The Costs of Taxation and the Marginal Cost of Funds 1/

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Abstract

It is argued that taxation causes three kinds of deadweight losses and two types of direct costs. The deadweight losses arise from substitution, evasion, and avoidance activities while the direct costs are administrative and compliance costs. Some of these social costs tend to be discontinuous and/or nonconvex. Because most models of taxation ignore some components of the social costs of taxation, their conclusions cannot be of a general nature. An alternative approach to policy evaluation is to rely on a marginal efficiency cost of funds rule which can indicate appropriate directions of reforms. The paper discusses its merits, applicability, and limitations, as well as its relationship to other concepts.

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Summary

Excess burdens, administrative costs, and compliance costs are all components of the social costs of taxation: the costs incurred by society in the process of transferring purchasing power from the taxpayers to the government. The social costs include the cost of enacting and administering the law, involuntary compliance cost, and the deadweight losses and expenditure caused by taxpayer activities undertaken to reduce the tax burden, such as avoidance, evasion, and switching to more lightly taxed but otherwise less attractive consumption. All these components of social cost should be included in a proper model of the costs of taxation, and should affect the design of an optimal tax system.

The problem of designing a tax system is much broader than the problem presented in the standard optimal taxation problem, although the target remains maximizing social welfare, or alternatively, minimizing social cost subject to given targets. The most important component that is missing from models of optimal taxation is the issue of administering the tax law, which includes not only the process in which tax bases are determined, but also the procedure that determines and transfers tax revenue from the individuals to the government.

Because most models of taxation ignore some components of the cost of taxation, their conclusions cannot be of a general nature. An alternative approach to policy evaluation is to rely on a marginal efficiency cost of funds (MECF) rule that can indicate appropriate directions of reforms. The paper argues that the MECF concept is useful for analyzing small tax reforms. The thought exercise needed to apply it is relatively simple. For any change in the tax system that is considered, one has to evaluate the expected tax revenue and the expected leaked tax revenue. In the simplest case, the sum of the two, divided by the former, is the MECF. One can calculate the MECF for alternative ways of raising revenue, and, other things being equal, the one with the lowest MECF should be recommended. This approach can address a wide range of issues related to all of the categories of the cost of taxation. It can also be modified to take vertical equity issues into account. However, it does not allow the user to investigate the important issues of horizontal equity or fairness of the tax process, nor to evaluate nonmarginal changes in the tax system.
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I. Introduction

A casual survey of the public finance literature reveals an interesting pattern. Until the mid-1950s, almost all textbooks devoted a considerable amount of space to discussions of problems of tax administration, compliance, and enforcement. 1/ Beginning in the 1960s, though, the administration and compliance issues almost disappeared from the literature, excluding those intended for developing countries. 2/ The interest of economists shifted to deadweight losses and formal normative models, known generally as optimal taxation. In the early 1970s, before the optimal taxation literature reached its peak, Allingham and Sandmo (1972) planted the seeds for a turning point with their choice-based model of tax evasion; a large theoretical and empirical literature has followed. In the mid-1980s the problem of tax administration returned to gain some space, mainly in verbal but not in technical presentations. 3/ There has, though, been little effort to integrate these aspects of tax analysis into a coherent normative framework.

We begin this integrative task in this paper. We argue that excess burdens, administrative costs, and compliance costs are all components of what we shall refer to as the social costs of taxation: the costs incurred by society in the process of transferring purchasing power from the taxpayers to the government. The social costs include the cost of enacting and administering the law, involuntary compliance cost, and the deadweight losses and expenditures caused by taxpayer activities undertaken to reduce the tax burden, such as switching to more lightly taxed, but otherwise less attractive, consumption, avoidance, and evasion. All these components of social cost should be included in a proper model of the costs of taxation, and should affect the design of an optimal tax system. Hence, it is a bit puzzling that in each period, the interest of economists focuses mainly on one or two components of the costs. 4/

One possible interpretation of this stylized fact is that it reflects the issues that economists can solve. Until the emergence of the concept of excess burden in the 1960s, the public finance literature was mainly verbal and descriptive. Hence, the range of issues dealt with was not constrained by what can be solved by tractable mathematical models. With the emergence of mathematical models, the literature emphasized those elements of the social cost that can be easily modeled and analyzed—the excess burden.

1/ See, for example, Blough (1952), Shoup, Blough, and Newcomer (1937).
2/ Musgrave (1959) does not mention the terms. Atkinson and Stiglitz (1980) do mention tax administration as an important subject, but no analysis is offered. In contrast, Bird and Casanegra de Jantscher (1992) stress the importance of tax administration.
3/ Rosen (1985) devotes four pages (pp. 319-22).
This led to the optimal taxation literature, in which the main target was to find optimal rates of tax, and issues of tax administration were set aside as technical matters, which have no substantial bearing on the problem at hand. 1/

The pathbreaking paper by Allingham and Sandmo (A&S) added another dimension that can be analyzed by mathematical models—the issue of tax evasion. Following the A&S paper, hundreds of papers were published, 2/ most of them theoretical, dealing with different aspects of evasion. A relatively smaller number of books and papers have been empirical attempts to estimate the magnitude and determinants of evasion.

The realization that tax evasion is a serious problem faced by many industrial countries has led economists to raise the issue of tax administration; the mere fact that tax evasion exists often means administrative inability to enforce tax laws. However, there is still relatively little analytical work which incorporates tax administration. The main reason is that administrative issues are hard to analyze with continuous differentiable functions and, as will be argued later, require complex modelling effort.

In this paper, we argue that the problem of designing a tax system is much broader than the problem presented in the optimal taxation problem, although the target remains maximizing social welfare or, alternatively, minimizing social cost subject to given targets. The most important component that is missing from models of optimal taxation is the issue of administering the tax law, which includes not only the process in which tax bases are determined, but also the tax process itself—the procedure that determines and transfers tax revenue from the individuals to the government.

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1/ Administrative costs of taxation are fundamentally different from market transaction costs. In a market transaction, both parties willingly engage in the transaction. Hence, observing a market transaction, one can gather that the demand price exceeds the price received by the seller by the amount of transaction costs. They can be viewed as embodied in the utility or production functions, and they do not affect the stability of the equilibrium. In the case of taxation, one party may not be interested in participating in the deal and one role of the administration is to force the other party to participate. Since one partner may be trying to escape from the deal, tax transactions, unlike market transactions, are not stable. The administrator's ability to gather information and to exert his power on the taxpayer that materializes the tax transaction depends on the amount of resources budgeted for the former's activities. The more public is the information, the lower the administrative costs needed to retrieve it. One of the targets of compliance costs is to force parties that are engaged in market transactions to reveal the information to the tax authorities. This will reduce administrative costs.

2/ See the survey by Cowell (1990), and Tanzi and Shome (1993).
Enacting a tax law does not by itself raise revenue. It is the act of enforcing the tax law by the administration that transfers the tax from the individuals to the government. This was well understood 50 years ago. Note the following quote from Blough (1952), p. 146.

"It is tax policy in action, not simply the wording of the statute, that determines how much the taxpayer must pay, and the effects of the payment. Knowledge of the statute is only a start in knowing a tax system. The interpretations placed on language by administrators and courts, the simplicity and understandability of tax forms, the competence and completeness of audit, the vigor and impartiality of enforcement, and the promptness and finality of action all influence the amount of revenue collected, the distribution of the tax load, and the economic effects of the tax."

One expert has even declared that in developing countries "tax administration is tax policy" (Casanegra de Jantscher, 1990, p. 179). Although one may judge such a statement to be too extreme, we conjecture that most public finance experts would agree that the way the laws and regulations are administered affects the economic implications of the tax laws. 1/ Therefore, administrative issues should not be ignored.

The aim of this paper is to present the social cost of taxation in a broad context which includes administration, evasion, and optimal taxation issues so that one can fit the components of the tax problem into one framework. One theme of the paper is that the problem of taxation may be too complicated to be solved in the general case so that one has to rely on models which cover only certain parts of the problem. But if an essential part of the problem is overlooked, partial models may give incorrect answers. We explore an alternative approach that is limited to identifying desirable marginal changes, without a claim of optimality. The less ambitious objective enables us to use the concept of the marginal efficiency costs of funds (henceforth MECF). This methodology is less demanding than other alternative methods in terms of data, as its application revolves around forecasts of marginal tax revenue.

The paper proceeds as follows. In Section II we identify the major actors of the tax system, and in Section III we discuss the costs associated with each actor. Section IV derives the MECF concept in a simple model. Section V extends the analysis to include distributional issues, and Section VI discusses the problems that arise in analyzing nonmarginal changes. Some conclusions are offered in Section VII.

1/ Note, that whether a tax is feasible is determined only by administrative issues.
II. The Cast of Characters

We begin this task by laying out a stylized framework of the important actors in a tax system. The simplest framework has a social planner and two sets of agents—the tax administrators and the taxpayers. The social planner, who encompasses the legislative branch, the spending branch, and the judicial system, aims to maximize social welfare. The tax administrator acts as an agent on behalf of the social planner, while the taxpayers pay taxes. It is important to distinguish the tax administrator from the social planner because the tax administrator is only an agent, and the planner must therefore take into account the possibility of self-serving behavior by the administrator, including rent seeking, corruption, abuse of power and disloyalty, and hence, it must limit the power delegated to the administrator, by (for example) requiring a lengthy and detailed prosecution process, including tax courts and provisions to allow the taxpayer to appeal. These hurdles increase the administrative cost (see Virmani (1987), Chander and Wilde (1992), and Tanzi (1994) on corruption).

1. The social planner

For our purposes, the only objective of the social planner is to raise a given amount of revenue while keeping the social cost of raising revenue at a minimum level. Provision of public goods and any other services provided will be ignored. Also ignored are the motives of the social

1/ One way to interpret tax withholding is to view it as drafting some taxpayers (e.g., employers) into the tax administration. They are not empowered to act fully as tax administrators but this kind of hierarchy is typical to any kind of bureaucracy.

2/ There are many instances where one has to resort to a wider classification of actors. For example, the assumption of one social planner implicitly assumes that the social planner is interested in collecting the tax revenue. But whenever the planner is composed of several agents, as is the case of a democratic society, they may hold different opinions or represent different interest groups. In order to reach a decision about the tax system, compromises must be made. The result may be a blurred tax law that is hard to administer or to comply with. We refrain from extending the problem of taxation in this direction, not because it is an unimportant issue, but because it is difficult to analyze a tax law with a social planner who, in effect, undermines his own proposals.

Another case that is not captured in this framework is when the social planner, e.g., the government itself, undermines the implementation and administration of the tax law. When the government consists of several branches, and if some of the spending branches are relatively strong, then they may use their influence to increase their budget by allowing contractors to evade taxes. This kind of a situation undermines the ability of the tax administrator to collect taxes. As we will argue later, these kinds of issues, which are country-specific are difficult to model. On the other hand, they are captured by the marginal efficiency costs of funds.
planner in governing. It can be the maximization of a social welfare function, the maximization of the tax revenue (Levi, 1988), rent seeking or it can be to "... act like a discriminating monopolist, separating each group of constituents and devising property rights for each so as to maximize state revenue" (North, 1981, p. 23). All those targets are consistent with the target of keeping the social cost of taxation as low as possible. At this stage, we do not consider other targets of (or constraints on) taxation such as horizontal equity and redistribution of income. We will return to these issues in Section V. However, if the intention of introducing, say, fairness into the tax process is cost minimization, then they can be included in the analysis. For example, one can argue that it is easier to collect taxes when they are viewed by the taxpayers as fair taxes, or when the tax law is simple and unambiguous. In this case, the value attached to fairness is the reduction in cost caused by it.

Since the tax administrator is a different entity than the social planner, the social planner has to not only set the tax law, but also the rules of the game played between the administrator and the taxpayers. It determines the rights and the duties of each party, including possibly the duties of the taxpayers to collect information or taxes on behalf of the tax administrator.

2. The tax administrator

Roy Blough (1952, p. 338) defines the target of the administration as "to collect every dollar due to the government--and no more." He continues to say: "In tax administration the problem of equity or equal treatment is whether everyone is being required to pay the amount of tax due under the law. ...But a more important source of inequity is the failure of administrators to collect taxes from those who owe them. Such taxpayers receive a financial subsidy, while the tax loads of other taxpayers must be increased to make up the resulting revenue deficiency."

1/ The term "simple" is not well defined. Slemrod (1985, p. 71) defines complexity in terms of the amount of resources needed to operate the law. Blough makes a direct attempt to define it by arguing:

Tax simplification has been a loudly demanded objective. A good deal of discussion of simplification reflects a misunderstanding of what makes a tax complex. Emphasis is often placed on cumbersome and complicated language. The most important quality of a well-drafted statute is that it shall not be open to more than one interpretation. The ordinary taxpayer does not need to read the tax statute. More simple statements are available for his use. The language of the law is for administrators and courts. Wherever possible, the language should be simple rather than complex, but the matter is relatively unimportant. Lack of clarity, on the other hand, is of very great importance. Simple language, which proves to be ambiguous, may result in great complexity and uncertainty. (Blough, 1952, pp. 430-31).
Definitions of the target of tax administration used in modern analytical models focus almost entirely on revenue maximization. (See, for example, Reinganum and Wilde (1985)). Such a target, if taken seriously, implies ignoring overpayment by taxpayers and any other activity whose target is not short-term revenue. On the other hand, tax administrations, like any other bureaucracy, are not subject to competition and can set their own agendas which have nothing to do with the intentions of the social planner. 1/ There are actually two issues that arise here: what should be the targets of tax administration, and how to devise a framework so that the administration adheres to those targets, which include both cost minimization and equity. 2/ The first target can be defined quantitatively, and requires simply that administrative effort, like any other economic activity, should be subject to cost considerations. The other target, equity, can be interpreted as pursuing justice regardless of its cost implications. We return in Section V to the issue of how to combine justice and efficiency in an analytical model. 3/

3. **The taxpayer**

Taxpayers can minimize the impact of the tax system by engaging in three kinds of activities, all of which involve a substitution effect: 4/

a. A shift to other activities. Taxation makes the tax base more expensive, so that one way to avoid its impact is to divert the derivation of utility to other, cheaper sources. The importance of this factor depends on the substitutability and/or complementarity between the tax base and the untaxed commodities. The distortion which results from this activity is measured by the standard deadweight loss.

b. The taxpayer may try to avoid the tax by investing time and other resources in finding out legal ways not to pay the tax. This activity is usually referred to as avoidance, and is considered as a component of

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1/ Note the following statement: "Unfortunately, tax administrations do not function optimally. In some cases, they can be so inefficient as to distort completely the intention expressed by the tax laws." Tanzi and Pellechio (1995), p. 3. See also Bird (1989).

2/ Tanzi and Pellechio (1995) differentiate between "effectiveness" and "cost-minimization," where effectiveness is defined as attaining a high level of compliance among citizens. Cost minimization for a given revenue is identical to revenue maximization for given cost. Interpreting "high" as "equal" would make their target similar to the targets referred to in this paper.

3/ One can argue that activities which are directed toward equity, construct confidence between taxpayers and administration, which may lead to a long-run increase in revenue.

4/ We consider a one-period model. In a multi-period model one would have accounted for such taxpayer behavior as deferral of taxable income to future periods.
compliance costs. However, as will be argued later, one has to differentiate between two kinds of compliance costs—those that are imposed on the taxpayer by the social planner or the tax administrator, and those which the taxpayer voluntarily makes in order to reduce the tax paid. In this paper, the term avoidance will be restricted to voluntary compliance costs which are intended to reduce the tax paid.

c. The taxpayer may evade tax liability illegally. By imposing a tax with evasion opportunities, the relative price of being honest is increased. The substitution effect that is causing evasion is the change in relative price of honesty and the increase in the return to risk bearing through tax evasion.

All in all, we have encountered five components of the cost of taxation: (1) administrative costs—the cost of having a tax administration; (2) compliance costs—the costs imposed on the taxpayer to comply with the law; (3) the regular deadweight loss—the inefficiency caused by reallocation of activities by taxpayers who switch to nontaxed activities; (4) the excess burden of tax evasion—the risk borne by taxpayers who are evading; and (5) avoidance costs—the cost incurred by a taxpayer who searches for legal means to reduce tax liability.

In some cases the classification of a particular activity into one category of cost or another is arbitrary, and may depend on one’s interpretation of the intentions of the agents. Taxpayers can spend money in order to conceal the tax base or they can spend it to comply; they can try to avoid but they end up evading. Because of this overlap some investigators use the term "aversion" to refer to both avoidance and evasion (Cross and Shaw (1982)). Also, the separation of the costs borne directly by taxpayers into avoidance costs and involuntary compliance costs requires the knowledge of the intentions of the taxpayers. However, as demonstrated below, this classification is important in avoiding double counting of social costs. These distinctions present a challenge in constructing optimal models of a tax system.

III. The Components of the Cost of Taxation: Properties and Modelling Problems

1. Administrative costs

Tax administrations deal, among other things, with information gathering. But this is a difficult problem to model because information can vary by quality. There is a qualitative difference between an auditor "knowing" that a given taxpayer is evading and having sufficient evidence to sustain a court finding to that effect. Also, the cost of gathering information depends on how accessible the information is, and whether it can be hidden easily. The advantage of taxing a market transaction relative to taxing an activity of the individual such as self-consumption is a result of several properties. First of all, in any market transaction there are two
parties with conflicting interests. Hence, any deal which is intended to hide information has the potential of being reported to the authorities by one unsatisfied party. A second property is that the more documented the transaction, the lower the cost of gathering information on it. For this reason it is easier to tax a transaction which involves a large company, which needs the documentation for its own purposes, than to tax a small business.

Administrative cost may also be a function of the physical size and the mobility of the tax base (it is harder to tax diamonds than windows), whether there is a registration of the tax base (e.g., cars, drivers' licenses), the number of taxpayer units, and information sharing with other agencies. It is also an increasing function of the complexity and lack of clarity of the tax law.

Administrative costs possess two additional properties which complicate modelling of tax administration issues: they tend to be discontinuous and to have decreasing average costs with respect to the tax rate. To see the first property, consider two commodity tax rates, denoted by \( t_1 \) and \( t_2 \). If \( t_1 > t_2 \), then only the total sales of the two commodities need be reported and monitored. If, however, the two rates differ even slightly, then the sales of the two commodities must be reported separately, doubling the required flow of information. There are decreasing average costs because the cost of inspecting a tax base does not depend on the tax rate. (Except to the extent that people are more inclined to cheat with a higher tax rate.) Hence, a higher tax rate reduces administrative cost per dollar of revenue collected (see Sandford, 1973). Administrative cost may also be a function of the combination of taxes employed and their rates, because the collection of information concerning one tax may facilitate the collection of another tax (e.g., inspection of value-added tax (VAT) receipts may facilitate the collection of income tax). Because of these properties of administrative costs, it is not surprising that economic modelling, which handles more easily continuous and differentiable variables, tends to be scarce in this area.

2. Compliance costs

As far as we know, there is only one formal normative model that addresses compliance costs (Mayshar, 1991), although one can find estimates of its magnitude (Sandford, 1973, Sandford et al., 1989; Slemrod and Sorum, 1984; Blumenthal and Slemrod, 1992). As an example of the modelling difficulties this topic poses, consider the following problem: when is it optimal to delegate to employers the authority to collect taxes and convey information about employees, thus requiring the administration to audit both the taxpayer agent and the taxpayer himself, and when is it optimal to deal only with the employee? Clearly, given that the employer already has this

1/ A good description of the properties of administrative cost can be found in Shoup, Blough, and Newcomer (1937, pp. 337-51).
information it would save administrative costs to require him to pass it along to the tax administrator. This may also reduce total social costs if the cost of gathering information by the administration is higher than the increase in cost caused by imposing a two-stage gathering system. 1/

The potential efficiency of involving taxpayers in the administrative process must be tempered with a practical consideration. Administrative costs must pass through a budgeting process, while compliance costs are hidden. Hence, there may be a tendency to view a decrease in administrative cost accompanied by an equal (or greater) increase in compliance costs as a decrease in social cost, because it results in a decrease in government expenditures. We return to this point later.

3. The regular deadweight loss

Any tax which creates a wedge between the relative prices that any two taxpayers face entails an efficiency loss. The deadweight loss created is an increasing and continuous function of the tax rates, but it is also a function of the combination of taxes employed. If one abandons the assumption that the set of taxed commodities is given, one cannot assume that the deadweight loss is a continuous function.

4. The excess burden of tax evasion

In the Allingham and Sandmo model of an expected-utility-maximizing taxpayer, tax evasion occurs only if the taxpayer expects to increase his expected income, including the expected fines that he would have to pay in case he is caught. Hence, a taxpayer who evades taxes increases both his exposure to risk and his expected income. This additional exposure to risk is a deadweight loss to society. In principle, the taxpayer could be better off under an agreement whereby the taxpayer pays at least as much as the government currently collects, while the government ceases to audit. Assuming a risk-neutral government, the excess burden of tax evasion is equal to the risk premium that the taxpayer would be ready to pay in order to eliminate the exposure to risk (Yitzhaki, 1987). Depending on the other assumptions concerning the probability of detection, the penalty structure and risk aversion, the excess burden of evasion may be a continuous function which increases with the tax rates.

5. Avoidance costs

We distinguish between compliance costs, which are imposed on the taxpayer by the tax agency, and avoidance costs, which result from voluntary action carried out by taxpayers whose intention is to reduce tax payments.

1/ Note that a withholding system requires two information gathering systems and creates an opportunity for the withholding agency to evade the taxes it collects (Yaniv, 1988, 1992). In a period of rapid inflation the gain to the agent from withholding may exceed the cost.
Clearly, any activity to reduce the tax is a pure loss from the social point of view, and therefore creates a deadweight loss. In practice it is hard to distinguish between avoidance and compliance costs because the distinction between the two depends on the intentions of the taxpayer. It will be evident later that it is important to distinguish who controls each activity. The taxpayer controls activities that produce excess burden (including avoidance), while the tax administrator controls compliance and administrative costs.

6. Basic problems in modelling the tax system

Slemrod (1990) distinguishes between the theory of optimal taxation and optimal tax systems. Optimal taxation is usually restricted to the optimal setting of a given set of tax rates ignoring administrative costs, compliance costs, avoidance, and evasion. When dealing with tax systems one has to consider all the elements of the problem. Clearly, any general solution that ignores components of the problem is doomed to fail if the omitted part of the problem is an important issue. For example, to minimize the classical excess burden requires (in the general case) unequal commodity tax rates, and the finer the classification of commodities the lower the excess burden. But this solution ignores the administrative costs of differential commodity taxes. 1/

Another example concerns normative models of enforcement of tax evasion which, with a few exceptions, imply that it is optimal to impose a penalty severe enough to abolish all evasion. 2/ The main idea is simple. A rational taxpayer will never evade if the costs to him are too high, and the tax administrator can make the private cost as high as he wishes by increasing the penalty to infinity. In this case no one will evade and it will be possible to reduce costly monitoring almost to zero. But this kind of model ignores the possibility of a corrupt tax administrator who will abuse the system or, alternatively, will punish harshly someone who committed an honest mistake. The harsher the penalty, the more damage that can be inflicted by a corrupt administrator or, in the case of an honest mistake, the more cruel and unfair the system is. Hence, the harsher the penalty, the more detailed and cautious the prosecution process should be, although this may increase its administrative costs. In the absence of modelling the interaction between the penalty rate and administrative costs, analytical models usually impose a ceiling on the penalty rate by assumption.

A final example is that optimal tax models, which ignore administrative costs, if taken literally, generally imply that lump-sum taxation is the first-best solution. However, in real life they rarely exist and when they

1/ For additional examples, see Tanzi (1992).
2/ For example, Christiansen (1980) argues that a large fine and a small chance of detection are the most powerful deterrent in the case of tax evasion. This result is due to Becker (1968).
do, they are for the most part connected with military service (i.e., the draft, reserve duty, national service); an exception is jury duty. The missing element which leads to such a result is the cost of administration. The problem in enforcing a lump-sum tax is how to proceed if the taxpayer declares he is unable to pay it. If the administrator has to prove that the taxpayer can afford to pay the tax, then this is not a lump-sum tax. The advantage of taxing a market transaction is that it reveals an indication of both the ability to pay the tax and the liquidity that enables the taxpayer to pay without excessive damage.

IV. Marginal Efficiency Cost of Funds

Listing the basic components of social costs in a taxation problem, together with their unfriendly nature, is a reminder that the issue of optimal tax system is far from being solved. There are no models that can both deal with all the important issues and provide important insights. We cannot provide one here. Instead, in what follows, we offer a tractable methodology which can evaluate marginal changes in tax systems and take account of all five components of the cost of tax systems. It is based on the concept of the marginal cost of public funds. 1

1. MECF with only regular deadweight loss

The concept of marginal cost of public funds that we will be using is based on Mayshar (1990) and Wildasin (1984), as refined by Mayshar and Yitzhak (1995) to distinguish between distributional issues and efficiency issues. It will be convenient to first discuss the concept in the absence of administrative costs, evasion or avoidance; we extend the application to these issues in later sections. We intend to show that being able to forecast the revenue from each tax is sufficient for finding out the relevant marginal excess burdens. Furthermore, knowing these marginal excess burdens is sufficient for identifying a revenue-neutral marginal change that will improve the tax system, in the sense of lowering its total social cost.

Consider a representative taxpayer with a well-behaved utility function $u()$, and an observed allocation of its budget that satisfies $y = \sum_i q_i X_i$, where $q_i$ is the price of the $i$-th commodity the household faces, $X_i$ is the quantity consumed, and $y$ is given income. Assume that the vector of producers’ prices, $p$, is given and that $t_i = q_i - p_i$ are the tax rates.

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1/ See Hahn (1973) for existence of lump-sum taxes in the U.S. civil war.
2/ The "commodities" may include factors of production such as labor. In this case the quantity of the commodity is nonpositive.
Then, the marginal burden of a marginal tax reform on the household is 1/

\[ MB = \sum_i X_i \Delta q_i. \]  
(1)

The marginal burden is the income equivalent of the effect of the reform. Equation (1) shows that MB is a function of the quantities (tax bases) consumed and the changes in prices.

Tax revenue is

\[ R(t, p, y) = \sum_i t_i X_i(p + t, y), \]  
(2)

where \( X_i(q, y) \) is the demand for commodity \( i \), \( y \) is income, and consumer prices are \( q = p + t \), where \( t \) is a vector of specific taxes. Revenue neutrality requires

\[ MR = \sum_i MR_i dt_i = 0, \]  
(3)

where \( MR_i = \frac{\partial R}{\partial t_i} \) is the change in total tax revenue due to a small change in the tax rate on commodity \( i \).

It will turn out to be convenient to work with dollars of revenues rather than with tax parameters. Denote by \( \delta_i \) the change, measured in dollars of tax revenue, that results from a change in the tax rate on commodity \( i \), \( dt_i \), so that

\[ \delta_i = MR_i dt_i. \]  
(4)

Then the marginal tax reform, \( dt \), can also be characterized by the vector of tax receipts \( \delta \), and the change in tax revenue would then be \( MR = \sum_i \delta_i \).

Substituting expression (4) into (1), while taking into account that \( dt_i = dq_i \), yields

\[ MB = \sum_i \left[ \frac{X_i}{MR_i} \right] \delta_i, \]  
(5)

subject to \( \sum_i \delta_i = 0. \)

---

1/ One can derive this relationship under two alternative sets of assumptions:

(a) That the taxpayer is a utility maximizer and by Roy's identity \( \frac{\partial v}{\partial t_i} = -\lambda X_i \), where \( v \) is the indirect utility function and \( \lambda \) is the marginal utility of income. The marginal burden is the income equivalent of the change caused by the reform.

(b) No optimization is carried out by the taxpayer and we are only interested in a Slutsky compensation to the household. That is, the question asked is what the compensation has to be that would enable the taxpayer to continue to consume the basket he consumed before the reform.
The term in the square brackets is the Marginal Efficiency Cost of Public Funds, 1/ interpreted as the cost to the society of increasing tax revenue by a dollar, through a change in the i-th tax rate or other fiscal instrument. 2/

Let us illustrate the implications of (5) by concentrating on a revenue-neutral tax reform which involves only two taxes, in which case, because \( \delta_1 = - \delta_2, \)

\[
MB = ([X_1/\text{MR}_1] \delta_1 - [X_2/\text{MR}_2] \delta_1) = (\text{MECF}_1 - \text{MECF}_2) \delta_1. \tag{6}
\]

As long as MECF\(_1\) does not equal MECF\(_2\), a tax reform can reduce the burden of taxation and therefore increase the welfare of the representative taxpayer. If MECF\(_2 > MECF_1\), the reform must feature \( \delta_1 > 0 \), that is shifting revenue toward \( t_1 \); if MECF\(_2 < MECF_1\), a welfare-improving reform should decrease reliance on \( t_1 \) to raise revenue. Thus, promising directions for tax reform are indicated by comparing MECFs. To estimate the MECFs, one has to be able to estimate only two parameters for each instrument—the marginal change in revenue, MR\(_i\), and the tax base, \( X_i \), equal to the expected change in tax revenue if the tax base is inelastic. 3/ \( X_i \) is the burden imposed on the taxpayer at the margin.

Note that the above interpretation is not limited to reforms involving tax rates. One may define the marginal cost of funds with respect to any parameter of the tax system (e.g., income brackets, exemption levels, penalties for tax evasion, etc.). Nor does its application rely on an assumption that tax policy has been set optimally. The only assumption is that the taxpayer is a utility maximizer.

Having established the relevance of the MECF in a simple setting, we next discuss how it can be extended to other issues involving evasion and avoidance.

2. Extensions of the MECF to include other cost components

The MECF concept presented above was derived in a model which ignored administrative and compliance costs as well as evasion and avoidance. It can, though, be applied and used in a tax system framework. To see that, let us start with an intuitive explanation of the MECF concept.

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1/ The term MECF is slightly different from Marginal Cost of Funds because efficiency considerations are separated from distributional issues. We will return to this point later.

2/ This cost does not net out any benefits that arise due to the expenditure of the funds collected.

3/ In many practical estimations, \( X_i \) is also used as an estimate of MR\(_i\) (see Sutherland (1989)). The interpretation in those cases is that all MECFs are assumed to equal one or, alternatively, that all taxes are lump-sum taxes.
Recall that the potential change in tax revenue (assuming an inelastic base) is \( X_i \) but, because of taxpayers' response, the government collects only \( MR_i \). We can divide the potential tax \( X_i \) into two components as follows

\[
X_i = (X_i - MR_i) + MR_i.
\]

(7)

where \( MR_i \) dollars are collected and \( (X_i - MR_i) \) "leaks" outside the tax system. The critical question is how to evaluate, from a social point of view, the leaked dollars. The question can be answered by asking how much a taxpayer is ready to expend (on the margin) in order to save a dollar of taxes or, alternatively, how much utility loss he is willing to suffer in order to save a dollar of taxes. The answer is that a rational taxpayer will be ready to sacrifice up to, but no more than, one dollar in order to save a dollar of taxes. Hence, on the margin the private cost, which is equal to "leaked" dollars multiplied by their cost per dollar, is 

\( (X_i - MR_i) \). Hence, the collection of \( MR_i \) dollars results in \( (X_i - MR_i) \) loss to the taxpayer over and above the taxes paid. If we assume that the private marginal cost of the leaked tax revenue is also a social cost, then the cost to society of transferring a dollar to the government is

\[
\frac{(X_i - MR_i)}{MR_i} = \frac{X}{MR_i} - 1.
\]

The total marginal costs to the individual taxpayer, including the taxes paid, is \( X_i/MR_i \).

Consider now a taxpayer who also has the option to evade part of the additional tax. On the margin, he would be ready to sacrifice the value of one dollar (in additional risk bearing due to evasion and/or due to substitution to cheaper but less rewarding activities) in order to save a dollar of taxes. Hence, we do not have to know whether the "leak" was through evasion or substitution to evaluate the costs to society.

The same rule applies to avoidance activity and, in fact, to any activity under taxpayer control, so that it applies to substitution, evasion, as well as avoidance. Hence, all one needs to know is the potential tax (i.e., assuming an inelastic tax base) that will be collected from a change of a parameter of the tax system, and the actual change (taking into account all behavioral responses) in order to evaluate the marginal efficiency cost of raising revenue.

In constructing the MECF we have made use of two critical assumptions which deserve further attention. The first of these is that the taxpayer is not constrained. (That is, he is not at a corner solution. An example of such a taxpayer is one who is unable to evade additional taxes simply because he has evaded all the tax due.) If there are corner solutions, it is not appropriate to presume that at the margin the taxpayer is giving up a dollar's worth of utility to save a dollar of taxes; thus the "leak" in tax revenue may have a private cost that is less than the revenue cost. As an example, consider the MECF of raising the tax rate on labor income in a situation where, in an economy with two taxpayers, one reports no labor income at all and, at that corner, is bearing risk valued at 20 cents to evade one dollar; the other taxpayer, with identical labor income, reports all of it. Assuming no substitution or avoidance response and zero
compliance and administrative costs, the economy MECF with respect to an increased tax rate is 1.2, even though the potential tax base is exactly twice the revenue collected.

To take account of the possibility of the taxpayer being at such corner solutions, we generalize the expression for MECF by introducing a parameter \( \gamma \) multiplying the \( X_i - MR_i \), the leaked revenue, where \( \gamma \) is the marginal value to the taxpayer of a dollar of tax saved. Introducing \( \gamma \) undoubtedly reduces the simplicity of the MECF expression, because it will vary depending on the situation under study. Empirical investigation is required to determine whether, in many situations, assuming that \( \gamma \) is one is a reasonable approximation to the truth.

The second critical assumption is that the cost borne by taxpayers in the process of reducing tax liability is equivalent to the social cost. This is certainly true in many situations, such as when the private cost takes the form of a distorted consumption basket. But in some cases the private cost is not identical to the social cost. A straightforward example is when the taxpayer hires an accountant to search for legal reductions in taxable income, and these costs are deductible from taxable income. In this case the social cost is \( 1/(1 - t) \) higher than the private cost, where \( t \) is the taxpayer's marginal tax rate.

Fines (but not imprisonment) for tax evasion bring up a more subtle example of divergence between the private and social costs of tax-reducing activities. The prospect of a possible fine for detected tax evasion is certainly viewed as a cost by the taxpayer, but is from the society's point of view merely a transfer. Thus the leak of revenue due to evasion has a lower social value than the private value; in the extended MECF below, we subsume this issue into the \( \gamma \) parameter. Note that if the fine itself is the \( i \)-th policy instrument, this argument implies that its MECF could be close to zero, and almost certainly less than one, making increasing fines look like an attractive policy option indeed. As discussed above, there are reasons unrelated to cost minimization that dictate that increasing without limit fines for tax evasion is not desirable. 1/

We turn now to application of the MECF rule to administrative and compliance issues. Earlier normative models of taxation which address

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1/ This result is due to the fact that we did not distinguish between the administrator and the social planner. Raising fines increases the possibility of corruption on behalf of the administrator.
administrative costs have formed the problem as follows. 1/ There are two ways to raise revenue. One way is to increase a set of tax rates, and by so doing to increase excess burden. The alternative way involves increasing administrative costs (by, e.g., broadening the tax base as in Yitzhaki (1979), or by increasing the probability of a tax audit, as in Slemrod and Yitzhaki (1987)). On the margin, it is optimal to equalize the marginal costs of raising revenue under the two alternatives. Hence, in order to incorporate administrative cost all we have to do is to define the costs of taxation as deadweight loss plus administrative costs. At an optimum, the MECF of each tax rate should be equal to the MECF of administrative improvements that raise revenue. In calculating the MECF of administrative improvement, it is important to account for the fact that these expenses come out of funds which were presumably raised with tax instruments that have MECF in excess of one. 2/ In other words, administrative improvements that raise net revenue decrease the excess burden; hence, on the margin and for given revenue, the saving in excess burden should be equal to the increase in administrative costs. In this way, the MECF criterion can be applied to tax administration, too. 3/

Compliance costs are additional costs imposed on the taxpayer. Hence, they should be added to the burden imposed on the taxpayer. They serve as a substitute to administrative costs, but the expenses are borne directly by the taxpayer rather than through the government budget.

Having described all the components of the MECF, one has to define what are the relevant MECF for society. Clearly, one has to sum the excess burden of the tax to compliance and administrative costs to reach the total cost to society. But should we sum the marginal costs of substitution, compliance, and administration to come up with the social marginal costs to society of raising revenue? First, note that if optimal policy prevails,

1/ Most of the models that incorporate administrative costs restrict the analysis to a subset of the types of cost related to taxation. For example, Yitzhaki (1979) and Wilson (1989) deal with excess burden and administrative cost, while Sandmo (1981), Slemrod and Yitzhaki (1987), and Mayshar (1991) deal with evasion, administrative costs, and labor supply. The main drawback of the first type of model is that they rely on specific utility functions (Cobb-Douglas in Yitzhaki (1979), CES utility Wilson (1989)) in order to overcome the discontinuity created by having different commodities. The latter set of models do not allow for more than one tax in the system.

2/ This means that it is not optimal for a tax administration to behave like a tax farmer, i.e., setting marginal revenue equal to marginal costs, ignoring the fact that it spends tax dollars. Hence, privatization of tax collection may lead to overenforcement. See Slemrod and Yitzhaki (1987) and Mayshar (1991).

3/ Yitzhaki and Vakneen (1989) use the term "the shadow price of a tax inspector," which is the revenue collected by adding another tax inspector. Note that the MECF is actually the reciprocal of the shadow price of a tax inspector.
all policy instruments yield the same MECF, and hence it is sufficient to calculate one MECF to know them all. In a real situation, the MECF of different instruments can differ, and it is feasible to raise revenue utilizing only those policy instruments with a relatively low MECF. 1/ In either case, one should not add the MECF of administrative costs to the MECF of the other costs (excess burden and compliance costs) to get the overall MECF, because administrative costs are "factors of production" in the process of taxation and their role is to reduce the excess burden of the tax system.

The revised MECF that includes all components is:

\[
\text{MECF}_i = \frac{\gamma(X_i - \text{MR}_i) + C_i + \text{MR}_i}{\text{MR}_i - A_i}
\]

(8)

where \(\gamma\) is the value that the taxpayer is sacrificing at the margin in order to save a dollar of tax, \(C_i\) is the marginal compliance cost associated with the \(i\)-th instrument, \(A_i\) is the marginal administrative costs, and \(\text{MR}_i - A_i\) is the net revenue collected at the margin. The intuitive interpretation of the expression is the same as before, with some qualifications. The potential tax is \(X_i\). \((X_i - \text{MR}_i)\) is leaked at a social cost of \(\gamma\) per dollar, \(\text{MR}_i\) is collected by the government, and \(C_i\) is the additional involuntary compliance cost. Hence, the total burden on society is the sum of those components. Of the \(\text{MR}_i\) collected by the government, \(A_i\) is spent on administration, leaving \(\text{MR}_i - A_i\) in the coffers. MECF is the burden on society divided by what is collected after subtracting the cost of doing business. This yields the marginal costs of a dollar collected.

Because in expression (8) \(C_i\) is added in the numerator and \(A_i\) is subtracted in the denominator, the key conceptual difference between the two is explicit--only the latter use revenue raised from taxpayers. To illustrate this difference, consider that a tax for which \(C_i = \text{MR}_i\) (with \(A_i\) and \(X_i - \text{MR}_i = 0\)) might conceivably be part of an optimal tax regime (if the MECFs of other instruments exceed 2), it would never be optimal to have \(A_i = \text{MR}_i\), for at the margin this instrument has social cost but raises no revenue. 2/

1/ MECFs may differ even in an optimal taxation model if one includes other targets in addition to cost minimization. We return to this point in the next section.

2/ To formally see the point assume that MECF >1 and ask what would be the changes in compliance costs and administrative costs that will keep MECF constant. It is easy to see that \(-dC_i/dA_i = \text{MECF}\), which means that \(C_i\) should increase more than \(A_i\) decreases while keeping MECF constant.
V. Distributional Issues

1. Vertical equity

The MECF concept ignores differences in the distributional patterns of different taxes. When distribution matters one cannot continue to treat all dollars alike, but instead each dollar of potential marginal revenue (whether collected or leaked) should be weighted by the social evaluation of the marginal utility of income of the taxpayers. In other words, one should take into account what Feldstein (1972) calls the distributional characteristics of the burden on the taxpayers. There are three different approaches to incorporating distributional concerns: (a) an explicit assumption of a social welfare function; (b) an implicit assumption of a social welfare function; and (c) an assumption of a broad class of social welfare functions.

Using an explicit social welfare function, one should weight the \( X \) (the burden on the taxpayer) by the social evaluation of the marginal utility of income. For example, using an Atkinson-type (Atkinson, 1970) social welfare function implies that the marginal burden be weighted by the marginal utility of income \( y_h^{-\varepsilon} \), so that instead of \( X_i/MR_i \) as the basic expression of the MECF (in the simple model) we get MCF as:

\[
MCF_i = \frac{\sum_h x_{ih} y_h^{-\varepsilon}}{\sum_h y_h^{-\varepsilon} / MR_i}
\]

where \( x_{ih} \) is the marginal burden of the tax on taxpayer \( h \). Optimal tax theory implies that one should equate all the MCF\(_i\). For a sophisticated application of this approach, see Ahmad and Stern (1984, 1991).

The main problem with assuming a specific social welfare function is that it is difficult to defend such a strong assumption. Hence, Ahmad and Stern consider whether a reform is suitable under a range of social welfare functions. An alternative approach is based on inequality measures (or a poverty index) such as the Gini coefficient. Then the investigator implicitly assumes a social welfare function. In some cases one can recover the (implicit) social evaluation of the marginal utility of income. Those marginal utilities can be used to estimate a weighted income elasticity which summarizes the distributional characteristics of the tax base. For example, Yitzhaki (1994) uses \( \mu(1-C) \) where \( \mu \) is the mean income.

\[\text{Note that we use MCF}_i, \text{ rather than MECF}_i \text{ when we take into account both distributional and efficiency issues.}\]
(e.g., consumption per capita) and \( G \) is the Gini index of income inequality, as a social welfare function. In this case, \( \text{MCF}_1 \) becomes

\[
\text{MCF}_1 = \frac{X_i(1-\eta_i G)}{\text{MR}_i} = \text{MECF}_1(1-\eta_i G)
\]

(10)

where \( \eta_i \) is the Gini income elasticity of the tax base. In essence, expression (10) adjusts the MECF by the appropriate income elasticity to take distributional issues into account. Note that, other things being equal, the higher the income elasticity of the tax base, the lower will be the MCF of raising a given amount of revenue. The attractiveness of this kind of methodology is that it separates the estimation of the income elasticity from the estimation of the MECF. Hence, it can be useful for first-order approximations, where one can rely on a conjecture concerning the income elasticity and the Gini measure of income inequality.

Implicitly assuming a social welfare function does not, however, eliminate the need to defend it. Hence, an attractive alternative is to investigate whether an assumption of a specific social welfare function is really needed for finding out the direction of a tax reform. Under certain conditions one may find a reform that improves upon a large set of social welfare functions. For an illustration, see Mayshar and Yitzhaki (1995).

2. Horizontal equity, fairness, and justice

Objectives related to horizontal equity or the fairness of the tax process itself are more difficult to incorporate into the analysis, and we do not attempt that task here. Yet we believe that these issues are of fundamental importance in understanding the design of tax systems.

Because the interpretation of fairness is influenced by cultural setting, ideology, prejudice, and propaganda, it cannot be generalized over time and countries. For example, whether the rich accumulated their wealth by theft or by hard work, and whether the poor are poor because of lack of opportunities or because of laziness, lead to different interpretations of fair taxes. However, it seems to us that there are some widely accepted characteristics that are necessary for taxes to be fair. Among them are (a) taxes should not be arbitrary, in the sense that they must be imposed on a tax base that indicates an ability to pay or benefits derived from the

\[1/ \text{ The (Gini) income elasticity is a weighted average of the income elasticity of the potential marginal tax, weighted by the (implicit) weighting scheme of the Gini index. The term in the bracket is always positive (provided that the tax base is always positive).} \]
provision of public goods; 1/ (b) taxes should not be imposed retroactively (that is, the taxpayer should be given advance notice, so that he has a chance to adjust his activities to the tax); (c) the tax should not serve the specific interest of a person and should be general in the sense that equal taxpayers should be treated equally. 2/

These arguments were contained in the four canons of taxation of Adam Smith. Bastable (1895), in his interpretation of Smith's canons, points out that others have considered those rules as "partly ethical...and partly economical" and is in favor "to regard them not as economic, ethical, or constitutional, but essentially financial; they therefore rightly combine the different elements that must enter into problems connected with that subject" (pp. 385-86).

If these important objectives cannot be quantified, all one can do is to calculate the cost to society of adhering to those targets, and then discuss whether it is worthwhile to pay this price. Alternatively, changes in the tax law that do not conform with constraints related to these objectives may be simply discarded.

VI. Evaluating Nonmarginal Changes

Although marginal analysis can be helpful for evaluating small changes in the tax system, it cannot handle the grand design of the tax system. Because of the nature of the problem, i.e., the noncontinuity of administrative costs, nonconcavity of the revenue constraint, nonconcavity of deadweight loss and increasing returns to scale in tax administration—the tax problem cannot be handled by deriving marginal conditions in a well-behaved optimization problem. In this case, one may have to resort to simulation models so that the actual level of the social welfare function under different tax regimes can be compared.

Presumptive taxes

One interesting example, which involves both noncost-related targets and nonmarginal changes, is presumptive taxation. Presumptive taxes involve tax bases, or indicators, that can serve as proxies for ideal tax bases, but which are less easily manipulated and more easily monitored than the otherwise ideal tax base. Although the main motivation of presumptive taxes is to save administrative and compliance costs, the use of a proxy means that achievement of other targets will likely be adversely affected. The use of the term presumptive can be interpreted as including an apology that

1/ One can point out that random taxes, such as a draft lottery or random auditing do exist, but in practice, random taxes are often imposed in the presence of indivisibilities or increasing returns to scale.
2/ See the discussion in Lambert and Yitzhaki (1995) on horizontal inequity.
other targets (such as fairness) are sacrificed. In the sense that all
taxes make design sacrifices for administrative reasons, all taxes are
presumptive; after all, if there were no information gathering costs, an
ability tax is arguably optimal.

Consider the following tax design issues in the context of presumptive
taxation. Most economists would agree that the household, and not the
family, is the appropriate unit for capturing economics of scale in
measuring economic well-being. However, actual income taxes and transfer
payments are related to the family, where individuals are connected by
relationships that cannot be manipulated easily. The choice of the family
as the appropriate unit of taxation can be explained by administrative
costs. One may be able to evaluate the cost saving in taxing the family
instead of the household, but a proper evaluation of this issue requires the
knowledge of the harm done—in terms of mismeasuring ability to pay—by not
taxing the household.

The issue applies more generally to income taxation. Most economists
recognize that ability to pay is a function of full income, which includes
the value of leisure. However, it is difficult to value leisure and
therefore all tax systems are based on income and not on full income or the
return to ability. Thus, taxes based on income are in a sense presumptive
taxes on full income. Furthermore, one can interpret the provision existing
in many countries allowing spouses to file separately as a presumptive
recognition of the fact that two working spouses have less leisure than one
working spouse. Whether this is a reasonable approximation depends on the
value attached to the deviation from horizontal equity that separate filing
causes.

One can add to the list of presumptive taxes depreciation schedules,
the standard deduction, and a long list of what are explicitly labelled as
such (see Tanzi and Casanegra de Jantscher (1987), Sadka and Tanzi (1992),
and Slemrod and Yitzhaki (1994)). As far as we can see, the issues involved
in presumptive taxes cannot be easily handled by the concept of MECF nor by
simple optimization, because they involve cost saving at the expense of
another target (horizontal equity) which is analytically intractable.
Numerical simulation combined with evaluation of the cost attached to
deviations from justice principles may be required (see, e.g., Stern, 1982).

VII. Conclusions

In this paper, we explore the usefulness of the marginal efficiency
cost of funds as a guiding principle in the formation of tax policy
recommendations. We argue that the MECF concept is useful for analyzing
small tax reforms. The thought exercise needed to apply it is relatively
simple. For any change in the tax system that is considered, one has to evaluate the expected tax revenue and the expected leaked tax revenue. In the simplest case, the sum of the two, divided by the former, is the MECF. One can calculate the MECF for alternative ways of raising revenue, and other things being equal, the one with the lowest MECF should be recommended.

How relevant is the concept of marginal cost of funds to the International Monetary Fund? Our argument is that policy recommendations that are derived from abstract models (or, in some cases, experience) tend to be almost identical for all countries, simply because differences in culture, ethics, technological development, market structure or any other country-specific difference such as the level of income are missing in those models. To overcome the complexity of the tax problem, there is a tendency to concentrate on one component of the problem, which leads to finding policy guidelines that are only correct under certain conditions, which tend to be forgotten. For example, both "tax neutrality" and "optimal tax rates" are correct conclusions from disparate models, but they contradict each other. Careful application of the MECF can begin to sort out which argument is suitable for a specific country.

Consider the following example. The effectiveness of a VAT depends, among other things, on the validity of bookkeeping records in the country. The validity of bookkeeping depends on whether taxpayers need the records for running their own business. Excluding multinational corporations, it seems safe to assume that the larger the business the higher the reliance on records for in-house management, and the more costly manipulations would be. Hence, one can expect the efficiency of a VAT to increase with the size of the business. Therefore, we should expect a crucial level of development that is required for a VAT to be efficient. We do not know what this crucial "level of development" is and how to measure it. But clearly, the MECF of having a VAT may differ among countries, and comparing the MECF of VAT to MECF of other taxes within a country may shed some light on whether a VAT is the appropriate tax for a country. Note that country-specific properties, such as an inability to enact simple tax laws, corruption, and administrative capabilities are all captured in the MECF. The challenge, then, is to measure the MECF. Calculations similar to those

1/ It is argued by Bird and Casanegra de Jantscher (1992, p. 3) that "it seldom makes sense to try to reform tax administration without simultaneously reforming the tax structure." Clearly, one can generalize the argument by saying that it is rarely the case that it is optimal to change one tax parameter. The changes to be considered are the best combination that one can think of.

2/ Morag (1965) argued that taxes should be changed from time to time simply because it takes time for the taxpayers to learn how to "adjust" themselves to a new tax. This argument means that one cannot expect the same tax to be "the" appropriate tax for a long period of time. Recalculations of MECFs can indicate when to abolish a tax.
performed by Silvani and Brondolo (1993) can be viewed as a first step in answering the question. 1/

We are not offering the MECF as a replacement for traditional analysis of efficiency of tax systems, nor as a substitute to an expert's analysis of the weaknesses of a tax system. We do suggest, though, that it is a useful concept that can help in making the choice between competing alternative approaches.

1/ Silvani and Brondolo (1993) calculate the compliance rate of the VAT by estimating actual and potential tax revenues. They find that they vary from 90 percent to 33 percent. Restricting their analysis to the margin (or assuming that the marginal and average compliance rates are equal) adding compliance and administrative costs enables the calculation of MECF of VAT for different countries, which should be compared to the same calculations for alternative taxes. Note, however, that a compliance ratio of 33 percent implies an MECF of 3 although administrative and compliance costs are ignored.
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