute the optimal policy. Indeed, one may argue that actual tax enforcers do not always possess the features that would qualify them as ‘rational’. Like other branches of the public administration, they often have conflicting or ill-defined incentives, they may be governed by ‘process’- rather than ‘outcome’-oriented rules, and they are likely to have short-sighted and perhaps multiple goals. This suggests that the enforcer may tend to act myopically and just ‘react’ to impulses from the economic system. Thus the enforcer may decide auditing policy taking the amount of evasion in the economy as given and aiming to maximize detection, disregarding deterrence. This view, based on the assumption that the tax enforcer cannot credibly precommit to any specific auditing policy, is forcefully advanced by Graetz, Reinganum and Wilde (1986) and Reinganum and Wilde (1991). Their argument is that since actual audit rates are not observed by taxpayers, the enforcer has an incentive to relax any announced auditing policy once taxpayers have reported their incomes, that is, after the policy has performed its deterrent effect. Since taxpayers will anticipate the enforcer’s ex-post deviation, they will not rely on the announced policy and will engage in greater evasion. The bottom line is that, in equilibrium, audits will be performed on likely evaders rather than on compliant (that is, deterred) taxpayers. This would appear to be a most reasonable prediction, and it tallies with actual enforcement practices.

The comparative statics of the no-commitment model differ in nature from those of commitment models. With no-commitment, the evasion rate and the audit rate are determined simultaneously, whereas under commitment the audit rate determines the evasion rate. Consider, for instance, the effect of an increase in the audit cost. In the no-commitment model, evaders will evade more because they know that, ceteris paribus, the enforcer will react less harshly (due to the higher enforcement costs). The higher evasion rate, however, rises the net return from auditing and restores the enforcer’s incentive to exert effort. In equilibrium, the evasion rate will increase and the audit rate will not decrease. In the models with commitment, an increase in the audit cost means that audits become a more expensive deterrent tool. The enforcer will hence use them more parsimoniously and evasion rate will increase. In contrast to the no-commitment model, the equilibrium audit rate will decrease.

The two types of model provide different insights on tax enforcement. ‘Principal-agent’ models (with commitment) are probably best used to define the constraints that tax evasion puts on the effective tax system. They neatly define the set of implementable allocations on the assumption that the enforcer performs at maximum capacity. The ‘no-commitment’ approach, with a lower profile, aims at capturing a version of tax enforcement closer to actual practice. On the whole, however, these models still provide a very ‘stylized’ view of enforcement practice. They focus on just two enforcement tools, that is, the
penalty and the audit probabilities, and ignore most of the institutional features of real enforcement.

6. Procedures and Institutions

It is clear by now that real compliance decisions are much more complex than those depicted by standard economic models, in that taxpayers are subject to a wide variety of sociological and ethical factors. Nor is even the effect of enforcement policy itself fully captured by standard models. Real enforcement is unquestionably more than a mere combination of penalty and audit probabilities (regardless of how sophisticated these can be made). The process that leads from the checking of tax returns to the conviction of evaders is lengthy and complex, perhaps involving various bodies (tax administration, tax courts) and procedures (interviews, cross-examinations, settlements, and so on). The shape of the prosecution process affects taxpayers’ attitudes towards compliance in two ways. First, it determines the actual probability that a sanction will be imposed on evaders and, possibly, innocent taxpayers; and second, it may affect the degree of ‘hostility’ in the taxpayer’s perception of the tax system.

In a word, institutional and procedural features matter. They impose costs on taxpayers and affect the outcome of the prosecution process. We will touch briefly on some of these aspects, starting with the costs.

According to a number of studies, the cost to the taxpayer of compliance with the most common taxes (income and VAT) in industrialized countries can be as high as 10-13 percent of the total tax liability (see the pioneering contribution of Sandford, 1973, as well as Sanford et al., 1981; Slemrod, 1989; Pitt and Slemrod, 1989; Sandford, Goodwin, and Hardwick, 1989; Blumenthal and Slemrod, 1992, and Sandford, 1995a). High compliance costs, which may be due to complex tax schedules and rules, not only tilt the ‘cost-benefit analysis’ towards evasion, but may also generate resentment, weakening taxpayers’ moral conscience or even prompting them to evade as a form of ‘punishment’ for the tax administration. Legislatures should accordingly avoid the vicious circle of countering evasion by increasing the complexity of tax regulations, which raises compliance costs and fosters further evasion.

When the tax legislation is very complex, taxpayers usually have to turn to tax experts (CPAs or tax preparers), who have great power to influence their clients’ attitudes towards evasion, thanks to their superior knowledge of enforcement patterns. An interesting empirical study by Klepper and Nagin (1989b) on the United States suggests that tax preparers encourage compliance with regard to unequivocal items, and discourage it with regard to ambiguous ones. (Other investigations of this issue can be found in Scotchmer, 1989; Reinganum and Wilde, 1991; Erard, 1993, and Franzoni, 1998a.)
Costs are also entailed in mandatory record-keeping and reporting, whose role is to increase the visibility of offenses, that is, the ‘frequency and ease with which they come to the attention of and can be proved by enforcement officials’ (Kagan, 1989). As noted in Section 3, noncompliance varies greatly with economic grouping, as tax violation by different groups has different degrees of ‘visibility’. Unsurprisingly, therefore, evasion is apparently most common among independent contractors, professionals, and farmers. Conversely, compliance is highest among payroll employees subject to withholding.

In a technical sense, higher visibility makes it easier both to ‘observe’ the real situation or behavior of the taxpayer (by signaling potential violations) and to ‘verify’ it (prove it in court). Some forms of mandatory record-keeping, for example, serve a legal evidentiary function, implying a *de facto* shift in the burden of proof. It is the taxpayer who has to prove his compliance with the law, and bear the costs thereof. The question of the optimal amount of compliance duties to impose on taxpayers is therefore bound up with the optimal allocation of the burden of proof. Generally, the efficient allocation is that which places the onus of the proof on the party for which it is least costly (given its level of informativeness).

Another important factor in the ‘visibility’ of tax law violations is the standard of proof. Indeed, the difference between the ‘observability’ and the ‘verifiability’ of the tax base is precisely defined by the type of evidence that is necessary to assess it legally (and possibly prove that the original payments were not correct). In most countries, tax authorities have the power to estimate taxpayer’s liability by discretionary means when the information supplied by the taxpayer is deemed insufficient or clearly incorrect (OECD, 1990). Clearly, under these circumstances the standard of proof can be rather lax, and the use of mere statistical evidence can be used to prove taxpayers’ obligations. Presumptive taxation is a case in which statistical estimates and proxies are used *ab origine* to define the tax obligation, resulting in the automatic visibility of the activities covered and imposing virtually no compliance costs on taxpayers (see Tanzi, 1991). Note that simplifications and reductions in compliance costs will ordinarily be achieved only at the expense of reduced ability to discriminate among taxpayers (for purposes of either vertical or horizontal equity). As is pointed out by Kaplow (1996), a trade-off is likely to arise between containing compliance costs and accuracy in liability assessment.

On the procedural side, another important consideration is the possibility of resolving disputes through amicable settlements between taxpayers and the administration. In most countries, taxpayers can make a ‘deal’ with inspectors and obtain substantial penalty discounts in exchange for collaboration (OECD, 1990). When deals are left to the discretion of the revenue service, enforcement is likely to be adversely affected. Discretionary deals not only reduce the administration’s ability to precommit itself to any specific enforcement policy
but may also foster opportunism, tempting the administration to increase its inefficiencies (for example, lengthy and invasive prosecution procedures) so as to increase its ‘take’ at the settlement stage (Franzoni, 1995). Tax amnesties, though sharing some of these problems, may prove desirable, as they offer taxpayers social insurance against unexpected shocks, allowing them to complete their payments after uncertainty (about their income or their true preferences) has been resolved (Andreoni, 1991; Malik and Schwab, 1991).

A fundamental problem in considering the optimal institutional design of tax enforcement relates to incentives for enforcers. More fundamentally, the question is whether enforcement should be the job of public or private agents. First raised in general terms by Becker and Stigler (1974), the issue has been examined in the specific context of tax evasion by several authors. While in most countries taxes are collected by a public agency, in a few cases (as with import duties in Indonesia) collection is delegated to private contractors. Melumad and Mookherjee (1989) show that delegation of tax enforcement to a private party may be viable (that is, it can replicate the full-commitment solution) if it is backed by an incentive scheme based on publicly observable aggregate variables (audit expenditure, taxes filed and fines collected). This scheme rewards the agent for collecting fines, or, when no fine is collected, for meeting the target audit budget. Toma and Toma (1992) observe that different institutional arrangements may entail different agency costs so that depending on their incidence either public or private enforcement may be desirable.

A key agency cost is that associated with the danger of corruption. Since the personal aim of enforcement officers may not correspond to institutional purposes, there is scope for collusion with taxpayers. This seriously complicates the analysis, as a third constraint (no collusion) must now be taken into account. For while it may be contended that combating corruption can help control tax evasion, it may well be that anti-evasion measures as such ultimately just increase the scope and the extent of corruption (see Chu, 1990a; Chander and Wilde, 1992a; Besley and McLaren, 1993; Mookherjee and Png, 1995; Flatters and McLoad, 1995; Hindriks, Keen and Muthoo, 1996). This confirms that the institutional features of the enforcement system represent a point of fundamental importance. These features define the incentive structure governing the conduct of enforcers and crucially affect the actual functioning of all enforcement tools.

7. Conclusions

The foregoing offers an analytical framework for treating some salient aspects of tax noncompliance, suggesting causes and possible remedies. As must be clear by now, tax evasion is a complex phenomenon that cannot be eradicated by marginal changes in enforcement practice. Social and moral attitudes, which
play a very important role, are very slow to change and are often beyond the reach of public policy. Standard enforcement therefore remains crucial. The empirical evidence suggests that a stricter enforcement regime is likely to induce greater compliance; the key variable here is the probability of detection.

To date, most studies in this field have focused on two enforcement tools: penalty rates and auditing probabilities. Much work remains to be done to ascertain the impact on compliance of less striking but nonetheless important procedural and institutional factors.

Actually, closer examination of institutional reality suggests that the audit rate may not be the relevant variable. What really matters is the probability that an investigation will eventually result in conviction and sanction for the wrongdoer. Here a host of additional factors come into play: whether evasion leaves detectable traces, the specific ability and expertise of the auditors, the set of investigative tools at their disposal (for example, the degree of banking secrecy), the possibility of inducing taxpayer collaboration, the feasibility of out-of-court settlements, the standard of proof, the definition of ‘fault’, the clarity of the tax law, the number of levels of appeal, and so on.

Research into the impact that these procedural aspects have on taxpayer compliance is still in its infancy. Better integration of the research on tax evasion with the ‘law and economics’ analysis of legal rules is definitely desirable. As theoretical analysis proceeds, additional empirical work will be needed together with more extensive study of comparative tax enforcement law and procedure.

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