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Taxation and Development: The Weakest Link?

Essays in Honor of Roy Bahl

Edited by

Richard M. Bird

Jorge Martinez-Vazquez

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STUDIES IN FISCAL FEDERALISM AND STATE–LOCAL FINANCE

Series Editor: Wallace E. Oates, *Professor of Economics, University of Maryland, College Park and University Fellow, Resources for the Future, USA*

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Richard M. Bird

Professor Emeritus of Economics, University of Toronto, Canada

Jorge Martinez-Vazquez

Regents Professor of Economics and Director, International Center for Public Policy, Andrew Young School of Policy Studies, Georgia State University, USA

STUDIES IN FISCAL FEDERALISM AND STATE–LOCAL FINANCE

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Contributors

Roy Bahl, Andrew Young School of Policy Studies, Georgia State University, USA

Richard M. Bird, University of Toronto, Canada

Musharraf Rasool Cyan, Andrew Young School of Policy Studies, Georgia State University, USA

Andrew Feltenstein, Andrew Young School of Policy Studies, Georgia State University, USA

William F. Fox, Department of Economics, The University of Tennessee, USA

Roy Kelly, Duke Center for International Development, Sanford School of Public Policy, Duke University, USA

Luciana Lopes, Andrew Young School of Policy Studies, Georgia State University, USA

Yeti Nisha Madhoo, University of Mauritius, Mauritius

Jorge Martinez-Vazquez, International Center for Public Policy, Andrew Young School of Policy Studies, Georgia State University, USA

Thornton Matheson, Fiscal Affairs Department, International Monetary Fund

Charles E. McLure, Jr., Hoover Institution, Stanford University, USA

Matthew N. Murray, University of Tennessee, USA

Shyam Nath, Amrita University, India

Victoria Perry, Fiscal Affairs Department, International Monetary Fund

Janet Porras-Mendoza, International Center for Public Policy, Andrew Young School of Policy Studies, Georgia State University, USA

Paul Smoke, International Development Program, Robert F. Wagner Graduate School of Public Service, New York University, USA

Chandara Veung, Fiscal Affairs Department, International Monetary Fund

Violeta Vulovic, International Center for Public Policy, Andrew Young School of Policy Studies, Georgia State University, USA

Sally Wallace, Department of Economics, Andrew Young School of Policy Studies, Georgia State University, USA

Eric M. Zolt, University of California, USA

Preface

Most of the chapters in this volume were first presented and discussed at a conference sponsored by the International Center for Public Policy of the Andrew Young School of Policy Studies in Georgia State University held at the Evergreen Resort at Stone Mountain Park, Atlanta on 13–15 September 2012. In addition to those who have directly contributed to this volume, we are grateful to Ehtisham Ahmad, James Alm, Sijbren Cnossen, Gary Cornia, Robert Ebel, Riel Franszen, Mark Gallagher, Bert Hofman, Doug Keare, Johannes Linn, Remy Prud'homme, Mark Rider, Vito Tanzi, Teresa Ter-Minassian, Larry Schroeder, Enid Slack, Francois Vaillancourt, Christine Wallich, Michael Wasylenko, Debbie Wetzel, Christine Wong, and Joan Youngman for their participation at the conference and the comments they provided at different stages of the completion of the chapters. We are also grateful to Arienne Wyatt for invaluable assistance in preparing and editing the manuscript and seeing the book through to publication.

While the following chapters speak for themselves, our hope is that this volume as a whole provides a worthy tribute to Roy Bahl, who has long played an important role in the field of taxation and development. It is also our hope that this volume provides both an informed reflection on how much progress the developing world has made in introducing effective tax systems at both the national and subnational levels of government and a useful benchmark for judging how far, and in what direction, countries still have to go in this respect.

<div align="right">The Editors</div>

1. Sustainable development requires a good tax system

Jorge Martinez-Vazquez and Richard M. Bird

Budgets are where the dreams of development planners and reformers come to be born or to die. The hopes and aspirations of any society as well as its capability to realize them are revealed more clearly by how governments spend and tax than by the declarations of politicians or the advocacy of interest groups, whether domestic or international. How a country finances its public sector is not simply about money but about such broader issues as the relation between state and society, how political institutions function in articulating and implementing social objectives, and the extent to which states succeed in achieving them. Spending and regulatory policy are of course also important but since even the best-intentioned government cannot spend revenues it does not have a critical element of development policy always and everywhere is taxation.

How much a country taxes, what it taxes, how it determines its tax policy, the extent to which the level and structure of taxation are related to spending policy, how taxes are administered, and how well both policy and administration adjust to the ever-changing environment all countries now face in this globalizing world – such matters are not simply esoteric issues best left to public finance specialists. On the contrary, as historians are increasingly recognizing, they are the "sinews of power" in the important sense of being critical links between what a country may wish to achieve through its political institutions and what is actually achievable and achieved.[1]

In the last few years the development community at large has at last begun to take seriously some of the problems arising from the weakness in many countries of the critical link between taxation and development. In addition to the simple need for additional revenue emphasized by the UN Millennium Project (2005), the centrality of taxation for development has recently been stressed by both the European Commission (2010) and

the OECD Development Advisory Committee (OECD 2012). Moreover, increased attention is also being paid both to the role of taxation in affecting the distribution of income and wealth (International Tax Dialogue 2011) and in improving governance (OECD 2010). Some aid agencies have also moved tax and development to the top of their "to-do" lists, with particular attention being paid to improving tax policy and especially tax administration as well as to reducing fiscal barriers to bringing micro and small business into the formal sector and strengthening domestic and international efforts to reduce capital flight and international tax evasion. In a recent useful survey of the aid literature, Fjeldstad (2013) identifies some of the critical issues many developing countries face with respect to strengthening the link between tax and development that have been highlighted in the recent development literature:

1.   The need to increase revenues to finance major social and infrastructure needs;
2.   The need to design taxes to favor efficiency, growth and equity;
3.   The need to reduce tax exemptions to increase the tax base and reduce corruption and evasion;
4.   The need to reduce taxes on the poorest and to increase taxes on the richest;
5.   The need to deal more adequately with profit-shifting by multinational companies;
6.   The need to design and implement taxes with careful attention to the implications for improving the quality of governance.

All of these questions are, to varying extents, discussed in the present book. Of course, some of them – especially the first three listed – have long been the focus of the relatively few tax scholars who have dedicated much of their careers to the study and improvement of tax systems in developing countries. Roy Bahl stands out among the small group of development tax experts not simply because of his important work on subjects that are now, once more, at the forefront of development discussion but also because of the extent to which he has long been actively engaged not only in thinking about such matters but in doing what needs to be done to improve outcomes both by training tax and public finance specialists in developing countries and by carrying out extensive field work in a variety of countries around the world. Since Roy's experience and work on taxation in developing countries is unique in the extent to which he has paid close attention to subnational issues it is not surprising that, as more and more countries began to turn in recent

decades to some form of decentralization as a possible way to deal with some of their problems, he has again played a critical role in shaping much of the recent expansion of work on issues of regional and local finance in developing countries.[2]

The essays in this volume by friends, colleagues, and students of Roy Bahl all relate to some aspect of the critical linkages between taxation and development. The three essays in Part I, for example, focus mainly on the key question of how much and in what way countries can, should, and do tax: what factors determine the level and growth of taxes in different environments, how the effects of alternative possible changes in taxation may be modeled and evaluated, and how views as to what changes are advisable have altered over time. In contrast, the four essays in Part II consider from different perspectives aspects of some difficult and important issues in tax design: how to deal with multinational enterprises, how to deal with small and informal enterprises, the connection between tax policy and income inequality, and the appropriate way to deal with a particular form of "tax expenditure" or, in the particular case considered, outright subsidy.

Looking still more deeply into fiscal reality, the three essays in Part III similarly consider from different perspectives three aspects of fiscal decentralization: why theory and practice seem always to differ, how to reform the property tax, and the unduly neglected subject of local user or beneficiary charges. Finally, to round off the volume, Roy Bahl in the final essay stands back from the critical but often context-specific and complex details raised in many of the preceding chapters and discusses in more general terms the fundamental question of just how, when, and to what extent tax systems in developing countries can be strengthened.

Several common themes emerge to varying degrees in the course of the superficially diverse topics covered in this volume. One such theme is the importance of better understanding the ways in which taxes and expenditures are linked. At the macro level, this point is made explicitly in Chapter 2. It is also central to the discussion of the economics and politics of taxation and inequality in Chapter 7, and comes up again with respect to particular aspects of tax policy in Chapters 4 (on the evolution of ideas about tax policy) and Chapter 6 (on taxing small and medium enterprises), as well as in all three of the chapters dealing with fiscal decentralization and subnational revenues. The importance of understanding the intergovernmental context in designing tax policy at any level of government is itself another cross-cutting theme that is discussed not only in the chapters on decentralization but also in the context of the issues considered in Chapters 4 and 6. Both of these themes might perhaps be subsumed under a third theme that echoes throughout the

book as a whole, namely, the critical importance of considering tax issues within the specific context of each country taking into account not only the level and structure of its economic development but also its history, its regional location, and its political institutions. As Acemoglu and Robinson (2012), Besley and Persson (2011), and Alesina and Reich (2013) have recently emphasized in different ways, since the economic and political development of every country is both path-dependent and context-specific it is inextricably linked not only to such non-economic factors as those just mentioned but also to other critical factors such as social norms and culture that are even harder to measure, analyze and understand (Inglehart and Welzel 2010).

Many years ago, when one of us was just beginning the study of public finance, he was both impressed and somewhat terrified to be told that to understand the subject one really needed deep knowledge of not only economics but also political science, public administration, sociology, management, and accounting.[3] Subsequently, as his own experience with the field expanded, he began to add to this list of ideal requirements for the well-rounded student of public finance knowledge of mathematics, history, law, and psychology. Obviously any one person can be at best a dilettante with respect to many of these fields, so most who work in the field of tax and development have understandably tended to hew fairly closely to their own disciplinary base, which for most has been economics. Of course, as is discussed further in Chapter 4, the nature of the economics discipline has itself altered considerably over the last 50 years. One consequence is that economists have substantially increased their analytical understanding of the economic effects of taxation: indeed, much of what was once called "public finance" is now more commonly called "public economics" – at least by economists. This development had many beneficial effects in sharpening the economic analysis of tax policy in developing countries and in particular in facilitating the development of new tools that have in recent years led to much more and much better empirical analysis (as discussed in Chapters 2 and 3).[4]

Over the same period, however, a subset of economists concerned with public sector issues moved in a different direction towards what is often called the "public choice" approach, which in effect returned to the older political economy tradition of Colm (1955) although in a considerably more analytically and empirically rigorous way.[5] However, although some have applied this approach fruitfully to explore some issues of taxation and development both empirically (Kenny and Winer 2010) and conceptually (Brautigam, Fjeldstad and Moore 2007), there seems still to be a considerable distance to go before this approach really moves into the mainstream (Keen 2012). Nonetheless, as many of the chapters in the

present book confirm, to understand how taxes work in developing countries more progress is needed in the direction of broadening rather than narrowing our approach to the subject although there is still, of course, much to be done with respect to developing and applying new modeling techniques to developing country data. The chapters in this book thus consider the past (what we have learned), the present (what problems we currently face), and the future (how can we better approach those problems) of tax and development. We have learned much about this subject over the last half century. As is almost always the case with complex social phenomena, however, there is still much more to be learned.

OUTLINE OF THE BOOK

The next three chapters in the volume provide a general overview of the changes that have taken place in analyzing tax performance and in tax thinking more generally in recent decades. Success in terms of the usual criteria is evident in some countries and their experience suggests lessons that may be useful to those facing similar problems in other countries. However, even in such success stories progress has usually been slow and many challenges still lie ahead. Taxation may be the weakest link in development policy for several reasons. Central to the economic approach, for example, is the concern that taxes may be inefficiently distorting the allocation of resources, thus retarding growth. A politically more salient argument in many countries may simply be that the existing tax systems may not raise sufficient revenue to permit the level of public expenditure on infrastructure and social services needed to promote growth and development. How much and how tax revenues are raised in any country largely reflects collective political choices, although such choices may, or may not, adequately reflect the underlying concerns of the people. From both a political and an economic perspective, however, since adequate tax effort is critical to satisfying growing needs for health, education, public infrastructure and other basic services it is always an essential component of development policy.

Chapter 2, by Musharraf Rasool Cyan, Jorge Martinez-Vazquez and Violeta Vulovic, reexamines the question of what determines the level of tax effort exercised by different countries. The earlier literature on this question largely focused on the comparison across countries of the availability of "tax handles" and the comparison of actual collection performance against a measure of potential collections. In effect, the extent to which each country utilized its tax bases was compared with the

average utilization rates found in countries with comparable levels and structures of economic development. More recent studies along this line have expanded this approach by taking into account not only such "supply" factors as the size of potential tax bases (imports, mining, etc.) but also factors influencing "demand" such as the extent to which political institutions give people "voice" and legal institutions establish a favorable "climate" for private saving and investment. This chapter breaks new ground by relating the definition of tax effort not so much to what other countries are doing as to the developmental needs and budgetary goals that set the parameters of potential tax reform. The authors argue that it is important to link the adequacy of tax effort explicitly to the specific expenditure objectives of government and the associated gains in national welfare.

Chapter 2 also examines the extent to which it matters if the traditional regression model (which, as noted above, essentially "benchmarks" countries against the average of other countries) or the newer stochastic frontier modeling approach (which instead benchmarks against the "best" performance) is used to estimate tax effort. While the authors find that the differences in the two approaches are not that great, they argue that the capacity measures yielded by both approaches do not really provide a politically appealing revenue target specifically applicable to a country. They suggest that more meaningful ways to measure tax effort might be to take either the gap between current revenues and the existing level of public expenditures – the result of a country's political choices – or the gap between existing revenues and those required to reach such presumably desired targets as the Millennium Development Goals (UN Millennium Project 2005). Although the latter of these approaches has been explored to some extent in such recent official documents as IMF (2011), the present chapter appears to be the first to compare the results of measuring tax effort in terms of the existing fiscal gap with the results of the more conventional regression and stochastic modeling approaches. While the estimates reported here are only preliminary, this approach to assessing tax effort appears worthy of further exploration since experience suggests that governments are more likely to move to strengthen revenues to meet clearly defined and understandable goals than to meet objectives suggested by inherently complex and difficult to understand econometric analyses.

Not all that long ago such essential components of policy analysis as revenue impact estimates, the distribution of tax burdens, and the efficiency effects of tax reform proposals consisted at best of some sort of spreadsheet analysis involving aggregate figures combined with lots of guess work. At worst, it was little more than a set of back of the envelope

calculations illustrating some of the expected outcomes of different policy packages. Matters are now very different as a result of the evolution and introduction of two sets of analytical tools that have become integral components in the preparation and analysis of serious tax reform packages in countries around the world. Some decades ago, tax administrations in a few developed countries began to construct micro datasets from structured samples of individual taxpayers, particularly with respect to personal and business income taxes, in order to be able to calculate how the tax liabilities of different taxpayers would be affected by changes in the structural design of the tax system. Such micro-simulation models (MSM) are now widely available in many countries around the world and have become considerably more sophisticated by allowing behavioral responses of taxpayers to the different tax design scenarios.[6] This approach has proved particularly useful in analyzing the distributional impact of tax changes. Around the same time as MSM models began to be constructed, largely on the basis of administrative data, academic economists began using computable general equilibrium (CGE) models, initially to understand the interrelated determination of relative prices in many sectors of the economy. Soon, however, applied CGE models began to be used to study the impact of different tax structures, and such models have subsequently proved to be a useful way to analyze the likely impact on efficiency of tax changes.

In Chapter 3 Andrew Feltenstein, Luciana Lopes, Janet Porras-Mendoza and Sally Wallace examine the impact of these two new tools – micro-simulation and computable general equilibrium modeling – on tax reform and tax advice in developing countries. The authors both identify the strengths and weaknesses of both techniques and present a useful review of how they have been used in analyzing tax policy reforms in developing countries. Since, as noted above, the two approaches are essentially complementary in what they can do, with MSM focusing on distributional effects and CGE on allocative efficiency, it is not surprising that many attempts have been made to use both approaches in a combined fashion. Two main approaches have been followed in integrating these approaches. The "top-down" approach, which is the most commonly used, feeds the aggregate results obtained from the computable general equilibrium model into the micro-simulation model. In contrast, in what Chapter 3 calls the "bottom-up" approach, the micro-simulation model is first used to generate parameters that are then employed in designing and running the computable general equilibrium model. The authors conclude that either approach can be useful in yielding more accurate estimates of the impact of tax reform on revenues, allocation of resources and after-tax income distributions and illustrate,

with an application to the case of Pakistan, the relative usefulness of each of these modeling techniques.

The conventional wisdom on development taxation has changed substantially over time, with three distinct stages being discernible. In the first few decades after World War II, the dominant "model" was essentially the same as the "comprehensive income tax" ideal long advocated as the appropriate objective for developed countries. Understandably, most early studies in developing countries essentially followed the same lines and advocated tax reform policies not all that different from those that their authors advocated in their own countries. This approach to development taxation did not turn out to be very successful. Such policies were seldom accepted in full and even when they were accepted in part they were not very successful in achieving the objective of establishing an equitable and efficient revenue system. These poor results were one reason why a second, quite different approach to development taxation began to emerge in the 1980s. More importantly, however, the new "model" adopted by most advisors reflected the important post-1970 developments in public economics mentioned earlier, with the result that the new model implicitly underlying most advice on tax matters remained essentially a "one size fits all" normative approach, although the ideal to which developing countries were now urged to aspire, which took the form of a "broad base low rate" model centered more on the VAT than the income tax, was also reinforced by an increasing body of empirical evidence.

Chapter 4 by Richard M. Bird suggests that over the last two decades another "model" for tax reform in developing countries has begun to emerge that differs substantially from its predecessors in several important respects. This approach does not present a single model suitable for all countries but rather a list of factors that need to be taken into account in developing an appropriate model of reform given the specific circumstances and objectives of the particular country in which it is to be applied. This approach explicitly recognizes that taxation plays many roles, both positive and negative, with respect to different policy goals and that careful attention needs to be given to how each of the many dimensions of the design, implementation, and effects of the tax system may affect these goals. In addition, it emphasizes the need to bring more explicitly into the analysis of national tax reform such often-neglected factors as macroeconomic conditions, international economic developments, the political institutions within which reforms are developed, become law, and are implemented, intergovernmental relations, social security systems and other relevant aspects of expenditure policy, as well as relevant regulatory policies. Experience tells us that what happens to

tax systems always and everywhere reflects where the change is taking place, why it is taking place, who is for and against it, and what is going on elsewhere in both the domestic and international policy world. Obviously, no one, anywhere, can really factor all these potentially relevant characteristics into either a simple analytical or a computable empirical model, so as with all model-building, formal or informal, the most important decision is often what can and should be left out of account while still producing meaningful results. In part because such critical decisions cannot really be made – and, the author suggests, should not be made – by those not directly responsible for and affected by them, the chapter concludes that the most useful role for foreign advisers concerned with taxation in developing countries is to train, support, and assist domestic analysts and policymakers to make the best decisions they can over the long haul rather than simply to fly in, dispense advice, and leave.

One of the most conspicuous features of economic globalization is the high and continuously increasing mobility of capital across national borders. This capital mobility has become an important factor shaping policy around the world. Competition for mobile capital has led countries to redefine their tax systems by, for example, lowering corporate income tax rates (Devereux, Lockwood, and Redoano 2008), adopting "dual" income taxes with different rates on labor and capital income (Bird and Zolt 2011), and introducing a panoply of tax incentives intended to attract more direct foreign investment (Klemm and van Parys 2012). The increased competition for investment capital has forced developing countries to become more competitive not only in terms of tax policy but also with respect to public investment in infrastructure and such aspects of governance institutions affecting foreign direct investment flows as the simplicity and certainty of business licensing. Regardless of what any developing country may do to improve the attractiveness of its own "environment" for foreign investors, however, the extent to which countries can successfully tax foreign companies is not fully within their control. Instead, it inevitably depends critically on what is going on in the world in general. Much attention has recently been paid to one important aspect of this international context – the extent to which a country's tax base may be eroded by profit shifting and especially the use of tax havens (OECD 2013). Another important factor, however, is how the home country tax system of foreign investors (largely developed countries) treats earnings generated in host countries (significantly, emerging and developing countries).

Chapter 5 by Thornton Matheson, Victoria Perry and Chandara Veung considers how some important recent changes in the treatment of

cross-border investment income in major developed countries may affect the extent to which developing countries can effectively generate tax revenues from the profits generated by foreign direct investment. A number of major capital exporting (home) countries have shifted recently (or are contemplating doing so shortly) from what is called worldwide corporate taxation – under which investors are taxed on all income regardless of where it is generated but are generally allowed a credit for taxes paid in the host country – toward the so-called "territorial" system, under which home countries tax only those profits originating in the home country – that is, exempt income earned abroad. The authors find that this regime change has significant implications for the volume, distribution and financing of foreign direct investment in developing countries. The conclusion that the move to a territorial system makes businesses more sensitive to host-country statutory tax rates, especially for the case of foreign direct investment financed from new equity, is reinforced by an analysis of bilateral outbound foreign direct investment data for the UK for 2002–2010, a period during which the UK changed from a worldwide to a territorial system. Every country has long had difficulty in designing its tax system to deal appropriately with foreign firms as well as in implementing whatever policy it decides to follow in the face of the complexity of the structure and operations of such firms, and the fact that so much of their activity is beyond the reach or knowledge of any country. This task has of course been particularly difficult for developing countries which, almost by definition, have far less expertise in such matters than developed countries, let alone the firms in question. Changes such as those discussed in this chapter that are made by developed countries for what presumably seem to them to be good reasons do not necessarily make life any easier for tax policymakers and tax administrators in developing countries. Indeed, all too often, they may make life more difficult. This is one area in which more external support along the lines sketched in the preceding chapter might perhaps be most helpful.

Tax enforcement around the world for the last few decades has largely focused on large taxpayers, domestic as well as foreign. This approach makes sense because the always scarce resources available to tax administrations are usually most productive in revenue terms if focused on large taxpayers, who constitute only a small percentage of all taxpayers but often account for two-thirds or more of tax revenues collected. Recently, however, there has also been increasing interest in many countries in how best to tax the smaller taxpayers (ITD 2007; IFC 2007). Some smaller taxpayers may fall within the category of the "hard-to-tax", a label applied to those who fail to register voluntarily or

file returns and are unlikely to keep appropriate records (Alm, Martinez-Vazquez and Wallace 2004). Because such taxpayers represent a sizable share of the economy in some developing countries, this new interest in dealing with them may sometimes be linked to revenue issues. It may also sometimes be seen as a way to make it possible and desirable for smaller taxpayers, who are often initially included in special simplified regimes, to eventually graduate into full civic responsibility as ordinary taxpayers. But more than revenue may also be involved. For example, improving the extent to which smaller taxpayers are included within the tax system may be perceived as a way to increase tax morale and horizontal equity across the board and hence to increase the extent to which taxation may play a positive role in building up trust in the state.[7]

William F. Fox and Matthew N. Murray explore the largely unsettled issues of how best to foster tax compliance among small enterprises in Chapter 6. Decisions have to be made on what businesses are to be considered "small" and what, if any, special rules should be applied to such taxpayers as well as about the design of enforcement regimes and administrative policies and procedures. Such decisions must take into account not only the conventional concerns about revenue and equity but also such complex factors as the incentives for firms to remain small, the presumably desirable effects of inducing more firms to move into the "formal" sector of the economy, and the possible strengthening of tax enforcement in general as a result of expanding the scope for cross verification. There is also an important issue of credibility. If the decision is made to tax small enterprises, but there is neither strong political willingness to do so nor a relatively efficient and non-corrupt tax administration, the attempt to extend the reach of the tax system to encompass small enterprises may backfire and compromise overall tax compliance. The authors examine a number of ways in which unique regimes for small enterprises have been implemented such as the use of minimum thresholds and the introduction of presumptive tax regimes. Much of their discussion is centered on the VAT, which is by far the most important source of revenue in developing countries. On the whole, they offer little support for such alternatives as special presumptive regimes both for administrative reasons and because such systems tend to discourage rather than prepare taxpayers to graduate into the regular system of taxation. The authors conclude that it is better to integrate small firms directly into the general tax system although in a simplified fashion.

The ultimate purpose of taxation is to secure the funds needed to provide public services in as fair (in the sense of being politically

acceptable and sustainable) and economically sound a fashion as possible. Understandably, the major thrust of much of the economic literature on taxation in developing countries has been on the revenue and economic rather than the political aspect of these objectives. Much attention has been paid to the essentially macroeconomic issue of the appropriate level of taxation, an emphasis that has been highlighted in recent years in many countries by cyclical problems. Especially since the evolution of public finance into public economics in the 1970s even more attention has been paid to a wide variety of microeconomic issues related to the effects of taxation on growth and development. These issues are obviously important. But anyone who actually works on tax issues in any country soon learns that most critical factors that shape what is actually done often arise in terms of the supposed distributional effects on different regions, different groups (workers, capitalists, homeowners, voters) and, of course, different income levels (rich, poor). Until recently, however, the dominant literature on tax and development paid surprisingly little attention to how taxation may affect the distribution of income and wealth. One reason for this relative neglect may simply have been because it is much more difficult to determine the distributional effects of taxation with any confidence than most people (and most politicians) think. Even with all the advances made in analyzing and modeling tax reforms, the major tool available for such work continues to be simply to simulate in quantitative terms the impact of particular assumptions about the incidence of taxes, few of which have as yet been empirically validated in any convincing way. Nonetheless, in recent years the increasing wealth of the few at the top has once again, after decades of neglect, moved concern with taxation and inequality back to the top of the tax policy agenda in many countries.

In Chapter 7, Richard M. Bird and Eric M. Zolt compare and contrast the role taxation and more broadly fiscal policy has played with respect to income distribution in several countries in North and South America. They begin by noting that in some ways the world seems to have turned "upside down" in recent years as incomes have become more unequal in North America, especially in the United States, and less unequal in Latin America. The picture is much the same whether one considers trends in Gini coefficients, in poverty reduction, or in social mobility: while still strikingly unequal in many respects, all these indicators have clearly improved (in the sense of moving towards greater equality) in major Latin American countries in recent years, while they have worsened in the United States. Moreover, the authors find that, although the United States continues to rely most heavily on the (presumably essentially progressive) personal income tax and the Latin American countries most

heavily on the VAT (which is often considered to be basically regressive), on the whole the public sector's impact on distributional outcomes has become more progressive in Latin America and less so in the United States. While only a relatively small part of this impact is attributable to taxation, and the personal income tax in the US undoubtedly remains considerably more progressive than those in the other countries studied (Mexico, Colombia, Brazil, Peru, and Argentina), the authors nonetheless suggest that the changes noted may suggest an underlying shift in the "fiscal contract" existing in Latin America. The chapter develops the notion of the fiscal contract – a concept mentioned in passing earlier in Chapter 6 – as the fiscal manifestation of the underlying changes in the "social contract" that over time shapes the policy decisions emerging from political institutions. In effect, the authors suggest, drawing on experience in other countries, that since the tax system sustainable in any country must be one that is supported by the interests of a critical set of politically significant groups, the recent changes in Latin America may be read as evidence of a change in the political balance that has probably been driven in large part by the recent substantial increase in the size and importance of the middle class in the region. From this perspective, they conclude that, perhaps surprisingly, it may turn out to be more difficult to restore "fiscal balance" in political and social terms in the United States than it will be to sustain at least for some time the relative turn toward equality evident in recent Latin American experience.

The desirability of broadening the base of taxes such as income and consumption taxes has long been argued by tax policy experts. The other side of this argument is that few tax advisers support any of the many tax incentives, tax concessions, tax exemptions, tax holidays, tax expenditures, or whatever other label may be attached to policies that imply narrowing rather than broadening the tax base. Three basic arguments may be made against such measures. The first is simply that because they narrow the tax base, higher tax rates (which are more inherently distorting) must be imposed on the remaining base in order to raise any given amount of revenue. The second is that because such concessions almost always increase both the complexity and the administrative costs of the tax system, they introduce still further efficiency as well as (in most cases) equity costs. And the third is simply that the social benefits received from such concessions can almost never be shown to exceed the costs to which they give rise. Of course tax concessions are simply one manifestation of what seems to be the inexorable drive of political systems to subsidize a seemingly endless variety of "good things" – or at least things or activities that some can plausibly argue to be "good". Subsidies spend revenue rather than collect them. But like taxes subsidies

impact on the efficiency of resource allocation and the distribution of income. Subsidies come in many forms and shapes in addition to tax concessions such as transfers to persons or businesses, either directly or through price control policies. Such policies in some countries demonstrably weaken the fiscal position of governments but are seldom subjected to the same rigorous scrutiny and political debate as proposed tax reforms. This is unfortunate since it is even more important for developing countries to spend wisely than to tax more or in a better way. Because the pressure to tax more usually arises from the need to finance expenditures it is critical to ensure that inefficient and inequitable expenditures are eliminated before seeking to increase taxes.

Unfortunately, such wasteful expenditures remain all too common in many countries. As Charles E. McLure, Jr. shows in Chapter 8, there are many reasons why the extensive fuel subsidies found in some developing countries need reform. Because subsidies to fossil fuel consumption result in serious distortions in such key sectors of the economy as transportation, energy and the environment, they are particularly inappropriate for many reasons besides the simple waste of fiscal resources.[8] In his characteristically careful, detailed and restrained analysis of this important and complex subject, McLure shows that subsidies to fossil fuel consumption exacerbate such problems as traffic congestion and air pollution, increase energy insecurity, waste foreign exchange, and increase unproductive public bureaucracy. He then rigorously reviews such key definitional issues as the shortcomings of the price-gap methodology commonly used in the quantification of the subsidies, estimates fossil fuel consumption subsidies for 37 countries based on International Energy Agency data, and outlines the budgetary and other positive implications of eliminating subsidies. Chapter 8 concludes with a careful discussion of two arguments often used to defend such subsidies: to encourage consumers to switch from traditional fuels, which in many ways can be even more problematic, to modern fuels and their allegedly desirable distributional effects. Fuel subsidies are sometimes said to protect the interests of the poor. In reality, however, as the chapter argues, the incidence of most fuel subsidies is regressive, with most benefits flowing to the middle and upper income classes. In summary, fossil fuel subsidies are precisely the sort of wasteful and inefficient expenditure that developing countries should not be in the business of raising taxes to finance.

It is now widely accepted that good fiscal decentralization requires subnational governments to have a significant degree of revenue autonomy. Such autonomy not only encourages such governments to raise revenues but also increases both political accountability and fiscal

responsibility by creating, in effect, a hard budget constraint at the margin.[9] Greater tax autonomy and its twin sister, lower transfer dependency, are also arguably associated with a long list of other virtuous outcomes such as better budgetary and macroeconomic stability. Moreover, although by no means all issues are settled there appears to be considerable consensus in the literature about how to provide more tax autonomy to subnational governments. Examples of best practice with economically attractive tax sources for subnational governments are abundant. Providing adequate revenue autonomy is not complex, requiring only the devolution of power to subnational governments to set tax rates for tax sources they select from a closed list. Nonetheless, many countries, developed as well as developing, have failed to adopt such "best practices" and continue struggling to find adequate financing for the increasingly large expenditure needs of subnational governments. Why do revenue assignments in practice tend to deviate significantly from those suggested by generally accepted normative criteria and why are potentially good subnational taxes often badly designed?

Paul Smoke in Chapter 9 examines in depth why theory and practice differ so much in the implementation of subnational revenue systems. Smoke asks whether the problem arises because subnational taxation principles are inappropriate or whether they are just poorly applied. Although, as is all too often the case, the evidence is limited, conflicting and difficult to interpret, he concludes that the answer is that both factors seem to be at play. Although the conventionally suggested taxation sources are logical, they are often difficult to implement in practice and encounter certain critical constraints in terms of important contextual factors such as political will or administrative capacity. Although historical factors such as colonial roots may play some role in explaining the lack of effective change, political economy considerations remain the most obvious and important reason why inappropriate tax assignments and bad design have proved so difficult to reform over the years in so many countries. In the face of such powerful constraints, policy designers need to focus much more on pragmatic implementation strategies, inductively seeking out what really works, and giving full consideration to key political and administrative realities. Chapter 9 lays out the need for much fuller exploration of such key elements of the political economy setting within which decisions about subnational revenues are made as the durability of the "political will" underlying the original push for decentralization, the nature of the national bureaucratic environment that typically defines the all-important (and often devilish) "details" of decentralization, the distribution of local political powers and the incentives faced by both national and local politicians, the specific nature of

electoral processes, non-electoral governance mechanisms, the level of tax morale and compliance attitudes with respect to local revenues, the importance of deconcentrated systems competing with decentralized units, and local capacity and whether there are in place political incentives to use it.

In contrast, the two chapters that follow consider some lessons experience suggests with respect to the two most important sources of local "own revenue" now found in most countries: property taxes and user charges. Tax experts agree that property taxes have the potential to be a significant source of revenues at the subnational level in both developing and developed countries. The property tax is particularly attractive because those revenues can be raised both with relatively low efficiency costs and in a fairly equitable way. Despite its promise, however, few countries have come close to realizing the potential of the property tax. Moreover, attempts to reform and strengthen the perform- ance of property taxes have seldom achieved much success in practice. As Chapter 9 emphasized, the principal reasons appear to lie in the always somewhat nebulous realm of political economy. Despite its long history and some past successes,[10] most experience in recent decades suggests that the property tax is often one of the most unpopular of taxes. The reasons for its unpopularity include both its generally high visibility and the fact that it is based not on a measurable flow (such as income or expenditures) but usually on the value of an asset which may or not be related to income. Although people hold very different conceptions (many of which are demonstrably misperceptions) about the horizontal fairness of the tax, on the whole they know they do not like it, and politicians who are responsive to their constituents generally go along with such opposition. In addition to this fundamental political barrier, the property tax is also often difficult and relatively costly to administer, particularly in the form of a market value-based tax which is both conceptually preferable and generally recommended. Such a tax requires a good property registration system and frequent property valuations, neither of which is either cheap or in existence in most developing countries. Moreover, even when solid tax base information is available, it is often costly and difficult to collect and enforce the tax since there is seldom any good way to base the system on the sort of declarations or withholding through business intermediaries used for sales and income taxes. In many countries, the subnational governments charged with administering the tax lack either the means or the authority to demand payment. Unsurprisingly, poor tax administration reinforces the percep- tions of arbitrariness and unfairness among taxpayers and results in still

greater reluctance on the part of politicians, local or national, to make effective use of the property tax as a source of local finance.

Despite such problems, Roy Kelly argues in Chapter 10 that it is still possible to succeed with property tax reform by carefully designing country-specific reforms to take adequately into account both the need to "sell" them to the public and to cope with administrative capacity problems, by preparing carefully and methodically to implement the reform, and by persisting with the effort to the point where the property tax can indeed become a meaningful source of subnational revenues. In line with some of the arguments made in earlier chapters, he suggests that such reforms to local government finance can be seen as a critical component of a broader public sector reform to become "demand-driven". His argument is based not on academic naiveté about the real world but rather on his extensive and intensive experience for decades with property taxation reform efforts in a number of developing countries. In addition to doing the technical work well, which is not a quick process, the chapter suggests that successful reform of the property tax requires many of the elements present in any other successful tax reform such as political leadership and the right incentives to mobilize administrative and popular support. On the technical side, the chapter outlines in detail the key policy and administrative components required to make the property tax work: determining the appropriate coverage of the tax base coverage and the structure of tax rates and establishing sound and adequate systems for valuation and collection. Because the weakest point of property tax reform is the quality of tax administration, once the political side is on board, the real problem is to get right all the details of adopting simplified data capture, data management and tax mapping procedures, appropriate valuation methodologies, transparent assessment procedures, accountable collection mechanisms, effective enforcement systems, and targeted taxpayer service. None of it is difficult in principle but pulling it all together in practice has proved to be a time-consuming and tricky task.

Most experts would agree that perhaps an even more appropriate source of revenue for local governments than the property tax is user charges and fees, as developed extensively some years ago in the seminal study by Bahl and Linn (1992). Charges and fees fill the bill so well because they embody what is often called the "benefit principle" of charging those who get services from the public sector for what they get. They thus allow local governments not only to provide the right amount of public services demanded by local residents but at the same time to finance those public services efficiently – two conditions that are rarely satisfied within the public sector. When the services provided (and

charged for) are determined by the local community itself, all sides of the ideal local government triangle – who decides, who benefits, and who pays – are equal, and people presumably get both what they pay for and what they want. What more can be asked of any funding mechanism? Many services provided by local governments are amenable to being financed with user charges and fees, including water and sewerage, electricity, parking, garbage collection and disposal, urban transportation and road use, pre-school care, residential care for the elderly, museums, parks, and sport facilities. Other services, such as health and education, can be partially financed with user fees. In addition, user fees can be charged to cover the public costs of registration and monitoring for a wide range of activities including business licensing, real estate titling and registration, and driving permits. Betterment levies (varieties of which are known under names such as plusvalía and development charges in different countries) may also be imposed and paid up front by developers and owners for such local infrastructure improvements as sidewalks, lighting, additional road construction, and water and sewerage access. From a political economy perspective, local user charges and fees also offer the advantage of not directly competing for any tax base with central governments. Perhaps for this reason, central governments are often much more generous in granting autonomy to subnational govern-ments to set charges and fees than to set taxes. Despite all the positive attributes of local user charge financing, however, in reality user charges and fees are severely underutilized by local governments, especially in developing countries.

As Yeti Nisha Madhoo and Shyam Nath say in the title of Chapter 11, such charges are thus indeed the "Cinderella of subnational finance" – the ideal belle of the local fiscal ball but instead relegated to minor household chores. After setting out the principles and practices of user fees and charges and their revenue potential, the authors consider some reasons why beneficiary charges have been so little and so badly used in practice. They identify a variety of factors including such general structural features as the strong centralization of revenues and the heavy reliance on intergovernmental fiscal transfers to finance local activities found in many countries. Even where intergovernmental reforms have stressed the need to emphasize subnational budgetary autonomy more, in general the solutions sought have focused far more on such ideas as revenue sharing and piggybacking subnational taxes on central levies than on increasing and improving local beneficiary charges. The chapter also examines in some detail the case of local water services, considering both the trade-offs between public versus private provision of water services and the implications of water utility policies for full and partial

cost recovery. This discussion is supported by an empirical analysis using the results of a contingent valuation survey in Mauritius to quantify the welfare effects of charging for water services taking into account both user willingness to pay and the cost of providing water services. While this case is perhaps relatively unusual in the sense that charging turns out to be desirable in terms of its effects on both efficiency and distribution, the authors suggest that it may perhaps only be through the orderly privatization of public services such as water that are subject to crowding and exclusion that fees and charges as a form of financing such services may attain their proper role in the developing world.

Chapter 12 concludes the volume with an essay by Roy Bahl, who draws on over four decades of intensive work in the trenches of tax reform efforts in numerous developing countries as well as his extensive body of academic work to take a panoramic view of the progress and lack thereof in tax system reform and explore the question of whether the "weakest link" will ever be strengthened. Recognizing the limitations of many developing countries in terms of both the accessibility of tax bases and their administrative capacity to collect what are often complex taxes, Bahl argues that not only have the economies and tax bases of most countries grown over time but that how to implement good tax policy and modernize tax administration has also been well learned and documented. The hard question remains: why have we not observed more progress in the tax systems of so many developing countries?

To answer this question, Bahl first takes a close look at the evolution over the long run of tax revenue trends in developing countries and the main explanations generally put forward to explain the lackluster performance of the tax to GDP ratio in many countries. He argues that some of the answer lies in the choices made in the design of tax structures – not so much the types of taxes that are emphasized but rather the narrowness of the initial tax bases chosen. The main problem, however, in his view has been the exceptionally slow pace that most countries have taken with respect to modernizing tax administration, a pace that reflects both their fundamental lack of commitment to effective enforcement and the resulting inadequate investment of resources in the task of administrative modernization. Nonetheless, Bahl is optimistic about the future of tax reform in developing countries, suggesting that the staggering need for increased expenditure on infrastructure and social services may in the end force new ground to be broken when it comes to reforming both tax policy and tax administration. Recent marked improvements in taxation in Latin America, a region of the world that for many decades had been a proverbial underperformer, may, he suggests, perhaps herald further good news in the future on this front from other

regions. The argument in this final chapter that the critical fiscal link may perhaps be forged more strongly in the near future under the combined pressure of the economic need to expand public expenditures and the political need to finance that expansion more sustainably in a way that meets the needs and wishes of the expanding politically relevant population, provides an optimistic and welcome coda to this volume.

NOTES

1. The phrase "sinews of power" comes from Brewer (1990). An equally critical developmental role is assigned to state finances by Ferguson (2001). Although both these authors focus on issues of war finance, a broader developmental approach has been taken in recent years by numerous other recent works exploring the critical role of public finance in shaping state development, following the lead of Tilly (1975): see, for example, Martin, Malhotra, and Prasad (2009) and Cardoso and Lains (2010).
2. Roy's expertise in this area grew initially from his extensive work on state and local finance in the US – work that continued – e.g., New York (Bahl and Duncombe 1991) and Ohio (Bahl 1995) – but was soon strengthened by his key role in a number of major country studies in e.g., the Philippines (Bahl and Miller 1983), Korea (Bahl, Kyo and Park 1986), Jamaica (Bahl 1991, Bahl and Wallace 2007), Guatemala (Bahl, Martinez-Vazquez and Wallace 1996), China (Bahl 1999) and South Africa (Bahl and Smoke 2003).
3. The professor who said this had obviously been influenced by an interesting essay by Colm (1955, 20–21) on public finance as "a borderline science … that tries to strike a balance between politics and economics."
4. See Newbery and Stern (1987) for an early overview of the implications of the new (optimal tax) approach initially launched by Mirrlees (1971) for tax and development as well as Ahmad and Stern (1991) for an excellent first attempt at a country study using this approach combined with then state of the art empirical techniques. Boadway (2012) provides a useful recent overview of the current state of the art, and examples of the range and nature of recent analytical and empirical work along these lines may be found in many recent studies from such institutions as the IMF and the World Bank as well as in many of the studies reported in such books as Bird, Poterba and Slemrod (2005), Alm and Martinez-Vazquez (2006), Gordon (2010), and Zodrow and Fuest (2013) as well as in numerous recent journal articles and theses.
5. The modern "fathers" of this approach were of course Buchanan and Tullock (1965), whose followers have sometimes been characterized as the "Virginia school" although other important strands of the modern revival of the new political economy in economics have come from the work of Gary Becker and the so-called "Chicago school" as well as from other sources. Useful summaries and overviews of the many contributions of economists to this literature from different perspectives may be found in Persson and Tabellini (2000, 2003) and Mueller (2003). However, much of the push for the recent interest in applying the new political economy perspective to taxation in developing countries has come from such political scientists as Bates (2008), Lieberman (2003), Mahon (2004, 2011), and Moore (2007).
6. Such models have also been expanded in some countries, including some developing countries, to include not only income but also other forms of taxation (VAT, excises, import duties, property taxes, payroll taxes). They have even, in some instances,

linked to some aspects of transfer policy (e.g., social security), tax expenditures (exemptions, incentives) and even direct expenditures, although few if any developing countries seem as yet to have done much along these lines.

7. Although Chapter 6 does not emphasize the political aspects of small business taxation, Moore (2013) identifies the failure to pay sufficient attention to the need to improve local revenue raising – the level of government with which most people engage most directly – as perhaps the biggest failure in tax reform in sub-Saharan Africa from a political perspective.

8. Indeed, there is an extensive literature (e.g., Newbery 2005, Smith 2006, and Guevara 2007) that argues that rather than subsidize fuel consumption an excellent case can be made in many countries for imposing heavier taxes on the consumption of fossil fuels than on other commodities.

9. See Rodden, Eskeland and Litvack (2003) for a number of useful explorations of this concept. Other interesting recent studies may be found in, for example, Brosio and Jimenez (2012) and Martinez-Vazquez and Vaillancourt (2011).

10. Sokoloff and Zolt (2005), for example, draw an interesting contrast between the property-tax based growth of local government in North America and the general failure of effective local government in Latin America.

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PART I

Taxation and development: Surveying the terrain

2. New approaches to measuring tax effort

Musharraf Rasool Cyan, Jorge Martinez-Vazquez and Violeta Vulovic

2.1 INTRODUCTION

In this chapter we attempt to take a fresh look at the classical question of the determinants of tax effort. Our goal is to better understand the fundamental economic logic of the different approaches that have been used in the previous literature, consider alternative measurements which may provide a more direct intuition of what the concept of tax effort attempts to measure, and to compare quantitatively the rankings of tax effort produced by all these different approaches. As we see it, the fundamental issue is how to move forward toward a definition of tax effort that has a higher relevance to the developmental needs and budgetary ambitions of a country and as an indicator of potential tax reform needs. Fundamentally, all tax effort indicators are calculated by comparing actual collection performance against a measure of potential collections. This definitional choice lays out several dimensions for the conduct of tax policy in a country. These include the need for reform to raise revenues with reference to some potential, the desirable timing and urgency of those reforms, and the extent of the gains in national welfare that are achievable with these reforms. While the first two dimensions have been examined in different ways in the previous literature, in this chapter, for the first time in this literature, we will examine how much the two different approaches to estimation of tax effort matter as compared with those conventionally used. In addition, and also for the first time in this literature, in this chapter we argue for the need to explicitly link the adequacy of tax effort with the specific expenditure goals of government and their associated gains in national welfare.

Developing countries have often clearly defined service delivery and development outcome gaps. A number of international reports highlight

who is lagging behind global trends and by how much.[1] These comparative statistics are often used to serve as motivations for focusing attention on the development needs in different countries, to spur action on specific reforms or to gather support for particular programs. These discussions very often correctly point out the gaps in development needs. But much less often the discussions clearly identify how much financing is available to a country to bridge the existing budget gaps. In developing countries, foreign aid and national tax effort together bring the resources up to cover budgetary needs. The national tax effort is something the countries can change through tax reform but without referring to development needs or 'desirable revenue potential'; by how much and within what timeframe the tax effort should be changed is often left unclear. A number of considerations are relevant to these key questions. These include whether tax effort is an outcome of the structural features of the economy largely outside the immediate control of the government or is it simply a result of administrative inputs much more under control of government; whether taxation levels indicate collective preferences for public goods or they are hampered by endemic corruption which seeps away resources; or whether institutional features of the country matter more than anything else. All these issues have been debated in the literature for several decades. The vibrant debate on the determinants of tax effort indicates not only its critical importance to development but also the complex nature of the issue.

Clearly the way tax effort is calculated is affected by the choice of the measure of revenue potential, the denominator of any tax effort indicator. Thus one way to research the tax effort concept is to see how the revenue potential benchmark or desired tax capacity is estimated. In this chapter, we develop this discussion by comparing three different ways to estimate tax potential, and therefore tax effort. Each case has certain strengths and weaknesses. Through this discussion we aim to extend the literature by organizing the search for a tax potential estimate in an integrated manner. We also make a mention of some additional ways in which tax potential, and thus tax effort, could be estimated.

This chapter contributes to the discussion on tax effort in two other relatively less significant but noteworthy ways. First, one of the approaches we examine in depth is the stochastic frontier analysis model. This econometric tool generates a measure of tax capacity which is specific to each country while the performance benchmark arises out of the experience with general tax effort across countries. Using a wider range of explanatory variables our analysis provides improved estimates vis-à-vis the previous literature. Second, the model allows estimation of time-varying inefficiency in tax effort. In our analysis we attempt to

estimate the effects of various institutional factors on this inefficiency thus delineating a clearer agenda for comprehensive tax reforms.

The rest of the chapter is organized as follows. First, we briefly recount in Section 2.2 the importance of calculating tax effort, not only accurately but cogently, to tax policy and reform discussions. In Section 2.3 we discuss three ways in which tax effort can be calculated for different countries using different benchmarks for tax capacity or desirable levels of revenue. Then in Section 2.4 we recount the methodology for estimating tax effort using the traditional and stochastic frontier analysis approaches. In addition, we also identify several other ways in which tax capacity and effort could be calculated. Section 2.5 contains a discussion of the estimation results. In Section 2.6 we provide an explanation of a new measure of tax potential and therefore tax effort and draw a comparison between tax efforts calculated by using three different methods. Section 2.7 concludes the discussion laying out directions for further work.

2.2   THE IMPORTANCE OF CALCULATING TAX EFFORT CORRECTLY

How much tax revenue needs to be raised in any particular country is fundamentally the result of a collective choice decision on the desired level of public expenditures. Collective preferences for public goods and services, desired level of social protection and insurance and economic wealth, in turn, are the main determinants of the desired level of public expenditures. There is, therefore, no normative theory of desired revenues applicable to all countries. Among developed countries it is perfectly anticipated to find marked differences in the share of gross domestic product (GDP) that is collected in taxes (for example, Sweden and the United States). On the other hand, there is a commonly accepted stand that lagging economic development can be interpreted as an almost obvious need for more public revenues. Developing countries with lagging indicators in health, education, public infrastructure and regulatory services are commonly perceived to be in need of higher public spending to meet short-term population needs as well as to put the country on a longer term development trajectory. The recent UNDP rankings for Human Development Index show that some countries lag behind others by a magnitude of threefold in health and education outcomes.[2] Finding sustainable financing is a key to bridging these gaps and harnessing the human potential in these societies. This brings up tax effort as a central concern for policy.

Tax effort, the ratio between actual tax collection and potential tax or revenue, serves as an effective indicator and point of departure for tax reforms and as an enduring indicator of the sufficiency of government revenues. From this perspective tax effort is a useful tool to motivate policy discussions on how much additional endeavor a country needs to make for meeting its development objectives. Only when governments are raising sufficient revenue can they pursue enhancing access and quality of services for the people. Within the development policy, poverty reduction is a key objective that has shaped many developing country plans in the past decades (Pirttilä and Tuomala, 2004). In addition, donor policies in many countries have required poverty reduction strategies to be developed and adopted as formal statements and serve as devices to monitor progress. All these policy options lay down expenditure levels, which, in turn require commensurate revenue.[3] On the other hand, growth promotion policies also consider tax effort as an important indicator but from a different perspective. How much income should be left for private allocation is often at the center of growth and development policies together with what type of taxes should be used to collect revenue (Arnold et al., 2011). High taxation means less income for private consumption and investment. More importantly, a bad tax system is likely to stifle growth (Bird, 2010) and be accompanied by some negative effects on local economic activity and job creation.[4] Of course, the level of taxation and even the types of taxes used in a country are linked to the level of development (Bahl and Bird, 2008). However, while this relationship is apparent, it is noteworthy that it is less clearly understood how they affect each other.

The manner in which tax effort is calculated, however, becomes as important as the reported ratio itself. A country with high preference for public goods, and therefore public expenditure, may need a higher level of revenues. Social norms may influence tax collection as well as level of taxes (Konrad and Qari, 2012).[5] The quality of public expenditure also influences citizens' choices.[6] Inefficiency in converting public expenditure inputs into consumption would intuitively lower the value of such expenditure in the eyes of the citizens.[7] On the other hand an inverse comparator may have a very low preference for public goods where the people dictate choices of low public expenditures.[8] Consequently, in such a country the required level of revenue will be lower. This notion demands that tax effort measures should take into account the collective preference for public goods and the interdependence of preferences for public expenditures and taxes.[9] If democratically expressed collective preferences for a certain level of public expenditure result in a certain level of tax effort there is not much point in generating a policy debate about increasing efforts to collect additional revenues. It is this intimate

connection between country-specific development objectives and the measures of potential tax revenue and actual collections that forms the main basis for the discussion of tax effort measures.

It can be argued that the collective preference for public goods in a country should have a mirror image in the level of taxation. It is intuitively appealing to argue that a country decides to provide a certain level of public goods and then goes about raising a matching level of revenue. In practice, that true reflection of collective preference for public expenditure seen through the revenue effort may be hobbled by political factors in a country. There are cases where tax effort in a country has stagnated over time (for example, Martinez-Vazquez, 2001 for the case of Mexico; Martinez-Vazquez, 2007 in the case of Pakistan). This could be a combination of tax policy and administration settling into some sort of an equilibrium which is quite divorced from what appears to be the collectively preferred level of public expenditures. In addition, the quality of political institutions is reflected in the level of tax effort with interest groups vying with each other for influencing public policy in general and tax policy in particular. The level of taxation therefore must be seen as a direct outcome of highly contested political and rent-seeking processes, with notions of equitable access to services, allocative efficiency, and size of government impinging upon the final outcomes.

Political choices in a country materialize in the shape and level of taxation but those may not be the only forces at play. Tax administration, its functionality and effectiveness are also determined by politics. What may not be achievable by tax policy transparently is sometimes possible through tax administration opaquely. Thus political redistribution may be achieved through differential application of administration (Esteller-Moré, 2011). Tax policy may treat different groups according to notions of equity. But tax administration may favor some groups by paying less attention to them. In Pakistan, for example, small traders comprise a formidable political group. Tax policy levies a sales tax on retail business transactions but lack of enforcement allows small businesses to evade the tax. This is an apparent loophole in the tax system. Governments in the last two decades have struggled periodically to enforce documentation of retail transactions and to follow through with collection. However, each time public protests were launched by small businesses forcing the governments to abandon efforts and allowing the status quo to continue. In other words, to provide a dispensation which, although not legislated in tax policy, is de facto provided through tax administration.

Between the traditional approach to estimating tax effort focused on the presence of tax handles starting with the work of Lotz and Morss (1970) and Bahl (1971) and the later work like Bird, Martinez-Vazquez and

Torgler (2008), there has been an attempt to unravel the largely subliminal political agreements, organizational culture and social features of tax systems. Estimating tax effort by taking into account the political and institutional dimensions of a country starts to cater to less visible constraints on tax systems. We now clearly understand that the political equilibrium in a society affects the level of taxation.[10] This is important from several perspectives. First of all, tax gaps generated by comparing country collections with international average may serve as a good entry point for discussions on tax policy but they may not provide a plan for reform. Deeper understanding of local tax systems is required to create tax reform packages with specific country relevance. Second, tax reform may seek to reset the political balance achieved between competing interests in the past. If this plays out on the sidelines of reform implementation, it may affect the reform outcomes without the main issues ever coming into proper focus. If this threat is recognized and discussed in the reform process, its adverse effects may be curtailed. Third, tax reform that suits a particular context has higher probability of success. The standard tax advice must be tailored to address particular situations, keeping in view the feasibility of reform actions. Fourth, institutional characteristics in a country may be of two types. First, some social or cultural characteristics are hard to change in the short run. These must be recognized so as to adopt mitigation strategies for enhancing the success of reforms. Second, organizational characteristics and tax morale, on the other hand, are not set in stone. Reforms that aim to address the contextual variables that define the environment in which taxes are levied, paid and collected are again likely to be more successful than those which pay scant attention to them.

The quality of governance is also likely to affect tax effort. This is based on the assumption that if corruption is rife and trust in public authority is low then citizens would not support higher levels of taxation. An inefficient public expenditure system converts taxes into public services at higher costs. Often, the failure of the state to provide adequate public services leads to citizens opting for privately provided service substitutes. When this happens, citizens are likely to support even lower levels of taxation.

2.3   THREE APPROACHES TO CALCULATING TAX EFFORT

Several approaches can be used to determine tax effort for individual countries, and they differ fundamentally by the way in which the key variable of potential tax revenue is calculated.

In the first approach, which for lack of a better name we will call the traditional regression approach, tax effort is measured by comparing actual tax collection as a percentage of potential tax revenues. That revenue potential is generated from the predicted values based on regression analysis. Some early contributions to this discussion were Bahl (1971) and Lotz and Morss (1970). Later on, Leuthold (1991), Tanzi (1992), Stotsky and WoldeMariam (1997), Ghura (1998), Piancastelli (2001), Eltony (2002), and Gupta (2007) have contributed empirical studies using this approach. The advantage of this approach lies in its simplicity. Data on the dependent variables are easily available and the estimation models do not impose much structure on the estimation parameters. By adding various economic features related to the tax bases and their relative accessibility to the tax administration authorities, this approach takes into consideration structural economic features that are likely to affect tax effort. In an international cross country setting, this approach to calculating tax effort serves a useful purpose of providing comparisons on the size of government revenue across countries conditional on economic structure and other determinants of taxable bases.

For policy advice, tax effort determined in this manner serves a useful but limited purpose. The traditional approach yields an indicator that is clear but that generally has important limitations to inform policy reform. An exception to this may be when the introduction or not of a particular tax instrument can be used to explain variations in tax effort.[11]

From a specific country perspective, the traditional regression approach does not provide a yardstick of expected revenues but generates a notional value of revenue potential if a number of estimated parameters were to follow the same pattern in that particular country. In particular, the standard estimated equation characterized by tax handles representing structural features of the economy does not provide much guidance to governments eager to increase their revenue. The structural features are often not amenable to change over the short run as a result of government policy measures.[12] For instance, if an economy has a large agrarian base and this shows up as a major determinant of low tax effort, it only indicates that tax effort may not change for many years to come thus diminishing government's enthusiasm for reform.

As an extension of the traditional approach, the role of institutions can be added to the list of determinants of tax effort (Bird et al., 2008). Beyond the traditional tax handles, the level of revenue a government is able to collect may be constrained (facilitated) by the quality of public services, governance and state institutions. Whereas the first two contribute to tax morale, the quality of institutions may have both a direct and an indirect effect on tax collections. Institutions may lack capacity to

collect revenue. Where outdated systems form the bedrock of tax administration, it is hard to collect higher revenue as documentation may be insufficient, records may not be up to date or disaggregated record keeping may result in loss of information. The cost of administration is high and this may result in *ab initio* high expenditures on reform measures to raise more revenue. For tax reform purposes, this choice sets up a trade-off between current consumption, which is politically insistent, and future tax revenues to be realized over time (Cárdenas and Tuzemen, 2011). Fiscally constrained governments may not be able to adopt long-term costly options. Indirectly, the quality of institutions again affects tax morale and creates opportunities of collusion between tax collectors and taxpayers. The additional analytic dimensions of the traditional approach can provide more relevant guidance to governments aiming to enhance their tax effort since it offers some entry points for policy reform in the short run.

More recently several papers have used stochastic frontier analysis to compute tax effort and for taking a stab at formally identifying the determinants of inefficiency in tax collections (Alfirman, 2003; and Pessino and Fenochietto, 2010).[13] The analysis is conducted into two stages. In the first stage, stochastic frontier analysis is used to model tax effort while in the second stage, factors influencing the time-varying inefficiency in tax effort are identified. This approach has the advantage of identifying weak areas of administration and institutional environment. These sources of time-varying inefficiency are generally important to tax reform and typically are more amenable to reform measures than structural variables over shorter spans of time.

The sources of inefficiency in tax effort have been discussed in a number of papers (Pitt and Lee, 1981; Battese, 1992; and Battese and Coelli, 1992). Corruption is seen as an important factor that decreases tax collection and can add rents to formally paid taxes.[14] More generally, corruption may vitiate efforts at increasing taxes in two ways. First, corruption is an unobserved charge on tax payments resulting in a higher effective tax on taxpayers than what is estimable from the public accounts. Attempts at increases in taxes are likely to be met with more resistance and higher evasion. Second, corruption payments do not contribute to the financing of public goods and services. They are rents siphoned away for private consumption. If higher taxes lead to higher rates of corruption, taxpayers will attempt to evade even more. Third, corruption is a result of the bargaining position granted to tax collectors by tax policy decisions. Higher tax rates increase tax collectors' bargaining position allowing them to collect higher rents from taxpayers.

Tax gaps result from both tax policy decisions and administration and compliance implementation. Exemptions and other elements of the tax structure are part of the first component of the gaps, whereas corruption and evasion are part of the second component. While recognizing the dual sources of gaps, the revenue losses from tax exemptions and the like are much more difficult to account for in cross-country analysis.

For ascertaining the value of the traditional and stochastic frontier approaches of calculating tax effort to tax policy discussion it is useful to focus on the creation of the counterfactual revenue or tax potential measure. The traditional regression approach creates a counterfactual for the measure of tax potential that is the predicted value for each country from the estimated equation for the entire sample of countries. In other words, the measure of tax capacity for each country is generated by using parameters based on cross-country data but allowing for individual country characteristics as given by the level of the variables used in the estimation equation.

The stochastic frontier analysis develops a function that expresses the maximum amount of revenue that countries could collect from given bundles of determinant characteristics of revenues, and allows us to estimate technical inefficiency in a country's revenue collection and then investigate factors determining technical inefficiency in the country's tax system. The possibility frontier of taxation is the highest level of taxation feasible under the given country conditions. It estimates a measure of tax capacity in the country given its economic, institutional, social and population features. It takes into account the national income, tax handles, tax administration and preference for public goods. There are some advantages to estimating tax effort and collection inefficiency as a two-step process. The first step clearly lays out a model where the production possibility frontier of taxation is clearly established. The second step provides a measure of time varying inefficiency in tax collections. This is a function of both tax policy and administration. As a second step, different institutional and administrative variables can be analyzed as determinants of the measure of inefficiency.

As we discuss below, the estimated tax effort from the traditional approach and the stochastic frontier analysis are highly correlated. This result indicates that the two methods are quite substitutable. Thus, the advantage of the stochastic frontier approach may simply lie in having a more transparent interpretation of specific institutional constraints to tax effort in a country.

On the other hand, both the traditional and stochastic frontier approaches are limited in that they do not generate country-specific measures of tax potential that are cogent to national policy. Using data

from other countries to estimate tax potential introduces noise through unobserved factors not the least of which are the collective preferences for public goods and services and general cultural attitudes toward the role of the public sector.[15] An alternative approach to estimating tax effort is to look at the deviations between what a country would like to raise in tax revenues – as revealed by the persistent (or structural) choice of the level of public expenditures – and its actual tax collections. Invoking Ricardian equivalence it should be possible to argue that taxpayers see the current deficit as future taxes. Therefore, the deficit is a measure of the discrepancy between the desired level of taxation (or preferred level of public expenditures) and the current level of taxation for each particular country. This approach has the advantage of assessing tax effort while accommodating preferences for size of government in a country. Under this approach therefore we would use the actual level of public expenditures (or some moving average of that variable) as an indicator of desired level of taxation in a country, revealed through the political process.[16] This method is closely related to the revenue adequacy approach which relates the overall balance between expenditures and revenues (Martinez-Vazquez and McNab, 2000) and it is consistent with the empirical evidence that changes in expenditures appear to lead to changes in tax levels (Baicker and Skinner, 2011). As we indicate, developing this approach is a veritable research agenda and something we highlight to be important for generating a higher relevance for tax policy discussions for policymakers.

Selecting the (persistent or structural) level of expenditures observed in a country as a benchmark for the desired level of taxation suggests that there are several other possibilities for the selection of the benchmark. For example, one such benchmark for revenue effort could be the average expenditure levels (adjusted for population and so on) of other countries in the region of similar income levels. This approach would seem to be the one implicitly used in public expenditure reviews by the World Bank and other multilateral finance institutions when they compare the performance in education, health, infrastructure and so on of a country with those in other similar countries in the region. A similar benchmark could be constructed by deriving the level of expenditures required in a country to achieve the Millennium Development Goals (MDG). In the empirical work in the next section we will only consider the (persistent or structural) level of expenditures observed in a country as a benchmark for the desired level of taxation as the alternative to the tax effort measures derived from the traditional approach and stochastic frontier approach.

2.4 ALTERNATIVE ESTIMATIONS OF REVENUE EFFORT

To estimate revenue effort under the different methodologies discussed in the previous section we employ a panel dataset comprising a sample of 94 countries over the period 1970–2009. Our main goal in this section is to compare the performance of the three approaches discussed in the previous section, and in particular determine to what extent the different approaches deliver different scores for tax effort.

We start with the so-called traditional regression approach for which the benchmark for potential revenues in the tax effort ratio is derived from the predicted revenues based on a fixed effects model, which has been traditionally used in the literature. The traditional method is augmented by including institutional factors that can potentially affect tax effort.

Our second approach is known as the stochastic frontier approach, which develops in the first stage a function that expresses the maximum amount of revenues that countries could collect given several bundles of determinant characteristics of revenues. In a second stage, this analysis also allows us to investigate what factors may be responsible for explaining the observed technical inefficiency in a country's tax collection system. For the third approach, we calculate countries' revenue effort based on their expenditures.

Finally, we will compare three estimates of revenue effort and analyze the correlation between them. Note that in all the estimations we will use total revenues in place of tax revenues for reasons of definitional simplicity in our data. We are led by the assumption that most so-called non-tax revenues could be easily transformed via legal definitions in tax revenues. Under this approach we also avoid the noise introduced in the tax revenue data by how different countries decide to tax or collect other types of revenues from natural resources. We assume therefore that this is a reasonable proxy for tax effort.[17]

2.4.1 Predicting Potential Revenues

A. The traditional (fixed effects) regression approach
As we explained above, we firstly apply the traditional regression approach for predicting countries' potential revenues. In this case we estimate the function $q_i = f(z_i, \beta)$ using the traditional fixed effects method. The basic model can be expressed as

$$q_{ji} = \sum_{j=1}^{k} \gamma_j z_{ji} + \alpha_i + \mu_t + \varepsilon_{ji} \qquad (2.1)$$

α_i is the unknown intercept for each country which is time-invariant, while μ_t changes over time but not across countries. z_{ji} is a matrix of variables that we consider as important factors affecting countries' potential revenue collection. We discuss the determinants of potential revenues below. A significant difference between the traditional approach and the stochastic frontier approach is the assumption made about the random error, ε_{ji}. In the case of the traditional approach this is a two-sided normally distributed error while in the case of the stochastic frontier model the error is assumed to be one-sided. Thus in the case of the stochastic frontier approach a country can only deviate from the optimal by underperforming in its tax administration while in the case of the traditional approach a country can deviate from the expected average by both overperforming or underperforming.

B. Stochastic frontier analysis
We now move to the stochastic frontier analysis. Stochastic frontier models became a popular subfield in econometrics after they were first introduced by Aigner, Lovell, and Schmidt (1977) and Meeusen and van den Broeck (1977).

In a world where there is no inefficiency, tax administration in country i collects tax revenues $q_i = f(z_i, \beta)$. Stochastic frontier analysis, however, assumes that tax administration potentially collects less revenue than it might due to a degree of inefficiency, that is

$$q_i = f(z_i, \beta) \, \xi_i$$

where $\xi_i = (0, 1)$ is the level of inefficiency in its revenue collection. If $\xi_i = 1$, the tax administration is collecting the optimal amount of tax revenues, using the available inputs z_i defining the tax bases, and the production function $f(z_i, \beta)$. When $\xi_i < 1$, the tax administration is not making the most of the available inputs z_i. Since tax collection q_i is assumed to be strictly positive ($q_i > 0$), the degree of technical inefficiency is also assumed to be strictly positive ($\xi_i > 0$).

Tax revenue collection q_i is also assumed to be subject to random shocks, implying that

$$q_i = f(z_i, \beta) \, \xi_i \, \exp(v_i) \qquad (2.2)$$

Taking the natural log of equation (1) yields

$$ln\,(q_i) = ln\,[f(z_i,\,\beta)] + ln\,(\xi_i) + \upsilon_i \tag{2.3}$$

Assuming that function $f(z_i,\,\beta)$ is linear in logs, that there are k inputs defining the country's tax bases, and defining $u_i = -ln\,(\xi_i)$ yields

$$ln\big(q_{ji}\big) = \beta_0 + \sum_{j=1}^{k}\beta_j \ln\big(z_{ji}\big) + \upsilon_{ji} - u_{ji} \tag{2.4}$$

where q_i represents a ratio of total revenues (sum of tax and non-tax revenues) to GDP, while z_{ji} represents a matrix of variables affecting the country's potential revenues. Moreover, to account for countries' fixed effects, we include a set of country and year dummies.

We assume that the idiosyncratic error component, υ_i, is independently $N(0,\,\sigma_\upsilon)$ distributed over the observations. Since $\xi_i = (0,\,1)$, it implies that $ln\,(\xi_i) \leq 0$ and, therefore, $u_i \geq 0$. In other words, the inefficiency effect u_t lowers the tax collection from its potential level. We assume two alternative specifications of the inefficiency term, u_i. In the first one, the u_i is independently half-normally $N^+(0,\,\sigma_u^2)$ distributed, and in the second one, the u_i is independently exponentially distributed with variance, σ_u^2.

Revenue potential variable
When identifying determinants of countries' revenue potential that can be derived from the stochastic frontier regression analysis, we are led by the hypothesis that a country's revenue capacity depends on economic, demographic and institutional factors. As economic factors we include GDP per capita, openness, shares of hard-to-tax sectors in GDP (agriculture, services, and construction), inflation rate, income inequality, capital investments, foreign grants, and crude petrol production. Among demographic variables we identify age dependency, population density, and level of education. Finally, to account for the country's institutional setting, we include corruption level as an additional determinant.

Economic factors GDP per capita is one of the variables that are most commonly used in the tax effort literature as a proxy for economic development. One would expect a positive relationship between GDP per capital and revenue collection because of higher ability to pay in a society with higher income (Bahl, 1971; Fox and Gurley, 2005).

As a measure of trade flows serving as a tax handle, *Openness* is measured by the KOF's Globalization Index, which incorporates three major dimensions of globalization; namely, economic, social and political globalization.[18] The effect of globalization on revenue mobilization is

ambiguous. On the one hand, greater mobility of goods and factors of production largely represents increased mobility of the tax base, and hence, potentially reduces revenues (Keen and Mansour, 2010). On the other hand, since imports and exports take place at specific locations generally few in numbers in a country, they are relatively easy to tax, leading to larger revenues (Alonso and Garcimartín, 2011).

Similarly, the effect of *inflation* on the tax revenues is ambiguous. On the one hand, due to the Olivera–Tanzi effect (Olivera, 1967; Tanzi, 1977), hyperinflation decreases real value of tax revenues due to the lags between tax liabilities and the actual collection of the taxes. Moreover, certain types of taxes, such as excise duties, that are levied at specific rates may not be properly indexed, in which case high inflation leads to a reduction in their real value (Easterly and Schmidt-Hebbe, 1991). On the other hand, inflation may increase revenues in progressive tax systems if the tax rates are indexed with a significant lag (Alonso and Garcimartín, 2011).

Another important determinant of a country's ability to collect taxes is the sectoral structure of the economy. Certain sectors in the economy have been traditionally hard to tax, such as *agriculture*, *services*, and *construction*. Because of that and other reasons (equity and political economy issues), many countries exempt agriculture from taxes. A similar case can be made for many services. The construction section in most countries has a high percentage of output produced informally and therefore is hard to reach by tax administrations (Jewell, Flanagan and Cattell, 2005). Therefore, the larger the share of these sectors in GDP, the more difficult it will be for tax administrations to collect revenues.

The *income inequality* variable is measured by the Gini coefficient, which represents the extent to which the distribution of individual income or consumption within a country deviates from an equal distribution. Income distribution has been rarely used as a determinant of revenue effort, with the exception of just a few studies such as Bird et al. (2004), Gupta (2007), Pessino and Fenochietto (2010), and Alonso and Garcimartín (2011). All these studies find that income inequality has a negative effect on revenue collections. It is considered that increasing income inequality reduces the tax base through more than one channel. For example, in a more unequal society, the administration mostly depends on the higher income groups for revenue collection, which reduces the tax base. Gupta (2007) uses tax structure (direct versus indirect taxes) as a proxy for income distribution and argues that since indirect taxes tend to be regressive, they increase income inequality and reduce the tax base. Similarly, as Alonso and Garcimartín (2011) point out, higher income inequality may lead to a larger informal sector which hinders tax collection. Furthermore, a political economy argument can be made that

income inequality also represents concentrated but powerful interests in society which may not be easily amenable to paying higher taxes.

Capital investment measured by the gross fixed capital formation, is expected to have a positive effect on government revenues through the potential expansion of economic activity and tax bases. On the other hand, resource-rich countries may exert lower tax effort than their resource-scarce counterparts because of either incentives caused by the wealth from natural resources, or because of the lack of capacity to fully utilize their revenue potential (Ndikumana and Abderrahim, 2010). We employ *domestic crude petrol production* as a proxy for a country's natural resource endowment. Similarly, *grants* received from foreign governments and international organizations may give governments an incentive to reduce their tax effort (Gupta et al., 2003).

Demographic factors   Demographics can also play a significant role in determining a country's tax base and effort. Age dependency, measured as the ratio of dependents (the population below age 15 and above age 65) to the working-age population (those aged 15–64), is expected to have a negative effect on the tax base (Le et al., 2012). Another demographic component is population density, whose effect on the revenue potential and revenue effort is ambiguous. On the one hand, a higher concentration of people should make taxation easier. On the other hand, larger population density may also encourage informal activities that are difficult to tax (Mkandawire, 2010). Because people live closer to each other, information transactions become more feasible which in turn tends to reduce revenue collection (Kau and Rubin, 1981).

The level of *education*, measured by the UN's Education Index, has been frequently used as another important demographic component of a country's revenue capacity. The effect of education is also ambiguous. On the one hand, the more educated people are the better they can understand the relationship between public goods provision and the importance of paying taxes to finance them (Pessino and Fenochietto, 2010). On the other hand, the more educated people are the more knowledgeable they become regarding how to avoid paying taxes, in which case we would expect a negative effect of education on revenue collection.

Institutional factors   The previous empirical evidence shows that a high level of corruption reduces revenues collection (Abed and Gupta, 2002). Bird et al. (2008) have also found that taxpayers who deal with rampant corruption are less willing to pay taxes. Corruption also discourages foreign investment, which negatively affects economic activity and the tax base. We measure corruption with the ICRG's assessment of corruption in

the political system. The index ranges from 1 to 6, where a higher number means a lower risk of corruption.

Finally, given that our dependent variable is preferably observed at the general government level whenever possible, and at the central government level when the data at the general government level are not available, we include a dummy that equals 1 if the revenues are observed at the general government level, and zero otherwise. This allows us to cater to the effects of budget classification in our empirical results.

2.4.2 Explaining Technical Inefficiency

As we mentioned above, the stochastic frontier analysis allows us to estimate the level of technical inefficiency and its determinants in countries' revenue collection systems.

Basically, after estimating equation (2.4)

$$ln\left(q_{ji}\right) = \beta_0 + \sum_{j=1}^{k} \beta_j \, ln\left(z_{ji}\right) + \upsilon_{ji} - u_{ji}$$

we predict the technical inefficiency term, $\widehat{u_{ji}}$, and then we estimate the following equation

$$\widehat{u_{ji}} = \sum_{j=1}^{k} \theta_j w_{ji} + \alpha_i + \mu_t + \varepsilon_{ji} \tag{2.5}$$

where w_{ji} represents a set of variables that may explain technical inefficiency in revenue collection, including corruption, complexity of the tax system, tax morale, years in office of the chief executive, political fractionalization, population growth, government debt level, and changes in the monetary base. α_i is the unobserved individual country effect, while μ_t is the time effect.

It is not clear whether *corruption* is only an input variable determining potential revenue collection by reducing the tax base, or it is also the determinant of technical inefficiency. That is why we also include corruption in the inefficiency equation. Corruption may increase technical inefficiency in the tax system by introducing permanent instability in the political system. Since our variable represents the risk of corruption, with larger values meaning lower risk, we expect a negative relationship between this variable and technical inefficiency.

After Wagner's (1976) findings strongly supported the hypothesis that the *complexity of the tax system* affects public expenditures and revenues, there were many studies that tested this hypothesis and found positive effects[19] or no effect.[20] This hypothesis states that the simpler the tax system, the easier

it is for the taxpayers (and voters) to perceive the real cost of government, and it is more likely that the government would have smaller expenditures and, therefore, smaller revenues. In other words, more complex tax systems lead to larger government, greater expenditures and, therefore, greater revenues for their financing, and in turn, more efficiency in revenue collection. We measure tax complexity by the Herfindahl Index of a country's revenue system,[21] but we acknowledge that it is far from being a perfect measure of tax complexity given that it assumes that all taxes have the same level of progressivity and equally affect taxpayers' incentives.

Tax morale, measured by the percentage of the population who declare cheating on taxes as never justifiable, is another variable for which it is not very clear whether it should be an input to the collection process or, instead, a determinant of technical inefficiency. Since higher tax morale makes it easier for the government to collect taxes, it could be interpreted to be an input contributing to the larger tax base. However, in high-tax-morale societies, tax administration may be more relaxed in collecting taxes and have lower audit rates (and therefore, all other things equal, be relatively more inefficient in extracting revenue for a given tax base), which may give way to higher tax evasion. We try to estimate equation (2.4) by including tax morale as another explanatory variable, but due to a relatively small number of observations, our sample is reduced 50 percent of its size and allows us to predict potential revenues for just a few countries. Therefore, we include tax morale only in the technical inefficiency equation while its sign may depend upon the mechanism through which it affects tax effort.

Democracies tend to have more efficient tax systems (Aizenman and Noy, 2009) and greater *fractionalization in the government* is interpreted to mean better representation of citizens and more efficient provision of services. Moreover, fractionalized governments might contribute to political stability by being less able to make comprehensive reforms (Bjørnskov et al., 2006). The variable *political fractionalization* represents the probability that two deputies from among the government parties picked at random would be of different parties.

Population growth rate is associated with higher inefficiency in the tax system because it is difficult to administer a rapidly rising population of taxpayers (Le et al., 2012). On the other hand, while higher levels of *government debt*[22] may have a positive effect on government efficiency in collecting taxes because it will need to repay the debt in the future (Barro, 1974), *seignorage revenues*, proxied by increases in the monetary base, may discourage governments from collecting taxes (Cukierman et al., 1992). To account for a lag in the effect of debt on efficiency in collecting revenues, we use the previous year value of government debt.[23]

   Finally, we include a dummy for general government to distinguish between inefficiency measured at the general government level from the one measured only at the central government level, and we also include a dummy for the OECD countries, allowing for a structural shift between developed and developing countries.

2.5 EMPIRICAL RESULTS

2.5.1 Fixed Effects

We start the discussion with the results obtained from the estimation of equation (2.1) using the fixed effects model. Table 2.1 presents alternative specifications for estimating potential revenues by using this methodology. As can be observed, unlike stochastic frontier analysis where in the first stage we include only those variables potentially affecting the tax base, in the traditional approach we also include the institutional variables. In addition to a different estimation method, in this case we do not log-transform any of the variables in the model. As we can see in Table 2.1, the estimated coefficients mostly have the expected signs and are statistically significant.

2.5.2 Stochastic Frontier Analysis

As we explained above, in our analysis with the stochastic frontier model we assume two alternative specifications of the inefficiency term, u_i. In the first one, the inefficiency term has half-normal distribution and in the second one it has an exponential distribution.[24] In addition, we estimate three specifications for each distribution of the inefficiency term. In the first one, we consider corruption as a component of the technical inefficiency so we do not include it in the stochastic frontier model; while in the second specification we include corruption as an input.

Table 2.1   Determinants of potential revenues, fixed effects

	(1)	(2)	(3)	(4)	(5)
Income Inequality	−0.279***	−0.288***	−0.291***	−0.254***	−0.284***
	(0.037)	(0.038)	(0.035)	(0.040)	(0.038)
Globalization	0.108***	0.098***	0.079***	0.113***	0.106***
	(0.032)	(0.033)	(0.030)	(0.035)	(0.033)

	(1)	(2)	(3)	(4)	(5)
Age Dependency	0.022	0.023	–0.079***	0.021	0.048
	(0.027)	(0.028)	(0.025)	(0.030)	(0.032)
Agriculture	–0.297***	–0.296***	0.077	–0.289***	–0.292***
	(0.049)	(0.051)	(0.053)	(0.053)	(0.051)
Services	–0.147***	–0.142***	0.022	–0.145***	–0.142***
	(0.034)	(0.034)	(0.034)	(0.037)	(0.034)
Construction	–0.848***	–0.895***	–0.243*	–0.923***	–0.894***
	(0.139)	(0.141)	(0.130)	(0.148)	(0.141)
Population Density	–0.001	–0.001	–0.025	–0.003	0.001
	(0.004)	(0.004)	(0.016)	(0.005)	(0.004)
GDP per capita	0.002***	0.001***	0.001**	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Education	0.100***	0.107***	0.140***	0.125***	0.108***
	(0.023)	(0.023)	(0.025)	(0.025)	(0.023)
Inflation	–0.062***	–0.061***	–0.026*	–0.060***	–0.059***
	(0.017)	(0.017)	(0.016)	(0.018)	(0.017)
Capital Formation	0.176***	0.202***	0.074	0.210***	0.211***
	(0.051)	(0.052)	(0.050)	(0.054)	(0.052)
Grants	–0.620***	–0.667***	–1.159***	–0.759***	–0.681***
	(0.151)	(0.154)	(0.134)	(0.164)	(0.154)
Crude Petrol	–0.008***	–0.009***	–0.000	–0.008***	–0.009***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Government Debt$_{-1}$	0.027***	0.027***	0.035***	0.031***	0.027***
	(0.005)	(0.005)	(0.006)	(0.006)	(0.005)
Corruption	0.015***				
	(0.002)				
Corruption$_{-1}$		0.015***	0.008***	0.016***	0.014***
		(0.002)	(0.002)	(0.002)	(0.002)
Complexity of Tax System			2.386***		
			(0.160)		
Government Fractionalization				–0.009	
				(0.008)	
Population Growth					–0.573*
					(0.341)
General Government	0.034***	0.036***	0.031***	0.034***	0.036***
	(0.006)	(0.006)	(0.005)	(0.006)	(0.006)
Constant	0.280***	0.212***	0.153***	0.217***	0.201***
	(0.053)	(0.055)	(0.052)	(0.059)	(0.055)
Observations	1,079	1,039	814	976	1,039
R-squared	0.843	0.845	0.910	0.844	0.846

Notes: Standard errors in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Dependent variable: Total revenues. All explanatory variables are in levels. All specifications include regional and period dummies.

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Table 2.2   Determinants of potential revenues, stochastic frontier analysis

	Half-Normal			Exponential		
	(1)	(2)	(3)	(4)	(5)	(6)
Income Inequality	–0.307***	–0.224***	–0.185***	–0.340***	–0.267***	–0.228***
	(0.042)	(0.048)	(0.050)	(0.041)	(0.046)	(0.049)
Globalization	0.313***	0.199***	0.225***	0.320***	0.211***	0.237***
	(0.049)	(0.059)	(0.059)	(0.049)	(0.058)	(0.059)
Age Dependency	–0.048	–0.119*	–0.109	–0.076	–0.177***	–0.172**
	(0.063)	(0.067)	(0.069)	(0.061)	(0.066)	(0.067)
Agriculture	–0.035**	–0.050**	–0.033*	–0.046***	–0.067***	–0.051***
	(0.017)	(0.020)	(0.020)	(0.017)	(0.019)	(0.019)
Service	0.042	–0.089	–0.060	0.033	–0.140**	–0.111
	(0.058)	(0.069)	(0.071)	(0.058)	(0.068)	(0.070)
Construction	–0.131***	–0.103***	–0.109***	–0.142***	–0.122***	–0.128***
	(0.027)	(0.030)	(0.030)	(0.027)	(0.030)	(0.030)
Population Density	–0.034***	–0.054***	–0.052***	–0.037***	–0.055***	–0.053***
	(0.007)	(0.008)	(0.008)	(0.007)	(0.007)	(0.007)
GDP Per Capita	0.137***	0.141***	0.145***	0.106***	0.100***	0.105***
	(0.023)	(0.024)	(0.024)	(0.023)	(0.024)	(0.024)
Education	0.238***	0.194***	0.197***	0.274***	0.230***	0.233***
	(0.034)	(0.035)	(0.035)	(0.034)	(0.035)	(0.035)
Inflation	–8.737	–12.685**	–9.953	–5.566	–10.084	–7.183
	(5.765)	(6.281)	(6.427)	(5.765)	(6.316)	(6.490)
Capital Formation	0.171***	0.093**	0.125***	0.183***	0.106**	0.138***
	(0.038)	(0.044)	(0.044)	(0.038)	(0.043)	(0.043)
Grants	–0.010***	–0.012***	–0.012***	–0.010***	–0.013***	–0.012***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Crude Petrol	–0.004*	–0.007**	–0.005**	–0.003	–0.005*	–0.004
	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)
Corruption		0.130***			0.133***	
		(0.024)			(0.023)	
Corruption			0.053***			0.053***
			(0.008)			(0.007)
Gen. Government	0.163***	0.124***	0.133***	0.154***	0.114***	0.123***
	(0.022)	(0.024)	(0.024)	(0.021)	(0.023)	(0.024)
Constant	–2.061***	–2.273***	–2.180***	–2.083***	–2.361***	–2.270***
	(0.141)	(0.154)	(0.156)	(0.136)	(0.148)	(0.150)
Observations	1,334	1,094	1,064	1,334	1,094	1,064
Lambda	1.117	1.228	1.234	0.748	0.814	0.813
	(0.036)	(0.032)	(0.032)	(0.017)	(0.015)	(0.016)
Sigma (u)	0.210	0.212	0.213	0.051	0.135	0.135
	(0.027)	(0.231)	(0.235)	(0.002)	(0.011)	(0.011)
Log-Likelihood	89.63	133.12	127.45	102.30	148.61	142.30

Notes: Standard errors in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Dependent variable: log(total revenues). All explanatory variables, except Gen. Government Dummy are in logs. All specifications include regional and period dummies.

Finally, in the third specification, we employ one-year lagged value of corruption rather than the current value, to account for the potential reverse causality between revenues and corruption. We acknowledge that lagged values may not be the best instrument to resolve the reverse causality problem, but until we find a better instrument, we will have to rely on this one.

Table 2.2 presents the results from estimating equation (2.4) and assuming the two alternative distributions of the inefficiency term. As the table shows, results are robust to changes in the distribution of the inefficiency term and to changes in the specification. Moreover, the coefficients do not even change significantly in magnitude. All the coefficients have the expected signs and are mostly statistically significant.

In general, the results in Table 2.2 support those obtained by the traditional approach with most of the coefficients being within a close range of the magnitude. This is comforting in the sense that the different econometric estimation strategies do not seem to lead to different interpretations of the role played by the determinants of tax performance.

In the two models, the lambda parameter, $\lambda_i = \sigma_{ui}/\sigma_{vi}$, is statistically significant and the log-likelihood ratio test allows us to reject the null hypothesis that there is no technical inefficiency in the model.

2.5.3 Explaining Inefficiency in the Tax System

As we have already mentioned above, the stochastic frontier analysis allows us to predict technical inefficiency in revenue collection and then investigate its determinants. Table 2.3 presents the results obtained by estimating equation (2.5) when half-normal distribution of u_{ji} is assumed, and Table 2.4 presents a corresponding model in the case of the exponential distribution of u_{ji}. Columns 1–4 in Table 2.3 present the results obtained by estimating the model where the dependent variable $\widehat{u_{ji}}$ is obtained as a predicted value from the model in column 1 in Table 2.2, while in columns 5–8 in Table 2.3 the dependent variable is the predicted value from the model in column 2 in Table 2.2. Similarly, the dependent variable in the specifications presented in columns 1–4 and 5–8 in Table 2.4 is obtained from columns 4 and 5 in Table 2.2, respectively. In other words, when corruption is included in the frontier model, we do not include it in the inefficiency equation, and when it is not, we do include it.

As Table 2.3 shows, the results are quite robust to inclusion/exclusion of corruption, even though its estimated coefficient shows the expected sign and it is statistically significant. We also find that complexity of the

tax system (measured by the Herfindahl index) and government debt are especially important components contributing to higher efficiency in the tax system. In the words of numbers – one percentage point increase in the complexity of the tax system reduces inefficiency by 3.3–4 percentage points.

Similarly, one percentage point increase in the previous year level of government debt to GDP reduces inefficiency by 3.8–5.3 percentage points. Political fractionalization also seems to be a significant factor for tax efficiency – one percentage point increase in the probability of two deputies from the government being from different parties reduces inefficiency by 1.3–1.5 percentage points. In addition, tax morale seems to have a statistically significant effect, even though it is not as large in the magnitude. A surprising result is the negative sign on population growth rate which is the opposite from what we expected. A possible explanation for this result could be that a rapidly growing population generates pressure on the government for meeting their increasing needs for public goods and encourages it to collect more revenues to finance them.

2.6 COMPARING THE CONVENTIONAL TAX EFFORT INDICATORS AND THE EXPENDITURE-REVENUE GAP

Finally, we turn to calculating countries' tax effort indicators and to comparing them with the expenditure-revenue gap. Table 2.5 presents estimates of the tax effort using the stochastic frontier method (columns 5–10), the traditional fixed effects model (columns 11–13), and the ratio of total revenues and total expenditures (column 14). The tax effort ratios for the first two methodologies are obtained by dividing the actual tax and non-tax collections by the potential revenue capacity as defined earlier in each case. As we can see, in most cases tax effort estimates from the stochastic frontier method are slightly smaller than those from the traditional fixed effects model. We can also see that in most OECD countries the stochastic frontier estimate is about 10 percentage points lower than the one from the fixed effects. In part this reflects the fact that the benchmark for revenue performance under the stochastic frontier method is the best performance in the sample while the benchmark in the traditional approach is the fitted average in the sample.

Table 2.3   Explaining inefficiency in the tax system. Dependent variable: predicted inefficiency from the model assuming half-normal distribution of U_i

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Corruption	-0.502*** (0.192)	-0.105 (0.218)	-0.512*** (0.191)	-0.526*** (0.190)				
Complexity of Tax	-3.541*** (0.445)	-3.297*** (0.427)	-3.434*** (0.447)	-3.438*** (0.446)	-3.996*** (0.514)	-3.629*** (0.505)	-3.851*** (0.515)	-3.861*** (0.514)
Tax Morale	0.089*** (0.025)	0.159*** (0.025)	0.098*** (0.025)	0.097*** (0.025)	0.078*** (0.028)	0.150*** (0.029)	0.089*** (0.029)	0.088*** (0.029)
Political Fractionalization	-1.438** (0.661)	-1.525** (0.670)	-1.485** (0.659)	-1.522** (0.656)	-1.325* (0.761)	-1.349* (0.787)	-1.395* (0.758)	-1.453* (0.754)
Government Debt_{-1}	-4.096*** (0.857)	-3.824*** (0.805)	-4.477*** (0.876)	-4.331*** (0.851)	-4.825*** (0.988)	-4.891*** (0.955)	-5.342*** (1.008)	-5.129*** (0.976)
OECD	-0.283 (0.690)	-1.214* (0.641)	-0.494 (0.696)		-0.386 (0.794)	-1.155 (0.755)	-0.680 (0.800)	
General Government	-2.492 (2.180)	-2.015 (1.969)	-1.991 (2.187)	-1.772 (2.164)	-4.423* (2.525)	-3.937* (2.347)	-3.739 (2.528)	-3.439 (2.503)
Broad Money		1.630 (1.513)				-1.920 (1.694)		
Pop. Growth			-0.802* (0.418)	-0.756* (0.412)			-1.102** (0.483)	-1.036** (0.476)
Constant	44.162*** (4.735)	30.934*** (4.902)	42.989*** (4.757)	42.382*** (4.676)	47.627*** (5.364)	38.872*** (5.664)	45.947*** (5.383)	45.000*** (5.265)
Observations	435	354	435	435	435	354	435	435
R-squared	0.856	0.889	0.857	0.857	0.843	0.871	0.845	0.845

Notes: Standard errors in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Columns 1–4: Dependent variable is technical inefficiency predicted from regression in Column 1, Table 2.1. Columns 5–8: Dependent variable is technical inefficiency predicted from regression in Column 2, Table 2.1.

Table 2.4 Explaining inefficiency in the tax system. Dependent variable: predicted inefficiency from the model assuming exponential distribution of U_i

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Corruption	-0.610*** (0.207)	-0.179 (0.211)	-0.622*** (0.206)	-0.636*** (0.204)				
Complexity of Tax System	-3.298*** (0.479)	-2.814*** (0.414)	-3.162*** (0.480)	-3.166*** (0.479)	-3.666*** (0.550)	-3.035*** (0.487)	-3.498*** (0.550)	-3.505*** (0.549)
Tax Morale	0.065** (0.026)	0.153*** (0.024)	0.076*** (0.027)	0.075*** (0.027)	0.042 (0.030)	0.134*** (0.028)	0.055* (0.031)	0.055* (0.031)
Political Fractionalization	-1.546** (0.711)	-1.381** (0.650)	-1.606** (0.708)	-1.643** (0.705)	-1.624** (0.814)	-1.369* (0.758)	-1.705** (0.809)	-1.748** (0.805)
Government Debt$_{-1}$	-3.763*** (0.922)	-3.366*** (0.781)	-4.246*** (0.941)	-4.102*** (0.914)	-4.290*** (1.057)	-4.259*** (0.920)	-4.892*** (1.077)	-4.734*** (1.042)
OECD	-0.218 (0.742)	-1.312** (0.621)	-0.486 (0.748)		-0.161 (0.850)	-1.093 (0.728)	-0.503 (0.855)	
General Government	-2.959 (2.346)	-2.230 (1.909)	-2.324 (2.350)	-2.109 (2.324)	-4.559* (2.701)	-3.770* (2.263)	-3.763 (2.701)	-3.541 (2.672)
Broad Money		1.100 (1.467)				-1.845 (1.633)		
Pop. Growth			-1.017** (0.449)	-0.971** (0.443)			-1.282** (0.516)	-1.233** (0.508)
Constant	41.193*** (5.098)	24.941*** (4.752)	39.705*** (5.111)	39.108*** (5.024)	43.649*** (5.737)	31.505*** (5.461)	41.695*** (5.751)	40.995*** (5.621)
Observations	435	354	435	435	435	354	435	435
R-squared	0.817	0.877	0.819	0.819	0.797	0.854	0.801	0.801

Notes: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1. Columns 1–4: Dependent variable is technical inefficiency predicted from regression in Column 4, Table 2.1. Columns 5–8: Dependent variable is technical inefficiency predicted from regression in Column 5, Table 2.1.

Table 2.5   Estimated tax effort by country

No.	Country	Period	GG Level	Fixed Effects			Stochastic Frontier Analysis						Total Revenues / Total Expenditures
							Half-Normal			Exponential			
				Spec 1	Spec 2	Spec 3	Spec 1	Spec 2	Spec 3	Spec 1	Spec 2	Spec 3	
1	Albania	2002–2004	1	0.78	0.88	0.89	0.68	0.73	0.73	0.68	0.73	0.73	N.A.
2	Algeria	1994–1995	0	1.28	1.31	1.33	0.95	0.90	0.92	0.95	0.90	0.92	N.A.
3	Argentina	2005–2006	1	0.99	1.04	1.05	0.86	0.88	0.88	0.86	0.88	0.88	0.90
4	Armenia	1996–1998	1	0.71			0.73			0.73			0.97
5	Australia	2002–2004	1	0.91	0.93	0.92	0.69	0.65	0.66	0.69	0.65	0.66	1.03
6	Austria	2004–2006	1	1.00	0.99	0.99	0.87	0.83	0.83	0.87	0.83	0.83	0.94
7	Bangladesh	2003–2005	0	0.95	1.02	1.08	0.73	0.76	0.76	0.73	0.76	0.76	0.83
8	Belgium	2003–2005	1	1.03	1.04	1.04	0.90	0.90	0.93	0.90	0.90	0.93	0.98
9	Benin	2003	0	0.79			0.79			0.79			N.A.
10	Bhutan	2006–2007	0	1.69			0.56			0.56			0.48
11	Bolivia	2000–2002	1	0.85	0.82	0.80	0.72	0.71	0.70	0.72	0.71	0.70	0.61
12	Brazil	2003–2005	1	1.75	1.69	1.70	1.29	1.24	1.23	1.29	1.24	1.23	N.A.
13	Bulgaria	2003–2005	1	1.03	1.09	1.10	0.88	0.94	0.95	0.88	0.94	0.95	1.01
14	Burkina Faso	2001–2003	0	0.64	0.68	0.69	0.68	0.71	0.72	0.68	0.71	0.72	N.A.
15	Burundi	1996–1998	0	1.55			1.44			1.44			0.76

Table 2.5   continued

No.	Country	Period	GG Level	Fixed Effects			Stochastic Frontier Analysis						Total Revenues / Total Expenditures
							Half-Normal			Exponential			
				Spec 1	Spec 2	Spec 3	Spec 1	Spec 2	Spec 3	Spec 1	Spec 2	Spec 3	
16	Cambodia	2005–2007	0	1.04			0.68			0.68			N.A.
17	Cameroon	1999–2001	0	0.80	0.84	0.83	0.87	0.99	0.99	0.87	0.99	0.99	N.A.
18	Canada	1998–2000	1	1.07	1.04	1.04	1.03	0.99	0.96	1.03	0.99	0.96	1.04
19	Central African Republic	1992	0	1.38			0.74			0.74			N.A.
20	Chile	1998–2000	1	1.01	0.99	1.00	0.90	0.89	0.88	0.90	0.89	0.88	0.96
21	China	2001–2003	0	0.51	0.56	0.58	0.47	0.51	0.50	0.47	0.51	0.50	0.64
22	Colombia	2002–2004	1	0.98	0.91	0.94	0.86	0.85	0.86	0.86	0.85	0.86	0.99
23	Costa Rica	2004–2006	0	1.11	1.15	1.13	1.01	1.02	1.01	1.01	1.02	1.01	0.97
24	Côte d'Ivoire	2000–2002	0	0.83	0.81	0.86	0.76	0.72	0.75	0.76	0.72	0.75	0.96
25	Croatia	1996–1998	1	1.19			1.06			1.06			N.A.
26	Cyprus	2003–2005	1	1.02	1.04	1.04	0.95	0.96	0.97	0.95	0.96	0.97	0.67
27	Denmark	2003–2005	1	1.17	1.13	1.13	1.09	1.07	1.05	1.09	1.07	1.05	1.04
28	Dominican Republic	2004–2006	0	0.98	0.97	0.99	0.87	0.88	0.90	0.87	0.88	0.90	0.95
29	Ecuador	2006	0	0.90	0.85	0.87	0.80	0.76	0.76	0.80	0.76	0.76	0.83
30	Egypt	2002–2004	1	0.79	0.83	0.83	0.69	0.76	0.75	0.69	0.76	0.75	0.92
31	El Salvador	2002–2004	0	0.75	0.71	0.70	0.73	0.73	0.73	0.73	0.73	0.73	0.84
32	Estonia	1996–1998	1	0.99			0.86			0.86			0.98

33	Ethiopia	1998–2000	0	0.72	0.94	0.95	0.78	0.87	0.90	0.78	0.87	0.90	0.55
34	Finland	2004–2006	1	1.11	1.04	1.05	0.93	0.82	0.81	0.93	0.82	0.81	1.06
35	France	2004–2006	1	1.05	1.10	1.10	0.92	0.94	0.98	0.92	0.94	0.98	0.91
36	Germany	1997–1999	1	1.01	1.00	0.99	0.89	0.89	0.88	0.89	0.89	0.88	0.96
37	Guatemala	2002–2004	0	0.84	0.87	0.80	0.74	0.78	0.75	0.74	0.78	0.75	0.82
38	Honduras	2004–2006	0	0.90	0.93	0.91	0.84	0.86	0.85	0.84	0.86	0.85	0.75
39	Hungary	2004–2006	1	0.90	0.93	0.95	0.73	0.78	0.80	0.73	0.78	0.80	0.84
40	Iceland	2004–2006	1	1.34	1.31	1.33	1.10	1.04	1.03	1.10	1.04	1.03	0.99
41	India	2003–2005	0	1.32	1.34	1.42	1.06	1.06	1.07	1.06	1.06	1.07	1.17
42	Indonesia	2002–2004	0	1.03	1.09	1.13	0.89	0.92	0.90	0.89	0.92	0.90	0.96
43	Iran	2003–2005	1	1.11	1.13	1.14	0.85	0.89	0.88	0.85	0.89	0.88	0.94
44	Ireland	2003–2005	1	0.75	0.79	0.79	0.72	0.70	0.72	0.72	0.70	0.72	0.91
45	Italy	2003–2005	1	1.04	1.09	1.09	0.96	1.00	1.03	0.96	1.00	1.03	0.90
46	Jamaica	2003–2004	0	1.56	1.81	1.79	1.49	1.67	1.64	1.49	1.67	1.64	0.88
47	Japan	2006–2008	1	0.96	0.99	0.99	0.74	0.74	0.74	0.74	0.74	0.74	0.75
48	Jordan	2001–2003	0	0.83	0.85	0.86	0.70	0.71	0.73	0.70	0.71	0.73	0.80
49	Korea, Rep.	2006–2008	1	1.01	1.06	1.06	0.92	0.94	0.94	0.92	0.94	0.94	0.96
50	Lao PDR	2006–2008	0	0.84			0.69	0.69		0.69			N.A.
51	Latvia	1996–1998	1	1.12			0.96	0.96		0.96			0.91
52	Lithuania	1996–1998	1	0.86			0.78	0.78		0.78			N.A.
53	Luxembourg	2005–2006	1	0.75	0.77	0.77	0.66	0.63	0.64	0.66	0.63	0.64	1.01

Table 2.5   continued

No.	Country	Period	GG Level	Fixed Effects			Stochastic Frontier Analysis						Total Revenues / Total Expenditures
							Half-Normal			Exponential			
				Spec 1	Spec 2	Spec 3	Spec 1	Spec 2	Spec 3	Spec 1	Spec 2	Spec 3	
54	Madagascar	2000–2001	0	0.54	0.50	0.50	0.52	0.55	0.54	0.52	0.55	0.54	0.89
55	Malaysia	2006–2008	0	0.85	0.81	0.84	0.79	0.75	0.75	0.79	0.75	0.75	N.A.
56	Maldives	2002–2004	1	1.49			1.35			1.35			0.85
57	Mali	1999–2001	0	0.71	0.84	0.86	0.72	0.75	0.77	0.72	0.75	0.77	N.A.
58	Mexico	2003–2005	0	0.86	0.86	0.85	0.78	0.78	0.79	0.78	0.78	0.79	0.95
59	Moldova	1998	1	1.17			1.21			1.21			N.A.
60	Mongolia	2006–2008	1	1.29	1.30	1.28	1.02	0.97	0.96	1.02	0.97	0.96	1.00
61	Morocco	1997–1999	0	1.06	1.08	1.10	1.02	1.04	1.05	1.02	1.04	1.05	0.94
62	Namibia	1993	0	1.50	1.31	1.44	0.96	0.95	0.95	0.96	0.95	0.95	N.A.
63	Nepal	2002–2004	0	2.42			1.01			1.01			0.78
64	Netherlands	2004–2006	1	0.93	0.92	0.92	0.85	0.84	0.83	0.85	0.84	0.83	0.98
65	New Zealand	2002–2004	1	1.04	0.98	0.99	0.96	0.93	0.91	0.96	0.93	0.91	1.09
66	Nicaragua	2003–2005	0	1.41	1.39	1.40	1.25	1.23	1.23	1.25	1.23	1.23	0.73
67	Norway	2004–2006	1	1.18	1.15	1.15	0.92	0.82	0.82	0.92	0.82	0.82	1.09
68	Pakistan	1997–1999	0	0.97	0.91	0.95	0.88	0.88	0.90	0.88	0.88	0.90	0.67
69	Panama	1998–2000	0	0.83	0.99	1.00	0.69	0.75	0.76	0.69	0.75	0.76	0.74
70	Paraguay	2003–2005	0	0.93	1.15	1.16	0.69	0.74	0.71	0.69	0.74	0.71	0.71
71	Peru	2003–2005	0	0.82	0.80	0.82	0.75	0.74	0.76	0.75	0.74	0.76	0.94

72	Philippines	2001–2003	0	0.79	0.80	0.80	0.74	0.75	0.74	0.74	0.75	0.74	0.78
73	Poland	2003–2005	1	0.95	1.01	1.03	0.82	0.86	0.89	0.82	0.86	0.89	0.86
74	Portugal	2003–2005	1	0.98	1.00	1.01	0.88	0.86	0.87	0.88	0.86	0.87	0.81
75	Romania	2004–2006	1	0.88	0.90	0.92	0.78	0.79	0.80	0.78	0.79	0.80	0.99
76	Rwanda	2000	0	0.42			0.43			0.43			N.A.
77	Singapore	1997–1999	1	0.91	0.97	0.98	0.78	0.82	0.83	0.78	0.82	0.83	1.07
78	Slovak Republic	1996–1997	1	0.98	1.03	1.02	0.85	0.94	0.94	0.85	0.94	0.94	0.86
79	Slovenia	1996–1998	1	0.98			0.76			0.76			0.95
80	South Africa	1985–1987	1	0.93	0.84	0.83	0.79	0.84	0.80	0.79	0.84	0.80	0.94
81	Spain	2003–2005	1	0.92	0.95	0.95	0.81	0.79	0.80	0.81	0.79	0.80	0.97
82	Sri Lanka	2000–2002	0	0.93	0.84	0.83	0.76	0.70	0.69	0.76	0.70	0.69	0.59
83	Sweden	2003–2005	1	1.12	1.09	1.08	0.90	0.83	0.83	0.90	0.83	0.83	1.01
84	Switzerland	2000–2002	1	0.72	0.73	0.72	0.65	0.64	0.64	0.65	0.64	0.64	0.94
85	Thailand	2000–2002	1	0.66	0.67	0.66	0.56	0.58	0.57	0.56	0.58	0.57	0.85
86	Tunisia	1998–2000	0	1.02	1.08	1.09	0.85	0.89	0.89	0.85	0.89	0.89	0.92
87	Turkey	1987–1989	0	0.65	0.68	0.68	0.55	0.55	0.56	0.55	0.55	0.56	0.92
88	Uganda	2000–2002	0	1.23	1.44	1.46	1.22	1.36	1.38	1.22	1.36	1.38	0.82
89	United Kingdom	2003–2005	1	0.92	0.91	0.91	0.85	0.80	0.82	0.85	0.80	0.82	0.92
90	United States	2002–2004	1	1.00	1.02	1.04	0.91	0.87	0.89	0.91	0.87	0.89	0.89
91	Uruguay	1996–1998	0	1.09	1.17	1.18	1.04	1.04	1.07	1.04	1.04	1.07	0.85
92	Venezuela, RB	2003–2005	0	0.79	0.81	0.83	0.72	0.71	0.72	0.72	0.71	0.72	0.54
93	Vietnam	2006–2008	1	1.55	1.46	1.51	1.49	1.43	1.45	1.49	1.43	1.45	N.A.
94	Zambia	2002–2004	0	0.61	0.72	0.75	0.55	0.62	0.62	0.55	0.62	0.62	0.55

Table 2.6 Correlation coefficients b/w tax effort estimates

| | | | Stochastic | | | | | | Traditional | | | Budget Balance |
| | | | Half-Normal | | | Exponential | | | Fixed Effects | | | |
			Spec 1	Spec 2	Spec 3	Spec 1	Spec 2	Spec 3	Spec 1	Spec 2	Spec 3	TR/TE
Stochastic	Half-Normal	Spec 1	1.00									
		Spec 2	0.96	1.00								
		Spec 3	0.96	0.99	1.00							
	Exponential	Spec 1	1.00	0.96	0.96	1.00						
		Spec 2	0.96	1.00	0.99	0.96	1.00					
		Spec 3	0.96	0.99	1.00	0.96	0.99	1.00				
Traditional	Fixed Effects	Spec 1	0.94	0.87	0.86	0.94	0.87	0.86	1.00			
		Spec 2	0.90	0.90	0.90	0.90	0.90	0.90	0.94	1.00		
		Spec 3	0.89	0.89	0.90	0.89	0.89	0.90	0.93	0.99	1.00	
Budget Balance		TR/TE	0.35	0.26	0.26	0.35	0.26	0.26	0.42	0.31	0.31	1.00

There are alternative ways to further discuss the results. One revealing approach is to focus on the different rankings obtained for selected countries.

An interesting case is Australia with only 69 percent estimated tax effort by frontier analysis, which is significantly lower than the estimate from the fixed effects model (about 90 percent) and the ratio between total revenues and total expenditures (103 percent). According to these numbers we could infer that even though Australia has a much larger capacity to raise revenues than it does, it actually raises only the amount that it needs for financing its desired expenditure needs. Another interesting example is Burundi for which the estimated tax effort from the traditional econometric analysis is between 140 and 150 percent, but they manage to cover only 76 percent of their expenditure needs from their own revenues.

However, to have a better understanding of these results, it may be more desirable to make comparisons between more similar countries. For example, among the industrial nations, when we compare Australia with Canada we can conclude that both countries collect enough revenues to finance their expenditures, but we estimate that revenue collection in Canada is much closer to its potential than it is in Australia. This may be the result of larger expenditure needs in Canada than in Australia and, thus, the need for higher collection of revenues. Similarly, we estimate that revenue collection in Burundi and Uganda, which are among the poorest countries in the world, is well above its potential, but at the same time they are not high enough to finance their expenditure needs. On the other hand, Bangladesh and Pakistan are two countries that are so similar but in many ways, including revenue collection, so different. While in both countries the level of revenue collection is below their potential and they are below the level needed to fully finance their expenditures, the revenue effort measure is much higher in Pakistan than in Bangladesh.

These numbers would suggest that for countries like Burundi and Uganda it would be necessary to increase their tax capacity through economic and institutional development efforts. Moreover, high dependence on foreign aid for financing government spending has a negative effect on potential revenue collections. As our results suggest, a 1 percent increase in grants from foreign governments and international organizations (i.e., foreign aid) leads to a 1–1.3 percent reduction in potential revenue collections. Countries like Burundi, with relatively low ratios of total revenues (tax and non-tax revenues) to GDP of 15.7 percent and relatively high average dependence ratios of foreign grants to GDP of 4.8 percent, have space for higher tax effort. Note that according to the latest Transparency International (2011) report, the corruption perception index

in Burundi is 1.9 (10 being the lowest and 0 the highest risk). In addition, it is quite clear from our numbers that countries like Pakistan and Bangladesh have space (and need) to increase their revenue collections through improved tax administration and enforcement.

For a more general comparison, Table 2.6 presents the correlation coefficients between the three estimates of tax effort. We can see that estimates obtained by the stochastic frontier model and the fixed effects traditional model exhibit a high positive correlation indicating that, whereas the differences in magnitude may be important, the two methods yield estimates within a close neighborhood of each other. The table also shows that each of the estimates from the traditional method and the stochastic frontier analysis has a much lower correlation with the tax effort measure generated by using total expenditures as a benchmark for potential revenue requirements. This result could mean that the tax effort measures generated by different econometric methods may not measure up very closely with the revenue requirements in a country, especially if the desired development levels achieved by a country or pursued by its policies are better approximated by its level of public expenditures. Connecting this with the question of how much revenue it needs to raise, given its preferred level of public goods, provides a more tractable avenue for tax policy discussions. The low correlation between the tax effort measures calculated by econometric methods and our third method also points toward a need to carry out further work in developing cogent measures of revenue requirements. Such measures could either be built as sustainability requirements for the current level of development or serve as lights on the path to achieving higher levels of development. As we mentioned earlier in Section 2.2, despite some good beginnings, much work remains to be accomplished in this area.

In general, according to our results, for most countries in our sample, actual revenue collections do not match their revenue potential. There are different reasons for such a result. Some countries (e.g., Australia) do not tax up to their full capacity because they do not need to, while some others (e.g., Burundi) tax much over the capacity but still have to rely on foreign aid and grants to finance much of their expenditure needs.

2.7 CONCLUSION

Calculating tax effort accurately for tax policy purposes and motivating discussion on the scope of tax reforms remains an important endeavor. In such efforts, the tax collections are known with relative accuracy. A plausible measure of tax capacity that appeals to the policy sense of

decision-makers is a harder task but still key to defining the potential tax gap for any country. The traditional approach to measuring tax effort develops a measure of tax capacity that arises out of the tax levels attained in other countries and the effects of tax handles and other determinants on those tax levels prevailing in the international experience. Adding institutional determinants refines this measure but it does not change in any substantial way.

Similarly, the stochastic frontier approach modifies the measure of tax capacity and parses out the production frontier and the implied time varying inefficiency. This provides an additional dimension for policy discussions by identifying determinants of and factors influencing inefficiency. The tax capacity measure produced with either approach, however, does not provide a tangible revenue target specifically applicable to a country. In either case, a weakness persists in that the tax gap does not have a close correspondence to the revenue needs given the development level to be sustained or achieved. In this chapter we have argued that the public expenditure level revealed as a political choice in a country may serve as an additional informative measure to quantify tax effort. It serves as a readily visible preference for the desired level of public goods and service provision in a country. Observed over time, it shows what a country wishes to spend on public goods. This is a useful and politically cogent fiscal indicator to assess the adequacy of the level of taxation in a country.

Linking tax collection to a country's expenditure profile has the advantage of bringing the politics of financing public goods to the foreground of policy discussions. A country may be able to sustain high levels of public expenditure with low tax collections in the short to medium term. In individual country cases, this could be made possible either due to international aid policies or country-specific ability to borrow. Over the long run, however, the question of raising revenues that correspond with the desired level of expenditures cannot be skirted by policymakers. The traditional approaches to measuring tax effort have some technical advantages including the fact that country cases are related to the international trends in taxation. However, even when these are considered, the political forces may not be moved by them. On the other hand, when tax and expenditure choices are seen as linked together and policymakers face the choice of either scaling down expenditures (politically unpopular) or increasing taxes (politically unpalatable), the trade-offs for development become much more apparent and may motivate appropriate decisions toward timely tax reform.

It is within this ambit that the search for a counterfactual measure of tax capacity should pay attention to regional comparators. Compared

with relatively opaque international averages, regional comparisons may evoke more intuitive responses. In this regard, additional measures of public expenditure could be developed to serve as indicators of either desired or recommended revenue requirements for a country, such as those in the Millennium Development Goals. Regional expenditures per capita on basic services like education, health and water and sanitation can provide a measure which indicates critical revenue requirements for keeping a country on the path of development. These critical expenditures may be low in a country, due to political priorities or high, due to inefficient expenditure management and service production systems. Using regional averages will help diminish such effects via some form of benchmarking competition. Another approach could be to develop regionally applicable measures of efficient expenditures to provide a set of basic services. Such measures will compare the cost of delivering services in comparable circumstances and may present convincing targets for enhancing tax effort.

Finally, a look at the development commitments may provide another measure of revenue requirement or desired fiscal capacity. Under several international commitments like health commitments and Millennium Development Goals, developing countries bind themselves to pursuing specific outcomes. The financial implications of these commitments are easy to work out. This could be done in absolute terms per country to find out the fiscal cost of reaching a particular development indicator or in comparative terms by alluding to regional comparators and referring to the levels of public expenditure reached to achieve particular development ends. Tax effort could then be defined with reference to committed public expenditures and used per se to provide specific policy guidance for tax reform. We aim to use such data and refined measures of tax effort, with a higher cogency for development, as future work.

NOTES

1. For example, to name two of the most influential sources of this information: UNDP Human Development Reports annualized since 1990; World Bank's World Development Reports annualized series since 1978.
2. UNDP's 2011 Human Development Report shows that Democratic Republic of Congo has achieved a human development index of 0.286 while Norway has ranked a high 0.943.
3. This discussion is often captured by fiscal response models tracing the effects of foreign aid on tax effort (for example, Franco-Rodriguez, 2000 and McGillivray and Ouattara, 2005 or by linking foreign aid with poverty reduction targets as an autonomous source of revenue (Agénor, Bayraktar and Aynaoui, 2008).

4. In the US context, Wasylenko (1997) points out that some studies report negative tax elasticity estimates which means that the states with higher tax rates will lose economic activity to other regions and may also have a slower job creation.
5. Cummings et al. (2009) modeling the case of Spain show that when political change leads to social norms change this can result in an overall increase in the level of taxation.
6. Barone and Mocetti (2011), arguing that the efficiency of public expenditures contributes to tax morale, show that the quality of public expenditures can be seen as another factor that will in turn determine how much will be collected in taxes.
7. The notion of this inefficiency and how it may affect GDP estimates is discussed in Grigoli and Ley (2012).
8. For example Neustadt and Zweifel (2010) report differences in willingness to pay and size of the Swiss welfare state resulting in pressures on the latter.
9. See Bierbrauer and Sahm (2010) for theoretical discussion of this issue.
10. See, for example, Ehrhart (2012) who finds a positive relationship between democracy and tax collection in a panel of 66 developing countries for the period 1990–2005.
11. Keen and Lockwood (2010) use VAT as an explanatory variable in the tax effort equation to determine its impact on changes in revenue mobilization.
12. Features of industrial organization in a country may also be deemed to affect tax collections (Kleven, Kreiner and Saez, 2009) but they may be equally hard to change, especially in the short run.
13. There is a wide range of other institutional variables that have been examined for their potential to affect tax collection levels. Aizenman and Jinjarak (2012) derive results to show that inequality has a negative effect on tax base in a country; Elgin et al. (2013) argue that religion influences private charitable donations as a substitute to taxes.
14. Corruption may lower the burden of corporate taxes (Goodspeed, Martinez-Vazquez and Zhang, 2011); on the other hand, it is sometimes argued to be a marginal tax for businesses (Olken and Pande, 2012).
15. In the empirical section below we address some of these issues by using fixed effects estimation.
16. Mahdavi (2008) alludes to actual tax to GDP ratio as a function of the desired level of tax ratio but does not develop the concept further. The empirical analysis focuses on the standard determinants of tax level, and public debt and foreign aid and other control variables. Due to substitution, the desired level of tax ratio drops out of the model.
17. Only a few papers on tax effort discuss this issue. For example, Mahdavi (2008) uses non-tax revenue as a determinant of tax revenue, arguing that it works as a substitute to tax collections. Other papers have shown that higher non-tax revenue in developing countries (for example, from natural resources) is correlated with lower tax revenue. This issue is related to the study of revenue structure or mix.
18. The reason that we use this measure of globalization rather than the ratio of trade (sum of exports and imports) and GDP is that the latter does not take into account other important factors affecting trade openness, such as trade policy and a country's economic, social, and political characteristics, which the KOF's index does take into account.
19. See for example Pommerehne and Schneider (1978), Baker (1983), Breeden and Hunter (1985), Cullis and Jones (1987), and Heyndels and Smolders (1995).
20. See for example Clotfelter (1976), Munley and Greene (1978), Misiolek and Elder (1988), and Henrekson (1988).
21. We use different types of taxes to compute the Herfindahl Index. See the Appendix for details.

22. Government debt refers to the gross general government debt, whenever data are available. However, when general government data were not available, only central government debt was observed. See the Appendix for a full description of the variable and data sources.
23. We experiment with different lags of government debt and observe no significant difference in the results. Therefore, we observe only its one year lagged value.
24. We also try to estimate the model by assuming truncated-normal distribution of the inefficiency term, but we fail to do so since the estimation fails to converge.

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APPENDIX

Appendix Table 2A.1   Variables, description and sources

Total Revenues	= Tax Revenues + Non-Tax Revenues	IMF GFS Database, OECD Revenues Database, CEPAL
Age Dependency	Age dependency ratio (% of working-age population)	WDI
Agriculture	Agriculture, hunting, forestry, fishing (GDP Value Added in current Prices, %)	United Nations Statistics Division
Broad Money	Broad money (% of GDP)	WDI
Capital Formation	Gross fixed capital formation (including Acquisitions less disposals of valuables)(GDP Value Added in current Prices, %)	United Nations Statistics Division
Complexity of Tax System	= Personal Income Tax^2+Corporate Income Tax^2+General Tax on Goods and Services^2+Excises^2+Customs Duties^2	IMF GFS Database, OECD Revenues Database, CEPAL
Construction	Construction (GDP Value Added in current Prices, %)	United Nations Statistics Division
Corruption	Assessment of Corruption within the political system (max. points 6)	ICRG
Crude Petrol	Production of Crude Oil, NGPL, and Other Liquids (Thousand Barrels Per Day)	US Energy Information Administration
Education	Education index	UNDP Human Development Report
GDP Per Capita	GDP per capita, PPP (constant 2005 international $)	WDI
General Government	=1 if revenue data at the general government level	
Globalization	Globalization index	Dreher (2006) and Dreher, Gaston and Martens (2008).
Grants	Grants from foreign government and international organizations, % of GDP	IMF GFS Database
Income Inequality	Gini coefficient	UNWIDER
Inflation	Inflation, consumer prices (annual %)	WDI
OECD	=1 if OECD member country	
Political Fractional-ization	Fractionalization Index	Thorsten et al. (2001).
Pop. Growth	Population growth (annual %)	WDI
Population Density	Population density (people per sq. km of land area)	WDI

Appendix Table 2A.1   Variables, description, and sources (continued)

Government Debt$_{-1}$	General Government debt (% of nominal GDP). It does not include debt of public corporations	Historical Public Debt Database 2011
Service	Services, etc., value added (% of GDP)	WDI
Tax Morale	Percent of population declaring cheating on taxes as never justifiable	World Value Survey
Years in Office	Chief Executive Years in Office	Thorsten et al. (2001).

Appendix Table 2A.2   Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Age Dependency	6211	0.70	0.20	0.17	1.20
Agriculture	5793	0.18	0.15	0.00	0.81
Broad Money	4743	0.44	0.34	0.04	3.24
Capital Formation	5834	0.22	0.08	0.01	0.68
Complexity of the Tax System	2670	1.08	1.15	0.01	8.29
Construction	5834	0.06	0.03	0.00	0.28
Corruption	2760	3.17	1.39	0.00	6.17
Crude Petrol	4472	0.34	1.10	0.00	10.64
Education	3243	0.75	0.21	0.09	0.99
GDP per capita	4434	10.59	12.40	0.25	123.26
Globalization	5479	0.47	0.18	0.10	0.93
Government Debt	4895	0.56	0.52	0.00	20.93
Grants	3736	0.01	0.03	0.00	0.30
Income Inequality	2646	0.38	0.10	0.18	0.74
Inflation	5289	0.11	0.14	-0.29	1.00
Political Fractionalization	4059	0.21	0.28	0.00	1.00
Population Density	6272	0.26	1.22	0.00	19.43
Services	4925	0.52	0.14	0.07	0.93
Tax Morale	957	0.60	0.13	0.26	0.95
Total Revenues	3737	0.26	0.13	0.01	0.61
Years in Office	4892	7.05	7.25	1.00	46.00

3.   Modeling tax reform in developing countries

Andrew Feltenstein, Luciana Lopes, Janet Porras-Mendoza and Sally Wallace

INTRODUCTION

The evaluation of tax policy reforms has typically addressed two main issues: the efficiency and equity of the underlying tax code. Among the various analytical methodologies used for the analysis, two stand out. These are Computational General Equilibrium (CGE) models and Micro-simulation models (MSM). Each of them has certain advantages and disadvantages that have been considered by different researchers. While each instrument provides a useful type of analysis for each goal, they also include some drawbacks related with their main structures. In order to exploit their strengths, there has been an interest in linking these models either by integrating them or by treating them in a layered manner. The focus of this chapter is to address the efforts to link the two models and the methodologies that have been used for that purpose.

A review of the literature provides an interesting insight into this effort at two levels, empirically and methodologically. The empirical approach refers to the kind of reforms that have been considered in a variety of countries, as well as what kind of economies have been applying them. The methodological approaches are essentially mechanical: they identify what are the main strategies used to link the two models, and what are the main strengths and limitations associated with those strategies. This chapter will survey the literature on these two approaches, and will try to come to some general conclusions about whether there are any general conclusions to be drawn. In addition, the chapter provides an example of the application of one of these methodologies. We present a CGE model of the effects of tax evasion and entry into the underground economy in Pakistan. We also provide an MSM analysis of tax incidence in Pakistan. At this point, the two models have not been linked in a "top-down" overall model, which remains a topic of current research. However the

two models should serve as examples of the two approaches and we provide a conceptual framework for integrating them.

In the next section, we provide a brief overview of CGE and micro-simulation models as a means to discuss the integration of these important policy tools. In the section, we also provide a discussion of the benefits and the limitations of the separate models.

Computational General Equilibrium (CGE)

The use of computational general equilibrium (CGE) models to analyze tax policy began with the seminal papers of Shoven and Whalley (1972; 1973). These papers extended the Arrow–Debreu general equilibrium model to allow the introduction of taxes and tariffs. The approach, that originally incorporated only a few simple taxes in the context of static models, has been greatly extended. New versions of this approach use dynamic models with intertemporal optimization by all agents, and incorporate a wide variety of fiscal policies, not only taxes. It may be useful to mention some of the fiscal policies that have been frequently examined in the context of CGE models.

Among tax policies that can be incorporated into CGE models are sales taxes, value added taxes, tariffs on imports, export taxes, personal income taxes, corporate income taxes, wealth taxes, and land taxes. At the same time, subsidies such as price and consumption supports have been frequently analyzed. These models are quite flexible in dealing with different types of public current and capital spending. They have also proven to be useful, for example, in the analysis of the impact of the provision of public infrastructure on the productivity of the private sector, as well as a variety of other general fiscal policy issues.

More recent versions of the basic CGE model have attempted to incorporate financial assets, in particular money and bonds. Financial assets allow a considerable broadening of the scope of fiscal policies to be considered. Most importantly, they allow the model to avoid the requirement of a balanced budget, since deficits can be financed by a mixture of borrowing and monetization, as well as foreign borrowing. It has also been possible to introduce endogenous central bank behavior, including open market operations, discount lending, and interest rate targeting.

Further extensions of the basic CGE model have been to incorporate a foreign sector into the previously closed economy models. Thus many researchers have estimated import and export equations, and incorporated them, along with the modeling of endogenous capital flows, exchange rate regimes, and import quotas to analyze a variety of issues in foreign

trade. Similarly, the extension of the basic CGE model to include an intertemporal structure has permitted the numerical analysis of inflation and interest rates, as well as real growth rates, bringing the output of CGE models closer to familiar macro models.

Although CGE models have been extended to address a variety of economic policy issues, they have difficulties in certain areas. From the point of view of application to existing data, the use of representative agents is a problem. For example, a country may have survey data on thousands of households, but in order to incorporate this information into the CGE model, the households must be aggregated. That is, instead of thousands of households for which there is survey data, we would have, say, urban and rural representative agents, perhaps divided into income categories. Of course such aggregation discards a significant amount of useful information. Accordingly, many researchers have linked CGE models to micro-simulation models that do permit the incorporation of a high degree of detailed data, but do not have many of the endogenous modeling features of CGE models.

Strengths and Limitations of the CGE

CGE models have become the standard tool for carrying out efficiency analyses of tax reforms in specific economies. These models have been popular in studying the economy-wide impact of distortionary taxes. In the context of personal income taxation, their detailed treatment of work–leisure trade-off is important in analyzing labor force participation issues. In the case of indirect taxation, these models provide a linkage with the utility functions of the households and then indicate the welfare costs of taxes (Ahmed and O'Donoghue 2007).

CGE models have been subjected to an extensive analysis of their strengths and weaknesses. Their main advantages are that they are strongly founded in microeconomic theory, take into account economic flows in a flexible manner, and incorporate explicitly price effects. In addition, the specifications can be changed according to analytical needs, and they partially avoid the Lucas' critique, because there are no problems with expectations being incorporated in the estimated parameters used (Petersen 1997).

Although CGE models have considerable theoretical depth, they take a very flexible approach to statistical methodology. Some of the operational drawbacks are that the results are very sensitive to specification forms, closure rules and the choice of base-year. Additionally, many of the parameters of the model are derived from a single year's Social

Accounting Matrix (SAM). The expected structural changes in technology over time are ignored. In addition, the real world applicability of general equilibrium theory itself has been under scrutiny for a long time (Petersen 1997).

CGE models often include only one representative consumer, making it difficult to study effects on equality between different households. Other models include more than one consumer, but are likely to have only a small number of representative household groups. This implies that the equality analysis will tend to be too basic (Åvitsland and Aasness 2004).

Micro-simulation Models (MSM)

Micro-simulation models (MSM), which explicitly incorporate individual level data on households, individuals, or firms have a long history in policy analysis. The methodology behind micro-simulation models is based on the work of Orcutt (1957) and Orcutt, Greenberger, et al. (1961). Orcutt's original work in this area came out of a concern that the distributional aspects of policy changes were not considered in models of that period (largely macro growth models). The early MSMs envisioned a dynamic element in modeling where the base data were micro files of households, individuals, or companies. Baroni and Richiardi (2007) point out that these early dynamic micro simulation models did not live up to their promise, in large part because of data constraints since public use micro data were hard to come by in the 1950s and early 1960s. The model development then took a step backwards in the sense that models of the 1980s were static in nature. In the 1980s substantial gains were being made on the data front through the expansion of publicly available household surveys and the popularity of the IRS Statistics of Income Program, which made non-identified micro-level tax return data available to researchers in the US.

As the availability of micro data became less of an issue, focus turned again to the static nature of the micro-simulation methodology in the early 1980s. In the tax policy world, policymakers and researchers alike called for "dynamic scoring" of tax legislation that would incorporate the macroeconomic impacts of tax changes (such as increased economic activity) in the revenue estimates of tax legislation. Dynamic scoring called for adapting, some might say modernizing, the heavily used static micro-simulation models in the US. This trend toward more dynamic micro-simulation modeling was not unique to the US. In Australia and Canada (among other countries) policymakers were calling for more dynamic models to analyze the impacts of tax and expenditure policy changes on income, employment, and long-term tax revenues.

The uses of micro-simulation models have been extended to a number of different types of policy issues across many countries throughout the last three decades. The specific uses of micro-simulation models range from estimating the distributional impact of changes in the taxation of social security benefits (Wixon et al. 1987), to the demand for day care services in Denmark (Baekgaard 1996), to the implications of sales tax reform in Canada (Gupta et al. 2000). Many models have been designed specifically for the analysis of taxes in developed and developing nations. By far the greatest appeal of these models is the detail they provide in terms of distributional analysis.

There is no one unique approach to micro-simulation modeling. However, we can classify micro-simulation models into (at least) three general types: static, micro-dynamic/macro-static, and dynamic. Static models are used most often to simulate the short-term distributional and revenue impacts of detailed changes to tax and transfer programs. Micro-dynamic/macro-static models allow behavior to change, but with the overall constraint that GDP remains the same. Dynamic models are often used to simulate the impact of changes in policy (tax and transfer programs for example) on macro aggregates and, in some cases, the data are endogenously aged for population growth and other demographic changes.

A typical tax policy oriented micro-simulation model is comprised of three pieces: (1) a micro-level database (for example, information from tax returns for individuals or corporations for the base year and future years), (2) a tax calculator (a computer program that calculates the tax paid under alternative tax structures and which may be supplemented with behavioral changes associated with the tax changes), and (3) an output program which categorizes taxes paid by income group, tax burdens, winners and losers, and the overall change in revenue.

Strengths and Limitations of the MSM Approach

A number of researchers agree that the relevance of the MSM approach lies in providing in detail the behavior of individual firms and households. These agents are observed at a highly disaggregated micro level which can be expressed in two types of direct applications (Bourguignon and Spadaro 2006). First, it is simpler to identify the likely winners and losers of a reform under a disaggregate sample of economic agents rather than a few aggregate agents. Second, the results obtained with an MSM at the level of individual agents can be aggregated at the macro level, thereby providing a more accurate evaluation of the aggregate financial cost or benefits of a reform.

In the case of tax reforms, MSM is often the preferred methodology when equity analyses of tax reforms are undertaken. However, while MSM helps to estimate the distributive effects of a reform, it is limited due to the assumptions that individual behavior is largely unchanging, as well as its inability to model prices, wages and macro variables (Davies 2004). These assumptions may cause it to miss valuable information because of its partial equilibrium nature (Åvitsland and Aasness 2004).

Linking CGE and MSM

In the remainder of this chapter, we set the stage to bring together the best of both modeling traditions – CGE and MSM. The ultimate concept is to provide a tool that analyzes the macroeconomic impact of a policy change (such as a new tax, changes in tax rates, etc.) integrated with a micro dataset that enriches the analysis by fine-tuning the types of policies that can be analyzed and providing detailed distributional analysis. This is not the first attempt at such modeling, but in our view, this is the first attempt to develop such a model for tax analysis in a developing country that deals with some of the stickiest issues of tax policy – tax compliance, self-employed versus institutionally employed, and the impact of alternative tax policies on growth and investment.

The next section will survey the existing literature that has attempted to link CGE and MSM models. We will categorize the literature in various ways, and also discuss the countries to which the analysis has been applied.

SURVEY OF THE LITERATURE

This section presents a review of the literature on linking CGE and micro-simulation models or micro datasets and highlights the pros and cons of resulting models. This review aims to emphasize the works that investigate the impacts of fiscal policies, with applications to developing countries. Some of the fiscal policies that have been examined through the use of CGE and micro-simulation models are: reductions in tariffs; changes in direct taxes; changes in consumption taxes; adoption of cash transfers, and implementation of food subsidies. In addition, the general focus has been to analyze the effect of fiscal policies on labor markets, income distribution, and poverty.

This survey covers almost 30 years, from 1984 to 2012. This literature review is organized according to the approach used to link the CGE and

the micro dataset. Five different approaches have been identified: top-down; top-down with representative household groups; income distribution function approach; top-down/bottom-up; and fully integrated. Table 3.1 summarizes the main advantages and disadvantages of each approach presented in this section. The analysis of the literature review shows how the efforts to integrate the CGE and MSM reflect the data requirements, the availability of modeling resources, and the certainty about how to model the economy (Davies 2004). Under those conditions, it is difficult to uniquely identify which method is superior, but rather it is more useful to define which method suits best the objectives of the analysis.

The top-down approach has been used to establish a connection between the CGE model and the micro-simulation model. Robilliard et al. (2001) introduced the methodology. First, the micro dataset is used to estimate key macro variables that appear in the CGE model (wages, profits, employment, etc.). These variables are econometrically estimated using other relevant variables available in the micro dataset (age, education, region, etc.). This first step provides an initial set of coefficients for the micro-simulation model. Second, the values observed in the micro data are used to define consistent benchmark values for the key macro variables in the CGE model (for example, the sum of a variable x over the micro-units will be equal to a macro variable X that is included in the CGE model). Third, a policy change is simulated by the CGE model, modifying the macro variables of interest (from X to X*, for example). Fourth, the values estimated for the key macro variables (X*) are imposed on the micro-simulation model. In this way, a new set of parameters fully consistent with X* is estimated for the micro model. And finally, the effect of a policy change on each micro-unit can be evaluated using this new set of parameters estimated for the micro-simulation model.

The advantage of the top-down approach is the richness in terms of household behaviors that can be modeled. One disadvantage of this approach is that the coherence between the macro and micro models is not guaranteed. Another weakness is that the feedback effects of household behaviors are not taken into account in the CGE model.

Robilliard et al. (2001) presents an application of the top-down approach to study the effects on poverty and inequality of the financial crisis that hit Indonesia in 1997. In addition, they compare the impact of alternative social policies (food subsidies, household transfers and a public work program directed at unskilled workers) designed to protect the poor during the crisis. The initial set of coefficients for the micro-simulation model is estimated using OLS and multi-logit models. The CGE model communicates with the micro-simulation model through a

Table 3.1   A comparison of alternative approaches

Approach	Advantages	Disadvantages
Top-down	Richness in terms of household behaviors that can be modeled (compared with the top-down RHG, the income distribution function and the fully integrated approaches).	The coherence between the macro and micro models is not guaranteed. The feedback effects of household behaviors are not taken into account in the CGE model.
Top-down with representative household groups	Simplicity (fewer resources in terms of data, time, and skill, compared with alternative approaches that are not based on representative household groups).	It does not account for heterogeneity among agents within household categories (all individuals pertaining to the same household category will be subject to the same impact estimated by the CGE model). The feedback effects of household behaviors are not taken into account in the CGE model.
Income distribution function approach	Simplicity (fewer resources in terms of time, skill, and data – it requires only the set of parameters estimated for each within-group distribution of income).	The within-group distribution of income is assumed to be fixed across simulations (only the distribution of income between groups of households and the overall distribution of income change across simulations). Strong assumption that one income distribution represents all groups of households.
Top-down/ bottom-up	It takes into account the feedback of households generated by the micro model back into the CGE model. There is no need of adjusting the micro data to the national accounts and there is no need of balancing income and expenditure, as required by the fully integrated approach. It imposes fewer limits on microeconomic household behavior, compared with the fully integrated approach.	The results may change in a fundamental way depending on how feedback from the MSM model is imposed on the CGE model. Data inconsistencies between the micro and macro datasets can affect results seriously. The researcher may be unable to distinguish whether the resulting changes are due to feedback effects or due to data inconsistencies.

Approach	Advantages	Disadvantages
Fully integrated	It is able to capture the interaction between policy reforms and individual responses. It is able to capture individuals' feedback to the general economy.	The reconciliation of the micro data with the macro data is a requirement and may be difficult.
		More limited in terms of household behaviors that can be modeled than the TD and TD/BU layered approaches. Certain types of equations that are commonly included in a behavioral model are not easily modeled within standard CGE modeling softwares.

vector of prices, wages, and aggregate employment variables. They estimate that the most efficient social package in terms of poverty reduction appears to be household transfers.

Bourguignon et al. (2003) also use the top-down approach to investigate the impact of a change in the foreign trade balance (before the Asian financial crisis) on income distribution and poverty in Indonesia. However, the main purpose of the chapter is to illustrate the methodology and compare the top-down approach with the top-down RHG approach, which assumes that the impact on each micro-unit is given by the simulated impact on representative households in the CGE model (see below for a detailed description). They show that the results estimated differ substantially, depending on the chosen approach. The top-down approach should produce higher quality results because under this approach important household behaviors can be modeled and taken into account on inequality analysis. However, this will be true only if the representation of these behaviors is satisfactory. As mentioned by Bourguignon et al. (2003), the problem is to judge whether these behaviors are properly modeled. In conclusion, more work is needed to take full advantage of the top-down approach.

Another application of the top-down approach is presented by Bussolo and Lay (2003) for the Colombian economy. The paper studies the effects of the trade liberalization of the 1990s on income distribution and poverty. The average wage in each labor market segment, the average profits for different activities, the shares of self- and wage-employed for each segment, and the relative price of food and non-food are the variables extracted from the CGE model after the policy simulation and transmitted to the micro-simulation model. The micro-simulation model computes changes in earnings and the shares of self- and wage-employed

for each segment. The CGE micro-simulation model estimates that the trade liberalization shock reduced poverty in Colombia.

There are several other examples of the top-down applications including Ortega (2011) and Raihan (2010). Hérault (2006) identifies advantages of this method in that it avoids the use of representative agent assumptions and that it does not formally require full reconciliation of micro and macro data. The paper shows that trade liberalization appears to be pro-poor and to have a limited dampening effect on inequality. Dartanto makes a similar application for Indonesia (2010). He measures the impact of world price volatility and import tariffs of rice on poverty. The model identifies three main institutions (government, enterprises and households), 25 industry categories, and nine factors of production.

The top-down approach has also been used for policy analysis in developed countries. Buddelmeyer et al. (2009), for example, provide an application of this methodology for Australia.

The top-down approach with representative household groups (top-down RHG) has been used to establish a connection between the CGE model and the information available in micro databases. Agénor et al. (2003) present a description of this procedure. First, a traditional CGE model with representative households is used to simulate a policy change, producing changes in key macro variables (consumption, income, prices etc.) for each household category. Second, the households available in the micro dataset are classified into the categories of households available in the CGE model. Finally, the changes estimated by the CGE model are imposed on each individual in the micro dataset.

Under the top-down RHG approach, all individuals pertaining to the same household category will be subject to the same impact estimated by the CGE model. This is different from the previous approach, in which each individual is subject to a different impact after a simulated policy, depending on the specific individual characteristics. The advantage of this approach is the simplicity (compared with the previous approach, for example). As mentioned by Lofgren et al. (2003), approaches to link the CGE and the micro dataset that are based on representative household groups require fewer resources in terms of data, time, and skill, compared with alternative approaches that are not based on representative household groups. One disadvantage of this approach is that it does not account for heterogeneity among agents within household categories. Another weakness is that the feedback effects of household behaviors are not taken into account in the CGE model.

Agénor et al. (2003) use a CGE model representative of a typical middle-income developing country and the top-down RHG approach to study poverty reduction policies. More specifically, they simulate the

effects of a cut in the minimum wage and an increase in the employment subsidy on unskilled labor on income distribution and poverty. Changes in income, consumption and employment extracted from the CGE model are imposed on each household in the survey data. The main purpose of the paper is to compare the top-down RHG with the income distribution function approach (see below for a detailed description). Despite not finding fundamentally different results under the two approaches, they show that there is a potential for very large differences in terms of poverty and income distribution results. Additional examples of such models are found in Coady and Harris (2001), de Barros and Corseuil (2002), and King and Handa (2003).

The income distribution function approach provides an alternative way to benefit from the information available in disaggregated datasets while running policy simulations in macro CGE models. The following methodological description is strongly based on the work of Agénor et al. (2003). First, it is necessary to classify the households available in the micro dataset into the categories of households that exist in the CGE model. Second, a parametrically estimated distribution of income is assumed for each household category. Third, the parameters of the distribution of income within each group are estimated using the micro data. Fourth, a traditional CGE model is used to simulate a policy change and obtain the new group-specific mean incomes. And finally, the new group-specific mean incomes estimated by the CGE model are used to estimate the new distribution of income between groups of households and the new overall distribution of income. This procedure assumes that the distribution of income within representative household groups is not altered by the policy change, that is, the shape of the distribution is assumed to be fixed and only the distribution mean is subject to changes.

The advantage of this procedure, according to Lofgren et al. (2003), is its sparseness because the only additional data required is the set of parameters estimated for each within-group distribution. One disadvantage of this approach is that the within-group distribution of income is assumed to be fixed across simulations. Lofgren et al. (2003) explain that for this assumption to be a close approximation of reality, the representative households in the CGE model must be highly disaggregated. In addition, as showed by Boccanfuso et al. (2003), the assumption that one income distribution represents all groups of households and is invariant across policy simulations may result in misleading conclusions in terms of inequality and poverty analysis.

Decaluwé et al. (1999b) provide an application of this procedure. They evaluate the impact of a fall in the price of exports and an import tariff reform on poverty and income distribution for an archetype African

economy. The household micro data is used to estimate the parameters of the income distribution function of each group of households included in the CGE model. A Beta distribution was assumed. Decaluwé et al. (1999a) also use the methodology and the assumption of a Beta distribution to evaluate the effects of a significant current account deficit and an increase in the unskilled labor supply on poverty and inequality in an archetypal semi-industrialized economy. Also assuming a Beta distribution, Agénor et al. (2003) study the distributional and poverty effects of a cut in the minimum wage and an increase in the employment subsidy on unskilled labor in a typical middle-income developing country. An alternative approach is given in Colatei and Round (2000), who assume that the income distribution function of each household group included in the CGE model follows a lognormal distribution. They study the effects on poverty of a range of revenue-neutral redistributive policies in Ghana.

The top-down/bottom-up approach was introduced by Savard (2003). First, the CGE model generates the outputs to feed the micro-simulation model (a vector of prices for goods and factors, for example). Second, the micro-simulation model and the outputs of interest extracted from the CGE model are used to estimate the behavior of each micro-unit (household behavior in terms of consumption and labor supply, for example). Third, the individual outputs estimated by the micro-simulation model are aggregated over all micro-units and will feed the CGE model (for example, individual consumption is aggregated over all households, producing a single vector for consumption). Finally, the CGE model produces a new set of outputs that will feed the micro model. As a response, the micro model will produce a new set of individual responses that will feed the CGE again. The process between the CGE and the micro model continues until a solution is achieved.

One advantage of this approach, compared with the top-down approach, is that it takes into account the feedbacks of households generated by the micro model back into the CGE model. According to Savard (2003), another advantage of this procedure is that it is possible to use the exact income and expenditure data available in the micro dataset. There is no need of adjusting the micro data to the national accounts and there is no need of balancing income and expenditure, as required by the fully integrated approach (see below for a detailed description of this approach). He also explains that this approach imposes fewer limits on microeconomic household behavior, compared with the fully integrated approach.

Colombo (2010) describes two drawbacks of the top-down/bottom-up approach. First, the conclusions may change in a fundamental way depending on how feedback from the MSM model is imposed on the

CGE model. And second, it is possible to run the model without previously solving inconsistencies between the micro and macro datasets, however, these data inconsistencies can affect results seriously. The researcher may be unable to distinguish whether the resulting changes are due to feedback effects or due to data inconsistencies.

Savard (2003) presents an application of the top-down/bottom-up approach for the Philippines. The paper investigates the effects of a reduction in import tariffs on poverty and income distribution. However, the main objective of this chapter is to introduce the top-down/bottom-up approach as a new methodology to link the CGE model and the micro dataset and to present its main advantages compared with the other approaches.

Some examples of the application of the top-down/bottom-up approach can be seen in the studies from Savard for the Philippines. One study (Savard 2010) uses the CGE–MSM model with endogenous labor supply and unemployment to explore the impact of scaling up infrastructure spending in the Philippines under three funding mechanisms (increases in the VAT, the income tax rate and foreign aid). The CGE model is categorized into 20 sectors and it is assumed that capital is not mobile between sectors. Labor is divided between formal and informal, and the choice of combinations between these two factors is determined by a CES function. The results show that infrastructure spending reduces poverty and that foreign aid is the most equitable funding mechanism, while a VAT provides the strongest poverty reduction.

Another study compares the results of using the Representative Agent (RA) and top-down/bottom-up approaches in terms of poverty variation and income distribution as opposed to macroeconomic and sectoral results (Savard 2005). He emphasizes that the RA approach is not able to generate intra-group variance as it represents the structure of wealthy households much more than that of poor ones. In that sense using aggregated RA models for poverty and inequality reduction could lead to biased policy conclusions.

An example of the use of the CGE–MSM model for tax policy analysis is seen in the study by Ăvitsland and Aasness for Norway (2004). They evaluate the effect on equity of three taxation reforms (a uniform VAT rate on all goods and services, the abolition of the investment tax and a non-uniform VAT on the lines of the reform of 2001). The CGE model has 41 private and eight governmental production activities, and 24 commodity groups. All factors are completely mobile and malleable, the distribution of full consumption and leisure is determined by a CES function, and the government expenditure is exogenous. They link the CGE and the MSM models by multiplying consumer prices, nominal

pre-tax incomes, wealth and transfers in the MSM model by percentage changes in corresponding variables in the CGE model. It is found that under the third taxation reform, the equality is increased. The top-down/bottom-up approach has also been used for policy analysis in other developed countries. Magnani et al. (2011), for example, provides an application of this methodology for France.

Finally, an example of the fully integrated approach (also called bottom-up or integrated multi-households CGE analysis) is presented by Cogneau and Robilliard (2000). First, the micro dataset is used to estimate household behavioral equations econometrically (wages and value added by sector, for example). The residuals of these econometric equations are preserved to be included in the model as exogenous variables that will take into account unexplained heterogeneities between households/individuals. The parameters that cannot be estimated econometrically are from the literature or derived from the household survey or the SAM. Second, the equations estimated for each household are aggregated and compose the CGE model, that is, the CGE model is based on information from the micro dataset. The CGE model includes all households. We can say that the number of representative households in the CGE model under this approach is equal to the number of households in the micro dataset. In Cogneau and Robilliard (2000) there are thousands of households, factor, and activity accounts in the full model SAM. However, they explain that it is possible to derive an aggregate social accounting matrix (SAM) with a reduced number of accounts. And finally, a solution algorithm will seek the equilibrium prices that will clear excess demands. As explained by Cogneau and Robilliard (2000), at each step all the micro behavioral functions will be recomputed with new prices. This makes some microeconomic behaviors endogenous. According to Cogneau and Robilliard (2000), since the microeconomic specifications constitute the foundations of the model, this procedure could be called a bottom-up approach.

According to Cockburn (2002), an advantage of the fully integrated approach is that all the heterogeneity of households is included into the CGE model, making possible to model the effects of policy changes on each individual household. Cororaton (2003) explains that the approach captures the interaction between policy reforms and individual responses. In this way, individuals' feedback to the general economy is also taken into account. One disadvantage is that the reconciliation of the microeconomic data with the macroeconomic data is a requirement and may be difficult. Another disadvantage is that the fully integrated approach is more limited in terms of household behaviors that can be modeled than the top-down and top-down/bottom-up layered approaches. According to

Savard (2003) and Colombo (2010), certain types of equations that are commonly included in a behavioral model are not easily modeled within standard CGE modeling software. As a result, fully integrated models are relatively limited in terms of capturing the behavioral responses of the agents to the policy reforms that are implemented.

Cogneau and Robilliard (2000) use the fully integrated approach, as previously detailed, to study the impact of many different growth strategies (two different policies for a formal sector "push" and four different policies for the development of the agricultural sector) on poverty and inequality in Madagascar. In their model, which captures the heterogeneity at the household level, households differ by their demographic characteristics, labor market position, preferences of consumption, preferences of labor supply and their endowment of physical and human capital.

Cockburn (2002), Cororaton (2003), Decaluwé et al. (1999a), Boccanfuso et al. (2003), Aka and Diallo (2011) all provide analyses using fully integrated models in developing countries. In addition, the fully integrated approach has also been used for policy analysis in developed countries. Slemrod (1984) provides an application of this methodology for the United States, Tongeren (1995) and Tongeren (1997) for the Netherlands and Plumb (2001) for the UK.

Besides these approaches, there have been other attempts to integrate the macro–micro models. One alternative is proposed by Zavaleta (2010). His study analyzes the effects of an increase on natural resources output on poverty and inequality, and compares different redistributive policies. He uses an exact aggregated representative household model (EARH) which consists in using exact aggregation conditions to create a relatively small number of representative households in the CGE. The approach applies exact aggregation conditions of household behavior, which links the CGE and MSM models through a limited number of representative households. The approach accounts for substantial heterogeneity in household behavior and is consistent with econometrically estimated demand functions at the micro level.

Another approach is used by Annabi and other authors who develop two papers for Senegal and Canada. The first one, developed with Cissé (Annabi et al. 2005), examines the poverty and income distribution effects of a complete trade liberalization policy in Senegal. The second one analyzes the impact of an increase in foreign competition on Canadian labor markets, income distribution and poverty (Annabi et al. 2010). For both studies, they use a sequential dynamic MSM–CGE model which combines the growth aspects of a dynamic CGE model with the detailed information provided by MSM techniques.

Table 3.1 summarizes the main advantages and disadvantages of each approach presented in this section. The analysis of the literature review shows how the efforts to integrate the CGE and MSM lies in the data requirements, the availability of modeling resources, and the certainty about how to model the economy (Davies 2004). Under those conditions, it is difficult to uniquely identify which method is superior to the others; rather it is more useful to define which method suits best the objectives of the analysis.

In the last sections of this chapter, we provide an overview of two distinct models – a CGE and a micro-simulation for Pakistan. The use of Pakistan is largely a function of data availability, but the point in these sections is to remind readers of the important components of each model and to provide some intuition regarding how they might be integrated in one of the frameworks that have been summarized in this chapter.

A CGE ANALYSIS OF TAX POTENTIAL: A "TOP DOWN" APPLICATION TO PAKISTAN[1]

Background

This section develops a dynamic general equilibrium tax model, applied to Pakistani data, in which optimizing agents evade taxes by operating in the underground economy. The model will generate dynamic paths for various macro outcomes for the economy. These macro outcomes will then serve as inputs to a micro-simulation model for Pakistan, as described in the next section. This micro-simulation model will, in turn, generate detailed outcomes at the sectoral and household level, resulting from the macro inputs from the CGE model. This exercise will thus serve as an example of the top-down approach. This is one way to integrate the two types of models. Another methodology is to integrate the micro data and behavior into the CGE framework by using the micro data as the baseline database. The benefit from such a bottom-up approach is that, for tax policy, very detailed changes in tax law can be evaluated, simulated first within the micro-simulation model to calculate new effective tax rates. These rates can be used within the CGE model to determine changes to macro aggregates, which can then be fed back to the micro-simulation model. The result is a very detailed analysis of tax changes that includes the macro changes and the micro detail of tax policy and distributional analysis. This type of top-down/bottom-up integration will be investigated in the future.

The intuition of the CGE model is that firms optimize their returns to capital by evading taxes, but face certain constraints in doing so. The cost to firms of evading taxes is that they find themselves subject to credit rationing from banks. Our simulations will show that in the absence of budgetary flexibility to adjust expenditures, raising tax rates too high drives firms into the underground economy, thereby reducing the tax base. Aggregate investment in the economy will be lowered because of credit rationing. Taxes that are too low eliminate the underground economy, but result in unsustainable budget and trade deficits. Thus, the optimal rate of taxation, from a macroeconomic point of view, may lead to some underground activity.

We apply our model to Pakistan, and calibrate it to macro data for an 8-year period from 2004 to 2011. We then use a sectoral breakdown of tax data generated by the model to estimate tax gaps on a sector by sector basis. We will see that certain sectors are currently paying taxes below their potential, while others may be above their tax potential. These sectoral gap estimates may be used as indicators of where greater tax enforcement efforts should be directed. On the other hand, these sectoral indicators give little information about evasion at the level of individual firms or households. In order to generate information on evasion at the micro level, the outputs generated by the CGE model will be used as inputs for the micro-simulation model in the next section.

The cost of operating in the underground economy is modeled in terms of the inability to borrow from the official banking system. Banks in the model are assumed not to have perfect information about the firm's true ownership of assets and its associated true tax obligation. We assume that due to collateral requirements, credit is provided only in relation to the firm's implied ownership of assets, which is determined from its actual tax payment. The idea here is that in the face of default, banks can only seize those assets that have been officially declared by the firm. Hence, the higher the extent of tax evasion, the lower the implied value of firm assets, and the lower the amount of credit provided by the banking system. Our approach has some similarity to Kiyotaki and Moore (1997) who model credit limits on loans. These limits are determined by estimates of collateral which, in turn, are determined by estimates of durable asset holdings by borrowers. Here, tax payments are used to estimate the value of the durable asset of the borrower, as the asset cannot be directly observed.

We assume that firms can operate partially in the formal and partially in the underground economy. That part of their operation that takes place in the legal economy pays taxes and can borrow from the banking system. That part that is underground does not pay taxes and cannot

borrow. Admittedly this distinction is artificial, but captures some of the benefits and costs of operating in the underground economy discussed in the literature. In reality, the underground firm may still be able to finance its investment needs by relying on trade credits or borrowing from secondary lenders who charge higher than market interest rates and are willing to incur high risks.

Our approach also assumes that firms can evade taxes without any real risk of detection or punishment. Shleifer and Vishny (1993) point out that where public pressure on corruption or the enforcement ability of the government is relatively weak – as is the case in many developing countries – this is in fact a fitting assumption.

Model Intuition

We have developed the formal structure of a dynamic general equilibrium model that endogenously generates an underground economy. Much of the structure of our model is designed to permit numerical implementation for Pakistan. Our model has *n* discrete time periods. All agents optimize in each period over a two-period time horizon. That is, in period t they optimize given prices for periods t and t+1 and expectations for prices for the future after t+1. When period t+2 arrives, agents re-optimize for period t+2 and t+3, based on new information about period t+2. The dynamic structure is described in detail in Blejer, Feldman, and Feltenstein (2002).

Our approach is related to Gordon and Li (2009). Here the government is able to tax a firm only if that firm uses the banking system. When the firm uses a bank, it is assumed that the bank has access to the firm's balance sheet, which it records. The bank then makes this balance sheet information available to the government, which is then able to collect taxes, in particular sales taxes, based upon its knowledge of the firm's balance sheet.

We use a dynamic approach in which both firms and banks optimize and in which the benefits to a firm of accessing the banking system are endogenous. Our approach is related to Dabla-Norris and Feltenstein (2005). Here a firm compares the return to capital with the marginal tax rate on capital income. If the return is greater than the tax rate, then the firm pays the full capital tax. If it is less than the tax rate, then the firm reduces its tax payments proportionally. Hence the firm enters the underground economy gradually, as the gap between tax rates and returns to capital increases. At the same time banks use a firm's capital tax payments, combined with the capital tax rate to obtain an estimate of the firm's minimum capital value. This is thus the bank's estimate of the

firm's collateral, and hence reflects a minimum estimate of the value of assets that the bank can seize if the loan fails. This approach is motivated by the collateral constraints in Kiyotaki and Moore (1997). We should note that we are thus focusing on only a single type of tax evasion, namely, evasion of the capital income tax. As we shall see, indirect tax rates can change rates of evasion of the corporate income tax by changing the rate of return to capital. We do not, however, consider direct evasion of sales or value added taxes, for example.

Our approach has the key feature that tax evasion is based upon optimizing behavior by firms, rather than upon some exogenous firm characteristics. In particular, enterprises, as well as individuals, will balance their need to invest by borrowing from the banking system with their desire to reduce their tax obligations. This optimizing behavior is, of course, forward looking.

A General Equilibrium Specification

Production
There are eight factors of production and three types of financial assets. The five types of capital correspond to five aggregate nonagricultural productive sectors. An input–output matrix, At, is used to determine intermediate and final production in period t. The matrix is 27 × 27, using the disaggregation of Ahmad et al. (1985). Corresponding to each sector in the input–output matrix, sector-specific value added is produced using capital and urban labor for the nonagricultural sectors, and land and rural labor in agriculture.

We suppose that each type of sectoral capital is produced via a sector-specific investment technology that uses inputs of capital and labor to produce new capital. Investment is carried out by the private sector and is entirely financed by domestic borrowing.

The decision to invest depends not only on the usual investment variables, but also upon the decision the firm makes as to whether it should pay taxes. This decision determines the firm's entry into the underground economy. We assume that the firm's decision is based upon a comparison of the tax rate on capital with the rate of return on new capital. Formally, suppose that we were in a two-period world. Suppose that:

$$\frac{P_{K2}}{1+r_1} \geq t_{K1}$$

that is, the present value of the return on one unit of new capital is greater than the current tax rate on capital. In this case we assume the investor pays the full tax rate on capital inputs. Suppose, on the other hand, that:

$$\frac{P_{K2}}{1+r_1} \le t_{K1}$$

Here the discounted rate of return is less than the tax rate. The extent to which the firm goes into the underground economy is determined by the gap between the tax rate and the rate of return to investment. That is, the firm pays a tax rate of $\bar{t}_{K1}$ where:

$$\bar{t}_{K1} = t_{K1} \left[1 - \left(\frac{t_{K1} - \frac{P_{K2}}{1+r_2}}{t_{K1}} \right) \right]^{\alpha} \tag{3.1}$$

Here $0 \le \alpha$ and higher values of α lead to lower values of taxes actually paid. That is, the ratio $\frac{\bar{t}_{K1}}{t_{K1}}$ reflects the share of the sector that operates in the above ground economy. Hence α represents a firm-specific behavioral variable. An "honest" firm would set $\alpha = 0$, while a firm that is prone to evasion would have a high value for α.

Banking

Our premise is that banks have no direct way of knowing whether specific firms operate in the underground economy. We assume that banks only care about the amount of capital that they estimate the firm may have. If the firm defaults on its loan, then this represents the best estimate of the amount that the bank could seize. The bank would, presumably, be willing to lend an amount equal to at least the estimated firm capital.

We assume the borrower is required to show the bank his tax returns in order to obtain a loan. There is a single, flat corporate tax rate that the borrowing firm faces. Hence, suppose that T_{K1} represents taxes actually paid by the borrower in period 1. This is known to the bank, as the potential borrower is required to present his tax returns. Thus if the borrower fully complied with his tax obligation, and hence carried out no underground activity, the value of his capital, $\hat{K}_1$, would be given by:

$$\hat{K}_1 = \frac{T_{K1}}{t_{K1}}$$

In this case the bank lends an amount L_1, where $L_1 < C_{H1}$, as the bank would not be able to seize the full value of the loan in the case of a default. The situation we have described would, in the case of perfect certainty, have credit rationing when the estimated value of the firm's capital is less than its loan request. If the firm's capital is greater than its loan request, there would be no credit rationing.

Consumption

There are two types of consumers, representing rural and urban labor. We suppose that the two consumer classes have differing Cobb–Douglas demands and endowments. The consumers maximize intertemporal utility functions, which have as arguments the levels of consumption and leisure in each of the two periods. For a discussion of this modeling approach, as well as mathematical details, see Feltenstein and Shamloo (2013).

The government

The government collects personal income, corporate profit, and value-added taxes, as well as import duties.[2] We only consider a central government. It pays for the production of public goods, as well as for subsidies. In addition, the government must cover both domestic and foreign interest obligations on public debt. The resulting deficit is financed by a combination of monetary expansion, as well as domestic and foreign borrowing.

The foreign sector

The foreign sector is represented by a simple export equation in which aggregate demand for exports is determined by domestic and foreign price indices, as well as world income. The specific form of the export equation is:

$$\Delta X_{n0} = \sigma_1 \left[\frac{\pi_1}{\Delta e_i + \pi_{Fi}} \right] + \sigma_2 \Delta y_{wi}$$

where the left-hand side of the equation represents the change in the dollar value of exports in period i, π_i is inflation in the domestic price index, Δe_i is the percentage change in the exchange rate, and π_{Fi} is the foreign rate of inflation. Also, Δy_{wi} represents the percentage change in

world income, denominated in dollars. Finally, σ_1 and σ_2 are corresponding elasticities.

Simulations

In this section we carry out numerical simulations of our CGE model. The model is designed to give some qualitative notion of the implications for the macro economy of tax evasion and entry into the underground economy. Our goal is to calibrate the model to the dynamic path of the Pakistan macro economy, based upon the most recent available sources for the economy's technological and policy parameters.

We use an input–output (IO) matrix given in Ahmad et al. (1985), in which an 87-sector matrix is derived to represent Pakistan's technology for 1981. This has been updated for 1989/90, and we use the coefficients in this updated matrix.[3] This matrix is aggregated by adding rows and columns to generate the 27-sector matrix used for this study. Sectoral value addeds are taken from the national income accounts for 2004 expanded to correspond to the 27-sector IO matrix. We use 2004 as a starting point as our 8-year dynamic simulation is from 2004 to 2011. The production coefficients in sectoral value added functions are Cobb–Douglas and are taken from the IO matrix.

The model incorporates personal and corporate income taxes, sales taxes, and import tariffs. Our source for all tax rates is the website of World Tax Rates 2010/2011.[4] For the personal income tax we use the various slabs from 0 to 20 percent. For the corporate tax rate we use 35 percent of net taxable income of a company. For nonresidents, a 15 percent rate is levied on the gross amount of royalties or technical service fees, and 30 percent for other payments under the presumptive tax regime. The standard rate of the sales tax in Pakistan is 16 percent. Note that these are statutory rather than effective rates. The model generates endogenous effective tax rates, which are different from rates generated by single equation estimates.

Exchange rate time series are taken from the Statistics and DWH Department, the State Bank of Pakistan. We use the annual average US dollar foreign exchange rates for the years 2003–10, as we wish to generate a dynamic macroeconomic path for these years. We assume that the structure of financing of the government budget deficit is an exogenous policy instrument, and we take the 2003–10 shares from the Handbook of Statistics on Pakistan Economy 2010 (State Bank of Pakistan 2010).[5] We make a similar exogeneity assumption for public and private capital inflows, which are taken from Table 8.1, State Bank of Pakistan (2010). Our source for the historical series of expenditure by the

consolidated public sector is Table 3.7, State Bank of Pakistan (2010) where we use the shares of GDP table.[6]

Our model incorporates behavioral demand for money that depends upon interest and inflation rates, as well as real income. We use the estimates given in Qayyum (2005). In order to use our model for counterfactual simulations, we first generate an equilibrium using benchmark policy, technological, and behavioral parameters described. The program used to solve for the equilibrium converges to an accurate approximation of a Kakutani fixed point in usually less than 20 seconds for the eight discrete time periods we are currently simulating. We run the macroeconomic model forward for eight years,[7] giving tax rates and public expenditures their estimated values. We also suppose that the central bank maintains a fixed exchange rate, with the rate being fixed at the historical level of each year. Table 3.1 shows the results of the benchmark simulation. It may be worth making a few remarks concerning the simulated values. First, notice that our model generates moderate rates of growth in real GDP, with an average growth rate of 5.9 percent over the total 8-year period. This approximates Pakistan's actual real growth rate over the period in question. The budget is in deficit for all but one year, with an average deficit of 1.1 percent of GDP. This is lower than the actual historical deficit for the period. The simulated interest rate is relatively stable, and averages 7.9 percent, which is in line with Pakistan's interest rate. The trade deficit is relatively stable and averages 2.3 percent of GDP, which is somewhat better than the current level in Pakistan. The annual rate of inflation averages 22.3 percent, which is somewhat higher than the Pakistani average. Finally, sector 4, services and retail trade, operates significantly in the underground economy for all eight years of the simulation, indicating considerable tax evasion in retail trade. This also possibly corresponds to the Pakistan experience. By the end of the eight years of the simulation, the sector is underreporting income for tax purposes by 31.5 percent.

Our model helps us to identify those sectors that are underperforming from a tax point of view. We therefore use the model to carry out a sectoral estimate of the tax gap. Here the predicted outcomes of the general equilibrium model for 2010, assuming full compliance, are compared with actual tax revenues collected. That is, we set the "honesty" parameter for each sector at 0. This is the parameter α in equation (3.1). The general equilibrium model then generates a path for tax collections for the eight years of the simulation, and we choose the predicted collections for 2010. These are then compared with actual tax collections for 2010 for selected sectors, as well as for the aggregate

Table 3.2 Base case

Period	2004	2005	2006	2007	2008	2009	2010	2011
Nominal GDP 1/	100.0	137.8	133.4	181.2	314.1	475.3	538.3	785.6
Real GDP 1/	100.0	117.4	113.5	119.7	131.3	142.3	144.3	149.6
Real GDP growth rate 3/		17.4	–3.3	5.4	9.7	8.4	1.4	3.6
Inflation 3/		17.4	0.1	28.9	58.0	39.7	11.6	40.8
Price Level 1/	100.0	117.4	117.5	151.4	239.2	334.1	373.0	525.3
Nominal interest rate 3/	6.9	10.5	3.6	3.6	8.4	13.1	7.7	9.7
Budget surplus 2/	–1.4	–1.3	–1.6	–1.8	1.3	–1.2	–0.9	–2.2
Trade Balance 2/	–3.7	–2.6	–2.0	0.0	–4.3	–2.0	–2.6	–1.1
Import Duties 2/	2.0	2.1	2.2	2.2	2.1	2.1	2.2	2.2

Real return to		Share of Sector in Legal Economy			
		2005	2007	2009	2011
K1 1/4/	100.0	100.0	100.0	100.0	100.0
K2	100.0	100.0	100.0	100.0	100.0
K3	100.0	100.0	100.0	100.0	100.0
K4	100.0	3.7	5.9	27.0	58.5
K5	100.0	100.0	100.0	100.0	100.0

Notes:

1. Normalized to period 1 of the base case.
2. As a percent of GDP.
3. In percent.
4. The capital types are specific to broad sectors of the input–output matrix. The 5 capital types are:
K1 = Mining.
K2 = Manufacturing.
K3 = Electricity, gas, construction.
K4 = Services, retail trade.
K5 = Public administration, health, education.

economy and the manufacturing sector. The aggregate results are given in Table 3.2. They indicate that, on the level of the overall economy, there is a tax gap of about 58 percent, while in the manufacturing sector the gap is approximately 53 percent. As might be expected from the general

equilibrium model, capital intensive sectors such as iron and steel, and oil and gas, have smaller gaps than do less capital intensive sectors such as finance and insurance, or hotels and restaurants.

Table 3.3   Tax gaps by selected sectors in percent

Sector	Gap
Mining & Quarrying	−96.9
Manufacturing	−52.5
(of which)	
1. Chemicals	−67.5
2. Automobiles	−48.3
3. Cigarette and Tobacco	103.4
4. Iron and Steel	−10.5
5. Oil and gas	−25.7
6. Paper and Paper Board	−53.2
7. Textile	−59.2
8. Edible Oil	75.2
9. Cement	−49.0
10. Sugar	−91.2
11. Pharmaceuticals	−46.9
12. Fertilizer	−23.0
Telecom	−81.3
Wholesale and Retail Trade	−73.4
Finance and Insurance	−93.3
Hotels and Restaurants	−85.3
Other	−53.8
Total Economy	**−58.3**

Notes: A number of manufacturing sectors have been excluded from the disaggregation. They are included in the category 'other'. Other sectors that are not included in the terms of reference, but for which it is possible to calculate gaps, have been included.

These calculations should help in the measurement of the overall problem, as well as to identify those sectors where improvement is most needed.

It may be useful to add a few remarks about the absolute values of these gap estimates. Recall that the sectoral definitions of the general equilibrium model are based upon the 87-sector Pakistan input–output matrix. These sectors are, in turn, based upon national income accounts value added definitions. These sectoral definitions are not exactly the same as those in the actual tax collection tables which we use for the gap estimates. Thus, for example, the national income account definition of Finance and Insurance may be broader than that used by the tax authorities.

Accordingly, the general equilibrium model would generate greater expected tax revenue for Finance and Insurance, assuming perfect compliance, than would be reflected in actual tax collection data. Hence the estimated compliance gap would be relatively large, as we see in Table 3.3. Of course the opposite could also be true, that the national income account definition could be narrower than the tax definition, leading to some underestimations of particular gaps. Accordingly, it is best to look at broad sectors, such as the overall economy, manufacturing, or retail sales, for example, for absolute values of gaps as there is a closer comparison between national income account and tax collection definitions for these categories. For more narrowly defined sectors, it is best to look at the gap estimates as reflecting relative (compared with other sectors) rather than absolute gaps.

PAKISTAN MICRO SIMULATION MODEL (MSM)

The MSM that serves as the second piece of the integrated model that is underdevelopment is based on a number of micro data files from Pakistan. The MSM allows very detailed calculations of income and consumption taxes (at any level of government) and also provides a means to analyze the distributional effects of these taxes on Pakistani households by income level, region of the country, urban–rural split, etc. and therefore provides a level of detail that cannot be provided by the CGE model. Sectoral analyses can also be developed. MSM models are very useful for nuanced changes in tax policy such as simple rate changes, changes to deductions, and exemptions. CGE models are not typically as adept at these types of changes because the data are more aggregate/macro-based. In such cases, MSM models can be used to estimate the change in effective tax rates which can be fed into the CGE model. If those changes are relatively small, the CGE model may not pick up a measurable change in macro aggregates. As noted above, because of the micro-level data, the MSM might also be used to estimate

behavioral effects of tax changes such as labor or savings behavior, and these changes could be fed into the CGE model. Or, the MSM could be used to establish the aggregate base data on labor, income, employment, etc. which could then serve to calibrate the CGE model. In the future, these various integrations will be tested using the Pakistan models presented here and we will be analyzing whether or not there are perceptible differences in policy simulations from the various integrated models. Ex ante, we have no theory that suggests any one integration model will provide more accurate estimates of policy effects or more reliability welfare effects, etc. That is a matter of future research.

In the current MSM, the following micro datasets are used: the Pakistan Household Integrated Economic Survey (HIES), the Pakistan Labor Force Survey, and a special sample of tax returns from Federal Board of Revenue (FBR).[8] The current MSM is based on 2004–05 data files.

The HIES includes data for 14,708 households. The survey asks very detailed questions about expenditures, income, employment, family situation, and housing. We use the weight provided to us by the Federal Bureau of Statistics in the analysis. Once the observations are weighted, we have a population total of 19,288,310 households.

The HIES is the key dataset for the MSM. We use total income information and information on the distribution of expenditures by detailed type along with the demographic data of the households. The overall level of expenditure is substantially less than reported in the national accounts. This poses a difficult problem in any modeling, but in particular for the potential integration of the CGE and MSM. Currently, the HIES data are reweighted to reflect national totals of expenditure.

From the FBR, we have tax return micro data which allows us to "layer" a pattern of compliance on the HIES data. Since the HIES data provide detail about employment (formal, informal, government, etc.), a module within the MSM calculates tax liability. The calculated tax liability is then matched to HIES observations, with the expected small number of matches, representing compliant taxpayers.

Finally, we use the Pakistan Labor Force Survey (LFS) 2005–06 micro data file as another check on noncompliance. The LFS is a detailed micro data file with 32,744 households and individuals within each household. The data contain detail regarding the type of employment and average weekly or monthly income by employment type for paid employees only (not self-employed and other workers). The LFS is thought to be a more thorough dataset for analyzing wage income for paid workers. The HIES and LFS include income from all individuals and households – that of compliant and noncompliant taxpayers as well as taxpayers below and

above thresholds. As such, both of these data sources should provide a potential level of tax liability in the country. To work with both of these files, we deflate the LFS by 9 percent to reflect the 2004–05 level of the HIES data. If we were starting with tax return data as our base data source, we would have to impute noncompliers to the income distribution so that we had a full picture of the tax burden on all individuals and households in Pakistan.

Because our data are so detailed, we can analyze the distribution of tax burden from the more appropriate measure of "comprehensive income" which incorporates the theoretical finding that taxes affect returns to capital and labor. The appropriate distributional analysis would use an income measure that represents a counterfactual – what income returns would be without the taxes – to provide a measure of tax burden. One obvious example is the case of wage income. Wages are reported net of taxes. If we assume that the incidence of the salaried individual component of the income tax is on wage earners, we need to "gross up" our income measure (measured via consumption expenditures) to reflect the pre-tax level of wage income (as reported consumption expenditures will obviously not include this tax impact on wage income). The same is true of taxes on capital (from the capital income tax, corporate income tax, and property taxes).

To operationalize the MSM model, we effectively create a tax system via a computer program (in SAS or STATA), and calculate tax liability for each household (income and consumption taxes). If we apply the tax calculator to the entire database, we have an estimate of potential tax liability. We know that tax evasion is rampant in Pakistan, so as noted above, we flag noncompliant taxpayers by matching tax return data with the estimated liabilities. In the case of consumption taxes, we have FBR data on collections by type of product and by region of the country. Based on these data, we know for which consumption items and regions actual tax payments are less than our MSM estimated liabilities. However, unlike the income tax information, we do not know where in the income distribution the consumption tax evasion is concentrated. In the current model, we assume that the consumption tax evasion is uniformly distributed in the population according to their consumption of specific taxable items (which we have in detail in the micro data). A companion corporate model is also developed using income tax returns from FBR. The corporate model is utilized mainly to provide estimates of changes in effective tax rates by sector, which is possible because of the detailed tax calculator available in the corporate MSM. A typical tax incidence analysis would use the output from the corporate MSM to distribute the change in the corporate tax to individuals based on a sophisticated set of

assumptions regarding the incidence of the corporate tax on labor and capital (Wahid and Wallace 2008).

The model can be used to simulate a number of alternative tax policies. The changes are calculated within the MSM, holding behavior constant (including compliance). Turning behavior "on" moves the MSM from static to "micro dynamic" as noted in the introduction. The static MSM provides detailed output regarding the effective tax rate by income level, sector, etc., which may be used as input to the CGE model.

For purposes of illustration, the static version of the MSM model was used to analyze the impact of reducing the corporate income tax and increasing the consumption tax rate (across the board). A 10 percent reduction in CIT revenue would cost Rs 20 billion (2006–07 levels). The level of reduction could be achieved through a reduced corporate tax rate or a higher threshold, among other items.

To achieve an increase in GST revenue of Rs 20 billion would require a 6.5 percent increase in consumption tax revenues. This would yield an increase in the effective tax rate of about 6.4 percent relative to GDP and in the statutory rate of slightly over one percentage point. This type of tax reform would reduce the burden on the upper income via the reduction in corporate income tax and at the same time increase the "across the board" take from the increased consumption tax.

Based on MSM results, the "winners" are those individuals in the top decile, whose total effective tax rate falls by about 0.17 percentage points – or about 1.3 percent reduction in the effective tax rate. The households in all other deciles would see an increase in tax burden of between 0.08 to 0.11 percentage points. In this option, the lowest income deciles see the largest increase in tax burdens. In the final section, we use the MSM output for this policy change to provide a starting point for the CGE model, and analyze the results. This top-down model is one of the integrated models that can be analyzed and in the future, we will be analyzing additional alternatives.

CONCLUSION

Computational general equilibrium models (CGE) and micro-simulation models (MSM) each have their own sets of strengths and weaknesses. Both have been widely used for the analysis of fiscal policies in developing countries, and many attempts have been made to link the two models, thereby combining their relative strengths. We have surveyed a broad literature using a variety of approaches to apply linked CGE and MSM models to analyze fiscal policies, in particular taxes and tariffs, in

developing countries. We conclude that the "top-down" approach, in which the aggregate outputs of the CGE model feed into the MSM, is the most commonly used. Nonetheless, a "bottom-up" approach, in which the MSM generates estimated parameters, such as effective tax rates, which are then used as inputs to the CGE, may also be quite useful.

We have then developed CGE and MSM models of Pakistan, both of which have been used to analyze tax compliance and the general effectiveness of the Pakistan tax code. The two models have not, at this stage, been formally linked and we are working on such a linkage as part of future research. As an example of how a bottom-up link might work, we could take the simulation given in the MSM study, reducing the CIT by 10 percent and thereby changing the effective rate of tax/GDP from 3.27 percent to 2.94 percent. We would then compensate by increasing the effective consumption tax rate from 3.03 to 3.2 percent. These new effective tax rates would then enter the CGE model as input parameters and the CGE model would track the dynamic impact on the macro economy.

This chapter has focused on two important models for policy analysis: the CGE and MSM. In general, MSM are useful for relatively small policy changes – changes in tax rates that will have small impacts on behavior (savings, labor, investment, etc.), changes in exemptions, credits, and deductions, and in cases where distributional analyses are critically important. CGE models are most useful for major policy changes where we expect substantial changes in effective tax rates which in turn impact the level of output in the economy, employment, savings, etc. In some cases, choice of the model is a function of data availability as micro-level data may not be available in certain countries. Ultimately, integration of the two models enables answers to all of the important policy questions – employment, output, savings, distribution of the tax burden, and revenue impacts. We continue to investigate the integration of CGE and MSM and identification of a metric to evaluate whether or not there is an optimal integration, be it top-down, bottom-up or other.

NOTES

1. This section is based upon Feltenstein and Cyan (2013).
2. We only consider a central government.
3. Unfortunately there is no up-to-date input–output matrix that is currently available for Pakistan. We have been informed that one is being developed, but it not complete and we do not have access to it. Of course the structure of the Pakistan economy may well have changed since 1990, but we do not have evidence to support or reject such a conclusion. Once the new input–output matrix becomes available, then it can easily be

substituted for the old matrix and the simulations and gap estimates can be re-calculated.

4. World Tax Rates (2010/2011).
5. Table 4.2, Summary of Public Finance (consolidated federal and provincial).
6. http://www.sbp.org.pk/departments/stats/PakEconomy_HandBook/Chap-3.7.pdf.
7. In practice, we take 2004 as the base year. By this we mean that initial allocations of factors and financial assets are given by stocks at the end of 2003. We have data for fiscal and other policy parameters for the next 8 years, that is, through 2011.
8. Until 2007, the income tax returns are referred to as "R" forms due to the naming of the specific forms. The "IT" form series has replaced the "R" form series and these new forms are much more data entry and taxpayer friendly. For details of the MSM model, see Wahid and Wallace (2008).

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4. Foreign advice and tax policy in developing countries[1]

Richard M. Bird

'Go west, young man' is one of the many popular quotations that appears never to have been said by (any of) its purported authors.[2] Nonetheless, these words capture in essence the advice given to many an ambitious American in the late 19th century – the period of the opening up of the West in the United States. Equally, aspiring tax policy experts in the post-World War II period who were too young to have played any role in the war and immediate post-war reforms in their own countries might have been well advised to 'go South' if what they wanted to do was to play an active role in developing and implementing tax reforms. How else could someone fresh out of graduate school have a chance not only to design major new taxes and to analyze a variety of complex policy questions but also to have the analysis taken seriously by decision-makers?

Following in the footsteps of such pioneers as Carl Shoup and Richard Musgrave, over the last half century many economists from developed countries have dispensed advice on tax reform to developing countries – often, whether they had asked for such advice or not. The life of such peripatetic tax advisers has not always been one of wine and roses. Quite apart from any hazards associated with field work, those who wished to storm the heights of academia were not always well-advised to spend too much time on this path at a time when increasing emphasis was being placed on contributions to theoretical and econometric matters that were, for the most part, far removed from those that seemed necessary in the field where the tool needed was more often a sturdy machete to clear away the underbrush than a yet more finely tuned analytical instrument to analyze data that did not exist.[3] Nonetheless, those with strong policy interests who were open to new experiences and willing not only to travel but also to spend the time and effort required to understand the institutional settings in which they worked undoubtedly did much fruitful work over the last half century or so, by bringing new ideas and analysis

to fiscal vineyards around the world and calling attention to the many important facets of reality that were not easily encompassed by prevailing wisdom.

Those engaged in such tasks inevitably learned much about the real world and about how to "do" tax policy. Two stars of the academic world, Peter Diamond and Emmanuel Saez (2011), recently said that "a result from basic research is relevant for policy only if (a) it is based on economic mechanisms that are empirically relevant and first order to the problem, (b) it is reasonably robust to changes in the modeling assumptions, (c) the policy prescription is implementable (i.e., is socially acceptable and is not too complex)." This is precisely the approach followed for many years by good policy analysts like Roy Bahl. However, although the middle ground between grand theory and case studies – the space within which policy-relevant approaches to good development tax policy presumably lurk – remains largely undeveloped, the heyday of foreign 'fiscal doctors' is perhaps now past. Before reaching this conclusion, however, it is useful first to review what the standard approach to tax policy in developing countries has been over the past half-century.

An important characteristic of much foreign tax advice in the initial decades after World War II was that no one asked for it. Instead, advice and advisers, short-term and long-term, initially arrived on foreign shores largely at the initiative of the victorious powers such as Britain, France and the United States. In all too many instances, the tax policies suggested reflected those currently in place in the adviser's home country.[4] In other cases, ideas currently under discussion, though not implemented, in the home country were suggested for implementation abroad.[5] Finally, in a few instances, ideas were developed at home specifically for export.[6] Of course, even among the earliest foreign tax studies some – though usually incorporating elements of each of these models – transcended them to some extent and had an important and lasting impact on subsequent tax policy development in the countries concerned.[7]

The bilateral aid programs that began to flourish in the 1960s were based both in the countries just mentioned (often focused mainly on their former colonies) and to a lesser extent in other developed countries. As time went on, however, the array of regional and multinational agencies established in the post-Bretton Woods world – the United Nations (UN), the World Bank, and above all the International Monetary Fund (IMF), particularly after the establishment of its Fiscal Affairs Department (FAD) in 1964 – became the major players in the fiscal advice arena. Even when not formally initiated or financed by the developed countries

in one guise or another the modus operandi of most fiscal missions continued to be very much along what may perhaps be labeled, with no disrespect to either side intended, the 'teacher–student' path.[8]

Foreign fiscal advice to developing countries has always been driven as much by the training, experience and interests of those giving the advice as by any specific need for advice perceived by the recipient countries. As discussed in the next section, the advice given changed over time both because our understanding of theoretical and empirical public economics changed and because more and more advisers were increasingly exposed to reality in a variety of developing countries. Time also changed how advice was received, owing both to increasing technical capacity in recipient countries and to changes in the political and economic realities they confronted. The resulting changes in both the 'supply' and the 'demand' curves for foreign tax advice suggest, or so this chapter argues, that increasing substitution of domestic for foreign suppliers is both inevitable and on the whole a good thing although there may remain an important – but very different – role for both foreign aid and to a lesser extent foreign experts in helping to improve fiscal outcomes in developing countries.

FIFTY YEARS OF FISCAL ADVICE[9]

The three decades between the end of World War II and the first oil crisis of the mid-1970s were on the whole years of growth and prosperity in most developed countries. Experience first with government-led success in war and then with rapid and generally equalizing market-led growth inevitably shaped the ideas of the few people – mainly economists – who were beginning in the 1950s and 1960s to think about tax issues in the very heterogeneous group of developing countries, many of which were then in the process of emerging from colonial status.

Over the past fifty years both academic researchers and international institutions – sometimes following ideas suggested by research, sometimes responding to populist fads or pressures from the politically powerful – have issued many policy prescriptions with respect to how to improve economic growth and development in poor countries: increase capital investment; improve education; control population; liberalize trade and capital markets; reduce government controls on market activities; and so on, and on (Easterly 2002). Each of these policies has at times been marketed as a universal 'silver bullet' that will result in improved economic performance wherever applied. Unfortunately, none has worked as advertised.

The standard approach to tax and development has similarly undergone a number of major model changes over the years, with various stages in between and the extent of 'beta testing' or 'piloting' varying sharply from model to model. Much has been learned about taxation and development over the last half-century. However, we still have much to learn. Even the best research answers to particular questions have usually turned out to be extremely difficult to apply in practice. Moreover, since even the best research is only one of many inputs into policymaking, the task is not only to improve research on tax and development but also to improve how knowledge is marketed to those who can, if they wish, put the knowledge to use. Whatever approach is taken, despite the understand-able desire of many to find a relatively simple model with which to understand and manipulate complex reality, there is no magical fiscal medicine, the swallowing of which will always and everywhere be beneficial. What this complex and changing world needs is less such a non-existent 'universal fix' than a fiscal medicine kit containing a variety of remedies and treatments directed at the variety of fiscal problems and needs which arise at different times and often in different ways in different developing countries. Of course, the core contents of the 'tax kit' are still likely to be similar in most countries, but what is considered to be the 'core' has changed markedly over time.

Development Tax Model 1.0

In the beginning (c.1960), the accepted academic view of good tax policy was, more or less, that the ideal tax was a broad-based personal income tax with progressive rates that included capital gains in the tax base and was integrated with the corporate income tax in order to make both the decision to incorporate and the choice between debt and equity finance more neutral (Auerbach 2010). This concise summary tells the story: it was all about the income tax, especially in English-speaking countries. The report of the Canadian Royal Commission on Taxation (1966) was called 'a landmark in the annals of taxation' by Harberger (1968) precisely because it was the most detailed attempt to turn these ideas into practical policy recommendations.[10]

It is thus not surprising that what might be called version 1.0 of the (implicit) Development Tax Model (Figure 4.1) essentially set out a progressive comprehensive personal income tax as the ideal tax for developing (as for developed) countries. Indirect consumption taxes were considered to be at best a necessary evil, and both the international and subnational aspects of taxation were generally neglected. Moreover, in line with the prevailing post-war Keynesian view of 'government as

leader' most expert advisers urged not just better (more progressive) but more taxes as necessary to development (Kaldor 1963). For twenty years or more such eminent foreign advisers as Kaldor, Shoup, Musgrave and their followers generally recommended packages based on variants of this model to allcomers.[11]
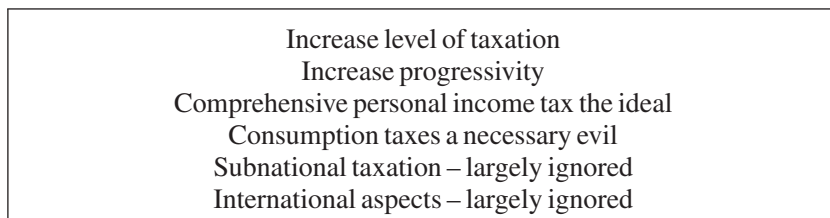

Increase level of taxation
Increase progressivity
Comprehensive personal income tax the ideal
Consumption taxes a necessary evil
Subnational taxation – largely ignored
International aspects – largely ignored

Figure 4.1   Development Tax Model 1.0

Unfortunately, the outcome of this advice was not all that impressive. In contrast to the earlier post-war years (Chelliah 1971) during the 1970s and 1980s relatively few developing countries significantly increased their tax–GDP ratios (Bahl and Bird 2008). Structurally, however, two important changes did occur in most countries: the introduction of the VAT and the general lowering and flattening of statutory income tax rates. Each of these changes might perhaps be interpreted as illustrating the success of good tax advice. The downward shift of personal and corporate income tax rates was supported both by developments in economic theory and by research results demonstrating the potentially large efficiency costs of high marginal tax rates. Similarly, to some extent at least the widespread adoption of VAT can perhaps be attributed to the more favorable views of consumption taxes emerging in the literature in these decades as well as to the argument that this way of taxing consumption is less economically distorting than most other forms of indirect taxation. Whether for these reasons or others, it was clear by the end of the 1980s that a new standard model of development taxation had emerged.

Development Tax Model 2.0

One way to think of this new model, as set out, for instance, in World Bank (1991) and sketched in Figure 4.2 might perhaps be as the fiscal component of the so-called 'Washington consensus' that ruled the policy roost after the early 1980s.[12]

Value added tax as the main revenue pillar
Substantial reductions in import tariffs
Income taxes – broader bases but lower rates
Few or no tax incentives
Excises for revenue (and externality pricing)
Subnational taxation essentially property tax

Figure 4.2   Development Tax Model 2.0

The main pillar of development tax policy in this model was no longer the personal income tax but the VAT (value-added tax), preferably imposed at a single rate and on a broad base (Ebrill et al. 2001). One reason for placing VAT at the fiscal center in many countries was the increasing emphasis – first through GATT and then the World Trade Organization (WTO) – on the need for signatory countries to impose lower and more uniform import tariffs. Income taxes, both personal and corporate, remained important sources of revenue in many countries but preferably with lower rates and broader bases – and less use of tax incentives. Although growing interest in decentralization issues led to more attention being paid to local governments, for the most part they were simply told to make better use of the traditional property tax. Interestingly, although some attention was paid to the continuing import-ance of traditional excises, almost never were payroll taxes or non-tax revenues, important though such revenues are in some countries, taken into account in tax discussions. Finally, although more nuanced, as with Model 1.0 the underlying message to most developing countries with respect to tax levels continued to be that 'more is better.'

Since VAT did become more important in many countries (Bird and Gendron 2007) and income tax rates declined almost everywhere (Peter, Buttrick and Duncan 2010), at first glance those selling Model 2.0 seem to have been much more successful than their predecessors were with Model 1.0. However countries seldom do things because economists produced persuasive theories or evidence that it would be good to do them. Indeed, often tax researchers have not so much led the reform elephant as mopped up behind it. VAT, for example, was developed in France and then adopted in Europe as a better way to administer a general consumption tax, particularly with regard to cross-border trade. Countries lowered and flattened income taxes at least in part because

more people rose into tax brackets formerly occupied, if at all, by a few rich people and in part because of perceived international competition for capital (Leibrecht and Hochgatterer 2012). To some extent, the role of tax economists was simply to rationalize developments that had already occurred in the real world.

Moreover, neither the level nor the structure of taxation in most developing countries has actually changed much. The UN Millennium Project (2005), much like Kaldor (1963), informed developing countries that on average they needed to mobilize another 4 percent of GDP in tax revenue to achieve the minimal Millennium Development Goals – that is, to increase from their current average tax ratio of 17–18 percent to something closer to 22 percent. More recently, the IMF (2011) was a bit more cautious, suggesting only that a 2 to 4 percent increase in the ratio was both desirable and feasible in most developing countries – though noting that most could likely get up to 2 percent more from VAT alone with no great effort. Despite such optimism, in reality the tax–GDP ratio has, on average, hardly increased in developing countries over the last 30 years. Indeed, taxes went up relatively much more in developed countries during this period (Bahl and Bird 2008). Of course, a few fast-growing countries from time to time have managed to achieve and even exceed the UN-prescribed rate of increase but it is not clear that the new levels reached will be sustained over time.

Fiscal inertia seems to be more common than fiscal growth, with many countries remaining for relatively long periods at more or less the same tax–GDP level. Kaldor (1963) noted long ago that the main reason taxes have not gone up in most countries is because it is seldom in the interest of those who dominate the political institutions to increase taxes. Economists – on the whole not a group keen to man the revolutionary barricades – have found it difficult to suggest an alternative explanation. They often end up advocating little more than the always unwelcome medicine of fiscal puritanism – a hard-to-swallow mix of fiscal abstinence (stop wasting money) and fiscal rectitude (collect the taxes you impose).

There is some evidence of similar 'inertia' even in tax structures. Although there is considerable variation within the diverse group of developing countries, often less has been going on than those dazzled by the seemingly endless changes of tax rates and tax legislation may think. For example, although how consumption taxes are collected has changed to some extent as countries have adopted VATs, the relative importance of such taxes on average has hardly changed at all as increased VAT collections (often on the same import base) have been offset by decreases in customs revenues (Martinez-Vazquez and Bird 2011).[13] Despite the

fiscal challenges they face and the many tax changes they have made, when it comes to tax reality in many countries, 'business as usual' is often a better description than 'tax reform'.

Although poorer countries are more constrained than richer countries, they too have considerable discretion as to how much they raise and how they raise it (as well as how they spend it). Both opportunity and choice affect tax levels and tax structures. Originally, most studies of tax determinants stressed opportunity – that taxes mainly reflected economic structure. Per capita GDP and the non-agricultural share of GDP continue to be important explanatory factors. However, more recent studies using such 'demand-side' variables as quality of governance, inequality, size of informal sector, and tax morale (e.g., Bird, Martinez-Vazquez, and Torgler 2008) suggest that to a significant extent tax levels in different countries reflect people's perception of the quality and responsiveness of the state. Kaldor (1963) was thus right in the important sense that countries that wish to tax more need governing institutions that facilitate rather than obstruct the achievement of this goal. Enhancing the rule of law, reducing corruption and the shadow economy, and improving tax morale are neither simple nor easy. But advising countries to work on such matters may nonetheless be more sensible than suggesting they wait around until someone finds oil on their territory. Indeed, since oil money all too often has exacerbated governance problems (Collier and Hoefler 2005) many urge that such countries usually need to improve governance – even though, since the easy money flowing from exploiting natural resources means that such countries do not need to persuade their citizens to pay taxes by offering them good government, few seem to have been enticed to follow this difficult road.

How countries structure their tax systems depends upon the need and desire for increased public services, the capacity to levy taxes effectively, and preferences for such public policy goals as attaining a desired distribution of income and wealth and increasing the rate of growth. In a study based on observations for 100 countries over the 1975–92 period Kenny and Winer (2006) show that countries tend to utilize *all* tax bases more as tax levels rise. For example, if one compares OECD countries with Latin American countries, the latter collect less as a share of GDP from every tax source (Barreix and Roca 2006). Unsurprisingly, how heavily countries rely on different tax bases over time increases more on bases that become relatively more important. For example, as oil production and prices increase, oil countries get more revenue from this source.[14] Further, much as argued in the traditional 'tax handles' approach (Musgrave 1969) taxes on particular bases tend to increase when the administrative costs of imposing those taxes decline. For

example, rising education levels lower the cost of imposing personal income taxes and are hence associated with more reliance on such taxes.[15] Kenny and Winer (2006) suggest that an additional critical factor influencing tax structure choices is the extent to which reliance on particular tax sources can be translated into effective political opposition. For example, as Prichard (2009) shows for Ghana, fuel taxes may be derailed by strong opposition from well-organized taxi and truck operators.

Only when the basic underlying political, economic, and administrative realities that underlie tax policy change is a country likely to alter its tax mix substantially. Even a good tax reform – one that raises (more) revenue in a more efficient and equitable fashion – is perhaps unlikely to be more effective than, say, a good seatbelt law. That is, if everything else stayed the same, many lives would be saved. However, things do not stay the same because some people appear to drive more recklessly when they feel safer, so overall highway death rates may decline less than expected. Similarly, if countries tend to achieve equilibrium with respect to the size and nature of their fiscal systems that reflects the balance of political and other factors, they tend to stay there until 'shocked' to a new equilibrium.[16] One implication is that 'reform' in one aspect of tax policy may often be offset by changes elsewhere that tend to return to the pre-reform situation. For instance, one of the most striking features of the various major tax reforms that took place in Mexico in earlier decades (Gil-Diaz and Thirsk 1997) was how little effect they had on Mexico's tax ratio. As Martinez-Vazquez (2008) discusses, most of these reforms appear, either intentionally or by coincidence, to have been undermined by unrelated ad hoc measures or offset by administrative deterioration.

On the whole, we still have relatively little understanding of the likely effect of tax changes on either political or – despite the extensive literature asserting the contrary – economic outcomes. For example, only a few small mice of agreement have yet emerged from the mountain of empirical studies on the impact of taxes on growth (OECD 2008) although, as Martinez-Vazquez, Vulovic and Liu (2011) show, the evidence that heavier reliance on 'direct' taxes adversely affects growth continues to mount. Of course, much of the evidence is derived from cross-country studies that are inherently able to cast at best limited light on the impact of a particular tax change in the setting of a particular country.[17] Still, as countries develop and become more open, all are faced to some extent by the task of capturing in the tax base expanding production and consumption activities without either overstraining administrative capacity or unduly discouraging the expansion of such activities. Unfortunately, the leading edge of growth in many countries –

outward-oriented development – may all too easily become the bleeding edge of the fiscal system as it becomes more and more difficult to levy taxes effectively on capital income, thus potentially exacerbating internal inequalities and political pressures on the tax system.

Moreover, even the best tax laws yield revenue only when they can be effectively implemented. In many developing countries, there is a large traditional agricultural sector that is not easily taxed. Often there is also a significant informal (shadow) economy that is largely outside the formal tax structure – an economy that may itself to some extent be a function of how taxes are designed and implemented (Alm, Martinez-Vazquez and Wallace 2004). Such problems are more difficult when their scale is great and available administrative capacity limited. *How* revenue is raised – the effect of revenue-generation effort on equity, on the political fortunes of the government, and on the level of economic welfare – may be equally (or more) important as *how much* revenue is raised. The best tax administration is not simply that which collects the most revenues; facilitating tax compliance is not simply a matter of adequately penalizing noncompliance; tax administration depends as much or more on private as on public actions (and reactions); and there is a complex interaction between various environmental factors, the specifics of substantive and procedural tax law, and the outcome of administrative effort. All this makes tax administration complex and assessing the relation between administrative effort and revenue outcomes a difficult task. Work on such issues has barely begun even in developed countries, and we know far less than we should about many aspects of the critical administrative dimension of taxation in developing countries.[18]

Much the same can be said of an even more fundamental determinant of tax system change – the political economy of taxation. Those who design and implement tax systems, like those who try to escape them, probably consider themselves to be eminently 'practical' people responding to the world around them as they see it. Keynes (1936, 384–85) once said that "practical men, who believe themselves to be quite free from any intellectual influences, are usually the slaves of some defunct economist … soon or late, it is ideas, not vested interests, which are dangerous for good or evil." This dictum may both unduly flatter economists and give too little weight to the fact that tax policy is shaped not only by ideas but also by vested interests, changing economic conditions, administrative constraints and technological possibilities, and, especially, by the nature and functioning of the political institutions within which these factors affect policy decisions. But it is fundamentally correct: ideas matter.

So, however, do interests and institutions. The best tax system for any country is presumably one that fits its economic structure, its capacity to administer taxes, its public service needs, and its access to such other sources of revenue as aid or oil. It must also take into account such nebulous but important factors as 'tax morale', 'tax culture', and, perhaps above all, the level of 'trust' existing between people and their government. Tax policy decisions are not made in a vacuum. Nor are tax systems implemented in one. The taxes that are adopted in a country and how they are administered are always and everywhere both path-dependent and context-specific. They reflect the outcome of complex social and political interactions between different groups in society in a specific institutional context established by history and state administrative capacity. In turn taxes may themselves to some extent influence the showing the context, nature and outcomes of such interactions (Moore 2007). Like tax administration, tax politics deserves close attention by those interested in improving tax policy although as yet it is far from clear how, if at all, closer consideration of the political economy aspect is likely to affect the substance of tax policy advice.[19]

Until recently, however, little research has focused on either the administrative or the political dimensions of taxation. Economists understandably have approached the tax-development nexus from their own disciplinary perspective, as illustrated by the prolonged theoretical discussion among tax economists about new forms of progressive direct consumption taxes (McLure and Zodrow 2007). This discussion may have led many economists to change their view of the relative virtues of taxing consumption versus income. In the policy world, however, its main consequence may have been to foster a better – but still not very (if at all) progressive – indirect consumption tax in the form of VAT.[20] Of course, VAT has swept the board in the developing world for reasons that have little, if anything, to do with the internalization of lessons from research – in part owing to the reputed administrative advantages of VAT compared with other forms of sales taxes, in part reflecting the desire of the IMF and other external advisers (as well as governments) to increase the income-elasticity of consumption taxes, and perhaps especially by the need to replace the revenue from customs duties affected by trade liberalization.

Similarly, much economic research suggests that high marginal tax rates (MTRs) can induce a variety of changes in the behavior of taxpayers, with resulting economic costs. Tax-induced changes may include changes in hours worked and in labor force participation, the substitution of non-taxable for taxable consumption, changes in the timing of income realization, changes in the form of compensation

(including incorporation), use of deferred compensation and other tax shelters, and increased evasion. A high MTR is most costly when applied to a tax base that is more responsive to tax rates – when, for example, affected taxpayers may easily substitute from paid work to unpaid family care, or from conventional employment to activities in the less-taxed informal sector, or they may even move to another country. Such behavioral responses to taxation can be usefully summarized in the 'elasticity of taxable income' (Feldstein 1995) – the average percentage decrease in a taxpayer's taxable income due to all behavioral responses when the taxpayer's marginal share (one minus the marginal tax rate) is decreased by 1 percent. Examining the effects of the 1986 US tax reform on a sample of taxpayers, Feldstein (1995) estimated the elasticity of taxable income to be quite large, with preferred estimates ranging from 1.0 to 1.5. To put these estimates in perspective, note that even unitary elasticity implies that government revenues would reach their maximum level at a tax rate of 50 percent; further tax increases would actually decrease revenues. Although this approach to determining the revenue-maximizing tax rate is an understandable approach to making old arguments about efficiency more meaningful and palatable to policymakers (Bird and Wallace 2005), such arguments appear to have had little direct influence on tax policy. Income tax rates may have come down around the world, but there is little evidence that the structure of MTRs accords with what analysis suggests.[21]

A recent review of optimal taxation notes that "where large gaps between theory and policy remain, the … question is whether policymakers need to learn more from theorists, or the other way round" (Mankiw, Weinzierl and Yagan 2009). With respect to taxation in developing countries, the answer seems clear: tax researchers need to understand the constraints and objectives facing policymakers before offering them pre-cut solutions to what researchers think are their problems. In fact, both the theory and the evidence on the size and distribution of any gains from such policies are at best ambiguous (Diamond and Saez 2011). To paraphrase Shakespeare, there are more things in heaven and earth than are dreamt of in optimal tax theory. Not only is the world within which tax policy decisions are made complex; so are the motivations of those who make, and react to, such decisions.

The reduced marginal tax rates on high income recipients and corporations found around the world seem less likely to reflect absorption of the lessons of optimal taxation than the globalization of international capital markets and the accompanying regional and international competition for capital. Although tax research has not yet produced convincing guidance to what a good system of international taxation might look like, solutions to

the problems arising from the imposition of international constraints on domestic tax policy are perhaps more likely to emerge from the sort of 'soft governance' embodied in the endless meetings and discussions of agencies like the OECD than from either the dictates of economic theory or the rather drastic solution of creating a de facto international tax authority.[22] Experience shows that "there are many problems that people are unable to solve in the abstract, but are able to solve when placed in a real-world context" (Babcock and Loewenstein 1997, 122). International taxation is likely to continue to be one such problem.

Looking back at Model 2.0 with all this in mind, at best the glass seems half full from a policy perspective. The core ideas of Model 2.0 – the BBLR approach to income taxes and the VAT as a superior form of sales tax and the best way to replace trade taxes – were extensively marketed to the developing world by fiscal missionaries from the IMF and elsewhere. The audience was surprisingly receptive to the message, although the relative success of these ideas may lie at least to some extent in the fact that, arguably, they coincide with elite interests. Since elites pay (or think they pay) most of the income taxes in developing countries they benefit directly from reduced and flatter income taxes. Elites do not pay most VAT, but they do control the companies that act as collection agents for this tax and it is generally in their interests to extend the tax base as far as possible in order to draw into the tax net as much of their 'informal sector' competition as possible. Whatever the reasons, the generally sensible core advice of Model 2.0 was widely accepted. On the other hand, not only was inadequate attention paid to both the administrative and political economy aspects of taxation but a number of substantive fiscal issues important in many countries – for example, subnational taxation[23] and payroll taxes and non-tax revenues more generally[24] – have been unduly neglected. More importantly, despite much expert work by the IMF and others on tax administration in recent years, as yet little has been done to relate this work adequately to policy, let alone to take adequate account of the country-specific political economy considerations that in the end seem to be the primary determinants of both policy uptake and policy success. At best, what may emerge from the experience recounted to this point is what perhaps might be labeled Development Tax Model 3.0.

TOWARDS DEVELOPMENT TAX MODEL 3.0

What might such a new standard 'model' look like? Before attempting to answer this question, it may be helpful to consider the sorts of objectives

and instruments that need to be taken more carefully into account by tax advisers. One useful starting point is to think about the different roles taxes play – for example, stabilization (revenue sufficient to finance public expenditure in a sustainable way), redistribution (altering the market-generated distribution of income and wealth), and regulation (affecting private sector allocative decisions) – and to consider how different taxes may be linked to the achievement of these goals.[25] From this perspective, the main role of a broad-based single rate VAT (like a similar payroll tax or a flat-rate income tax) is simply to raise revenue, while progressive personal income taxes and wealth taxes are presumably intended mainly as redistributive instruments, and excises as well as the corporate income tax (in addition to backing up the personal income tax) play primarily a regulatory role (Avi-Yonah 2011).

The Distributional Objective

Consider first the issue of progressivity. Model 1.0 assumed (roughly) the more progressive the tax system the better, while Model 2.0 in effect assumed tax progressivity was not an important issue. Neither assumption provides either a correct or a useful starting point. On one hand, progressivity is not costless. On the other, in the policy context of most countries tax advice that assumes distributional considerations are either unimportant or can easily be achieved by (usually unspecified) adjustments somewhere else in the tax-transfer system is of little use. Distributional issues often dominate in the minds of those who shape policy and the general inability of politicians to understand tax incidence and of tax economists to say much that policymakers consider relevant about distributional issues has often relegated the economics of taxation to the sidelines in policy discussion. Although distributional studies are often both conceptually and empirically difficult to model, let alone to convey to decision-makers, the reality is that equity concerns lie at the heart of many public policy questions. Unless tax economists deal explicitly and satisfactorily with this issue their advice is unlikely to be influential.

Policymakers often talk about poverty-alleviation and more egalitarian income distribution. In practice, however, their real distributional concerns about policy outcomes are often driven less by the desire to maximize social welfare than by more narrowly focused political economy considerations: How will this region or locality be affected relative to that one? Will home-owners be disadvantaged or benefited? How will the old be affected? What will be the effects on farmers and the rural sector? Will this or that industry be better or worse off? Although such questions are seldom considered in mainline tax research they are

frequently critical in shaping policy decisions. To resonate in policy circles, research needs to speak to such questions. If experts want their research to be taken seriously, they need to be able to tell good stories that relate to the concerns that people have – regardless of whether those concerns are seen as central, or even acceptable, within the accepted disciplinary research model.[26]

Tax policy is not just about economics but about politics. To provide useful advice on tax issues in any country one must understand the political as well as the economic factors that shape policy decisions and policy outcomes. As noted earlier, the level and structure of taxation reflect deep-seated institutional factors that, in the absence of severe shocks, do not change quickly. Tax policy decisions reflect the outcome of complex social and political interactions between different groups in society in an institutional context established by history and state administrative capacity. Taxation is not just a means of financing government; it is also a very visible component of the social contract underlying the state. Citizens are more likely to comply with tax laws if they accept the state as legitimate and credible and are thus to some extent both willing to support it and afraid of what will happen to them if they don't. Tax policy changes thus depend largely on how different political groups perceive proposed changes and how they react to these perceptions: as Lledo, Schneider, and Moore (2003) put it, any major tax reform is thus always and everywhere "an exercise in political legitimation."

Those who have to pay more must be convinced that they will get something worthwhile for their money. Those who do not want to pay more must not be able to block reform and, in the end, must be willing to go along without taking to the hills in revolt or fleeing the country.[27] Those within government and in the private sector who implement the reform must support it or at least not actively sabotage it. And of course politicians must see sufficient support to warrant putting reform not only on the agenda but on the ground in practice as well as law.

To illustrate how little research usually has to do with policy consider, for instance, property taxes in the United States. Although research on this tax has long been a major industry it is hard to detect much, if any, effect on actual tax policy as a result.[28] For example, the literature demonstrates clearly that taxes on property are decidedly superior to taxes on property transfers; yet the latter are invariably much more politically popular and, in most developing countries, often more important in revenue terms. Property tax research and property tax policy appear to be activities carried out by different people in different rooms who do not communicate well with each other.

Excises are another ancient tax that still generate significant revenues in many countries. Countless studies have considered the efficiency effects of taxes on alcoholic beverages and tobacco. Again, however, such studies have had little perceptible effect on either the level or structure of these taxes.[29] Much the same is true with respect to taxes on vehicles and fuel, despite the substantial economic literature suggesting alternative designs of these levies on efficiency grounds. Perceptions about the effects on changes on equity and politics almost always trump efficiency analysis even if – unusually – the latter is presented to policymakers in both language and a context to which they can relate.

In one way or another, perceived fairness is thus always a key issue in designing any tax regime. Indeed, from one perspective, taxes exist primarily to secure equity. National governments do not need taxes to secure funds: they can simply print the money required to fund operations. The tax system is in effect a mechanism designed to take money away from the private sector in as efficient, equitable, and administratively inexpensive way as possible. Of course, what is considered equitable or fair by one person may differ from the conceptions held by others. Some may stress horizontal over vertical equity, for example, as OECD (2006) argues is increasingly true in developed countries and as Bergman (2003) suggests is also the case in Latin America. Others may tilt the balance the other way, as did the 'progressive' thinking underlying Model 1.0. One way or another, however, equity also matters in tax policy discussions.

Does this mean tax progressivity matters? Harberger (2006) argues it does not matter much: insofar as government policy affects the distribution of income and wealth, spending – such as providing education (even when financed from regressive taxes) – is much more important than taxing the rich. Even in a relatively advanced country like Chile with an unusually well-developed and effective tax administration the progressivity of the income tax simply cannot have any significant influence on distributional outcomes (Engel, Galetovic and Raddatz 1999). One may argue that such taxes share the burden of government more fairly and may even be essential to building social trust, but one cannot argue persuasively in the context of most developing countries that they are likely to be effective redistributive tools. As Lindert (2003) shows, it was not by taxing the rich but by taxing the growing middle class that developed countries 'grew' large states. Similarly, in notoriously unequal Latin America income tax only began to be a relatively efficient and effective revenue raiser to any extent when it began recently in (some) countries to bite into the middle class, essentially by combining reduced

top rates with lowering the level at which those reduced rates come into play (Lora and Cardenas 2006).

How to Sell Tax Reform

Process issues are often more important than substantive issues like efficiency or equity when it comes to selling tax reform. Marketing matters. Those who want serious tax reform need to understand not only tax theory and practice but also the dark art of political salesmanship. This warning needs to be taken particularly seriously by those who are concerned not only with how tax revenues may build up a more sustainable state but also with how the revenues collected may contribute to, or detract from, the long-term development of state legitimacy. Consider for example the question of 'fiscal illusion.' Which is more important: what taxes do or what people think they do? Economists have always focused on the objective reality of outcomes and assumed that citizen-voters will eventually if not immediately see through the veil of perception and make policy decisions on the basis of reality. But is this right? Even if in the long run budget constraints will force people to face up to fiscal reality, history demonstrates everywhere that policy decisions have usually been shaped and governed more by perceptions than by reality.[30]

As an example, consider earmarking and what Breton (1996) calls the 'Wicksellian connection' between the two sides of the budget. Establishing such a linkage in the minds of people is critical to the whole issue of state legitimation. This argument is, for example, one of the key elements in explaining the popularity (and mixed results) of fiscal decentralization around the world (Bahl and Bird 2008a). Earmarking – linking specific revenue sources to specific expenditures – has existed since the earliest recorded fiscal practices (Webber and Wildavsky 1986). Both politicians and taxpayers often find earmarking an attractive and feasible way to finance social security, road works, education, environmental programs, and other good things. Politicians like earmarking as a means of reducing taxpayer resistance to higher taxes. Officials like to have secure revenue sources dedicated to fund their activities. Taxpayers like the greater accountability they perceive with respect to how their tax dollars are spent. Economists, however, have come only lately to the table when it comes to understanding and analyzing this common fiscal practice.[31]

Budgeting experts, for instance, have almost unanimously condemned earmarking as a bad idea, arguing that no rational budgetary process is conceivable unless the practice is essentially banned. Although the implicit (and implausible) assumption in this argument is that budgetary

decisions are (or should be) made by a government with the sole objective of maximizing social welfare, the condemnation of earmarking for distorting expenditure allocation is supported by the fact that rampant earmarking has certainly at times had this effect in some countries. This approach remained essentially unchallenged in the public finance world until Buchanan (1963) revived an important efficiency argument (made earlier by Wicksell) in favor of establishing as tight a linkage as possible between taxing and spending decisions.[32] In this approach, earmarking is seen not simply as a way to secure political consent for a tax increase but rather – under certain specific conditions – as perhaps the *best* way to deal with the fundamental normative problem of public economics – how to provide people with the public services they really want – where 'want' is interpreted in the only economically relevant sense of what they (collectively, as determined through their political institutions) are willing to pay for.[33]

The economic case for earmarking is strongest when there is a close benefit link between taxes and spending. Benefit-related earmarking (like user charges) if properly designed and implemented reveals taxpayer preferences for public services and sends a clear demand signal to the public sector about how much of a service should be supplied. Since revenues received (and only such revenues) are spent on the service in question, supply automatically adjusts to demand and economic efficiency is achieved. Such earmarking may also be considered equitable in the sense that no one receives a service without paying for it or pays without receiving service. Provided that the public service thus financed is similar to a privately supplied service in the sense that both an individual's consumption of the service and the marginal cost of providing the service can be satisfactorily measured, most people would probably consider such levies fair on the whole.[34] Since informed and rational taxpayers – 'economic men' as it were – are aware that when payments are extracted from them the funds will be used to pay for certain expenditures, they will presumably support the taxes or charges if and only if they support the expansion in the supply of government services for which the earmarked revenues are targeted. In these circumstances, both tax and expenditure decisions will be made more rationally than under general fund financing.

Unsurprisingly, such perfection seems seldom to be observed in practice. Many factors may explain the relatively disappointing performance of earmarking in the real world: the cost and difficulty of controlling many separate funds (Fullerton 1996), the inappropriateness of many of the linkages that have been established for political reasons between

particular revenues and expenditures (McCleary 1991), and the under-standable resistance of citizens to attempts to charge for services that initially were provided 'free' or at highly subsidized prices (Bird and Tsiopoulos 1997). Most earmarking seen in most countries makes little economic sense. Often, not only is there no logical link between the tax imposed and the spending for which it is designated but there is also no solid budgetary link. How much is collected from the designated source and how much is spent on the designated activity are essentially separate decisions, decided independently. What is the rationale for such non-logical non-linkages, and do they matter at all? These are not trivial questions. Many countries have many earmarked revenues, and new ones are created or at least suggested every day, not least in the environmental field.

One important rationale for imposing taxes designated to be spent on this or that popular activity is simply revenue enhancement. Politicians hope to justify the imposition of a new tax by capitalizing on the presumed 'halo effect' of something popular like education, health or 'greenness.' Earmarking may also sometimes be motivated in some instances by rent-seeking behavior. As an example, an increase in tobacco taxes with the proceeds earmarked for increased health spending may receive support from non-smokers, who would not pay the tax but want more spending on health; from smokers, who feel guilty about smoking and are worried about the health consequences of smoking; and from people in the health business who (presumably) not only believe that higher taxes on tobacco and more spending on health are good but also realize that they would be clear gainers if health spending increases as a result (which may not be the case). Some studies (Cnossen and Smart 2005) suggest that the result may be that tobacco taxes (which are highly regressive) may already be higher in some countries than can be rationalized on externality grounds. But can politicians be expected to resist such a win–win combination?[35]

If earmarking makes sense, by definition, it is economically sensible. When there is not a clear benefit rationale, it is hard for an economist to defend any form of non-benefit earmarking that actually affects expend-itures (in the sense that the level of expenditure on any particular activity is determined at the margin by the amount of revenue collected from any particular tax or charge). But if calling a new tax a 'health tax' makes it more marketable, provided the tax is better than the alternatives and spending is not affected, should economists be perturbed by mis-labeling?[36] Such concerns, like those with respect to various perspectives on tax equity, need careful consideration by tax advisers.

Setting the Target

The implicit policy target set in both Model 1.0 and Model 2.0 was, to oversimplify, an 'ideal' system derived from economic theory. The most popular alternative target is probably what is usually called 'best practice' – that is, developing countries are in effect advised to adopt the pattern found in some 'model' country – perhaps some statistical average of better (best) performing countries, as defined in terms of growth rates or some other 'output' measure or simply chosen on a best-judgment basis. Benchmarking as a way of establishing standards for evaluating the performance of tax systems has become increasingly popular in recent years (Gallagher 2005).[37] Benchmarking can be thought of as a systematic process for identifying and measuring 'performance gaps' between one's own outputs and processes and those of others, usually those recognized as leaders in the field or between actual performance and some hypothetical 'ideal' performance. The underlying motivation is presumably that by identifying such gaps one can perhaps begin to understand why they exist and how they might be closed in the country being studied.

The basic logic of benchmarking is sound and should in principle be both attractive and useful even to those being benchmarked: if others can deliver similar results more effectively and efficiently than you do, why not learn from them? However, if the intended objective is to provide useful guidelines for restructuring a particular tax system – to lay the basis for successful tax reform – most benchmarking exercises fall far short. Benchmarking may sometimes help to identify areas of possible weakness, that is, deviations from some 'norm' that may perhaps be symptoms of problems that might usefully be examined more closely. However, although such exercises may lead to the collection and analysis of useful data, in themselves they neither supply clear explanations of the underlying problems nor insights that are likely to prove helpful in resolving those problems: problems are not solutions and possibilities are not certainties. Good benchmarking from the perspective of any country cannot be simply a matter of blindly adopting the practices of others, even those considered by experts to be 'best in class.'

The real motivation for benchmarking is not so much to provide solutions as to help pick out areas in which there may be opportunities for change and improvement. In the case of revenue systems, as emphasized earlier, very often such opportunities are likely to be 'soft' (qualitative) in nature and difficult to identify very precisely, let alone resolve. Benchmarking exercises like those increasingly popular with aid agencies that focus primarily on 'hard' (quantifiable) data are all too

likely to provide seriously incomplete information and may lead to changes (such as new technology) being implemented in an unsustainable manner. It is always tempting to look at what 'might be' and to set it up as a target; but it is almost always a mistake when it comes to institutional reform to attempt to run before one can walk. As Schick (2012) has recently emphasized with respect to budgetary practices, it is usually more critical to get the basics right than to strive for any sort of perfection. A country without control over cash budgeting is not well advised to attempt to implement accrual accounting. Similarly, a country without a good taxpayer identification system and good telecommunications infrastructure (not to mention a reliable electricity supply) is usually not well advised to move immediately to a web-based tax system. This does not mean that countries cannot and should not in some instances try to move, as it were, from the 19th to the 21st century rather than painfully repeating the learning experiences more developed countries underwent in the intervening century. Nor does it mean that it may not sometimes be useful to hold out immediately unattainable targets as inspirational and possibly motivating goals. But it does mean that when it comes to implementing tax reform close attention needs to be paid to such critical 'soft' elements of organizational 'culture' as the philosophy, behavior and style of management, as well as its strategy and the degree of participation, communication, recognition, empowerment, and 'ownership' in the environment in which tax policy is formulated, designed and implemented (Gill 2000).

Of course, no one wants to hear that it may take decades before they are in a position to undertake this or that particular reform successfully, whether in tax structure or tax administration. No one wants to have to rethink their whole way of doing business (and politics) simply in order to make this or that tax incentive potentially useful (rather than, as usual, wasteful) or to get any real benefits from some attractive 'free' information technology being offered by an aid agency. What people want to hear is rather that they can simply bolt on this or that new feature to their existing system without making any more basic changes, and still get good, quick, and preferably quantifiable results. Similarly, many overweight people want to believe that there is a simple 'magic bullet' – a pill, a potion, a machine – that will make the problem go away. They do not want to hear that what they really need to do is to change their diet and exercise regime for life. It always seems much easier to buy a new IT approach off the shelf or to hire additional or better qualified (and paid) staff than to change how one makes policy or manages its implementation. It seems easier; but it also seems much less likely to produce 'good'

or 'better' results, let alone the 'best' results that are presumably the desired end goal.

Few countries that are currently considered 'developed' (US, Germany, Japan) or 'successful' (China, Korea) followed anything like 'best practice' benchmarking as a guide to policy change. Instead, one way or another – and the way was very different in each of the countries mentioned – they gradually altered their tax structures and administrations over time in response to (almost never in advance of) changes in the underlying political, economic, and social environment that required (and is needed to support and sustain) such improvements. It is far from clear why more can or should be expected of other countries.

The Need for a Long-term Perspective

Viewed in a long-term perspective, many developing countries have not yet completed even the earlier parts of the long cycle that produced the (more or less) redistributive and (more or less) growth-facilitating fiscal states now found in most developed countries – the long preparatory period during which the idea of the desirability and even necessity of a larger state and at least a mildly progressive fiscal system became established to different degrees in different countries.[38]

In many Latin American countries, for example, inequality is a big problem (de Ferranti et al. 2004; Gómez Sabaíni 2006). A key, and related, governance problem in most of the same countries is lack of accountability. A better tax system is critical to the solution of both problems. Reforms that link taxes and benefits more tightly such as decentralization and more reliance on user charges may (like earmarking) sometimes help accountability – though not necessarily reduce inequality.[39] On the other hand, reforms that replace highly regressive and inelastic excises by a relatively non-distortionary general consumption tax like a VAT may actually reduce inequality – especially of course if the increased revenues are invested in growth-facilitating activities such as education and infrastructure.

Many governments in developing countries – not just those in Latin America – are in dire straits. Even countries that have reached relatively safe harbors politically, achieving a certain degree of legitimacy and stability, are often in an economically precarious situation. The budget is politically and economically constrained. Life is difficult. Nothing can be done. All this may be true to some extent, but it is also both too much a counsel of despair and too easy a way out. Even in the most hopeless situations something usually can be done to improve matters. No doubt there will continue to be considerable dispute over what should be done

to improve tax systems. Indeed, in most countries it would be better if there was more informed public dispute about such matters because unless and until an adequate degree of political consensus on what should be done is achieved, no significant tax changes are likely to be made. In short, to a considerable extent the main tax challenge facing many developing countries is simply that there is as yet no implicit "social contract between governments and the general population of the kind that is embedded in taxation and fiscal principles and practices in politically more stable parts of the world" (Lledo, Schneider and Moore 2004, 39).

Such principles do not become embedded either painlessly or quickly. The specific substantive suggestions that Lledo, Schneider and Moore (2004) make to improve matters – such as better VAT administration on a broader base – are already the stuff of countless existing reports and most countries probably should in their own interests do many of the good things that experts advise. But the question is why so many have done so little. Lledo, Schneider and Moore (2004, 40) suggest, perhaps rather wistfully, that if Latin American countries wish to improve their tax systems they should "improve political institutions in ways that broaden and deepen social contracts. For example, create more responsive and less clientelistic political parties, more cohesive and less polarised party systems, and improved capacity of civil society to monitor government and participate in tax debates." In other words, since there cannot be good taxation (as they understand it) in the absence of good representation countries must get their politics right before they hope to get their tax systems right. This may be correct, but how useful is it to advise countries they should be something other than what they are?

Much thought and practice around the world suggests that there are three basic principles of good taxation or, indeed, public finance more generally.[40] First, using resources to finance public services should not result in a sacrifice of private value higher than the value of the public service produced. In other words, the last unit of resources transferred to the public sector – the Marginal Cost of Funds (MCF) for public services (in terms of the private goods forgone) – should just equal the marginal social benefit from expenditure on public services (Dahlby 2008). The main macro lesson related to this principle is embodied in the practical budgetary principle of maintaining aggregate fiscal discipline to ensure that government spending does not exceed the resources that citizens (who presumably benefit from the expenditures) are willing to allocate to it through the political process.[41] If fiscal discipline is not maintained, countries may run large and persistent budget deficits – deficits that both reflect serious underlying problems and make those problems worse the longer necessary corrective action is delayed. One of the most important

changes in recent decades is that an increasing number of countries that have undergone such experiences have tried to reduce the likelihood of future indiscipline by establishing such fiscal institutions as more comprehensive and transparent budgets as well as specific fiscal rules like fiscal responsibility laws (Liu and Webb 2011) that may at least in some circumstances restrain the level and nature of government borrowing. In this respect, expert advice, as conveyed in the literature and in the practice of international institutions seems on the whole to be both correct and widely accepted, although of course arguments about the extent to which fiscal discipline can or should be relaxed always occur in times like the recent (and ongoing) 'workout' from the financial crisis.

The second and third principles are essential if people are to perceive (and hopefully receive) sufficient 'value for money' to be willing to sustain stronger tax systems. The second principle is simply that, to maximize national economic welfare, the benefits received from the last dollar spent on each public service should be equal. While it is impossible to allocate budgetary resources strictly in this fashion because we cannot really measure well-being precisely, and because it is not clear how meaningfully can one compare the benefits from the last dollar spent on the army with those from the last dollar spent on health, the idea is both clear and correct. In some circumstances, as noted earlier, its budgetary embodiment may take such forms as earmarking or decentralization, even though unless carefully designed and implemented both approaches may sometimes create more problems than they resolve. More generally, however, the point is simply that since resources are scarce in developing countries, wasting those resources by spending them on something worth less than the opportunities forgone when taxes are imposed is a dead loss. In practice, the best way we know to improve the allocation of public resources is to measure and assess both public sector performance and the economic cost of public services as well and as transparently as possible. Like adequate representative governance, institutions that promote transparency and accountability are essential to ensuring that people on the whole get what they want when they pay their taxes. Few countries do what they can or should along either of these lines, but progress on both the political and administrative fronts is essential to ensuring that reforms intended to increase and improve tax systems are sustainable.

Much the same can be said with respect to the third principle mentioned, namely, that the services provided should promote the intended social outcomes (effectiveness) with as little leakage or waste as possible (efficiency). Although international agencies have devoted considerable effort to providing technical assistance in developing such

institutions in some countries, not all that much success is yet evident. Summing up, the main message here is simply that since spending better is, if not always a necessary precondition, at least a necessary accompaniment to better taxation, good tax advice requires much closer attention to what is to be done with the revenue than is usually recognized.

At Last, the 'Model'

After all these preliminaries, any simple presentation of a 'standard' model may seem impossible. Despite its label, Figure 4.3 therefore suggests more an approach than a model. More important than the precise configuration of the 'product' – the reform package – is ensuring that the process through which it is conceived, ordered, assembled, delivered, and implemented satisfies the real needs and capacities of the country in question.

The basic components of the tax system as set out in items 3 and 4 in Figure 4.3 already exist in most countries, although seldom in ideal form. From a revenue perspective there are almost always two basic 'tax pillars' – VAT and income tax, with the latter being some appropriate combination of personal, corporate, dual and/or flat taxes – which will play a central role in any analysis of taxation. Such common recommendations as a broad-based flat VAT (Bird and Gendron 2007) or even more recent arguments for dual income taxes (Bird and Zolt 2011), may provide useful starting points but considerable finesse is invariably needed to move very far in such directions from wherever the country in question is now.

The other main revenue sources commonly found are those listed in the next row: again, there is nothing new about this, except perhaps bringing both property taxes (and other local taxes) and payroll taxes (including social contributions) into the spotlight as necessary components of tax analysis – whether the central focus is on revenue, efficiency, equity, or administration, or any combination of these or other objectives – rather than relegating them to the sidelines. One approach might be to develop separate basic 'policy packages' for countries with substantial natural resource revenues or those emerging from crisis or those which are significantly decentralized in a meaningful way, to mention three areas to which considerable attention has been paid in recent years. A more general approach might be to work within a framework along the lines of that recently set out by Ivanyna and von Haldenwang (2012), who classify countries as high, average or low tax performers depending on whether they are above (high), below (low) or

1. Custom-built rather than off-the-shelf
2. Timeframe – short, medium, long
3. Core revenue pillars: VAT, income tax
4. Other taxes: Import duties, Excises (including environmental levies), Property tax (and other subnational taxes), Payroll taxes (including social contributions)
5. Non-fiscal aspects of tax policy, notably tax incentives
6. Critical features to be taken into account in tax analysis:
    a. Non-tax revenues
    b. Administrative aspects
    c. Linked spending (social security, earmarking, decentralization)
    d. Transfers
    e. Regulations
    f. Macroeconomic environment
    g. International aspects
    h. Decentralization policy

Figure 4.3   Development Tax Model 3.0

within (average) the 95 percent confidence interval of the trend line relating tax ratio and log GDP per capita, and then further analyze the 46 low-performing countries in terms of the estimated quality and effectiveness of governance, the importance of non-tax revenue and aid, and region. They conclude that the (mainly oil-producing) countries with high non-tax revenue (including aid) and low governance (such as Libya and Nigeria) have no incentive and little possibility of improving tax performance,[42] that some (mainly higher-income) countries seem simply to have chosen the low-tax path (Hong Kong, Malaysia) and that a diverse set of factors ranging from lack of capacity to 'crowding out' of tax effort by aid may explain what is going on in a third, larger group of low performing countries.

As Ivanyna and von Haldenwang (2012) themselves conclude, much more work needs to be done – e.g., in improving data on tax administration and subnational revenues as well as taking into account such more nebulous but important factors as the differing influence in different countries at different times of historical, regional and explicitly redistributionist or elitist political agendas – before sufficiently meaningful 'benchmarks' for tax performance can be established to guide those assessing or shaping tax policy in particular countries. Nonetheless,

exercises like that in their paper may provide a useful starting point for such analysis. To put much the same point another way, close consideration of the factors listed in item 6 of Figure 4.3 that prevail in a particular country is likely to point to some commonalities shaping policy recommendations for particular subsets of countries. To repeat the key point made here, however, one should not simply assume that such commonalities exist, as was too often the case when models 1.0 and 2.0 guided past policy recommendations.

Secondly, as item 2 in Figure 4.3 indicates, the time perspective taken in analysis matters. If the need is for immediate revenue, the appropriate policies are unlikely to be the same as if the aim is to facilitate the long-term attainment of a more rapidly growing or more just society. Cycles matter as well as trends. Is the country in a deep recession, coming to the end of a long boom, or simply in the doldrums? The acceptability, feasibility, incidence and effects of different policy recommendations are much more sensitive to the macroeconomic environment (row 6e) than seems to be recognized in much tax advice. If, as may often be the case, the idea is to make recommendations that will both respond to some current pressing problems and also move the system to a more sustainable and desirable position over the longer term, then 'one size' is even less likely to fit all and much more attention than usual needs to be paid to how to get 'there' from 'here' over what is likely to be a bumpy and winding road. Phase-ins, 'grandfathering', and all the usual compromises found in real-world policy processes need to be carefully considered and where necessary included as part of the initial policy proposal if it is not to go seriously astray. This is one among many reasons why much more attention needs to be paid to building up robust domestic policy 'think tanks', as noted in the concluding section.

Thirdly, analysis of tax policy reform in developing countries must take tax incentives more seriously (item 5). No matter how strongly or how often fiscal experts underline and demonstrate not only that most tax incentives yield little or nothing in the form of net gains from a societal perspective but they are also likely to mess up the tax system more generally, the political process will continue to churn out endless incentive proposals. Perhaps the time has come to accept this reality and focus not on fruitless efforts to get rid of incentives but rather on developing a process for limiting the damage they do and perhaps, over time, reducing their number and scope. Tax economists are basically correct in urging countries following the incentive path to keep it simple – that is, to aim at an investment-friendly environment by lowering taxes on investment in general rather than through detailed and complex systems attempting to direct investment into predetermined activities.

However, since no one seems to be listening perhaps more attention should be paid not to stopping countries doing what they seem to want to do but rather to ensuring that they do it in as open and transparent a way as possible in order to try to reduce the harm and possibly even increase the efficacy of fiscal incentives.[43] In any case, the persistence and importance of such non-fiscal concerns in shaping tax policy deserves more careful and explicit attention than it has sometimes received.

Finally, as mentioned earlier, item 6 lists a number of critical factors that need to be explicitly considered in considering tax policy reform. Several of the factors listed have already been discussed earlier to varying extents – macroeconomics, non-tax revenues, administrative aspects, decentralization, earmarking, and the international dimension. However, transfers and regulation may need a few words. The earlier discussion of the distributional aspect of taxation is sufficient reason to pay close attention to transfers. In fact, with respect to both interregional and interpersonal concerns, transfers and taxes have to be considered together not only for distributional but also for efficiency reasons (Bahl and Bird 2008a). As for regulation, it is impossible to understand or analyze either the effects of many taxes without explicitly taking into account relevant features of the regulatory environment. For example, the old question of how excise taxes on alcohol affect consumption may depend to a substantial extent on how (and how effectively) beverage production and distribution is regulated (Bird and Wallace 2006). Similarly, the new question of the effects of taxes on financial transactions also depends substantially on how such transactions are regulated (Bierbrauer 2012).

All this may seem to complicate the work of tax advisers. In reality, however, what Figure 4.3 attempts to do is not to set out a set of precise guidelines as to how to achieve success but provide a synthesis of what those who wish to improve fiscal outcomes need to understand if they wish their proposals to be not only accepted but to have positive outcomes. To paraphrase Tolstoy, every country's tax system is imperfect in its own ways and faces its own set of costs and benefits with respect to prospective policy changes. Designing good taxes for imperfect places is not easy, implementing them is likely to be even more difficult, and getting the powers-that-be to accept them may be impossible. But this is the world we live in. After fifty years of flying tax advisers, perhaps it is time to realize that the best way to realize the impossible dream of tax reform may be not to continue tilting quixotically against imagined windmills but rather to examine the ground much more closely in order to determine how a better tax system may perhaps be constructed modularly and incrementally in hostile terrain.

PLAY THE RIGHT GAME

For foreign tax advisers to become any more successful in "speaking truth to power" (Wildavsky 1979) or even to be heard by domestic decision-makers, they must play the right game. The tax policy world is very different in many respects now than it was 50 or even 20 years ago. Both the economic and the intellectual environments have changed. In many countries, the debate is really less about taxes than about what kind of society the people who matter want – and how it is determined which people matter. Ideas on the relevant balance between taxes and society forged over the first half of the 20th century have changed in recent years, as evidenced both by the death of death taxes in developed countries and by the limited success of developing countries in achieving the high levels of income taxation to which many of them aspired in the post-colonial period. In most countries, it seems the key question of how best to make the connection between the two sides of the budget sustainably operational is not simply unanswered by tax research as yet: it has not really been asked.

   History suggests that the need to secure an adequate degree of consensus from the taxed is one of the principal ways in which, over the centuries, democratic institutions have spread (Sokoloff and Zolt 2005). No non-dictatorial government in this age of information and mobility can long stay in power without securing a certain degree of consent from the populace, not least in the area of taxation. State legitimacy thus rests to a considerable extent on the 'quasi-voluntary compliance' of citizens with respect to taxation (Levi 1988). To secure such compliance in a sustainable way tax systems must, over time, represent in some real sense the basic values of at least a minimum supporting coalition of the population. Until an adequate degree of political consensus on what should be done is achieved, no significant tax reforms are likely to be made or, if made, to be sustainable. 'Consensus' does not require everyone to agree. But it does mean everyone has to agree (a) that the process was explicit and fair; (b) that they were treated well and their views were heard; and (c) that they are able not only to live with but to commit to the outcomes in some meaningful sense.

   Countries have sometimes tried to finesse some of these problems by appointing some kind of special tax reform commission, whether foreign, domestic, or mixed. The track record of such efforts is not good. Appointing an outside group is often simply a way to postpone dealing with a problem. However good the final output of such efforts may be, the results are seldom 'owned' by those who must sell them and then

make them work. Ownership matters. So does leadership. So does a coherent strategy, and of course so do adequate resources. Good tax policy planning involves economists, lawyers, administrators, and – importantly – adequate discussion with taxpayers and 'third party' tax collectors like banks and companies. Successful tax reform involves all this plus solid and continuing political support and adequate administrative follow-up. It is not easy anywhere. But it can be done – if it is done right domestically.

Good domestic planning and policy formulation focuses on what matters and what can be done and pays close attention to detail and implementation. Building up adequate institutional capacity in the tax field, both inside *and* outside government, is critical to being able to adapt policies to changing circumstances and needs, thus ensuring some degree of robustness and resiliency. The role of outsiders such as academics and aid agencies in this process is more to be supportive when countries want to reform their systems than to tell them when and how to do it.[44] In the end, if a country needs or wants better tax policy or administration, it can have it: the answer largely lies in its own hands. Even those who want to do the right thing, however, can often use help in finding out just what is right and how it can best be done.

It is always easy for those not in the game to give advice to those who are trying to play it. It often seems appealing and immediately productive to establish performance benchmarks for success, to support this particular organizational change reform here (revenue authority) and that new technology (web-based technology) there, in the apparent belief that such simple 'one-size-fits-all' approaches can provide quick (but sustainable!) answers to the many complex problems inherent in policy reform in difficult environments. Such approaches seem appealing. But so far at least the evidence suggests that most have not been very productive.

Fifty years of experience tells us that the right game for tax researchers and outside agencies interested in fostering better sustainable tax systems in developing countries' researchers is not the short-term political game in which policy decisions are made. The right game for them is instead the long-term one of building up the institutional capacity both within and outside governments to articulate relevant ideas for change, to collect and analyze relevant data, and of course to assess and criticize the effects of such changes as are made. Tax researchers in developing countries can and should play an active role in all these activities. To do so, however, they often need considerably more and more sustained support from academic institutions abroad as well as from international agencies than is now available. Such long-term 'institution-building' activities are seldom immediately rewarding. They appear at present to be out of

fashion with international agencies concerned with development, where most efforts at present seem to focus on designing and implementing ever more rigorous 'benchmarking' schemes. Nonetheless, the long-term institution-building approach seems still to provide the most useful way in which foreigners may perhaps be able to assist in the formidable and ongoing task of achieving more efficient, equitable, effective, and sustainable tax systems in developing countries.

NOTES

1. I am grateful to Sijbren Cnossen, Jorge Martinez-Vazquez, Jim Alm, and others at the conference for helpful comments on an earlier draft of this chapter but I am of course solely responsible for its contents. Given the scope of the material surveyed here and the need for brevity, not only are many issues touched on only in footnotes but a rather long list of references – including no doubt too many self-references – is included.
2. See http://www.llrx.com/features/quotedetective.htm.
3. The dilemma facing such advisers is evident from Krugman (1994), which basically asserts that most work done on development economics before about 1990 was largely useless and irrelevant because it was not based on the kind of formal, testable models that had, over the preceding two decades, become the 'gold standard' in academic economics. While there is much truth in this view, even the best such model usually leaves one a long way from being able to devise a workable solution to a real problem in the real world. Economic theory and economic policy are and should be closely related: but they are not the same and, as noted later, the relevant knowledge does not flow only in one direction.
4. For a beautiful example of how the sales taxes initially imposed in francophone Africa mirrored almost perfectly the version of the tax prevailing in France a few years earlier, see Hill (1977). France was of course not the only source of such ideas, and Africa by no means the only recipient: every adviser carries with him knowledge of his own system and is usually eager to share it with others. A particularly important instance of the wholesale imposition of a foreign tax policy model is the 'soviet-type' (command economy) tax system, originally developed in the USSR as part of its planning system and subsequently adopted in substantial part throughout the so-called Sino–Soviet Bloc in the decade after World War II (Wanless 1985). The story of how this system was replaced in what are called the 'transitional countries' towards the end of the 20th century is nicely summarized in Martinez-Vazquez and McNab (2000) but not further discussed here.
5. For a classic account of how a theoretical fiscal concept (land revenue) that was never accepted as a policy instrument at home came to be firmly implanted in India in the late 18th century, see Stokes (1989). Little had changed in this respect in the late 20th century: for two examples, see Goode (1961) on the (brief) adoption of a personal expenditure tax in India and what was then Ceylon and some aspects of the more recent history of income tax reform (Bird and Zolt 2005).
6. The income taxes initially imposed in much of anglophone Africa as well as other British territories around the world – and still found in e.g., Iraq as late as the beginning of the present century – were largely derived from a 'model' income tax devised by an interdepartmental committee in London in 1922 (Thuronyi 2003). Although later efforts like the 'Basic World Tax Code' (Hussey and Lubick 1992)

never had such success, the tendency to devise an all-purpose model to serve different 'clients' remains strong in the tax advisory business.

7. Perhaps the classic example is the famous Shoup et al. (1949) report in Japan – a report that to this day remains the benchmark for tax discussion in Japan – although few of its many recommendations remained in force for long (Brownlee, Ide and Fukagai 2013).

8. It should be noted, however, that some early major studies e.g., in Venezuela (Shoup et al. 1959) and Indonesia (Gillis 1985) were largely organized and funded by the countries themselves.

9. Much of the material in this section draws heavily on earlier discussions in Bird (2011, 2012).

10. As previously noted with respect to the Shoup report in Japan, however, few of the more fundamental recommendations of the Royal Commission report were fully accepted in Canada (Bird and Bucovetsky 1972).

11. I was no exception: see Bird (1970). The selected readings included in successive editions of Bird and Oldman (1964, 1967, 1975, 1990) provide a useful sampling of the changing literature in the field over time.

12. Elsewhere, it has been labeled the BBLR (broad base low rate) model (Bird 2011a).

13. Moreover, in some countries the change in consumption taxes has been more in form than in reality as the 'new' VAT continues to be interpreted and administered in more or less the same way as the 'old' excises or turnover taxes that were presumably replaced.

14. On the other hand, expanding trade has in recent years not been associated with increasing dependence on trade taxes (Baunsgaard and Keen 2005).

15. As Gordon and Li (2009) emphasize, financial development and the expansion of the corporate sector also increase the importance of income taxes.

16. Along similar lines, Peacock and Wiseman (1961) called the discrete jump in tax effort and public expenditure in post-war Britain a "displacement effect": general perceptions about what is a tolerable level of taxation tend to be stable until shocked by a social upheaval so that levels of taxation that would have been previously intolerable become acceptable and remain at the new higher level after the social perturbations have disappeared. The jump in tax levels in Nicaragua after the Sandinista revolution – and the maintenance of the new, higher level – under subsequent conservative governments provides another example. See also Bird and Zolt (this volume) for further discussion of the linkage between social and economic change and fiscal structure in Latin America.

17. Salmon (2012) presents a nice critique of the limited usefulness of cross-country empirical studies as a basis for political economy analysis, while Lindert (2003) emphasizes the extent to which detailed characteristics of tax design and implementation and market structure that are not easily captured in econometric models determine the impact of specific policies in different countries.

18. For more detailed discussions of tax administration in developing countries, see Bird (1989, 2004).

19. For an interesting overview of the rapidly growing literature on PEA (political economy analysis) – though without specific reference to tax policy – see Copestake and Williams (2012). Some aspects of PEA with respect to taxation are considered in the Latin American context in IDB (2006) and more generally in Brautigam, Fjeldstad and Moore (2007). Economists too have done good work on the political economy of taxation, as summarized a few years ago by Persson and Tabellini (2000, 2003). For the most part, however, this work understandably plays to our disciplinary expertise in model-building and econometrics. As Frey and Steiner (2012) emphasize, despite such interesting recent works as Acemoglu and Robinson (2012) and Engerman and Sokoloff (2011), all too many economists still seem to assume that

governments want and are actually able to maximize social welfare. See also Acemoglu and Robinson (2013) on the need for much more work on the political economy framework of policy analysis.

20. The progressivity (or otherwise) of VAT is discussed in Bird and Gendron (2007), as well as Jenkins, Jenkins and Kuo (2006). Some recent papers have explored the increasing possibility of 'personalizing' VAT through compensating income-related transfers in at least some middle-income countries: see Barreix, Bes and Roca (2012) and Keen (2013).

21. See Auerbach (2010); Mankiw, Weinzierl and Yagan (2009).

22. Musgrave (2002) remains perhaps the most interesting attempt to derive policy rules from theory; for different views on international tax policy see e.g., Tanzi (1995) and Bird and Mintz (2003).

23. See Bahl and Bird (2008a) and Bird (2011b).

24. On the importance of non-tax revenues, see Bird and Das-Gupta (2012); Alm and Lopez-Castaño (2005) and Bird and Smart (2012) discuss some aspects of payroll taxation. Another unduly neglected issue, natural resource taxation, has recently received much more attention (Daniel, Keen and McPherson 2010).

25. For an extended discussion of tax policy objectives in the context of a developed country, see Bird and Wilkie (2012).

26. As US experience with death taxes illustrates (Graetz and Shapiro 2005), one well-told story, even if not true, may outweigh 100 well-done econometric studies.

27. Or, at the extreme, perhaps creating their own country: Rabushka (2008, 868) concludes his exhaustive review of taxation in colonial America with the unequivocal (though controversial) statement that "The American Revolution … was a tax revolt, first and foremost."

28. Witness the major survey papers by Zodrow (2001) and Fischel (2001): the rate of production has not slowed down, as Augustine et al. (2009) demonstrate.

29. Cook (2007) provides a recent review of both research and policy on alcohol in the US. For a more general overview of excise tax research and policy, see Cnossen (2005). The important interaction between tax and regulatory policy is one aspect that clearly needs more attention: for some initial thoughts in one small area, see Bird and Wallace (2006).

30. Recently economists have begun to take this issue more seriously, as evidenced by the growing literature on behavioral economics (Congdon, Kling and Mullainathan 2011) and especially on 'tax saliency' (Feldman and Ruffle 2012) although to date the emphasis on the latter has been more on the effects on private allocative decisions than on governmental decisions about how to impose taxes.

31. This discussion draws on a more detailed treatment in Bird and Jun (2007).

32. Whether earmarking increases public trust in government or reduces it depends very much upon the context. For example, earmarking (hypothecation) was widespread in Britain at the turn of the 19th century but was then rejected and replaced in mid-century by the 'Gladstonian' approach to public finance, an important feature of which was a consolidated budget with no earmarking (Daunton 2001). Interestingly, the stated reason for the turn away from earmarking was to *restrict* the growth of the state in order to restore public trust in the neutrality of the public finances in the face of the then-common perception that hypothecated revenues were being (mis)used by the political elite to expand the 'fiscal-military' state in their own interests.

33. As Sijbren Cnossen, quoting Richard Goode, noted in a comment on an earlier draft of this chapter: "if you want the ends you must also want the means."

34. Partial earmarking may be appropriate even if consumption of a particular public service generates external benefits for other households. In the limiting case in which

the service is a pure public good and the marginal cost of extending service to another household is zero there is clearly no role for either user pricing or earmarking.

35. Earmarking tobacco taxes to health programs can be rationalized to some extent on 'benefit' grounds but is unlikely to have much effect on health spending. Earmarking such taxes to e.g., 'anti-tobacco' advertising campaigns may significantly increase the flow of funds to such activities (Jha and Chaloupka 2000) but this does not mean it is the best use of such funds.

36. For an argument that they should indeed lose sleep over fostering political deception, see Bird (2010), although this appears to be a minority opinion among those concerned with policy.

37. The following argument is developed at more length with respect to tax administration in Vazquez-Caro and Bird (2011).

38. Compare the different, but parallel, stories told by Lindert (2003) and Alesina and Angeletos (2003) about how different developed countries have reached quite different fiscal equilibria. Why should uniform outcomes be expected in the much more heterogeneous developing world? See also the more detailed, and partially overlapping, discussion of these issues in Bird and Zolt (this volume).

39. Instead of improving matters, wrongly handled each of these approaches may end up worsening them if the reformed institutions are captured by particular interests as happens all too easily even in developed and democratic countries (Berry 2009). There is no such thing as a free lunch when it comes to institutional change.

40. The following paragraphs draw on Bird and Das-Gupta (2012); for the basic theory, see Slemrod and Yitzhaki (2001) and for the practitioner's perspective, see Diamond (2006) and Schiavo-Campo and Tommasi (1999).

41. Intergenerational considerations may complicate the attainment of fiscal sustainability in this sense just as they complicate the attainment of environmental sustainability, but this point is not further discussed here.

42. Although they include Colombia in this group, it is clearly different from any of the other countries included and appears to fall within this category – as Ivanyna and von Haldenwang (2012, 26) themselves note – owing to a combination of special circumstances in the period considered – a sharp rise in non-tax revenue, a (somewhat questionable) borderline rating on the 'voice and accountability' measure used (p. 25), a more justified poor score with respect to corruption (p. 26), and the problems arising from substantial armed conflict. (For a recent detailed discussion of the Colombian experience in this period from a different perspective, see Bird 2012a.)

43. For suggestions along these lines – e.g., give incentives only in the form of explicit credits against taxes otherwise due in order to have a fully transparent system and establish a regular formal 'sunset' evaluation of incentives so that they are periodically reviewed and canceled if found to be ineffective – see, for example, Bird (2000).

44. Of course, as Sen (1999) stresses, there is always a role for outside critics and 'goal-setters.' However, although it may be not only more pleasant but sometimes even useful to stand outside and above the messy world of policy, the emphasis here is on how foreign advisers may help those down in the tax reform trenches to win the game once it begins. To do so, they must be close enough to the field of battle to understand the terrain in which it is fought.

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PART II

Key issues in tax policy

5. Territorial versus worldwide corporate taxation: Implications for developing countries

Thornton Matheson, Victoria Perry and Chandara Veung

5.1 INTRODUCTION

Global investment and cross-border enterprise in low-income countries (LICs) mean that effective taxation of foreign investors is of increasing importance to their economies. This is particularly true in light of the fact that corporate income tax from all sources constitutes on average a more significant part of domestic revenue in low-income countries than in advanced economies – even after the widespread introduction of the VAT across most low-income countries.[1] It is thus of considerable concern that the historical framework for cross-border income tax arrangements, which began to evolve in the early 20th century to handle income flows between advanced economies, appears increasingly poorly suited to allow low-income countries effectively to generate tax revenues from profits on foreign direct investment. Several factors contribute to this: (1) bilateral double taxation treaties can be used to strip taxable income from source (host) countries and move it to low tax jurisdictions; (2) the existing transfer pricing methodology is difficult for low-capacity countries to implement effectively – leading to calls by some academics and CSOs for the abandonment of the "arm's length" method of splitting profits in favor of "formulary apportionment" (or "unitary taxation"); (3) taxation of indirect gains related to assets located in a source country are typically not captured domestically, when the direct transfer occurs elsewhere; and (4) – the subject of this chapter, with less clear implications for low-income source countries – the trend to shift from "worldwide" taxation to "territorial" taxation – the latter being a framework in which only the source country has jurisdiction to tax profits deemed to arise there.[2]

Attention has recently focused on industrialized countries, and much ink has been spilled, on the implications of worldwide versus territorial income taxation as the framework for international corporate taxation. All G-7 countries other than the United States have now adopted territorial taxation (or a partial version thereof) for active business income. A pure version of territorial taxation imposes tax on active business income earned by corporations outside their countries of residence only in the source ("host") country, incurring neither contemporaneous tax liability in the home country, nor taxation on dividend repatriation from foreign subsidiaries. Worldwide taxation is a system under which corporations deemed "resident" in a country are taxable by that country on their income from all over the world, normally with offset either by deduction or credit for taxes paid to source countries on the same income, and sometimes, as in the US case, with deferral of tax until repatriation of the income in the form of dividends from foreign subsidiaries to the home country resident parent. Both the United Kingdom and Japan have moved to territorial systems, with modifications, within the past few years. Several recent proposals for US corporate tax reform propose or consider this option as well: the Simpson–Bowles Commission recommended it; the Volcker Report (by the President's Economic Recovery Advisory Board) considered it favorably; and House Ways and Means Committee Chairman Camp's proposed legislation would adopt a territorial system together with a minimum tax on foreign earnings. It is argued, as it was in the cases of the UK and Japan, that the US system of worldwide taxation with foreign tax credits and deferral is unduly complex and burdensome, deters repatriation of income, and encourages foreign incorporation. Note, however, that the US is not alone in taxing worldwide income (see Table 5.1).

Discussions of the potential effects of worldwide versus territorial taxation generally focus first on the impact on government revenue in the home country, and second on the "competitiveness" of the home country in the globalized market – though the latter may have quite different meanings to different people.[3] Discussions of competitiveness to some extent reflect "spillovers" – the impact of one country's policies or policy changes on other countries – since if one believes that "increased competitiveness" creates a winner, then there is also by definition a loser. But even there, the implications of such spillovers are largely considered for countries that might be viewed as real competitors for markets, jobs, and shares of world GDP. Little, if anything, has been said about the potential impact on LICs of changes in the framework for global taxation adopted by major industrial countries – notably, upon the flows of foreign direct investment (FDI) to those countries. Increasing FDI is a

Table 5.1   Distribution of OECD taxation systems

Taxation System	Countries
Territorial (26)	Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom
Worldwide (8)	Chile, Greece, Ireland, Israel, Korea, Mexico, Poland, United States

Source: Business Roundtable (April 2011).

major goal of economic management for most LICs, with obvious benefits including the creation of more and better employment, inflows of foreign exchange, exposure to knowledge and technology that would otherwise be unavailable to the host economy, and, of course, increased tax revenues. This chapter begins an analysis of this issue.

Section 5.2 presents a qualitative theoretical consideration of the impact of a change from a worldwide system to a territorial system on the volume, distribution and financing of outbound foreign direct investment (FDI). How do the various features of an international tax system, including cross-crediting, profit-shifting and deferral, influence cross-border investment patterns? What specific adaptations were made by the UK and Japan in their 2009 adoption of territoriality? Section 5.3 discusses possible impacts on LIC host countries in particular. Section 5.4 presents a preliminary empirical analysis of the impact of territoriality on FDI flows from the UK using bilateral panel data. Section 5.5 concludes and proposes further channels for research, including the need for analysis using firm-level data.

5.2   THE IMPACT OF SHIFTING FROM WORLDWIDE TO TERRITORIAL TAXATION ON OUTBOUND FDI

In 2009, two of the three remaining G-7 countries that levied a repatriation tax on corporate foreign dividends, Japan and the UK, switched to a policy of dividend exemption (territoriality). The remaining G-7 country with a worldwide system, the United States, has given consideration to "going territorial" during the last two administrations,[4] and enacted a repatriation tax holiday in 2005. The motivations for moving from a worldwide system with deferral and foreign tax credits to

territoriality were similar in both the UK and Japan: simplification and encouraging repatriation of large pools of earnings retained offshore. In the UK, conformity with EU laws and corporate tax norms and concern about corporate inversions were also significant considerations. An ancillary concern was the competitiveness of national corporations in bidding for foreign assets against companies headquartered in territorial countries, which faced only host-country level taxation.[5]

A switch from worldwide to territorial taxation could potentially affect the volume of FDI, its allocation across countries, the composition of its financing, and the distribution of tax revenues. The impact of such a switch depends on the level of home country corporate taxes relative to those in host countries as well as opportunities for deferral, cross-crediting and profit-shifting under both the worldwide and subsequent territorial regimes. If the average statutory[6] host country CIT rate, weighted by FDI stock per country, is below that of the home country, a shift to territoriality should reduce the overall tax burden on corporate investment, and both the income and substitution effects of this shift would tend to increase overall FDI outflows. If the weighted average statutory host country rate is above the home country rate, however, a move to territoriality may induce little or no aggregate change in FDI, though it will likely alter its distribution among host countries.

Under their worldwide regimes, both the UK and Japan had relatively high combined (central plus subnational) CIT rates of 30 percent and roughly 40 percent, respectively. This compares with a 2008 unweighted OECD CIT average of about 26 percent,[7] so their shift to territoriality could thus be expected to increase their outbound FDI.[8] However, in part to mitigate the increased incentive for outbound (as opposed to domestic) investment arising from the move to territoriality, both countries also cut their CIT rates: The UK reduced its CIT rate stepwise from 30 percent in 2007 to 24 percent in 2012, while Japan reduced its CIT rate to 38 percent in 2012 and plans a cut to 35.6 percent by 2015.[9] In 2010, the unweighted average CIT rate of UK FDI recipients was 26.2 percent for OECD countries and 23.7 percent for non-OECD countries, so the UK CIT rate fell from above-average to about average relative to its host countries. The income effect of the CIT reduction at these rates would stimulate aggregate corporate investment both at home and abroad, while the substitution effect of the shift would tend to increase domestic versus foreign investment, offsetting at least in part the effect of moving to territoriality. The Japanese tax cut, on the other hand, is slight enough that its domestic CIT rate remains well above its 2010 host country average of 29.6 percent for OECD countries and 25.5 percent for

non-OECD countries. Both the CIT rate cut and the move to territoriality should therefore provide a net stimulus to Japanese outbound FDI.

Worldwide tax systems – particularly those with more liberal cross-crediting regimes – suppress effective tax rate differentials among home and host countries. Under a hypothetical worldwide tax regime with no deferral or cross-crediting, the final tax rate on corporate investment will equal the home country rate as long as the host country tax rate, including the dividend withholding tax, is less than or equal to the home country rate; only if the host country rate exceeds the home country rate can the final rate differ. With cross-crediting, however, even this latter differential will diminish, since cross-crediting allows any excess credits from high-tax countries to be applied to earnings from low-tax countries. And as long as the weighted average tax rate on FDI does not exceed the home country rate, the final rate on total foreign earnings will equal the home country rate.[10] Allowing corporations to carry forward (or back) any excess credits to the next tax year, as many countries do, further homogenizes the final tax rate. Conversely, restrictions on cross-crediting, such as limiting it to particular types of income or income from a particular country or set of entities, can permit final tax rates to diverge depending upon the host country.

Repeal of the repatriation tax and elimination of foreign tax credits on exempt foreign income would thus cause the final tax rate on foreign dividends to diverge. Territoriality is therefore likely to render corporations more sensitive to host country taxes and to divert investment from high-tax to low-tax jurisdictions. As a consequence, host countries are likely to feel increased pressure to lower their CIT and withholding tax rates in order to attract foreign capital. Worldwide regimes effectively enable host countries to set higher CIT rates than territorial regimes: not only can they set their rates as high as the home country rate without raising the investor's final tax rate (ignoring the effects of deferral), but they can even set their rates higher than the home country rate to the extent that the higher foreign tax credits that those rates generate can be used to lower taxes on other foreign income.[11] Without this shelter provided by a worldwide system with fungible foreign tax credits, high-tax countries risk losing foreign investment if they do not cut their rates when major investor countries go territorial. This factor may add to the already notable degree of tax competition among developing countries, particularly regionally. Among jurisdictions that changed CIT rates between 2008 and 2010, more did cut than increase their rates – in line with a continuing world trend. However, countries that received at least 10 percent of their total inbound FDI in 2008 from the UK (Netherlands,

Spain, and the US) or Japan (Netherlands and the US) – all developed countries – did not lower their CIT rates during this period.

The impact of this change is in any event likely to be less dramatic in practice than in theory due to the widespread use of deferral under worldwide systems. Like the current US system, the worldwide systems implemented in the UK and Japan did not tax foreign dividends until they were repatriated, i.e., returned to the parent corporation for domestic investment or distribution. This allowed corporations to defer home country taxation indefinitely by keeping earnings "offshore" and reinvesting them either directly in active projects or passively in securities.[12] Passive investments could even be made in domestic securities held at home country banks, and although corporate parents could not use these funds directly, they could borrow against them or even, in some countries such as the UK, borrow them back from their foreign subsidiaries. In this sense, many observers have noted that home country economies were not in general deprived of the use of offshore earnings.[13] Additionally, corporate accounting standards allow non-recognition of the deferred repatriation tax liability for earnings which the corporate parent has elected to retain offshore indefinitely. This election boosts financial statement earnings, adding a financial incentive to the fiscal incentive for deferral.[14]

So long as earnings are not technically repatriated, they face only host country taxation, so a worldwide system with deferral can fairly mimic a territorial regime. Taking advantage of this feature, corporations from all three countries have retained large pools of earnings offshore: For example, US corporate offshore profits exceeded $1.2 trillion in 2012.[15] The widespread exploitation of deferral under worldwide tax regimes would mute the income and distributional effects of a shift to territoriality.

The wider differentials among domestic and foreign tax rates that accompany a move to territoriality increase the incentives for cross-border profit shifting via methods like transfer pricing (TP) and thin capitalization (TC).[16] Certainly, corporations have an incentive to use these techniques under worldwide systems with deferral as well, but this incentive is augmented under territoriality. Markle (2010) finds evidence that corporations subject to territorial tax systems shift more income than those subject to worldwide systems, but that the difference disappears when deferral is introduced. A particular area of concern, especially where the home country has an above-average tax rate, is domestic deduction of expenses (such as interest) incurred to finance foreign operations. Many territorial countries, such as Germany, offset this by levying a small residual tax on dividend repatriations of about 5 percent.

An alternative method would be to require allocation of domestic expenses between domestic and foreign investment, as has been proposed in the US,[17] although this greatly increases complexity. Notably, the UK accompanied its move to territoriality by enacting a "worldwide debt cap" in 2009 that limits domestic interest deductions to the corporate group's worldwide net borrowing from third parties.

While cross-crediting, profit-shifting and deferral soften the bite of worldwide taxation, controlled foreign corporation (CFC) rules give it more teeth.[18] Most countries allow deferral only for "active" foreign earnings, while "passive" earnings (for example, from securities investment by non-financial corporations) are subject to current taxation. The distinction between active and passive earnings can be set more or less generously to limit the benefits of deferral; for example, a parent must usually have a minimum ownership share in a foreign subsidiary – often 10 percent – in order for its dividend income to qualify as active. Pooling of foreign tax credits is usually also restricted at least between active and passive income pools. Further, foreign tax creditability is usually different for the two pools: For active income, credit is usually given for both the CIT and any withholding tax, whereas for passive income credit is often given only for withholding taxes.

Countries with a territorial regime for foreign dividends paid out of active earnings usually still maintain a worldwide regime for other forms of income. Moving from worldwide to territorial taxation thus does not eliminate the need for CFC and other anti-abuse rules – on the contrary, it increases their importance, since the tax gap between active and passive foreign income widens. Japan accompanied its move to territoriality with a tightening of its cross-border minimum tax, which subjects earnings from countries with low effective corporate tax rates to the CFC regime. In the US, the Ryan proposal for moving to a territorial system also includes a minimum tax on cross-border earnings. A foreign tax credit system for non-exempt foreign income must also be maintained under a territorial system, limiting the benefits of simplification. Generally speaking, the tighter a high-tax country's CFC rules – i.e., the narrower the scope of earnings exemption under a territorial regime – the less sensitive its investment will be to host country tax rates.

Moving from a worldwide to a territorial system can alter not only the volume of FDI and its allocation among host countries, but the composition of its financing and the level of earnings distributions as well. While some evidence suggests that repatriation taxes do not have a major impact on the corporate tax burden due to corporations' extensive use of deferral and cross-crediting, views have changed in recent years. On the one hand, effective repatriation tax rates are usually observed to be quite

low – the US Government Accountability Office (2008) reports that in 2004 the average effective tax rate on US repatriated dividends was only 4 percent – suggesting that they are not highly distortive. Maffini (2012) finds that, while multinational corporations headquartered in worldwide countries have higher effective tax rates than those in territorial jurisdictions, this is entirely due to higher home country tax rates and not to repatriation taxes on foreign earnings. Altshuler and Grubert (2001), examining the difference between corporations in excess credit and those in excess limit positions, find little evidence that a switch from a worldwide to a territorial tax system would alter corporate investment patterns.

However, corporations' dramatic response to the 2005 US repatriation tax holiday, which resulted in a roughly $300 billion increase in repatriated earnings (Figure 5.1), surprised many observers and called attention to the distortions inherent in the deferred offshore earnings that have arisen over the past decade as the wedge between the US and foreign CIT rates has widened.[19] In the US, UK and Japan, anticipation of a repatriation tax holiday and/or shift to territoriality likely augmented the pileup of offshore earnings. Nonetheless, there is evidence that even constant repatriation taxes may distort distribution and investment decisions. Kleinbard (2011) points out that, while the effective tax rate on actual repatriations may be small due to expert corporate manipulation of FTCs, the implicit repatriation tax rate on the bulk of offshore retained earnings may be much higher. An earlier paper by Desai, Foley and Hines (2001) finds that repatriation taxes discourage dividend distributions. And Dharmapala, Foley and Forbes (2011) discover that the bulk of the earnings repatriated in the 2005 holiday, despite legal restrictions designating them for investment and new hiring, were effectively paid out as dividends, indicating that repatriation taxes can clearly distort corporate financing.

By eliminating the disincentive for dividend repatriation under a worldwide regime with deferral, territoriality will likely cause a shift from financing foreign investment out of retained earnings towards use of new equity or debt. The drop in retained earnings is clearly visible not only during the US repatriation tax holiday of 2005 but following the UK and Japan's adoption of exemption in 2009 as well (Figures 5.2 and 5.3). Of course, the initial surge of dividend repatriations, which cleared the backlog of earnings retained offshore under deferral, was likely to be greater than the new steady-state repatriation rate; nonetheless, the shift to territoriality should increase the equilibrium rate of earnings repatriation. Given the divergence in foreign tax rates, new equity investment is
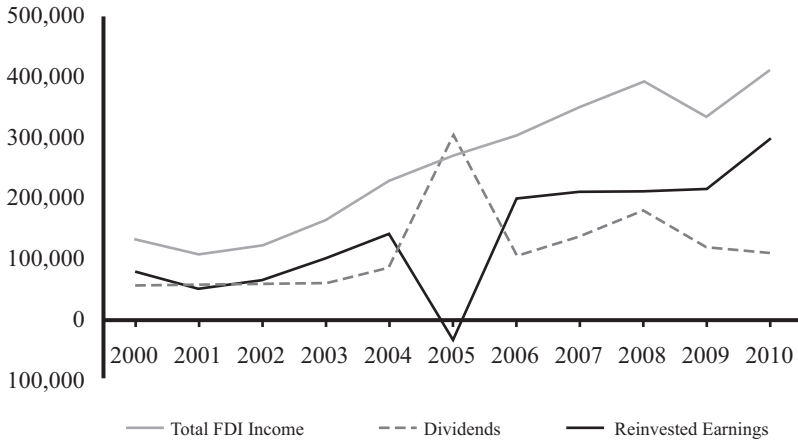
Source: US Bureau of Economic Analysis.

Figure 5.1   US FDI income 2000–2010 (in USD millions)
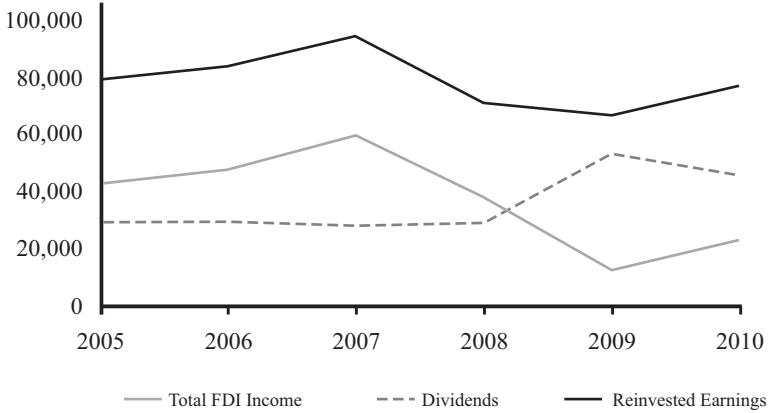
Source: UK National Statistics Office.

Figure 5.2   UK FDI income 2005–2010 (in GBP millions)
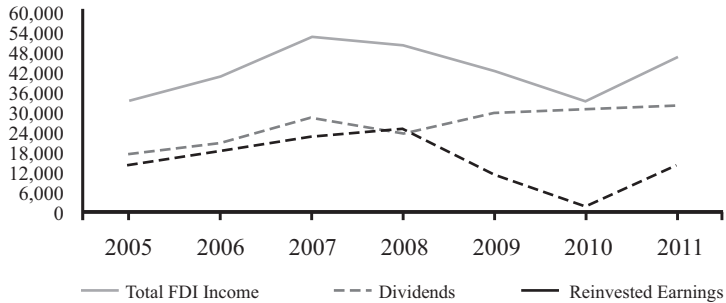
Figure 5.3   Japan FDI income 2005–2011 (in JPY 100 millions)

more likely to flow to host countries with low tax rates, while high-tax host countries are more likely to attract investment financed out of debt.

5.3   IMPACT OF A SHIFT TO A TERRITORIAL SYSTEM ON THE ECONOMIES OF LICS

Increasing FDI is a major goal of economic management for most LICs. Obvious benefits include the creation – or hope of creation – of more and better employment, inflows of foreign exchange, exposure to knowledge and technology that would otherwise be unavailable to the host economy, and increased tax revenues. A primary question is thus the potential impact on FDI flows caused by a shift from a worldwide tax regime to a territorial system on the part of a potential investing country. Unlike the case of more economically equal partner countries, there is generally little significant *outbound* FDI from LICs; thus, the issue for LIC spillovers can as a first approximation be analyzed in one direction.

   As discussed above, the impact on FDI into host LIC countries should depend upon the differential in effective tax rates among the home and host countries with respect to earnings in the host (source) country. Where the host country has a low(er) average effective tax rate than the investing country – either because of a low statutory rate, or because of extensive tax exemptions and incentives that apply to the relevant income, as is frequently a factor in such cases – a shift to territorial taxation on the part of the investing country should stimulate FDI to the

low-tax host. Where the host country has a higher effective tax rate, the elimination of foreign tax credits with regard to the income earned from the FDI would tend to have the opposite impact: some of that investment could shift to lower-tax jurisdictions to the extent that it remains offshore.

Loss of retained earnings: Repeal of home country tax on dividends raises the concern of whether developing countries in particular will lose capital from reinvested offshore earnings. More research is needed on how "offshore" retained earnings are deployed before that question can be satisfactorily answered; however it seems unlikely that developing countries will lose significant capital simply as a result of repatriation tax repeal. After making the direct investments that are profitable on a risk-adjusted basis, corporations are likely to retain offshore cash in safe-yielding securities denominated in currencies that match their over-all liquidity needs, rather than in the country where they were generated. For example, the Senate Committee on Investigations (2011) reported that US multinational enterprises invest almost half of their "offshore" retained earnings in US dollar securities with domestic banks. It thus seems unlikely that corporations retain offshore earnings in LICs under a worldwide system except to finance direct investments. LICs therefore may have little to lose from the general drop in offshore retained earnings due to dividend exemption; the more serious consequence of that policy trend is the redistribution of FDI from high-tax to low-tax host countries.

As has been amply documented,[20] the location of taxable profits need not mirror the location of actual economic activity. A shift to territoriality and the accompanying increase in rate differentials would increase the incentive to shift taxable income to lower-tax jurisdictions, thus, presum-ably, increasing their tax bases and their revenues as long as their rates exceed zero. This effect could be limited by expense allocation rules and/or tighter thin capitalization rules, but the tendency would be for earnings stripping practices already well-known in highly profitable industry sectors to expand down the profitability scale. Though this tax base effect would not be limited to LICs, it would likely benefit lower-tax LIC host countries while eroding the tax base in high-tax LICs.

The introduction of true territorial taxation would reduce the "leveling" effect created by worldwide taxation with foreign tax credits, the pure form of which would result in the taxation of all earnings at the home country rate. The level of the host country effective tax rate would theoretically therefore become more important in determining the loca-tion of foreign investment. This effect could lead to even greater tax competition among LICs to attract FDI from territorial regime countries. Such tax competition can already be quite harmful to the cause of mobilizing domestic revenue for development in LICs, which as noted

tend to be far more dependent upon the corporate income tax as a source of tax revenue than their industrial country counterparts.

5.4 ANALYSIS OF THE UK SHIFT TO TERRITORIALITY

This section analyzes bilateral data on UK outbound FDI for the years 2002–2010 to determine the impact of the UK's 2009 move to territoriality on the distribution of FDI across host countries.[21] It tests the hypothesis that foreign dividend exemption makes FDI more sensitive to host country taxation. To test this hypothesis, we regress bilateral country–year net FDI flows, broken down by type of finance (new equity and retained earnings), on host country statutory tax rates[22] and their interaction with a dummy variable that takes on the value of 1 for years after 2008. Increased sensitivity to host country tax rates would be indicated by a negative coefficient on the interactive term, as parents reduce investment in high-tax countries and increase it in low tax countries in response to dividend exemption and the loss of foreign tax credits.

The analysis also considers the effect of the relevant withholding taxes; all models consider separately the effect of the CIT rate.[23] In the new equity regressions, the dividend withholding tax (DWT) is compounded with the CIT rate to calculate the total tax on repatriated earnings: CIT + (1–CIT)*DWT. For the retained earnings model, the dividend withholding tax was included separately from the CIT, since it may have an opposite effect on reinvestment. As for new equity, higher CIT rates are likely to discourage retention of earnings in the host country. However, higher DWT rates may encourage earnings retention in lieu of repatriation, so this coefficient is likely to have the opposite sign from the CIT.

A random effects model is used, since a Breusch–Pagan test indicates that country-level intercepts differ significantly and a Hausman test does not reject the hypothesis that the country-level random effects are uncorrelated with the residual error terms. A fixed effects model is also run (Appendix Tables 5.2 and 5.3) to test the robustness of the results as the data being used strongly makes the case for country fixed effects. As in previous studies of the effect of host country taxes on bilateral FDI flows,[24] a vector of other controls including GDP, GDP per capita, an index of public institutional quality,[25] a tax haven dummy,[26] and regional and year dummies are also included. Inflation and average GDP growth were initially controlled for, but dropped as they were consistently

insignificant. Descriptive statistics of the regression variables are shown in Table 5.2.

In the new equity regressions (Table 5.3), the coefficient on the interaction between the corporate tax rate and the territoriality dummy is, as predicted, negative. The CIT rate has an insignificant effect on new equity investment whether the interacted term is included or not (columns 1–4); however, from 2009 on, the host country CIT rate has a negative effect on equity-financed FDI, indicating that corporate parents are indeed more sensitive to host country tax rates under dividend exemption than under worldwide taxation.

Table 5.2   Regression variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Equity	245	592	4,106	−23,295	34,203
Retained earnings	405	1,097	2,878	−16,281	24,575
Debt	351	−124	4,358	−22,434	34,203
CIT	464	26.64	8.38	0.00	42.00
CITDWT	468	34.80	9.95	0.00	56.00
DWT	450	11.93	6.23	0.00	34.00
IWT	454	7.67	11.92	0.00	34.00
GDP	468	819	1,951	4	14,527
GDPPC	468	23,712	21,743	356	118,908
PUBINST	468	1.23	1.72	−3.28	3.61
HAVEN	468	0.14	0.34	0.00	1.00

Notes:

Equity: UK outbound FDI financed by new equity (USD mns.), 2002–2010.
Retained earnings: UK outbound FDI financed by retained earnings (USD mns.), 2002–2010.
Debt: UK outbound FDI financed by debt (USD mns.), 2002–2010.
CIT: host country CIT rate (percent).
DWT: Dividend withholding tax (percent).
CITDWT: CIT rate + DWT rate*(1–CIT) (percent).
IWT: Interest withholding tax (percent).
GDP: GDP (US$ billions).
GDPPC: GDP per capita (US$).
PUBINST: Sum of World Bank political stability and rule of law indices.
HAVEN: Tax haven dummy (Dharmapala and Hines 2009, less Ireland).
TER: Territorial dummy = 1 for years after 2008.

This result is robust to the inclusion of year dummies (column 4), indicating that it is not driven by changes in the investment environment

due to the financial crisis; in fact, when year dummies are included the coefficient on the interacted term becomes more negative. In the full model with year dummies, a one percentage point increase in the host country CIT rate under territoriality results in a $206 million decrease in UK FDI. The results are also robust to the compounding of the tax term with dividend withholding tax (DWT) rates (columns 5–8). These results are highly similar to the CIT-only results in the first four columns, which is unsurprising given the high correlation between CIT and DWTs. In the full model including year dummies (column 8), a one point increase in the compound tax rate results in a US$168 million decrease in FDI, a 28 percent decrease relative to the mean FDI value of US$591 million. These results are also robust when a fixed effects model is used: the coefficients of the interacted terms between CIT and territoriality dummy and between compounding of CIT with DWT and territoriality dummy have the same signs but slightly larger magnitudes than in the random effects model. The tax haven variable is significantly positive in all models except for those in columns 2 and 6, which include year dummies and no interacted tax term.[27]

Results for FDI financed out of retained earnings are mixed (Table 5.4). The coefficient on the CIT rate is perversely sometimes positive, although this result is not robust to inclusion of year dummies. The coefficient on its interaction with the territoriality dummy is significantly negative in only one regression model (column 3), and is also not robust to the inclusion of year dummies. The coefficient on the dividend withholding tax is significantly positive, as hypothesized, only in the models that include its interaction with the territoriality dummy (columns 7 and 8), and the interacted term is not significant. As in the case of FDI financed by new equity, tax havens receive a much higher level of reinvested earnings than other countries: an average of about US$1.7 billion per year. Presumably these results reflect the extensive use of tax planning techniques, and are indicative of the difficulty in following investment and repatriation flows in practice.

When a fixed effects model is used, the coefficients have the same signs as in the random effects model, except in the last regression (column 8), where the sign of the interaction between DWT and territoriality dummy is flipped. These coefficients are much larger in magnitude in the fixed effects than in the random effects model.

Table 5.3   FDI financed with new equity

Variable	1	2	3	4	5	6	7	8
CIT	–	–	2.3	17.1				
			0.1	0.7				
CIT*TER			–	–				
			–	–				
CITDWT					1.9	–	7.2	20.1
					0.1	–	0.3	1.0
CITDWT*TER					–	–	–	–
					–	–	–	–
GDP	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
	4.1	4.5	4.5	4.5	4.1	4.3	4.4	4.3
GDPPC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.5	0.6	0.5	0.9	0.5	0.6	0.5	0.9
PUBINST	–70	–132	–92	–209	–	–114	–78	–187
	–	–	–	–	–	–	–	–
HAVE	1,330	1,210	1,350	1,448	1,349	1,240	1,320	1,344
	2.1	1.8	2.0	2.1	2.0	1.8	1.9	2.0
Constant	–283	574	15	–192	–393	269	–159	–371
Region dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	No	Yes	No	Yes	No	Yes	No	Yes
Adj. r-squared	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.2
Number of obs.	244	244	244	244	245	245	245	245

Table 5.4   FDI financed with retained earnings

Variable	1	2	3	4	5	6	7	8
CIT	**59.07**	**44.73**	**52.32**	**42.33**	**56.11**	**41.77**	**44.98**	**38.45**
	2.23	*1.61*	*1.99*	*1.26*	*2.21*	*1.56*	*1.85*	*1.16*
CIT*TER			**-37.30**	12.29			-12.41	20.53
			-3.12	*0.19*			*-0.49*	*0.29*
DWT					33.87	35.56	**56.50**	**48.75**
					1.51	*1.58*	*2.39*	*2.05*
DWT*TER							-59.42	-43.89
							-0.92	*-0.94*
GDP	**0.39**	**0.44**	**0.45**	**0.44**	**0.39**	**0.45**	**0.44**	**0.44**
	2.05	*2.44*	*2.48*	*2.33*	*2.11*	*2.49*	*2.42*	*2.32*
GDPPC	0.05	0.06	0.05	0.06	0.05	0.06	0.05	0.06
	1.67	*1.84*	*1.81*	*1.84*	*1.70*	*1.90*	*1.84*	*1.89*
HAVEN	**1,738**	**1,703**	**1,735**	**1,684**	**1,998**	**1,989**	**2,044**	**1,982**
	2.65	*2.69*	*2.76*	*2.63*	*3.21*	*3.38*	*3.43*	*3.25*
PUBINST	-81.8	-148.4	-136.1	-147.2	-66.7	-144.7	-133.4	-147.4
	-0.33	*-0.57*	*-0.54*	*-0.57*	*-0.27*	*-0.54*	*-0.51*	*-0.55*
Constant	-2168.61	-1543.12	-1874.31	-1479.44	-2542.92	-1879.90	-2351.61	-1922.04
Region dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	No	Yes	No	Yes	No	Yes	No	Yes
Adj. r-squared	0.26	0.30	0.29	0.30	0.27	0.31	0.30	0.31
Number of obs.	401	401	401	401	392	392	392	392

5.5 CONCLUSIONS AND AREAS FOR FUTURE RESEARCH

This chapter posits that if a relatively high-CIT rate, capital exporting, country shifts from a worldwide to a territorial tax system, its corporations will become more sensitive to host country tax rates, reducing their investment in high-tax countries in favor of lower-tax countries. We make an initial attempt here to test this hypothesis by examining bilateral outbound FDI flows from the UK for 2002–2010. We find some evidence to support the hypothesis: In regressions of FDI financed with new equity, the coefficient on the interaction of the host country tax rate with a dummy variable that takes on the value of one for years following the switch to territoriality is significantly negative, both for the CIT rate and for the composite of the CIT and dividend withholding tax rates. In regressions of FDI financed out of retained earnings, however, the coefficient on the interacted CIT rate is significantly negative in only one model and not robust to the inclusion of year effects. These regressions also show some support for the hypothesis that, controlling separately for the CIT rate, the dividend withholding tax rate has a positive effect on retained earnings; however, this effect is not always significant and is not increased with the shift to territoriality.

The analysis presented in this draft is preliminary and could be refined in several ways, including: (1) construction of a formal model of corporate FDI to generate more precise testable hypotheses; (2) extension of the empirical analysis to include the effects of territoriality adoption on the volume and leverage of FDI; (3) investigation of the effects of territoriality adoption under a formulary apportionment system such as that proposed in the EU;[28] and (4) analysis of Japanese as well as UK data. Another very important avenue for further exploration is analysis of corporate-level rather than aggregate bilateral FDI data, which would permit, for example, controlling for the initial tax status of the corporation. Presumably, corporations that begin in excess credit status under the worldwide system would be less affected by the shift to territoriality than those beginning in excess limit, a consideration which may obscure the results from the aggregate-level data.

It is clear that LICs should keep a close eye on international tax changes proposed and adopted by the largest economies – both those imposed by formal law, and through "guideline" approaches taken in international fora.

NOTES

1. The corporate income tax raises an average of about 17 percent of total tax revenue in low and lower-middle income countries, vs. an average of 7 percent in high-income countries. See Keen, Perry and Toro (2011).
2. There are of course still other aspects of the international corporate tax system that also give rise to spillovers for LICs, most notably tax rates and bases – the latter including the use of tax incentives and expenditures – and the treatment of passive income either earned abroad by resident taxpayers, or earned domestically by foreign investors. All of these potential spillovers, like the territorial versus worldwide question, have been little formally studied and need further research. The present chapter attempts only to begin with one of the fundamental issues.
3. See, e.g., American Tax Policy Institute.
4. See, for example, President's Advisory Panel on Federal Tax Reform (2005), and President's Economic Recovery Advisory Board (2010).
5. See Desai, Foley and Hines (2003).
6. As a proxy for average effective tax rates (AETRs). The latter would be the preferred measure, but is not generally available.
7. See www.oecd.org. Non-OECD CIT rates vary widely, although on average they tend to be lower.
8. In 2010, the UK and Japan each accounted for more than 6 percent of world outbound FDI flows and for more than 4 percent of FDI to the non-OECD.
9. The UK rate was reduced to 28 percent in 2008 and 26 percent in 2011.
10. Using excess foreign tax credits to offset tax on domestic income is usually prohibited.
11. Kleinbard (2011) notes the incentive that worldwide systems create for investment in high-tax countries.
12. US Senate Permanent Subcommittee on Special Investigations (2011).
13. Dharmapala, Foley and Forbes (2011).
14. Graham, Hanlon and Shevlin (2011).
15. Bloomberg (2012).
16. Transfer pricing is the overpricing of intra-corporation purchases, including service fees, by affiliates in high-tax countries. Thin capitalization is the financing of operations in high-tax countries with excessive intra-corporate debt. Both practices shift profits from high-tax to low-tax jurisdictions, lowering the overall tax burden. Like cross-crediting, TP and TC narrow effective tax rate differentials across jurisdictions; however, while most countries prohibit the use of foreign tax credits to offset domestic income, TP and TC can transfer profits between home and host countries as well.
17. Office of Management and Budget (2009).
18. In the US, these are referred to as "Subpart F" rules.
19. In addition to a general downward trend in CIT rates among both OECD and developing countries since the late 1980s, the widening differential between US and offshore earnings has been fueled by refined earnings stripping techniques, facilitated by the "check-the-box" regime introduced in 1997.
20. See e.g., Grubert (2012), Kleinbard (2011).
21. The FDI data are published by the UK National Statistics Office: www.ons.gov.uk/ons/rel/fdi/foreign-direct-investment.
22. See Note 6; while average effective tax rates would be preferred, the statutory rate is used as a proxy as sufficient information is unavailable. Future work would benefit from use of AETRs.

23. Ideally, withholding taxes for dividends, interest and royalty payments would be controlled for in all regressions, since corporations make choices on how to finance FDI and repatriate earnings based on the full set of relevant tax prices (Grubert 1998). However, the aggregate level of the data, small number of observations and the high correlation among country-level withholding tax rates dictated parsimony, so only the most relevant withholding tax to the finance method in question was included.
24. For a summary and meta-analysis of this literature, see de Mooij and Ederveen (2008).
25. This is the sum of the World Bank Rule of Law and Political Stability indices.
26. The list of tax havens was taken from Dharmapala and Hines (2009), but Ireland was reclassified as a non-tax haven. Tax havens included in the dataset are Cyprus, Luxembourg, Malta, Switzerland, Panama, Hong Kong, and Singapore.
27. Tax havens – as defined above – draw an average of US$1.3–1.4 billion in UK FDI, controlling for the other regression factors including their corporate tax rate. This indicates that tax havens as defined by Dharmapala and Hines (2009) attract FDI by other means than their CIT rates, such as well-developed financial service sectors. Indeed, the average CIT rate for tax havens, which ranges between 9 percent for Switzerland to 35 percent for Malta, is 22.7 percent, not far below the average rate for non-havens of 26.6 percent.
28. See Devereux and Loretz (2011).

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APPENDIX

Appendix Table 5A.1   List of host economies by development level

Developing and Emerging Market	Bermuda, Brazil, Bulgaria, Chile, China, Colombia, Cyprus, Czech Republic, Estonia, Hong Kong, Hungary, India, Indonesia, Kenya, Latvia, Lithuania, Luxembourg, Malaysia, Malta, Mexico, Nigeria, Panama, Poland, Romania, Russia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Thailand, Zimbabwe
Advanced	Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United States

Note: The economies are classified according to the WEO Statistical Appendix (October 2012), excluding Bermuda.

Appendix Table 5A.2   FDI financed with new equity (fixed effect)

Variable	1	2	3	4	5	6	7	8
CIT	136.85	68.82	61.78	74.30				
	1.27	0.65	0.63	0.72				
CIT*TER			**−78.38**	**−208.31**				
			−2.76	−2.50				
CITDWT					62.42	37.74	37.74	49.08
					0.98	0.60	0.73	0.80
CITDWT*TER							**−58.45**	**−175.16**
							−2.76	−2.21
GDP	−0.01	0.00	0.00	0.00	−0.01	0.00	0.00	0.00
	−1.11	−0.30	0.09	0.91	−1.36	−0.21	0.00	0.67
GDPPC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	−0.13	−0.03	0.04	0.12	−0.31	−0.02	−0.05	0.03
PUBINST	4.07	3.95	1.76	3.61	2.91	3.75	1.40	3.11
	0.90	0.95	0.36	0.85	0.81	0.93	0.33	0.77
HAVEN								
Constant	−2772.75	−1514.13	−981.68	−2114.17	−897.88	−928.30	−454.15	−1526.79
Region dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	No	Yes	No	Yes	No	Yes	No	Yes
Adj. r-squared	0.06	0.01	0.07	0.14	0.12	0.01	0.05	0.13
Number of obs	244	244	244	244	245	245	245	245

Appendix Table 5A.3   FDI financed with retained earnings (fixed effect)

Variable	1	2	3	4	5	6	7	8
CIT	153.82	83.33	**121.56**	81.92	**150.83**	69.85	**112.06**	69.47
	2.59	1.91	2.55	1.63	2.52	1.50	2.30	1.32
CIT*TER			**−43.47**	10.05		**−204.00**	−16.07	17.56
			−2.73	0.15		−2.07	−0.58	0.24
CITDWT					−114.80		−164.54	**−196.34**
					−0.91		−1.54	−2.18
CITDWT*TER							−67.99	−43.65
							−0.98	−0.89
GDP	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.01
	0.55	1.79	1.11	1.61	0.51	1.85	0.97	1.61
GDPPC	0.00	**0.00**	0.00	**0.00**	0.00	**0.00**	0.00	**0.00**
	1.65	2.23	1.88	2.23	1.64	2.31	1.88	2.30
PUBINST								
HAVEN	3.34	5.46	3.21	5.59	3.06	4.50	2.40	4.61
	1.43	1.55	1.43	1.44	1.18	1.25	0.98	1.13
Constant	−6021.57	−5423.49	−5562.53	−5385.82	−4624.86	−2735.96	−3322.04	−2784.31
Region dummies	Yes	Yes	Yes	Yes	yes	Yes	Yes	Yes
Year dummies	No	Yes	No	Yes	no	yes	no	yes
Adj. r-squared	0.19	0.22	0.23	0.22	0.17	0.19	0.19	0.19
Number of obs	401	401	401	401	392	392	392	392

6. Taxing the small: Fostering tax compliance among small enterprises in developing countries

William F. Fox and Matthew N. Murray

INTRODUCTION

Revenue mobilization in developing countries is challenging and especially so when it comes to generating taxes from small enterprises. This represents a conundrum for policymakers and tax administrators. On the one hand there is a compelling need for revenues to meet spending and social objectives including some semblance of fairness in taxation. At the same time it is widely recognized that in many countries the cost of revenue mobilization from (at least some) small firms – including both administration and compliance costs – exceeds revenue potential. So even if policymakers decide to seek to tax small enterprises, the tax administration may have little enthusiasm for diverting resources from other seemingly more productive uses to enforce taxation of the small.

Defining a "small" business is problematic. In the US, the Small Business Administration includes some manufacturing firms with up to 1500 employees in their definition of a small business. The World Bank (2007), on the other hand, defines *micro* firms as generally having less than 10 employees, *small* firms as having 10–49 employees (though there are exceptions) and *medium-size* firms at 50–249 employees (again with exceptions). In practice small firms can be defined broadly by some of their common characteristics and this is the approach we follow in this chapter without a specific attempt to define small. Our discussion applies less to small firms with strong connections to the formal sector and with solid accounting practices. Instead, we focus on small firms that are often ill prepared to comply even with the simplest of tax systems, though there are certainly many exceptions even in very poor countries. Small firms tend to operate on the fringe of the formal economy, with only loose connections to the formal tax and regulatory apparatus of the state.

Their activities are often labor intensive,[1] meaning fewer interactions with market traders of tangible goods who may be in the tax net; they rely disproportionately on cash transactions; there are few opportunities for third-party verification; and they have poor bookkeeping practices. Tax policy is often uniquely designed for small enterprises, ranging from simple exemptions for small traders under the VAT to the imposition of presumptive tax regimes. Together the characteristics of small firms and their activities offer a weak foundation for voluntary compliance and leave little opportunity for effective enforcement.

There are no good consistent data across developing countries on the magnitude of tax gaps and noncompliance for small enterprises. Schneider et al. (2010) estimate overall GDP gaps on legal activities that range from 34.7 percent in Latin America and the Caribbean to 27.3 percent in the Middle East and South Africa to 37.6 percent in Sub-Saharan Africa. It is difficult to infer the share of these gaps that comes from small firms but it is likely to be significant. Data gathered by the World Bank (2007) show that micro, small and medium enterprises (MSMEs) share of employment is 49.4 percent in low-income countries and 53.9 percent in low, lower-middle and upper-middle income countries. In the end, tax gaps from small enterprises must be made up by higher taxes on compliant agents or forgone public services.

The relationship between revenue authorities and potential taxpayers has traditionally been viewed narrowly as a game theoretic principal–agent problem, which certainly has merit. This fits nicely with the often adversarial relationship between taxpayers and revenue authorities where each party operates with some degree of uncertainty and antagonism regarding the behavior of others. It is also consistent with negotiated tax settlements that are common in developing countries.

However, it has become apparent that there is more to the compliance game than simply administrative enforcement of taxes imposed on the unwilling. Interactions between taxpayers and the state represent an important facet of the evolving and arguably endogenous social contract in developing countries and this is not easily accommodated by classical models of underreporting and compliance. This is especially important for small firms since the first direct, formal contact with an arm of the state may be interaction with tax authorities.[2] If this interaction goes poorly it may weaken the social contract and support for the state, along with the will to comply. It is entirely possible that negative relationships – created by unsympathetic, arbitrary or especially egregious administrative behavior – create the will to cheat as a form of spite or reciprocity.[3] If policymakers decide to tax small enterprises, the absence of a strong and credible will to tax, along with administrative inefficiencies and

corruption, can compromise the tax enforcement climate, diminish revenue productivity further and harm the perceived fiscal exchange between taxpayers and the state. It may be better to not tax at all than to tax poorly.

Developing countries must first decide whether or not to tax small enterprises. If the decision is made to tax, the actual tax instrument must be designed and implemented, along with the enforcement regime and administrative policies and procedures that will define the relationship between taxpayer and state. Traditional arguments for taxation of the small include revenue need, the pursuit of taxpayer neutrality across businesses of different size and enhancement of the overall enforcement regime via inclusion of more firms in the tax net (to facilitate cross verification). Also, the failure to tax small enterprises creates incentives for firms to remain small or to use the "small" loophole to avoid or evade taxes; in such instances one would expect to see relatively large numbers of small firms bunching up at the kink point where the system of taxation for larger enterprises is implemented. Secondary arguments justifying taxation of the small have more recently been articulated. One such argument is that "formality," i.e., firm engagement with the formal sector as opposed to informal sector of the economy, will improve economic growth. So if firms can be nudged into compliance with the tax system, they may then comply more broadly with the state's regulatory apparatus, access market resources like credit, interact more fully with other enterprises and grow at a stronger rate. There is also the growing perception that fair and effective taxation of the small provides spillover benefits. For example, if taxation of the small enhances society's perception of the compliance regime and fairness of the tax system, others will more willingly comply without increased usage of costly enforcement sticks.

This broader perspective of compliance and enforcement is not easily accommodated by neoclassical models of criminal behavior which have been applied to understanding the compliance game and designing enforcement mechanisms. Behavioral economics, which introduces broader social and psychological influences, may be a better construct to understand how relationships between taxpayers and the state affect compliance. These seemingly modern ideas have early antecedents in the developing country context. For example, the introduction of the Blue Return system in Japan in 1950, which included positive inducements for compliance and is discussed more fully below, was advocated by Professor Carl Shoup as part of the post-war Shoup Mission. Much later, Shoup (1976) attributed the modest use of urban real estate taxation in developing countries to sociology, political science and anthropological

factors. Bahl and Schroeder (1983) note that there may be "a psychological incentive to pay if a taxpayer is among neighbors who are complying with the law."[4]

In what follows we first discuss a more nuanced view of the tax compliance game from the evolving perspective of behavioral economics. This discussion is followed by a more traditional analysis of issues related to taxation of the small drawing on recent insights and policy interventions. Our discussion generally blends issues of tax structure with various facets of tax administration and enforcement. In most instances the tax instrument in question is the VAT since it is the dominant revenue source in most developing countries, though we recognize there are compliance problems with all revenue instruments.

A primary conclusion of our work is support for integration of small firms into simplified tax systems that will lead taxpayers into the general and regular system of taxation for larger businesses as they grow and prosper. This might include a VAT with thresholds to exempt the smallest of traders and simplified reporting procedures that can nurture compliance. We generally offer little support for alternative tax systems, in particular presumptive regimes, which can be complicated, onerous, entail administration of multiple tax systems and do a poor job of preparing taxpayers for the regular system of taxation. Administration and enforcement should include comprehensive registries of firms, some form of regular filing or contact requirements with the revenue administration and rewards for good compliance behavior. We recognize that there may be circumstances where it is better to not tax the small. These situations are most likely to arise when tax capacity is exceedingly low and there is little confidence in the capacity of the state to administer the rule of law. We also argue for a broader perspective on the role of the tax administration apparatus in developing countries. The importance of nation building and a sound social contract point to the need to create a healthy rather than adversarial relationship between taxpayers and the revenue authorities. This is problematic in practice since it represents a sharp departure from current policy and will entail new models of training for administrative personnel.

BEHAVIORAL ECONOMICS: NEW PERSPECTIVES ON THE COMPLIANCE GAME

Research on compliance has traditionally focused on maximizing the collection of revenues that are due given resources available to the tax administration. Efficiency requires consideration of excess burdens, as

well as the costs of administration and compliance, but tax administrators
are prone to focus on revenues at the expense of other considerations.
More recently research has broadened the goals to include the important
roles that taxation can play in bringing businesses into the formal sector
and encouraging state-building. This broader behavioral perspective is
especially important for small firms because of an agent's direct inter-
actions with the revenue authorities. Owners of large firms, on the other
hand, often rely on legal and accounting staff, along with other profes-
sionals who are tasked with the tax reporting process.

The Allingham–Sandmo Model

Allingham and Sandmo (1972) provide the classical framework for
explaining individual taxpayer compliance behavior and rationalize and
guide administrative enforcement efforts. In principle the model is
especially well suited to small enterprises by virtue of the individual
agent – as opposed to a formal business establishment – making choices
regarding the degree of compliance with the tax system.[5] This framework
has its roots in early stick models of criminal behavior with agents
narrowly deriving utility from own income net of taxes and expected
penalties on underreported income; expectations are assumed to satisfy
the assumptions of expected utility theory. By focusing on the taxpayer's
choice of underreported income and emphasizing the role of penalties,
there is a natural linkage to enforcement through traditional examina-
tions, audits and administrative/criminal penalties for noncompliance.
(The literature is largely silent on how behavioral responses to audit
probabilities and penalties are shaped.) The Allingham and Sandmo
perspective is likely the mental construct used by most analysts and
policymakers today in framing the tax compliance game. For example,
Sarker (2003) discusses compliance problems associated with the self-
assessment system in Bangladesh and points to weak penalties as one of
the main impediments to improved administration and revenue collection.
But there are important exceptions where a broader view is applied. For
example, the Tanzania Revenue Authority has shifted its emphasis away
from enforcement and more toward compliance carrots (Foreign Invest-
ment Advisory Service, 2006). While this is a potentially important step,
there is virtually no knowledge of the returns to the application of
kindness and carrots to tax compliance.
   Despite the popularity of the Allingham and Sandmo model, there are
several reasons to reject it as a complete characterization of compliance
behavior. First, the magnitude of expected penalties is in practice
generally too low to explain observed rates of compliance across both

developed and developing countries. McCaffrey and Slemrod (2006) argue that this criticism of Allingham and Sandmo is overstated since a large share of income is matched by third party reporting and thus not even subject to traditional enforcement efforts. However, even accounting for this pattern of matched income, McCaffrey and Slemrod acquiesce and conclude that other factors must nonetheless be at play in explaining rather pervasive patterns of compliance in the face of low audit odds. There is related evidence from the laboratory that subjects overstate audit probabilities (Alm, McClelland and Schulze, 1992). But there is no neoclassical explanation of why this might be the case.

Second and related, there is empirical and experimental evidence to suggest that various notions of fairness regarding the behavior of others (e.g., reciprocity), fiscal exchange and the quality of governance affect compliance patterns (e.g., Cummings et al., 2009). Similarly, there is evidence from a wide class of public goods experiments that there is more cooperation and less free riding than would be predicted by theory. Together this evidence suggests that own compliance behavior can be affected by the compliance behavior of other individual agents, the nature of taxpayer relationships with revenue authorities and the quality of the quid pro quo between tax payments and government services. These conclusions go well beyond the boundaries of the Allingham and Sandmo model. Classical incentives matter, but so do other considerations. These other considerations may go a long way toward explaining why the returns to classical enforcement efforts vary across countries and regions. This may be especially important to small firms who likely hold first-hand knowledge of the compliance behavior of other small firms and have direct contacts with revenue authorities.

Finally, extensive laboratory experiments have rejected the expected utility approach to explaining behavior under uncertainty.[6] Prospect theory and loss aversion, concepts formalized by Kahneman and Tversky (1979), have been shown to have considerably broader explanatory power than expected utility theory. As discussed below, this alternative view of uncertainty has potentially important implications for the penalty–reward structure of the enforcement regime targeted to small entrepreneurial enterprises.

Behavioral Public Finance

Behavioral public finance offers a potentially promising complement to the classic Allingham and Sandmo model, whether applied to a developing or developed country context.[7] For example, the role of penalties

offers some important lessons. Frey (1997) distinguishes between intrinsic motivations to comply based on civic obligations versus extrinsic motivations that emanate from the threat of the enforcement regime. Everest-Phillips (2008) links the intrinsic motivations to state-building and argues that political inclusion, accountability and transparency, perceived fairness, effectiveness, and political commitment to share prosperity are the key elements to building intrinsic motivations. He goes on to contend that bringing small businesses into the tax net is an important component of bringing them into the formal sector. Encouraging firms to join the formal sector is important because these firms grow much more rapidly and they may help other businesses grow as well, so small business tax policy can be a key element to motivating much needed economic growth. Frey shows that more vigorous enforcement efforts can crowd out the intrinsic motivations that are essential to state building. The consequence is that people pay a higher share of their taxes not out of any civic obligation or duty to the state but because of the fear of retribution and penalties. This can potentially weaken the nature of the fiscal exchange between taxpayer and state and have broader social implications.

However, broadening the tax base to small firms may generate little if any new revenues (particularly when one accounts for administration and compliance costs), whether motivated intrinsically or extrinsically, and may not be justifiable based on net revenue maximization. The decision on whether to tax small businesses should be judged in terms of the broader set of objectives. For example, by reducing the size of the informal sector one expands the legitimacy and perceived fairness of taxes to others in the tax net and builds linkages to foster growth of the state.

Prospect theory and penalty (loss) aversion indicate that similar gains and losses from some reference point do not have the same magnitude of positive and negative effects on utility. An immediate implication is that rewards as opposed to only penalties surface as an important means of affecting compliance behavior. Falkinger and Walther (1991) introduce positive inducements into the Allingham–Sandmo model and show that a mixed strategy that includes rewards and sanctions is often superior to a pure penalty-based system. Ventry (2008) similarly argues that tax enforcement currently "relies too heavily on sticks and not enough on carrots." He views rewards for compliant taxpayers as a complement to penalties on the noncompliant, not simply a substitute. More generally Ventry makes the case for a more cooperative and constructive relationship between revenue authorities and taxpayers. There is nothing in

traditional models of criminal behavior and tax enforcement that would directly support such a cooperative approach to compliance and administration.

Incentivizing compliance through a reward structure will strike some as a peculiar means of getting taxpayers to do what they are obligated to do, similar to a bonus that is provided to a worker who shows up to work on time. But there is evidence that these rewards can enhance behavioral responses. Early evidence comes from the Blue Return–White Return system that was introduced in post-war Japan in 1950 at the recommendation of the Shoup Commission (Tanabe, 1973). Japan faced a dramatic need for revenue mobilization but dealt with taxpayers who had little in the way of formal books and records to support self-assessment of tax. A culture of compliance and honest self-assessment was lacking at the time which further compromised compliance. Taxpayers with proper books and records were allowed to submit Blue Returns that were accompanied by reduced sanctions and special provisions like loss carryforwards and carrybacks, and allowed deductions for family employees in order to facilitate separation of household from business finances. Taxpayers submitting White Returns were denied these same benefits. Importantly, audits of Blue Returns were confined to information maintained in regular books and records; audits of White Returns were subject to averages and standards akin to modern presumptive regimes. An important objective of auditing was to improve recordkeeping practices. With time there was substantial improvement in compliance and significant growth in the share of Blue Returns.

There are also more recent examples of positive incentives for compliance. For example, Tanzania and Pakistan have each implemented a carrot compliance model under the VAT whereby traders in good standing are given accelerated refunds (Foreign Investment Advisory Service, 2006). In Tanzania all VAT refunds are in principle to be provided within 30 days, while *Gold* and *Silver* status taxpayers – those with good compliance histories – receive expedited refunds. The classic penalty structure has not been abandoned. Those traders with compliance irregularities or with neither Gold nor Silver status are subject to audit prior to the granting of refunds. Like the Blue Return system in Japan, this approach encourages proper recordkeeping to support self-assessment and administrative enforcement.

Of course what matters most is what the tax administration does in practice and this can have an important bearing on taxpayer attitudes. The Foreign Investment Advisory Service notes that best-practice requirements for achieving Gold or Silver status are not transparent, which can create uncertainties and distrust, and thus potentially offset

any gains that might otherwise arise from the use of carrots. Manufacturing firms have noted that they are still required to provide verification for every VAT refund claim which renders the carrot (i.e., risk assessment) system largely ineffective and irrelevant.

A second and less obvious implication of prospect theory is that a series of small gains are preferred to a singular, aggregated gain, while an aggregated loss is preferred to a series of smaller, disaggregated losses (Krishna and Slemrod, 2003). Thus any incentives and rewards for compliance should be small (and salient) but spread out over time. The expedited VAT refunds noted above are consistent with this principle. Penalties and tax remittances, on the other hand, should be subject to aggregation rather than spread out across time. Unfortunately there is no direct empirical evidence to support such conjectures.

Salience has surfaced prominently in the new behavioral economics literature and requires transparency and meaningfulness in order for behavior to be affected by policies and other parameters. The enforcement/reward structure of the compliance regime, along with administrative procedures and provisions, must be clearly understood by taxpayers and have reasonably certain and significant consequences in order to be effective. This is not likely to be the case for many small enterprises that have tenuous and limited interactions with revenue authorities and other elements of the state's regulatory system. Many tax regimes allow rebuttable assessments that may diminish salience in the eyes of the taxpayer. More generally, corruption, bribes, and gross inefficiencies in tax administration in developing countries may cause the enforcement apparatus to be indirectly compromised.

Salience also suggests that voluntary remittance of tax must map visibly and significantly into public service provision and the safety and security offered by the state. Small, irregular tax remittances and presumptive or two-tiered tax systems may signal to taxpayers that their tax contributions are of inconsequential value to the state; taxpayers may also feel that they are of secondary value relative to other taxpayers. This argues for including small business enterprises into the regular system of taxation applied to larger firms. Of course, the benefits of feeling connected to an overall tax structure imposed on all business must be balanced against the administration and compliance costs associated with enforcing taxes on large numbers of small businesses. Indeed, a complicated general business tax structure may not be salient to many small firms, even if it is the same structure levied on larger firms.

The way in which tax payments are framed in the eyes of small enterprises may be portrayed as a form of price presentation as per the marketing research literature (Krishna and Slemrod, 2003) and can affect

the salience of taxation. For example, there is evidence that separately stating sales taxes and product prices leads to the perception of lower product prices (Chetty et al., 2009). Kamleitner et al. (2012) find that small businesses frame their tax payments as painful losses. It is possible that an indirect tax like the VAT, which one could argue is collected on behalf of consumers rather than taken from the income of the business enterprise, may lead to less mental distress than an income or presumptive tax that is perceived to be taken from the resources of the entrepreneur. Prospect theory and framing together may be arguments against presumptive tax regimes. As Krishna and Slemrod note, reductions in tax burden from some base are viewed as gains. Thus a tax that allowed for adjustments to the base to arrive at the tax burden – whether an income tax or VAT – may be preferred to a system that is framed as a lump sum burden that can only be reduced through an onerous rebuttal mechanism with the tax administration.

At a more general level are other-regarding preferences that may capture social norms and responsibilities, inequities in fiscal exchange and the political process, reciprocity and fairness. Unlike traditional neoclassical preference structures where utility depends on own characteristics like own leisure and own consumption, other-regarding preferences allow behaviors and outcomes of other agents to affect own utility and own behavior. One class of other-regarding preferences characterizes some goods as being positional or having status associated with their consumption, as with extravagant vacation homes (e.g., Ireland, 2001). A simple representation would be own consumption relative to mean consumption of society at large or some peer group such as co-workers or one's neighbors; an increase in own consumption relative to the mean would increase utility, while an increase in mean consumption with no increase in own consumption would diminish utility. The important implication of other-regarding preferences in the compliance context is that the behavior of others – taxpayers, tax administrators, the government at large and so on – can affect own wellbeing with no change in own behavior. At the same time, the behavior of others can induce changes in own behavior even absent changes in traditional parameters like own income, prices, tax rates and penalties.

The likely presence of other-regarding preferences poses both challenges and opportunities. The challenge arises from the greater complexity of the preference structure; opportunity arises through the possibility of a social multiplier whereby inducing positive changes in one's behavior can lead to positive changes in the behavior of others. Consider, for example, the notion of *positional compliance* where one's degree of tax compliance depends on mean compliance of society. Classical

enforcement activities that diminish the noncompliance of others may also serve to diminish own noncompliance.[8] Coolidge and Ilic (2009) survey informal firms in South Africa and find that those that are likely to move to the formal sector and register for tax perceive that other enterprises pay their taxes. Other policies that enhance compliance may have similar effects.

There is considerable evidence that various notions of fairness and the broad nature of the relationship between taxpayer and state have an important bearing on compliance behavior. Kirchler et al. (2010) emphasize the importance of a service-oriented attitude to tax enforcement that may help convey the fairness of the tax system and fiscal exchange with the state. Schnellenbach (2010) focuses on vertical reciprocity (taxpayer–state) and horizontal reciprocity (taxpayer–taxpayer) in affecting compliance. Alm, McClelland and Schultze (1999) use laboratory experiments to show that when higher enforcement parameters are rejected by voters, noncompliance grows pointing to the broad importance of social norms. Bird et al. (2007) find that tax effort in developing countries depends on the degree of corruption, public sector accountability and the efficacy of public institutions in supporting voice and participation. Richardson (2006) conducts a cross-country empirical analysis that points to the importance of fairness and tax morale in affecting aggregate compliance behavior.[9]

Nothing here is meant to suggest that the Allingham and Sandmo framework should be discarded. But there is a much broader social and political context within which self-interest is exercised and classic enforcement activities take place that must be recognized. Traditional enforcement, from simple interest charges to criminal sanctions, will remain important because we know that people are motivated by basic incentives and disincentives. But consideration should be given to mechanisms whereby rewards can be structured to induce and enhance compliance. This is easier said than done, especially in light of the paucity of guiding empirical evidence. More generally there should be increased recognition of and emphasis on social and political interactions that frame attitudes toward fairness and the quid pro quo between taxpayer and state. In this context attitudes are endogenous and will depend on the actions of agents of the state. Unfortunately, we know terribly little about how to change these attitudes and the costs that would be incurred in doing so. This is especially problematic if the only available resources are currently employed in the application of traditional enforcement activities.

TO PAY OR NOT TO PAY

Small enterprises must decide whether they want to opt out or stay in the tax system, participate partially with the tax system (e.g., register with tax authorities but underreport income/taxes or file irregularly) or fully opt into the tax system and thus the formal sector. As such the compliance decision of the firm can be viewed as a continuum ranging from no compliance (informality) to complete compliance (formality). The scope of participation will depend on a host of considerations that reflect the activities and objectives of the business enterprise and the nature of the state's tax and regulatory apparatus.

Two broad categories of possible incentives and disincentives to participate in the tax system are market considerations and public policies. Businesses that engage solely in illegal activity will generally choose not to participate, while those partially involved in illegal sector activities as well as above ground activities may have considerable incentive to comply (at least partially) in order to mask and launder some business activities. Such firms may generally choose to operate in the middle of the compliance continuum, paying all or much of what is due on legal activity and masking illegal sector activity through creative bookkeeping. It is entirely possible that the costs of being in the middle exceed the costs of complete informality or formality, but the returns to evasion may more than offset these costs.

Enterprises engaged in legitimate market activities face numerous incentives to formally participate in the tax system and register and file returns and reports, but there will generally be some temptation to underreport taxes. These incentives need to be highlighted in the eyes of fledgling taxpayers. Many businesses, especially businesses that have plans for growth, need access to formal capital markets and participation with the tax system may be a necessary antecedent to accessing financial capital. Access to public sector contracts will also hinge on participation with the tax system. (The incentive to contract with the state could easily be dampened or negated by corruption and rent seeking in the allocation of government service and acquisition contracts.) There may be other market incentives as well, for example the desire to use marketing techniques and advertising services that would otherwise possibly expose the firm and its activities to the revenue authorities.[10] Finally, depending on the product or service, consumers would likely prefer purchasing from legitimate enterprises in order to have the opportunity to return or exchange products and receive warranty service. This would be less important for the labor intensive services that many informal firms

provide to their customers, such as personal transport. Licensure may also be an important consideration to the extent that licensed sellers provide greater quality assurances.

Public policies may offer both incentives and disincentives to participate in the formal sector as a legitimate enterprise. For example, firms may want recourse to police and court services to protect their private property which provides an inducement to participation and some degree of compliance. A corrupt enforcement and legal system may fully compromise this incentive. Participation in the tax system will also expose a firm to the full regulatory and licensure apparatus of the state which could be costly. Corruption, ineptitude and administrative inefficiencies will increase these costs further. As with market-based incentives, taxpayers should be made aware of the public sector benefits that accrue from full participation in the formal sector.

The fiscal system imparts both direct and indirect influences on the choice to comply with the tax system. Presumptive tax regimes are used when observability is compromised or sharply constrained, as with small firms that rely on cash transactions. They are also intended to offer some relief from the compliance and tax burdens that would otherwise arise if firms were placed in the "regular" tax system. For example, Tanzania employs a presumptive tax system based on turnover where firms can pay a flat fee if they keep no formal accounts or a two-part tax (flat rate plus percentage) for those firms that keep records.

But regardless of how these presumptive systems are structured, they do entail some compliance cost and necessitate some payment of tax relative to completely opting out of the system. In many instances the tax burden may have little or no bearing on the taxes that might accrue from accurate self-assessment and reporting. In practice, the tax burdens of the presumptive regime can be relatively high and create a significant disincentive to market participation. For example, Stern and Barbour (2005) calculate marginal effective tax rates (METRs) for the presumptive and general tax regimes in South Africa, Zambia and Rwanda. In each case they find that the presumptive regime leads to substantially higher marginal tax rates.

While these presumptive tax regimes can represent an impediment to formality, they offer some encouragement for firms to grow and move to the general system of taxation. But there is an important question as to whether they nurture desired behavior, in particular the cultivation of formal records and books that can support tax compliance and also facilitate business management. It appears that presumptive taxation is used as a stopgap measure to generate revenue and provide some degree

of a level playing field relative to larger and better-established enterprises. If these systems are used, they should be structured to achieve longer-term policy objectives including accurate recordkeeping.

Small traders' participation in the VAT regime in most countries may be precluded by sales thresholds. The World Bank and International Finance Corporation (2007) reports that small enterprises in South Africa confront very high marginal effective tax rates (METRs) on their capital expenditures because of their inability to receive relief on input purchases. Of course the same enterprises are not required to charge VAT on their sales so the net tax impact will depend on the profile of the firm in question. Compliance costs are relatively high for smaller businesses because of fixed costs of compliance (including the need to keep formal books and accounting statements) and the small volume of trade. Compliance costs and the competitive advantage from not charging VAT on sales may together be substantial and provide significant encouragement to noncompliance.

For fully-qualified traders the VAT offers relief on input purchases, but compliance with the VAT also reduces opportunities for additional sales and market penetration via undercutting the tax-inclusive price charged by other traders. This would be especially true of retailers making sales to final consumers. Traders in the middle of the supply chain would likely have fewer opportunities to engage in this behavior since other firms would want access to the full value of credits on purchases.

FOSTERING COMPLIANCE THROUGH TAX ADMINISTRATION

Research over the past four decades evidences the importance of tax administrators viewing and structuring their role and approaches based on a broader perspective of the incentives and goals for paying taxes than is seen in the Allingham and Sandmo model. Tax administrators must also be evaluated using a much broader set of goals than simply a revenue generator if taxes are expected to be a major tool for linking taxpayers to the state. The goals, which include collecting revenues, limiting administration and compliance costs, and building linkages to the state, must be recognized when incentives are created for taxpayers and when tax administrations are evaluated.[11] This will require creation of a new culture within governing bodies and the tax administration and will require new models of training for administrative personnel, especially those with direct interactions with taxpayers.

Expanding Expectations for Tax Administrations

The more complicated incentives and goals significantly raise the challenges for tax administrators but also the mechanism for evaluating their performance. Establishing tax administrations that meet such extensive expectations is especially difficult in countries where taxes are collected at both the national and subnational levels, which is common for at least some taxes. Thus, many, not just one tax administration must envision their responsibilities more broadly and must become service oriented and client friendly. The importance of also building effective local administrations is magnified because local taxes likely impose the greater compliance burden (at least relative to revenues collected) because many small tax instruments are often levied (World Bank and International Finance Corporation, 2007). While the burden of each instrument may be modest, the collective burden across a number of small taxes can be substantial.

Responsibility for achieving broad goals for taxation must be seen even more inclusively than just the tax administrations if government accountability, transparency and fairness are driving forces behind achieving the goals of taxation. Essentially all ministries, and certainly those involved in regulation, have a role in building an environment that encourages taxpayer compliance. Simply put, good government and constituent responsiveness are factors in determining willingness to pay and to be part of the formal sector. The tax administration cannot be expected to fully offset perverse effects of onerous regulatory environments and bad government. Thus, performance of the tax administration should be evaluated in the context of the overall context where it operates.

Still, a highly professional tax administration is a key aspect to motivating compliance. A combination of properly designed carrots and sticks is appropriate, but many other tools must be in the administration's toolbox. Some of these tools can be exercised at the discretion of the tax administration and others are dependent on enabling legislation. Strong enforcement of the tax regime across a wide array of taxpayers, or at least the perception of enforcement, is essential to accounting for other-regarding preferences and to enhancing voluntary and non-confrontational willingness to pay tax. Salience is essential, which means an understandable tax code, good taxpayer information and low corruption, and ideally some clear connection between the payment of taxes and the services received from government. The bottom line is that a skilled, professional tax administration is integral to small firms becoming part of

the formal economy and paying taxes. Sticks will ensure some compliance, but likely far short of a broader conception of how to bring small business into the formal sector including the tax regime.

Importance of Low Compliance Costs

Both the compliance and tax burden costs must be kept low if small firms are to be expected to join the formal sector. Many countries, perhaps inadvertently, fail particularly when it comes to maintaining low compliance costs. The number and complexity of taxes at both the national and subnational levels are important determinants of small business compliance costs and the broader costs of joining the formal sector. For example, Everest-Phillips (2008) reports that local governments impose 1500 different taxes in Yemen, which makes the burden of knowing which apply a significant cost before complying with the ones that are imposed on a particular firm. It is important to remember that the entire set of taxes and not just the taxes that are specifically intended as levies on business (i.e., the VAT) can burden small firms.[12] Businesses perform much of the compliance for individual taxpayers in many cases, such as with the sales and excise taxes and the VAT. All of these entail significant compliance costs that are seldom reimbursed by government.[13]

Compliance costs encompass monetary, time, and psychological elements and all of these must be considered by the tax administration (World Bank and International Finance Corporation, 2007) because they reflect the social cost of the tax system. The time taken to file returns, react to frequent legislated changes in tax structure and provide information for multiple audits are factors that rank high in surveys on factors that create compliance costs. The evidence suggests that these costs are relatively greater for small firms than for larger ones, and particularly in the case of the VAT. The fixed costs associated with complying with multiple tax instruments can be expected to be especially onerous for small firms.

A multitude of different taxes, each generating small amounts of revenue and imposing unique compliance burdens, may cause taxpayers to question the efficacy of the state. In practice each of these taxes may represent an important source of revenue mobilization in developing countries. But firms paying these same taxes may not see the connection between tax payment and the provision of services. It may be better to consolidate tax instruments and use other means (such as earmarking or formula allocation) to fund programs that might otherwise be funded by a series of small levies. This approach may also produce resource savings in tax administration.

Principal–Agent Concerns

Enforcement of the tax regime must also recognize that tax administrations are not merely faceless organizations staffed by people who collect government revenues but institutions with their own incentives and agendas. Principal–agent problems can arise in tax administrations just as in most other institutions. In part, tax administrations will respond to the incentives placed before them and they have traditionally been evaluated and rewarded based on the revenues they collect, including arrears and penalties. A simple evaluation of effectiveness based on revenue generation lessens the motivations for drawing small firms, many of which will generate little if any tax revenue in the short term, into the formal tax system. Tax administrations also will be inclined to ignore compliance costs if tax revenues are all that matter. Thus, tax administrations must be confronted with a broader set of incentives if they are to play an important role in creating intrinsic motivations and undertaking nation building as well as the everyday responsibilities of operating the tax system. Similarly, incentives facing individual tax collectors must be brought in line with the broader expectations for the organization. Issues such as corruption and graft in imposition of taxes on small business must be addressed and countered.

The principal–agent problem can be aggravated in at least two ways. The first is when regional or local governments serve as the collection arm of the national government. This form of government tax farming – which is a complicated extension of vertical reciprocity – can naturally create tensions between the local tax collector and local firms, as well as the central government body overseeing the tax. A second problem can arise when local tax collectors charged with collecting local or regional taxes are spatially distant from supervisory agents in the local tax administration. There may be inherent tensions in such contexts that are difficult to overcome in practice. Similar principal–agent problems can arise when national officials are located far from the capital and regional managers.

Failure to broaden the tax base to small business likely means higher tax burdens on larger formal sector firms if revenue goals are to be met. Economic growth will be hampered by the higher effective rates on large firms but also the higher rates will discourage firms from expanding and joining the formal sector. Strong economic growth almost surely relies on rapid increases in the number and size of small enterprises so it is important to encourage their development and expansion – this is not to suggest that small firms should be free of tax. Research has tended to find that the formal sector is more productive and grows faster than the

informal sector (Palmade, 2005), evidencing the importance of drawing small firms into the formal economy. Small firms often understand the benefits of being in the formal versus the informal sector, including avoiding corruption and payments to remain informal, which goes to the heart of the tax administration (Everest-Phillips, 2008). The tax administration can go far by facilitating entry to the formal sector as it provides information on how to comply with regulations, taxes, and other aspects of the formal sector. This broader facilitation role must be recognized by the tax administration and supported by education and training programs that can nurture firms into compliance.

IMPLICATIONS

We return here to the question posed in the introduction: Should developing countries seek to tax small enterprises? Our first response is to waffle and say "it depends." In fact it does depend. For example, if revenue administration is of sufficiently poor quality, then there is no reason to divert resources to administration of tax on a new, much larger set of taxpayers. The discussion of taxpayers' motivations presented above evidences that behavior by the tax authorities and legislated tax structure each have important implications for the incentives and motivations that prompt taxpayer compliance. Poor administration of tax could conceivably do more damage than good since it lessens the potential to collect from more lucrative taxpayers without providing a positive relationship with government and incentives to formalize the business entity. If the decision to tax the small is made, this decision must be predicated on a careful cost–benefit calculus that yields well-defined goals, objectives and ultimately policies associated with administration and the evaluation of administrative personnel. A well-articulated plan for meeting these goals must be in place for meeting the goals.

Our discussion above suggests that small firms should be part of the same common tax structure applied to larger firms, though some adjustments could be possible such as semi-annual rather than monthly tax returns if dictated by cost considerations. A small or no threshold for VAT taxpayers is also indicated, though this varies from the recommended practice by the IMF which is a relatively high threshold.[14] Further, imposition of taxes that appear to offer some benefits, such as a VAT that permits credits for VAT implicit in inputs and capital purchases, appears to be more consistent with encouraging compliance than an additive income-based or presumptive tax. Taxing the small has considerable merit in terms of promoting tax fairness and helping integrate

firms into the formal sector of the economy. A simplified version of a VAT, along with effective protocols to guide tax administrators and their relationship with taxpayers, can help small firms transition to compliance with the regular VAT regime. By easing taxpayers into the regular VAT system, one avoids the need to administer two parallel but disparate systems of taxation. Fledgling taxpayers may also perceive this phased-in integration as a source of horizontal reciprocity by means of treating them like other taxpayers: they are part of the same system that other businesses operate in and there should be no stigma associated with being "small" and subject to a separate and potentially pejorative presumptive system of taxation.

The design, implementation and administration of tax should be framed by the lessons emerging from the new field of behavioral economics. Generally there must be a recognition that psychological and social influences can vary substantially both across and within countries. Thus there is no single solution that could be applied generally across developing countries. Tax rates and revenue collection by small businesses will always give rise to incentives for noncompliance. Similarly, traditional sticks like costly audits and penalties can be effective in combating noncompliance. But a broader view is needed that recognizes that the fiscal exchange between taxpayers and state defines the nature of the effective social contract and thus the path of nation building. This social contract could conceivably be harmed by an inefficient, arbitrary and corrupt administrative apparatus, with implications for small traders but also society at large. It is also possible that the treatment of small traders, especially those transitioning from informality to formality, can yield direct benefits to the social contract as well as spillovers to others. In the end it is the will to tax *and* the will to do so in a fair and equitable fashion that may offer the long-term promise of better revenue mobilization in developing countries and a more effective state. Marginal analysis suggests that initial small business tax reforms should focus on firms (or types of firms) that would benefit most from being part of the formal sector because they need financing or access to broader markets (Everest-Phillips, 2008). The tax structure and administration could begin by identifying these firms (perhaps by industry) and placing the greatest focus on bringing them into an efficient tax system that does not impose overly burdensome compliance or tax costs. A lower priority could be placed on working with other industries.

Unintended consequences should receive careful consideration in small business tax policy. Agents will respond to the motivations created for them, and the structure of the tax system and administrative practices each create incentives. For example, the policy and practice of taxing

large and small businesses should not and cannot be separated. Thresholds, lower rates, exemptions and other policies that limit or prevent taxation of small firms can change behavior of large firms (for example, organizing as a series of small firms), or prevent firms from wanting to become large. Either can entail a loss in economic activity or tax revenues. Thus, any deviation in the tax structure between small and large firms should be limited to areas that are least likely to be distorting. The World Bank and International Finance Corporation (2007) argues for presumptive taxes that are expected to bring in modest revenues but that get firms connected to the formal sector or preferred depreciation schedules with loss carryforwards that limit tax burdens for some small businesses in their introductory years. However, presumptive taxes work against other types of motivations created for small taxpayers. The World Bank argues against tax holidays that are more likely to be abused and we concur.

Similarly, aggressive third-party information sharing to enhance tax administration may harm formalization of the economy. For example, the use of information from the banking system to identify and collect tax from small firms may discourage use of the banking system as countries are seeking to expand formal financial sector activity.

Changes in culture and resource allocation will ultimately be needed to achieve the broader social objectives of taxation in developing countries. This will not be easy to do in practice in part because of the long-term view and payoff period for policy changes. In the meantime, tax compliance will likely remain a game of cat and mouse between the tax administration and taxpayers. But there will be opportunities to change the course of tax administration and these opportunities need to be pursued and evaluated for their effectiveness. We know that taxes and penalties create incentives that taxpayers respond to. At the same time we know very little about how a kinder, more behavioral approach to tax administration can affect revenues and the broader goals of tax policy.

NOTES

1. The smallest firms frequently rely heavily on the labor of the entrepreneur and her family.
2. We are not suggesting that all small firms are new. The most successful small firms become large and the least successful go out of business leaving a set of new and stable small firms.
3. Jolls et al. (1998) note (p. 1546) that "Some predictions of the standard model are simply wrong. For example, people can be both more spiteful and more cooperative than the traditional analysis predicts".

4. Jolls et al. (1998) provide a general discussion of neoclassical and behavioral models of law and economics. Alm (2010) applies behavioral economics to the field of public economics, including tax compliance. Also see the collection of essays in Alm, Martinez-Vazquez and Torgler (2010).
5. Everest-Phillips (2008) indicates that analysis of business taxes has focused on compliance costs and efficiency with little consideration of the underlying motivations and the broader willingness of firms to pay.
6. For a review, see Camerer et al. (2004).
7. In addition to the general review of behavioral economics by Camerer at al. (2004), see McCaffrey and Slemrod (2006) for a more focused discussion of behavioral public finance.
8. In practice it may be impossible to distinguish between enhanced compliance arising from other-regarding preferences and improved compliance from an enhanced enforcement regime.
9. Torgler (2002) provides a survey of the literature on the influence of tax morale and social norms on tax compliance. Also see Alm (2010) for a review of tax compliance experiments that point to the importance of social norms in affecting behavior.
10. See World Bank and International Finance Corporation (2007) for further discussion of advantages and disadvantages to compliance.
11. It is common for the tax code to be used to pursue additional social policy objectives, especially in developed countries. Taxpayers may incorrectly attribute the pursuit of these objectives to the tax administration while in reality their source lies with the legislative and/or executive branches of government. The role of the tax administration in these contexts can also be expected to shape taxpayer linkages to the state.
12. Annual studies by Ernst & Young (2012) for the Council on State Taxation have estimated that over 90 percent of state and local taxes paid by business in the US come from taxes other than the primary specific tax on business, the state corporate income tax. Most are taxes intended to be levied broadly on people and business, such as the property and sales taxes and excises on oil and gasoline.
13. A number of US states compensate vendors for some compliance costs associated with the sales tax.
14. LeJeune (2011) observes that EU countries have adopted relatively low thresholds, ranging from €0 to €80,000. Thresholds tend to be higher in countries that have recently adopted the VAT, such as Singapore that has a €540,000 threshold. Current practice suggests that countries may want to adopt a larger threshold but with a goal of bringing small firms into the VAT as administrative practices develop.

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7. Taxation and inequality in the Americas: Changing the fiscal contract?

Richard M. Bird and Eric M. Zolt

> There is a tide in the affairs of men
> Which, taken at the flood, leads on to fortune,
> Omitted, all the voyage of their life
> Is bound in shallows and in miseries.
>
> (Shakespeare, Julius Caesar, 4: 218–222)

Times change. In the words of an old English ballad, some things seem to have "turned upside down" in recent years. Since 2000, Latin America has become less unequal, with lower levels of poverty and likely greater economic mobility (Lustig, Lopez-Calva and Ortiz-Juarez 2012), assisted in part by more progressive fiscal policy (Mahon 2012). In contrast, the United States has become more unequal (Piketty and Saez 2003, 2013), while poverty has remained relatively constant (US Census Bureau 2012), economic mobility has likely declined (Hungerford 2008), and tax and spending policies have become less effective in reducing inequality (Harris and Sammartino 2011).

This chapter examines whether the tide has really changed in Latin America or in the United States, and, if it has, what may lie ahead for these two regions of the Americas? Do recent events portend fortune or misery? Although the primary cause of the more equal income distribution in Latin America is probably the sharp increase in growth and employment following the challenging political and economic decade of the 1990s (Gasparini and Lustig 2011), fiscal policy played at least some role. Indeed, recent Latin American experience suggests that the pessimism prevalent since the 1970s about the extent to which taxation can affect income distribution has perhaps been misguided. Economic, social and political changes can and do give rise to new norms and power configurations, which sometimes result in important changes in the social and fiscal contracts underlying governance structures.

SETTING THE STAGE

As a region, Latin America has long led the world in terms of income inequality (Blofeld 2011). Latin American fiscal policy, especially tax policy, did little to remedy this state of affairs (Mahon 2011). In contrast, the United States has been viewed not only as a land of opportunity, where hard work, thrift and personal responsibility lead to economic reward, but also as a country in which taxes are more progressive than in most other countries. The story of development in the Americas over the last century seems broadly to support this tale, with regions with higher levels of inequality adopting fiscal policies that result in lower tax revenues and lower levels of social spending than regions with lower levels of inequality (Sokoloff and Zolt 2006). From time to time, however, divergences from these broad trends have occurred. One such divergence has been in the last decade or so.

Although experiences in Latin America have been as varied as the countries of the region, Lopez-Calva and Lustig (2010) show that the story of recent developments is both economic and political. Economic growth has produced more jobs and better jobs, and hence a less unequal pre-tax (market-generated) distribution of income, with an expanding middle class and an increasing income tax base.[1] Although taxes have not become much more progressive, in some countries transfers have resulted in poverty being reduced in both relative and absolute terms.[2] While no Latin American country has yet managed to tax the rich very effectively and the long-term sustainability of recent trends is far from certain, these recent trends are very different than those widely predicted only a few years ago.

The story in the United States over the same time period also differs from the long-term picture set forth above. Recent economic developments have resulted in increased inequality, no reduction in poverty levels, and increased vulnerability for the middle class. Although federal income tax rates have been reduced for everyone (especially the middle class and the poor), the top quintile (especially the top 1 percent) has become so wealthy that the share of tax revenues from personal income taxes remains high (OECD 2012) and the total federal tax burden has been relatively constant over the last 60 years, averaging around 18 percent of GDP (JCT 2012). On the other side of the budget, although levels of social spending have increased, a greater proportion is going to the elderly (without regard to need) than to the poor (Harris and Sammartino 2011). There is also concern about a shrinking and declining middle class. A recent study notes that since 2000, "the middle class has

shrunk in size, fallen backward in income and wealth, and shed some –
but by no means all – of its characteristic faith in the future" (Pew
Research Center 2012).[3] From a high of \$152,950 in 2007, median
household wealth in the United States fell to \$93,150 in 2010, up only
slightly from the 1983 level of \$91,506 (Pew Center 2012).

One lesson that emerges from both these cases is that government tax
and spending policies continue to be important factors affecting inequal-
ity. Prominent experts take widely divergent views on what the effects of
current policies, or potential changes in policy, might be for different
countries. Compare, for example, two recent reviews of the Mirrlees et
al. (2011) report on the reform of the British tax system. Except for a few
surprisingly positive words supporting wealth taxes, Feldstein (2012),
clearly thinking mainly of the American case, emphasizes what might be
called the "new economic orthodoxy" of the costs of taxation in terms of
growth, as well as taxation's ineffectiveness as a redistributive tool.[4] On
the other hand, Atkinson (2012), writing from a British perspective,
provides a much more nuanced and comprehensive view of the nature
and impact of appropriate tax policy in a modern democracy. This
broader approach is more helpful in understanding recent fiscal develop-
ments in many Latin American countries, and may also have something
to contribute to the ongoing debates in the United States.[5]

The question of the effects of tax policies in the United States and
Latin America on inequality is particularly interesting because of the
contrast between the tax systems of the two regions. The United States
has long been a country that relies heavily on personal income taxes to
finance the federal government; it is also one of the few countries in the
world to have no national general sales tax. In contrast, Latin America
has long relied on consumption taxes (particularly the value-added tax
(VAT) and excise taxes) and most countries make very little use of
personal income taxes. Whether either region can maintain these patterns
in the face of recent changes in inequality is uncertain.

Is the United States becoming more like Latin America? The increas-
ing concentration of income at the top, persistent levels of poverty,
declining economic mobility, and declining public services may suggest
that the answer is "yes." Inequality has reached levels not seen since the
1920s, and the gap between the haves and the have-nots with respect to
equality of opportunities for quality education and academic achievement
continues to grow (Reardon 2011). Fiscal challenges and tax competition
may, in the end, break the United States' heavy dependence on the
federal personal income tax and result in the introduction of a VAT or
some other type of broad-based consumption tax. However, whatever
happens in the next decade or so, the United States will not morph into

Sweden. The size of government is unlikely to expand greatly, and the federal tax system is likely to continue to be dominated by the personal income tax, even if some form of a VAT is adopted.

Is Latin America likely to emulate the United States in following the small government model with relatively low levels of public social spending? Or will different countries in the region go different ways, with some continuing to be relatively small welfare states (such as Mexico) and others moving over time to a more European approach with relatively larger welfare states (such as Brazil)? Even countries that follow the first approach may nonetheless continue to expand their social spending, in part for political stability reasons. However, any such expansion of the public sector will likely be financed mainly by the VAT rather than the personal income tax. Countries that follow the European model are also likely to rely most heavily on the VAT, although increasingly supported by revenues from a more robust income tax system.[6] In both cases, most new tax revenue will have to come from not only the wealthy, but also the increasingly important middle class. To be able to implement and sustain such tax changes, countries may have to strengthen the "Wicksellian connection" between taxes and spending (Breton 1996) by matching tax increases to more universalist social programs encompassing a broader swathe of society, as opposed to the targeted (poverty-oriented) conditional cash programs recently adopted in both Brazil and Mexico.

INEQUALITY, POVERTY, AND ECONOMIC MOBILITY

Countries differ in the priorities attached to such related but distinct objectives as reducing inequality, reducing poverty, and increasing economic mobility (Zolt 2013). Moreover, such priorities may change over time. In this and the next section, we present a brief summary of the complex story of the interplay between taxation and inequality in the Americas. We focus largely on the extent and ways in which taxes affect redistribution between three groups: the 'rich' (the top end of the income distribution, defined differently in different contexts depending largely on the data), the 'poor' (the bottom 40 percent or so) and the huge and varied group in between these extremes that we call, for want of a better word, 'the middle.'[7]

The Distribution of Income

The most common summary measure of income inequality is the Gini coefficient, with a higher number representing greater inequality. Table 7.1 shows Gini coefficients for income inequality for the last 40 years for five major countries in Latin America, as well as for the United States and Canada.[8] Income distribution clearly remains far more unequal south of the border. Over the last 40 years, however, the average Gini coefficient rose by only about 4 percent in the five Latin American countries compared with a much greater increase in inequality in North America (12 percent). Especially striking is the decline in the Gini coefficients in the Latin American countries from an average of .56 in 2000 to .52 at the end of the decade, compared with the continued increase in the Gini coefficient for the United States over the same period. As Lustig, Lopez-Calva and Ortiz-Juarez (2012) report for Latin America as a whole, the unweighted regional Gini coefficient (for household per capita income) declined from .53 in the late 1990s to .50 in 2010, with 12 of the 17 countries for which reasonably comparable data are available showing a statistically significant decline.[9]

Table 7.1   The distribution of income: Gini coefficients

Country	1970	1980	1990	2000	2010
Argentina	0.36	0.41	0.50	0.54	0.51
Brazil	0.58	0.60	0.63	0.64	0.56
Colombia	0.43	0.53	0.53	0.57	0.56
Mexico	0.54	0.50	0.54	0.54	0.49
Peru	0.56	0.57	0.51	0.53	0.46
United States	0.32	0.34	0.35	0.36	0.38
Canada	0.30	0.30	0.29	0.32	0.32

Sources: For Latin America: Gini coefficients for earlier years from WIDER http://www. wider.unu.edu/research/Database/en_GB/wiid/ and since 1990 from CEPAL http://websie. eclac.cl/sisgen/ConsultaIntegrada.asp; coefficient shown is for year nearest date indicated and coverage varies from country to country (e.g., only urban sector for Argentina). For North America: Gini coefficients from stats.oecd.org (for mid-decade in 1970s and 1980s and for late 2000s for last column). (Although every effort has been made to make the data as comparable in coverage, concept and year as possible, there are wide variations from country to country and over time even within particular countries. Details of data concepts and sources may be found in the sources indicated.)

There are many different ways to measure income inequality. Table 7.2 sets out several different measures of changes in income distribution in Latin America over the last two decades. Over this period, the share of income going to the top 10 percent of the population declined sharply in Brazil, Mexico and Peru, but remained almost unchanged in Argentina and increased in Colombia. While the ratio of per capita income in the top decile to that in the bottom four deciles rose slightly in Argentina and Colombia, it declined significantly in the other three countries. Finally, in all five countries the share of the population living below the poverty line declined sharply. In summary, it seems clear that on the whole, income inequality and especially poverty decreased sharply in recent years, particularly in Brazil, Mexico and Peru. This is also true for Argentina and Colombia, at least in terms of poverty reduction.

Table 7.2   Income inequality and poverty in Latin America, 1990–2010

Country and year	Share of personal income going to top decile	Ratio of per capita income in top decile to that in bottom 40 percent	Share of population living below poverty line
Argentina 1990	39.4	13.5	16.1
2000	42.8	16.6	23.7
2010	39.8	15.1	8.6
Brazil 1990	50.6	31.2	48.0
2000	53.0	31.9	37.5
2010	45.0	21.1	24.9
Colombia 1990	42.6	16.7	56.1
2000	46.4	22.3	54.9
2010	44.0	20.1	37.3
Mexico 1990	43.8	17.2	47.7
2000	43.2	17.9	41.1
2010	37.4	12.8	36.3
Peru 1990	n.a	n.a.	n.a.
2000	43.6	19.5	48.6
2010	34.6	11.4	31.3
Average Change 2010/1990	−8.8%	+2.4%	−33.7%

Source: CEPAL http://websie.eclac.cl/sisgen/ConsultaIntegrada.asp; Argentina for urban only; for years closest to those indicated. (As indicated for Table 7.1, although we have tried to

be as comparable as possible over both countries and time, at best this table should be considered only an approximation, and other numbers may often be found in other sources for what seem to be the same concept: for more detailed information on the data, see the source cited.)

In contrast, in the United States, between 1979 and 2007, households at the very top of the income distribution experienced by far the largest gains in both relative and absolute income, with the pre-tax income of the top 1 percent almost tripling in this period (Harris and Sammartino 2011). Over the last three decades, the income of households in the top quintile (not including the top 1 percent) increased by 65 percent, while income growth was 40 percent for the middle three quintiles and only 18 percent for the lowest quintile. In other words, the rich got richer, and the middle class and the poor, while better off in absolute terms, became relatively worse off. In contrast, in the five Latin American countries over the last two decades, the share of the top decile decreased by 9 percent, the share of the second and third quintiles increased by 6 percent, and the share of the bottom 40 percent (the poor) increased by 9 percent.[10]

While growing income inequality is troubling, even more disturbing may be the high levels of wealth inequality in the United States. In all countries, wealth is more concentrated than income (Wolff 1996). Over the last 50 years, the Gini coefficient for wealth distribution in the United States has increased from .80 in 1962 to .87 in 2010 (Wolff 2012).[11] While wealth distribution data are even harder to assemble and compare than income distribution data, as Table 7.3 shows, the Gini coefficient for wealth distribution in 2000 was even higher in the United States than in the three Latin American countries for which data were available, and markedly higher than that in Canada.[12]

Table 7.3   The distribution of wealth: Gini coefficients, 2000

Country	Gini
Argentina	0.74
Brazil	0.76
Mexico	0.78
United States	0.80
Canada	0.69

Source: Estimates based on purchasing power parity exchange rates from Davies et al. (2008).

Intra-generational and Inter-generational Economic Mobility

Income equality appears to be linked to social mobility largely through its effects on the extent to which people have equal access to opportunities for improvement rather than on its direct effects on individual effort (Brunori, Ferreira, and Peragine 2013). There are two major approaches to examining economic mobility. Intra-generational mobility focuses on the individual to determine how much his or her absolute or relative position has improved over time compared with the general population. Inter-generational mobility measures seek to estimate how much of a child's income can be attributable to his or her parent's income.

Ferreira et al. (2013) find that the impressive change in income distribution in Latin America over the last decade or so has resulted in a substantial expansion of the middle class (which they define as those with income, at purchasing power parity exchange rates, of between US$10 and US$50 per person per day) from 20 to 30 percent of the population. Although an annual per capita income of $3650 may not sound like much to North Americans, Ferreira et al. (2013) suggest that it is sufficient to provide both a basic middle class standard of living and some degree of resilience to economic shocks. The fact that the fraction of the regional population reaching this level increased by 50 percent in little more than a decade is a remarkable achievement. Of course, there are still a great many poor people in Latin America; 68 percent of the regional population lived below the middle class level (as defined above) in 2009 compared with about 78 percent in 1995. And 30 percent were still classified as poor (with incomes of less than US$4 per day) in 2009 compared with 44 percent in 1995. Few people move from poverty to middle class within a few years. Most who exited the 'poor' category instead moved into what Ferreira et al. (2013) call the 'vulnerable' class, with an income between $4 and $10 a day, an amount that is decidedly better than poverty but not enough for comfort.

This vulnerable group (which grew from 34 percent in 1995 to 38 percent in 2009) is now the largest group in Latin America. Although the absolute size of the vulnerable group has remained relatively constant, its composition changed substantially over this period, as many who were vulnerable 15 years ago moved to the middle class and were replaced by others who were formerly poor.

Ferreira et al. (2013) thus document a surprising degree of intra-generational income mobility in Latin America in recent years. However, Table 7.4 suggests that inter-generational income mobility, as defined by the incomes of children compared with those of their parents, has not experienced the same change: inter-generational mobility remains

Table 7.4   Economic mobility across generations

Country	Inter-generational elasticity of earnings
Argentina	0.49
Brazil	0.58
Chile	0.52
Peru	0.67
United States	0.47
Canada	0.19

Note: The number reported is the 'inter-generational elasticity of earnings' as measured by the percentage difference in the share of the child's earning associated with the percentage difference in the parent's earnings from Corak (2012).

considerably less in Peru and Brazil than in the United States, although the gap between Argentina and the United States is smaller.[13] While a few European countries, such as the United Kingdom and Italy, have economic mobility levels comparable with that of the United States, most European countries have inter-generational income mobility levels much closer to Canada than to either the United States or Latin America (Corak 2012). The higher the inter-generational income elasticity, the more likely it is that the children of high-income parents will also have higher incomes. For example, in Peru, if one father makes 100 percent more than another, then the son of the first is likely to earn about 70 percent more than the son of the second. In the US (and Argentina), the son of the richer parent is likely to earn about 50 percent more, and in Canada (and northern Europe), the son of the richer parent will earn only 20 percent more.

To sum up, the degree of economic mobility in Latin America and the United States, at least when measured in these terms, appears to be substantially less than economic mobility in either Canada or Europe. American "exceptionalism" in terms of actual levels of economic mobility may be substantially less than perceived levels.

Access to quality education is a major factor in explaining differences in economic mobility across generations and among countries. Here, the United States and Latin America have had historically different traditions in providing public education, with the United States being a world leader in providing first common school and later high school and university education (Goldin and Katz 2008), and Latin American countries long being less willing to support public education (Engerman and Sokoloff 2001). In recent years, the academic achievement gap

between the rich and the poor in the United States has widened substantially (Reardon 2011). In contrast, some Latin American countries, although still notably unequal in terms of access to quality education, have made substantial progress in improving the position and educational attainment of previously disadvantaged groups (OECD 2012c), as well as in improving the quality of education by international standards.[14] These developments, if continued, will lead to a decrease in economic mobility in the United States and an increase in economic mobility in Latin America.

THE IMPACT OF THE FISCAL SYSTEM

Although income in Latin America remains highly unequally distributed, there has been considerable improvement in a remarkably short time. Although two-thirds of this improvement, and three-quarters of the rise of the middle class (as defined in Ferreira et al. 2013), is attributable to the rise in average incomes with economic growth rather than to the decline of income inequality, explicit redistributive policies, especially the expansion of more targeted social spending, were important in several Latin American countries.

Social Spending

Table 7.5 highlights the substantial increase in social spending in Latin America in recent years.[15] Much of the increase is attributable to increases in social security spending (most notably in Colombia and Mexico). Perhaps surprisingly, despite the apparently improving outcomes in education mentioned earlier, the share of social spending going to education actually declined in many Latin American countries. This decline may not have had a particularly adverse effect on inequality because a large portion of public educational spending in many countries primarily benefits higher income groups due to the combination of free (or low cost) tertiary education with the much higher percentage of largely privately educated higher-income children qualifying for university education. On the other hand, Canavire-Bacarreza, Martinez-Vazquez and Vulovic (2012) estimate that increased public expenditure on education may not only increase economic growth but significantly reduce income inequality.

Table 7.5   Social spending in Latin America, selected years, 1990–2008 (as percent GDP)

Country	1990	2008	Percentage increase over period	Education as percent social spending 2008	Social security as percent social spending 2008
Argentina	18.6	24.0	29	24.9	46.1
Brazil	17.6	24.8	41	21.9	51.6
Colombia	6.4	12.6	97	22.3	55.8
Mexico	5.5	10.0	82	35.6	26.4
Peru	4.0	8.7	118	32.1	35.1

Notes: Data from http://websie.eclac.cl/sisgen/ConsultaIntegrada.asp. Central government only for Colombia and Peru. Figures for Mexico are probably underestimated owing to difficulty in estimating some subnational expenditures. Social spending includes public sector expenditure on education, health and nutrition, social security, employment, social welfare, housing, and water and sewerage.

On the whole, social spending appears to have contributed to reducing income inequality in Latin America in recent years. In Brazil and Mexico, for example, cash transfer policies accounted for about 20 percent of the decline in inequality (Ferreira et al. 2013), while in Colombia an educational voucher scheme allowing students from poorer families to attend better schools appears to have had significant effects in improving educational outcomes (Angrist et al. 2002). Other studies in both Colombia and Chile summarized in Ferreira et al. (2013) demonstrate the possible gains from such innovations and reinforce the notion that one important way forward for Latin America may lie in reducing the fragmentation of the existing social contract by increasing the inclusivity of such key public institutions as schools.

An important outcome of extending and improving the quantity and quality of such critical public services may be to encourage the expanding middle class to buy into the expansion of the state sector rather than following the well-established path of the wealthy and opting out. An important factor explaining Latin America's historically high degree of inequality has been persistent inequity in access to education combined with poorly designed public social insurance transfers (de Ferranti et al. 2004). Better educational opportunities for the children of the emerging middle class was one of the main drivers in building local and state capacity in North America in the 19th and the first half of the 20th century (Sokoloff and Zolt 2006). Especially in regions with greater

equality, local governments were successful in expanding their fiscal base to provide more and better local goods and services. In Latin America, however, the wealthy have long avoided public health and education services in favor of costlier, yet higher quality private services. Using the terms made familiar by Hirschman (1970), this "exit" of much of the politically articulate population from public services has, importantly, meant that their "voice" has not been heard with respect to the need for improving public services. However, with greater prosperity, more democracy, and increased decentralization (Brosio and Jimenez 2012), it may now be possible in some countries to establish a similar link between what people are willing to pay for and what they receive from the public sector.

Most Latin American countries supply some important services at two levels – private and public – for education, as mentioned above, and at three levels – private, social security, and public – for health, with public provision clearly being at the lower end of the quality spectrum in both types of services. Social security in much of Latin America, as in the United States, is concerned as much or more with financing health care as with financing government-provided pensions.[16] Some countries in Latin America, such as Argentina, Brazil and Chile, introduced traditional compulsory social insurance schemes financed by payroll taxes even before World War II, like the United States. Others, including Colombia, Mexico, and Peru, followed in the 1950s, with latecomers like most of the Central American countries adopting social insurance programs in the 1960s and 1970s (Mesa-Lago 2008). The coverage and benefits of these schemes varies considerably from country to country, but in all cases, the social insurance system is financed through payroll taxes. On average, the level of these payroll tax rates in 2011 was over 20 percent, compared with 17.35 percent in the United States, although with wide variation from country to country, ranging from 10.6 percent in Mexico to 45.148 percent in Colombia. Social security taxes are applied only in the formal sector of the economy. Similarly, the benefits from the social programs financed by these taxes (which include both pensions and health services) may generally be claimed only by those who are or have been employed in the formal sector and have therefore contributed to funding the programs, although there is often no tight connection between taxes paid and benefits received (Social Security Administration 2012).

Many consider the basic social insurance systems in most Latin American countries to be deeply flawed, given their limited coverage of only the formal sector, the marked evasion even within that sector, and the fact that transfers are regressive in that they do not go to the poor. Indeed, a careful study of social transfers in eight Latin American

countries (including the five on which we focus here) concluded that the existing social system is in general both "grossly inefficient and regressive" (Lindert, Skoufias and Shapiro 2006, 4), with the partial exception of some of the conditional cash transfer systems mentioned above. Goni, Lopez and Serven (2011) estimate that about 70 percent of direct transfers go to the two top income quintiles in Latin America, compared with only about 40 percent in Europe, although taking in-kind transfers into account redressed the balance to a considerable extent.

Lindert, Skoufias and Shapiro (2006) conclude that governments in Latin America need to take a more integrated and targeted approach to "social protection," a term encompassing both social insurance and social assistance. However, they recognize it is unlikely that such recommendations can or will be soon implemented since "there is clearly some barrier to lowering social insurance transfers (even where they are highly inequitable) and raising social assistance transfers (even where they are progressive) in many countries" (p. 45). They note that such barriers likely arise from the different political constituencies served by these two classes of transfers, as well as the possible perceived legitimacy conferred on social insurance programs (because they link benefits to contributions, even if only partially) and on conditional cash transfers (because beneficiaries have to comply with a set of "co-responsibilities," e.g., sending their children to school). However, they do not consider, as the fiscal contracting perspective developed below would suggest, that the demonstrated political sustainability of the existing policies may require extending such "islands of success" in ways that will encourage those who will have to pay more to think they get something valuable for their money, even if that money flows to others. Instead, like most experts, Lindert, Skoufias and Shapiro (2006) recommend adopting a tidy integrated social protection package, even though experience suggests such policies are only likely to be implemented successfully in homogeneous and highly developed societies very different than those in most of Latin America.

In recent years, the United States has also seen major changes to its public social spending policies. The share of the (politically popular) federal transfers going to the elderly rose over the last 30 years, from 62 percent in 1979 to 68 percent in 2007 (Harris and Sammartino 2011). One result of this change in funding priorities is that the effectiveness of fiscal policies in reducing inequality has declined because transfers to the elderly are not conditioned on income.[17] For example, in 1979, households in the bottom quintile received over 54 percent of transfer payments, but by 2007 their share had declined to only 35 percent (Harris and Sammartino 2011).

Redistributive government spending can take the form not only of direct subsidies but also "tax expenditures," which tend to be distributed even less equitably. In the United States, for example, the top two quintiles receive about two-thirds of the benefits from tax expenditures for health care expenses and over 90 percent of the benefits from tax expenditures for incentives for retirement savings and home ownership, although the middle income groups also receive some benefits from these tax subsidies (Toder, Harris, and Lim 2009).

Table 7.6   Tax expenditures in the Americas, 2007 (as percent GDP)

Country	Total	Income tax subsidies	VAT subsidies
Argentina	2.2	0.5	1.1
Brazil	2.0	1.0	0.4
Colombia	3.7	1.6	1.9
Mexico	5.6	3.1	1.9
Peru	2.2	n.a.	n.a.
Average	3.1	n.a.	n.a.
Canada	11.0	6.5	3.5
United States	6.0	5.1	n.a.

Source: For Latin America, Villela, Lemgruber and Jorratt (2010); for North America, OECD (2010).

As Table 7.6 shows, while tax expenditures, particularly with respect to income taxes, are much less important in Latin America than in North America, their effect on distribution may not be all that different, although no estimates of their distributive effect appear to exist.

Taxation

Table 7.7 summarizes a few key quantitative facts about taxation in the larger Latin American countries as well as the United States and Canada. In most Latin American countries, both tax ratios and the share of taxes coming from income taxation grew significantly over the last decade, in contrast to the decline in both ratios in North America. On the other hand, as the last column in Table 7.7 shows, a major difference between North and South America is the dominant role of the personal income tax in the North and the dominant role of the corporate income tax in the South. This key structural feature of the tax system did not change

significantly in Latin America, although both corporate and personal income tax rates fell over this period in most countries, while VAT rates rose slightly (Lora 2012). Not only have income tax rates declined, but the scope of the system has been altered considerably: it has changed from one which, on average, imposed tax liability at a taxable income level of about 60 percent of per capita GDP in the mid-1980s to one that started at a level 2.3 times per capita GDP a decade later. At the same time, the average level at which the top bracket takes effect has declined sharply from 121 times per capita GDP to only 21 times GDP. With considerable differences from country to country, personal income taxes have become much flatter, with top rates declining to levels comparable with the lower corporate rates. Nonetheless, the share of both income and total taxes collected from the rich (the upper quintile) also grew over this period, reflecting the continuing inequality of pre-tax incomes in Latin America and the increasing inequality in the United States and, to a lesser extent, in Canada.

Table 7.7   Trends in taxation, 1990–2010

Tax ratio (T/Y)					Of which income tax				
Country	'90	'00	'10	% Change 2010/ 1990	'90	'00	'10	% Change 2010/ 1990	Ratio of CIT to PIT (c.2007)
Argentina	16.1	21.5	33.5	108	3.7	18.5	16.2	338	2.3
Brazil	28.2	30.1	32.4	15	18.1	19.3	21.2	17	2.0
Colombia	9.0	14.0	17.3	92	29.9	29.3	27.9	–7	n.a.
Mexico	15.8	16.9	18.8	19	27.1	27.3	27.8	2	1.1
Peru	11.8	13.9	17.4	47	5.7	19.8	37.6	460	4.2
Unweighted Average	16.2	19.3	23.9	48	16.9	22.8	26.1	54	2.4
United States	27.4	29.5	24.8	–10	46.8	50.5	43.6	–7	0.3
Canada	41.9	35.6	31.0	–26	48.6	50.1	46.8	–4	0.3

Sources: Tax ratios from OECD (2012, 2012a); excludes local government for Argentina (provincial government included) and for Peru (except for 2010), and does not include fees levied on hydrocarbon production as taxes. "Income tax" includes all taxes classified as such in GFS (personal, corporate, withholding). Ratio of corporate to personal income taxes for Latin America from Cornia, Gomez-Sabaini and Martorano (2012); for North America, calculated from data in OECD (2012).

All these results are sensitive to the particular incidence assumptions employed in the different studies, particularly the incidence of the corporate income tax. As Mahon (2012, 1) notes, the available evidence supports the conclusion that "most Latin American fiscal systems have become somewhat more redistributive since 2000." Although most tax reforms in the region have shifted tax structures away from reliance on income taxes and towards consumption taxes, some countries (such as Peru) have sharply increased their reliance on income tax. All countries in the region have increased their tax-to-GDP ratios, in contrast to what has happened north of the border.[18] Before 1970, most Latin American tax systems collected relatively little tax revenue, and did so in an inefficient and regressive way. Over the next few decades, while income tax rates were cut (in most countries without any offsetting base expansion) the role of the VAT was greatly expanded, with the important effect of strengthening tax administration. As emphasized below, this reform greatly increased the capacity of the state. However, the main responsibility for redistribution remained on the expenditure side and the increases in social spending towards the end of the century (see Table 7.5) resulted in spending becoming more redistributive in some countries (Barrientos 2011).

A useful summary presentation of the evidence taken from recent work by Mahon (2012) is shown in Table 7.8, which reports the results of 15 recent studies of fiscal redistribution in the five major Latin American countries examined here. This table illustrates several important points. First, first-order measures of the distributive effect of the fiscal system are invariably very small when measured in terms of changes in the Gini coefficient (which is more sensitive to changes in the middle of the income distribution than at the extremes). Second, such measures also often vary substantially from one year to another (or even for the same year, in the case of Colombia), in part because they are derived from a variety of different studies, often using differing incidence assumptions, particularly with respect to the incidence of the corporate income tax. Third, as emphasized earlier, social spending programs are generally more effective than taxes in achieving redistribution. Fourth, in three countries total fiscal distribution increased over this short period, while in Colombia and Peru, it appears to have decreased slightly. Finally, although there are exceptions, consumption taxes generally appear to be either slightly regressive or neutral, while income taxes are generally progressive.[19]

Despite the marked increase in the importance of income taxes in most major countries in Latin America in recent years, there likely has not been a significant change in the redistributive effect of the tax system.

Table 7.8 Recent studies of fiscal redistribution in Latin America

Country	Year	RS Index spending	RS Index taxation	Combined RS Index	RS Index consumption taxes	RS Index income taxes
Argentina	2001	0.00	+0.01	+0.01	0.00	+0.01
	2004		−0.009	−0.01		
	2006	+0.091	+0.019	+0.11		
Brazil	1998	+0.03	0.00	+0.03	0.00	0.00
	2003	+0.015	−0.005	+0.01	−0.018	+0.013
	2006	+0.07	+0.014	+0.08		
Colombia	2003	+0.050	0.000	+0.05	−0.004	+0.008
	2003	0.00	0.00	0.00	−0.01	+0.01
	2004	+0.006	−0.001	+0.005		
Mexico	2000	+0.01	+0.01	+0.02	0.00	+0.01
	2004	+0.018	0.000	+0.02		
	2006	+0.037	+0.003	+0.04		
Peru	2000	+0.035	−0.008	+0.03	−0.012	+0.0013
	2002	0.00	−0.01	−0.01	−0.02	+0.01
	2004	+0.005	0.000	+0.005		

Notes: The RS (Reynolds–Smolensky) index is the difference between the Gini coefficients pre- and post-spending or taxation as the case may be. By convention, a positive value indicates a progressive effect (that is, Gini declines) and a negative value a regressive effect.

Source: Mahon (2012).

One reason is that relatively little income tax revenue in Latin America comes from the personal income taxes, the only important progressive element of the tax system in most countries. In most Latin American countries, income tax revenues are derived primarily from corporate income taxes, the incidence of which may fall on low-income workers and consumers rather than high-income profit recipients (Harberger 2006). However, it may also be argued that corporate income taxes in developing countries are sometimes relatively progressive. For example, Shah and Whalley (1991) contend that the importance of market fragmentation and government regulations in most developing countries suggests that a considerable share of corporate profits arises from economic rents which, if not collected in taxes, will accrue to (presumably wealthy) corporate owners. Clausing (2012, 2013) recently underlined this point, emphasizing the extent to which multinational

investments similarly reap such rents, especially in countries, like many in Latin America, where there are substantial profits from extracting natural resources.[20]

The conventional view of the corporate income tax as being likely to be shifted to either labor or consumers seems especially questionable in countries like those in Latin America that are becoming more open but at the same time have significant foreign ownership and a rent-generating political and economic structure. If owners, and not workers or consumers, pay all or most of the corporate income tax, then most of the existing tax incidence studies in Latin America (such as those summarized in Table 7.8) may understate the progressivity of the tax system.[21]

THE FISCAL CONTRACT

Traditional public finance analysis assumes that the state is an autonomous entity that can decide what to do and then do it.[22] One approach, epitomized by the optimal tax literature (Boadway 2012), treats states as though they were (or should be) benevolent social welfare maximizers. On the other hand, the public choice approach considers those who control states to be self-interested actors (Brennan and Buchanan 1980). In essence, both approaches assume that "people pay taxes because they must; there is no relationship between the source of state revenue and state output; and spending is a function of rulers' whims" (Timmons, 2005, 534).[23]

Such views stand in contrast to what Timmons (2005) calls the "fiscal contract paradigm," which assumes that governments are viewed as selling citizens services for revenue and hence, like good businessmen, are most likely to respond primarily to the wishes of those who pay. Because taxes are costly and difficult to collect, those who run states will want to reduce such costs by reducing the willingness and ability of citizens to evade or avoid taxes. There are two ways to do so. One approach is to be nice: to make citizens more willing to pay for what the state does by ensuring that what is done is acceptable and seen as beneficial by a majority of those who pay. The other approach is to be tough: to strengthen fiscal administration and make them more afraid of what will happen to them if they do not pay their taxes.[24] The central fiscal problem of the state from this perspective is to balance its use of these two levers in order to obtain the revenues desired at the least cost. All countries are thus continually seeking a sustainable equilibrium between force and persuasion when it comes to tax compliance. Even if citizens have no realistic exit options and their opportunities to influence

state policy through voice are severely limited, states will still want to cultivate loyalty to reduce the costs of tax collection. Similarly, even the most open and liberal democracies need to have credible revenue enforcement mechanisms to prevent high levels of tax evasion.

The fiscal contract approach does not fit easily into what might be called the "welfarist" view, which takes redistribution as a major goal of the fiscal system and invariably concludes that taxes should be paid mainly by the rich and expenditures targeted mainly to benefit the poor.[25] In contrast, the fiscal contract view implies both that those who are expected to pay most of the taxes are likely to receive most of the benefits, and that their willingness to pay is tied to the expectation of receiving benefits. These benefits may be indirect in the sense of providing funds to the poor on the condition that they act in ways taxpayers value: for example, by ensuring that their children become educated. Discussions of taxation and inequality frequently focus on only two groups: the 'rich' (say, the top quintile, or even the top 1 percent) and the 'poor' (say, the bottom two quintiles). However, in the real world of the Americas, the most critical element may well be how the 'middle' or 'upper middle' (say, the bulk of the population between the 'poor' and the top 1–2 percent of the income distribution) perceive themselves to be treated.[26]

A reasonable assumption is that the poor want some package of basic public services (in addition to jobs), while the rich seek mainly to keep what they have: that is, protection for their property rights. The motto of the Toronto police service is "To Serve and Protect." What the poor want is mainly service, while what the rich want is mainly protection. To the extent that the middle class wants both service and protection, its recent rise to prominence in Latin America may provide an opportunity to change the fiscal contract. In countries in which both growth and democracy have recently flourished, the political equilibrium may change in ways that alter the nature of the implicit fiscal contract underlying political stability and state legitimacy. The newly better-off, the expanding middle class discussed by Ferreira et al. (2013), cannot easily emulate either the rich, who to a large extent not only pay as little as possible in taxes but also make little use of public services, or the poor, who neither pay much nor benefit much. The middle class, and especially the vulnerable middle class, need a stronger public sector to secure their position as much as the poor need it to improve their position. At the same time, the middle class have fewer opportunities than the rich to opt out of the tax system by hiding in the informal sector or by shifting activities offshore. For the first time in Latin America, a significant proportion of the population are now both politically relevant citizens and

taxpayers, although they are not often fully aware of how much they pay and hence less concerned than they should be about how their funds are spent. As more people become aware (e.g., through the expansion of the personal income tax and property tax) of the taxes they pay and of the extent to which their wellbeing and the future of their children depend on good state services, the political balance underlying the fiscal contract is likely to change.

Taxation in the Fiscal Contract

One side of a fiscal contract is the tax system. Most political scientists take progressive income taxes to be a good proxy for taxes on the rich and regressive consumption taxes to be an equally good proxy for taxes on the poor (Kato 2003). Although this approximation is at best rough, it is true that most income taxes are paid by those in the top part of the income distribution. On the other hand, much depends on the structure of the personal income tax. Such taxes may, for example, impact most heavily (in relative terms) those who have just entered the tax regime from the bottom (the lower middle class who may for the first time have moderate levels of income and some property to protect). If so, percep- tibly higher tax burdens faced by an expanding middle class may reinforce the normal anti-income tax sentiment of the rich, a phenom- enon that has perhaps become more important as income tax rate structures have become flatter. As Table 7.9 shows, the threshold income level at which Latin Americans begin to pay personal income tax is generally much higher than in developed countries.[27] In Mexico, for example, the personal income tax does not apply to workers with below-average wages, while in the United States and Canada the thresh- old level is set much lower, at around 30 percent of the average wage (OECD 2012b). Similarly, the highest rates of the income tax also cut in at much higher levels in many Latin American countries.

So long as the absolute level of income of the emerging middle class is increasing, the proportion of citizens paying income taxes is likely to grow. In Brazil, for example, a combination of increases in income, formalization of employment, and strengthened tax administration resulted in over 50 percent of those declaring income in 2011 paying income tax, compared with only 36 percent a decade earlier.[28] Many of those now caught in the tax net would seem to be natural allies of the poor in the sense that both groups tend to want expansion of public sector services like health, education, pensions, and basic public infrastructure services like transit, water, and sewerage.

Table 7.9   Personal income taxes: Thresholds and income at maximum rate (as multiple of average per capita income in 2010)

Country	Threshold	Maximum
Argentina	0.30	3.66
Brazil	1.10	2.74
Colombia	2.83	10.65
Mexico	0.49	3.39
Peru	1.69	14.69
Average Latin America	1.41	9.06
Average OECD	0.24	2.38

Note: 'Threshold' is the minimum income level at which personal income tax has to be paid and 'maximum' is the income level at which the highest tax rate is applied.

Source: Lora (2012).

As Martinez-Vazquez (2001) notes, one of the most striking features of the various major tax changes that took place in Mexico in earlier decades (Gil-Diaz and Thirsk 1997) was how little effect they had on Mexico's tax ratio (taxes as percent of GDP), which remained almost constant over the period. He suggested several possible explanations for this constancy. The reforms in tax structure may have been undermined by unrelated ad hoc measures, or they may have been offset by administrative deterioration. Either, or both, of these developments may have occurred less by accident than by design. Alternatively, they may reflect the extent to which Mexican revenues depend on oil prices.[29] As Table 7.7 shows, whatever the explanation, although an index of tax reform calculated by Lora (2012) suggests that Mexico and Colombia have carried out more tax reforms than the other Latin American countries discussed here, both still lag behind in effective tax reform.[30] However, as Table 7.7 also shows, Peru has altered its tax structure substantially in recent years and Colombia, although not changing tax structure significantly, has significantly increased its total tax revenues. Because countries tend to achieve an equilibrium with respect to the size and nature of their fiscal systems that largely reflects the prevailing balance of political forces, such significant changes in a relatively short period again suggest that there may have been a noticeable change in the politics underlying the national fiscal contract in at least some countries in the region.

Although total taxes and income taxes in particular are not all that high in most of Latin America and the tax systems are not progressive,[31] the extreme inequality of the region means that the rich nonetheless pay a relatively large share of taxes, so that simply increasing the net fiscal pressure on them may place additional strain on the fiscal contract. Tax reform in Latin America does not require governments to give more fiscal benefits to the rich, and it may, quite appropriately, be accompanied by steps to remove some tax expenditures and unwarranted gains on the spending side (such as virtually free tertiary education), as well as by fixing severe legislative malapportionment that makes it all too easy for elites to block tax changes in many countries of the region (Ardanaz and Scartascini 2011). Achieving significant tax reform as conventionally understood may nonetheless require some assurance to those who are going to have to pay more that, in return, their property rights and positions will be more secure than they would be if the present inequalities were simply perpetuated. As Sanchez (2011, 36) said with respect to the Chilean reform of the 1990s, for example, "entrepreneurs agreed to pay more taxes because the new government went to great lengths (in rhetoric and actions) to reassure them that it would maintain a vocation for free markets and an open economy." The new *Concertación* government was able to negotiate both a combined tax reform and social policy reform, which brought about political peace and the beginning of a move towards a new and perhaps lasting political equilibrium (Boylan 1996).

Even Colombia, often seen as a distributive laggard in the region (Moller 2012), may also be moving down this path. As Flores-Machias (2012) points out, Colombia has imposed a tax on wealth since 2002, which currently applies at rates of 2.4 percent of total liquid assets over US$1.3 million and 4.8 percent on assets over US$2.5 million. Revenues from this tax are far from negligible, fluctuating between 2.5 and 5 percent of government revenue and at times amounting to as much as 1 percent of GDP. How was Colombia able to do this? Essentially, by making a 'soft' but credible fiscal contract with the rich to earmark all the proceeds of this tax to security (where it financed an increase in expenditures of about 25 percent) with the explicit objective of expanding the control of the national government over the entire country and improving the security of both persons and business investments – all objectives towards which considerable and perceptible progress was made. Some years ago, Bird (1992) suggested that countries in crisis can adopt reforms long considered impossible. Fairfield (2010), with reference to the Chilean case, suggested that elite solidarity is easier to mobilize behind such reforms when a right-of-center administration is in power, because commitments to spend will be more credible. The

Colombia of the first decade of this century satisfied both of these conditions. On the other hand, to achieve acceptance of the wealth tax, the government deliberately backed away from attempting more fundamental tax reforms that business interests opposed.[32] Moreover, it is as yet unclear whether Colombia will follow countries like Brazil, Mexico and Chile in combining a slightly more redistributive tax policy with a more effectively redistributive policy of social spending.

Roberts (2012) stresses the traditional argument that the shift to more 'leftist' governments is a principal reason for the observed change in distributive policy in recent years. He notes, however, both that there has been no apparent shift in ideological views and that even non-left governments moved the same way. Colombia provides a nice illustration of the point emphasized by Hart (2010), that what he calls the "pro-market Right" can extract more tax revenue more efficiently, with less damage to both equity and growth, than the "interventionist Left." This is because the VAT is a more effective and efficient way to tax than the income tax, a point well accepted by social democratic governments in Europe (Lindert 2004) as well as by pro-market governments in Latin America. Perhaps optimistically, Colombia may also illustrate the argument made (in a quite different context) by Bodea and LeBas (2013) that when the provision of public goods through 'clubs' becomes less effective in conflict-prone communities, support for a social contract may increase. Morgan and Kelly (2010)'s findings that Latin Americans tend to be more concerned about inequality when worried about crime also support the view that fighting inequality and instability in personal and community life may go together.

Sustainability in the Face of Change

One definition of a sustainable tax system is one that is sufficiently aligned with prevailing economic and political factors to persist without the need for repeated major reforms. Achieving a sustainable tax system in this sense requires striking the right balance between the equity and efficiency aspects of taxation in terms of the equilibrium of political forces. Any state that wishes both to grow and to implement redistributive fiscal policies (regardless of how much redistribution is desired) must first establish an administrable and efficient tax system. For such a system to be politically sustainable in any but a totalitarian setting, it must also be considered to be acceptably fair by a majority of the politically relevant population. One reason why many countries in Latin America for many years had tax systems that were neither efficient nor fair was likely because the politically relevant domain of the fiscal

system was considerably smaller than the population as a whole. Profeta and Scabrosetti (2008) argued that the increasing democracy in Latin America in the 1990s had little effect on taxation because of the combination of the extent to which democratic institutions were either captured by the elite or undermined by short-sighted populism with the extreme weakness of state institutional capacity, particularly with respect to fiscal matters. However, the recent marked growth of the middle class in many countries in the region has increased mobility across income classes, and has brought more people in direct contact with the tax system. In many countries, this will raise the political salience of fiscal issues and increase the importance of having a system that is perceived to be both acceptably fair and acceptably growth-oriented (Daude and Melguizo 2010). At the same time, as discussed below, tax institutional capacity has been substantially strengthened in most countries. In contrast, over the same period, the increasing concentration of wealth and income at the highest levels in the United States and the removal of a large percentage of the population from the income tax rolls (Burman and Slemrod 2013) have arguably, by reducing the direct contact of many Americans with the tax system, increased the influence of the wealthy over the structure and level of taxation.

More democratic and sustainable outcomes cannot be induced simply by improving fiscal institutions, because a more encompassing and legitimate state is itself the key ingredient needed for a more balanced and sustainable tax system (Brautigam, Fjeldstad, and Moore 2007). Countries with similar economic characteristics in similar economic situations can and do sustain very different tax levels and structures, reflecting both their different political situations and the capacity of the state to deliver services and collect taxes. While economic structures and circumstances clearly influence tax levels and structures, in the end politics almost invariably rule when it comes to shaping the final outcome. The fiscal reality found in most countries reflects less evidence-based decision-making or empirical realities than a changing mixture of ideas, interests, and institutions. Viewed as a whole, tax systems seldom seem to have been designed with any particular objective in mind.[33] Like other political constructs, tax and spending policies reflect the nature of the social contract that underlies any sustainable society as influenced by such manifestations of both the changing local environment (e.g., democracy in its various forms) and the changing external context (e.g., globalization in its various aspects).[34]

Within this framework, the best tax system is the one that produces the desired amount of revenue in the least costly and distorting way. Countries no longer have the luxury of operating their tax systems in isolation.

Although the capacity of most Latin American countries to design and implement effective tax systems has increased substantially over time (as discussed later), the limits on state capacity stressed by Cardenas (2010) remain important and are being increasingly tested in the fiscal field. While 'globalization' has become an overused term, nations have clearly lost some degree of fiscal autonomy in recent years, not least with respect to tax policy, owing to increased competition for portfolio investment, qualified labor, financial services, business headquarters, and, most importantly for developing countries, foreign direct investment.

The traditional tax regime for taxing cross-border transactions rests on a stylized set of facts: small flows of cross border investments; relatively small numbers of companies engaged in international operations; heavy reliance on fixed assets for production; relatively small amounts of cross-border portfolio investments by individuals; and minor concerns with international mobility of tax bases and international tax evasions (McLure 2001). However, familiar tax labels are increasingly losing their meaning as lawyers and investment bankers convert, with relative ease, equity to debt, business profits to royalties, leases to sales, and ordinary income to capital gains, or the other way around. Combined with the disaggregation of production resulting in different operations in different countries, these factors have changed the business tax base. The increased share of value-added arising from services and intangibles makes it harder to locate the source of corporate income and thus harder for countries to tax corporate income. Increased intra-company trade makes it easier to avoid or evade taxes. Increased mobility of capital makes it harder to tax income. It may also be harder to tax higher labor incomes, as labor becomes more mobile, as traditional employer–employee relationships evolve into independent contractor status, and as owner-managers convert labor income into capital income. Even VAT revenues may be challenged as electronic commerce makes it more difficult to enforce tax on some cross-border transactions. The taxman's life is not becoming easier in Latin America, or anywhere else. Nonetheless, despite the increasingly tight international economic constraints on tax policy, it is still undoubtedly the case that no country in Latin America is anywhere near the limits of what it can do, it if wants to, to impose a fairer (or, for that matter, a more efficient) tax system.[35]

A LOOK BACK – AND AHEAD[36]

Consider how the Western democracies first got into the business of progressive taxation. In the United States, for example, as Weisman

(2002, 366) shows, over the course of prolonged discussions from 1860 to 1920, "economic crises and wars helped create a consensus for an income tax that falls most heavily on the wealthiest taxpayers." This lengthy debate about taxes was not so much about tax policy but rather about what kind of society Americans wanted. This consensus, a sort of fiscal contract, lasted until about 1970. Since then ideas about the relevant balance between taxes and society have again been in flux in the United States. In particular, progressive taxation appears to have lost much of its political appeal (Blyth 2002).

Balancing Equity and Efficiency

Other countries have reached different compromises. Alesina and Angeletos (2005) suggest, for example, that two models of redistributive taxation exist in developed countries. At one position is the United States, with relatively low taxes and low redistribution, while at the other are countries such as Sweden, with high taxes and high redistribution. They attribute the difference to, essentially, self-fulfilling expectations. In the United States, or so they argue, the general belief is that effort is causally related to income, so that those who make the effort, and consequently receive the income, are entitled to retain a large share of the fruits of their efforts. In the terms used by Musgrave and Musgrave (1989), the "entitlement" view is strongly entrenched in the United States. The relatively unequal distribution of income is considered fair because it is believed to reflect differential effort to a considerable degree. Because tax rates are low, so are tax distortions, with the result that high effort may indeed yield high after-tax income.

In contrast, Alesina and Angeletos (2005) suggest that in many European countries, the pervasive belief appears to be that high income reflects not so much high effort as good connections or even corruption. Because high taxes resulting from this belief system substantially reduce after-tax income, the connection between high effort and high income is indeed greatly weakened. This belief, they suggest, is strongly grounded in the prevalent social reality. Interestingly, however, perhaps reflecting the surprisingly good economic results discussed earlier, it appears that Mexicans and Brazilians are almost as convinced as Americans that hard work is the most important factor in achieving financial success.[37]

In any case, most high-tax countries have, in practice, substantially blunted the disincentive effect of taxation by lowering tax rates and favoring investment activities (Lindert 2004). Two distinct fiscal equilibria are visible in modern democratic societies: big government, with redistributive expenditures but not very progressive taxes (Sweden), and

small government, with more progressive taxes but less redistributive expenditures (the United States). The implications of choosing a larger and more redistributive public sector for tax policy are not necessarily what one might expect. Although the larger the government share of economic activity the more damaging bad tax policy choices can be, voters in such countries generally support more pro-growth (and less progressive) tax structures with lower effective tax rates on capital income, lower property taxes, and relatively higher taxes on labor income and consumption (especially on socially damaging activities such as smoking, drinking, and environmental damage). On the other hand, countries like the United States with smaller government sectors tend to have higher taxes on capital and wages and lower taxes on consumption, thus placing relatively more of the tax burden on more elastic factor supplies, with consequently more damaging effects on resource allocation and growth. It is thus not surprising to find, as Steinmo (1993) emphasized some years ago, that the income tax in the United States is much more progressive than that in Sweden, and that indeed it remains one of the most progressive in the world (OECD 2008).

Additional evidence that democratic polities do learn from experience, and do, over time, tend to reward parties that follow more prudent economic policies is provided by studies of subnational debt policy in the United States (Inman 2003) and Canada (Bird and Tassonyi 2003). Blyth (2002, 274) puts the same point another way when he notes that "political economies … are … evolutionary systems populated by agents who learn and apply those lessons in daily practice." The critical argument in Lindert (2004) is that in a well-functioning state, adequate feedback mechanisms are in place to give warning when sustainable limits are being breached. Such mechanisms may take the form of the "exit" mechanisms commonly emphasized by economists (as when over-taxed resources flee a jurisdiction) or the "voice" mechanisms stressed by political scientists (as when governments are changed to carry out more prudent policies) or, as is most common, both may exist. But the key point is that to avoid disaster, such "error-correcting mechanisms" *must* exist in sustainable states.

No government is always competent; none is omniscient; not all are always well-intentioned. Mistakes will be made. The key sustainability problem that all societies face is how to minimize the severity of such mistakes. As Lindert (2004) demonstrates, this is done by muting the anti-growth aspects of pro-redistribution spending policy by a more pro-growth tax policy. Redistributional policies that in themselves might have been unsustainable in the long run because they would impose excessive distortionary costs on resource allocation are made sustainable

in part by direct measures to reform the tax system to reduce such costs. In the story told by Bird and Tassonyi (2003) about subnational debt, much the same end is achieved by subjecting governments to constant pressures from both exit (market forces) and voice (elections). Macro-economic policies (subnational borrowing) that in themselves might have led to an unsustainable situation in the long run thus become sustainable over time by an evolution in both institutions (capital markets) and ideas (political rewards for conservative fiscal measures).

The search for a sustainable fiscal contract is a continuous process in every country. In many Latin American countries for a long time, it appeared that no viable democratic social consensus with the right balance between equity and efficiency in taxation was attainable. Many countries in the region were (and some still are) far from being perfect democracies (Snyder and Samuels 2001). They were instead what may be called "democratically exploitative" states – states in which those in power use the levers of power in large part for self-aggrandizement or in support of their particular group or interests. Over the last couple of decades, the rise of the middle class has contributed to democratization in many Latin American countries (Ferreira et al. 2013). This does not mean, however, that each country in this heterogeneous region will reach similar fiscal contracts. What is right, or at least feasible, in Chile or Brazil, for example, may not be desirable or possible in Colombia or Honduras.

Making Tax Systems Work

Taxation is, always and everywhere, what has been called a "contested concept" (Sabates and Schneider 2003). Some pay; some don't pay. Some pay more than others. Some receive compensating services; some do not. Such matters are, in democratic states, resolved through political channels. Indeed, history suggests that the need to secure an adequate degree of consensus from the taxed is one of the principal ways in which, over the centuries, democratic institutions have spread. No non-dictatorial government in this age of information and mobility can long stay in power without securing a certain degree of consent from the populace, not least in the area of taxation. State legitimacy thus rests to a considerable extent on citizens' "quasi-voluntary compliance" (Levi 1988) with respect to taxation. To secure such compliance, tax systems must, over time, represent in some sense the basic values of at least a minimum supporting coalition of the population. As empirical evidence shows, tax compliance depends to a marked extent on the level of tax morale in the population, and that in turn rests significantly on how

favorably people perceive how they are governed (Torgler, Schaffner and McIntyre 2010).

Taxation is one of the few ways in which the wealthy may be made less wealthy, short of outright confiscation. Although attempts to re-distribute income through taxation have not been markedly effective anywhere (Bird and Zolt 2005), as even rich countries have learned in recent years it may nonetheless be important in political terms to impose highly visible taxes on those who gain the most because sustainable tax policy needs to be accepted as fair by those affected. Two interesting features of inequality in Latin America, from a fiscal perspective, are the extent to which inequality arises from a very high degree of concentra-tion at the very top of the income distribution and inequality's relation to the extremely unequal distribution of land. The second point has long been recognized, as shown by the long, and not too successful, history of attempts at direct land reform in the region (Dorner 1992). The fiscal path to inducing land reform has had no more success in Latin America than anywhere else (Bird 1974). Property tax revenues are low in most Latin American countries. The coverage of the tax is not comprehensive, assessments are low, and collection rates are often low as well. Although nominal rates are also low, governments usually find rate increases in this very visible tax difficult to sell politically. Engerman and Sokoloff (2001) argue that one reason for the relatively persistent inequality in Latin America compared with North America is the much weaker role of local government (largely dependent on property taxes) in Latin America, reflecting the underlying political capture of the central government by the dominant elites. The recent interest in decentralization in many Latin American countries may be seen as both a response to the increasing democratization of the polity and a response to the increasing need for governments to be seen as responsive to local needs in an equitable fashion (Brosio and Jimenez 2012). One result may be renewed attention to local property taxation as a desirable and fair means of taxation, although as yet there is little evidence of this (ECLAC 2013).

At one level, the high concentration of income and wealth at the top in Latin America may appear to make the task of fiscal redistribution easier because a progressive income tax, or a wealth tax, would apply to a relatively small number of people. Indeed, as Tanzi (1966) noted many years ago, many common arguments as to why personal income taxes are difficult to implement in developing countries fail when it comes to taxing the rich in Latin America. There are not many to be taxed, they certainly have the capacity to comply with the tax regime, and so on. The real question is political: can the obvious opposition of the wealthy elite to such taxes be overcome? The wealthy can block such efforts in many

ways: they can block progressive legislation from being passed (Ardanaz and Scartascini 2011); they can introduce incentives and provisions to blunt its effects (doing so in the name of the "national interest"); they can corrupt the administrative process; they can use their resources to mute and delay it in many legal ways; or they and their resources can leave the jurisdiction. All this and more goes on in most Latin American countries, and has done so for many years (Gomez Sabaini and Jimenez 2012).[38]

The opening of capital markets, combined with weak international tax enforcement capabilities, makes it harder to tax the wealthy on much of their income from capital. The political reality in most countries means that it is not easy to do so. In the end, within limits, countries get the tax systems that those who run them want, and those who run many Latin American countries have not favored a very redistributive tax system. However, the increasing importance of the middle class and the interest of both the rich and the middle class in securing what they have, even if one price for doing so is to pay more taxes in part to help redistribution efforts, may have begun to alter the political balance and the nature of the fiscal contract in some countries.

Although the central social and economic problem in many Latin American countries remains inequality, the lack of government account-ability also persists. A good tax system is critical to solving both problems. As noted earlier, an important factor shaping the nature of the fiscal contract is the cost of tax collection. Gordon and Li (2009) and Kenney and Winer (2006) emphasize, in somewhat different ways, that when economic and technological changes alter the relative costs of imposing different taxes, both tax structures and tax levels adjust. In recent years the widespread adoption of the VAT has played a central role in improving the effectiveness of tax administration in Latin America, because the successful implementation of this tax usually requires a substantial upgrading of the capacity to administer taxes (Mahon 2011). A recent study of the Brazilian state VAT (Pinhanez 2008) demonstrates that one important result of introducing the VAT was that it strengthened both accountability within the public sector and the degree of trust between taxpayers and tax officials.[39] Provided the political will exists to increase tax revenues, the improvement made to administrative capacities of many countries by adopting a VAT makes it more feasible to reform other parts of the tax system than in previous years.

As studies from Taylor et al. (1965) to Moller (2012) have shown for Colombia it is not hard to think of ways to tax the rich more effectively, through indirect means such as taxes on vehicles as well as through such direct means as taxes on income and wealth (land, estates). Indeed, to the extent that some of the income of the rich reflects "rents" secured

through political connections or monopolies, such taxation may carry with it few distortionary costs. On the other hand, attempts to impose unduly redistributive taxes may backfire so that countries end up with smaller and less redistributive public sectors (IDB 1998), and even the most redistributive taxes are unlikely to have much effect on income redistribution (Harberger 2006). From the perspective of redressing income inequality and poverty, it remains clear that the most important function of the tax system is to provide funding for pro-poor (or at least not 'pro-rich') spending programs.

The dominant policy ideas in different countries (such as equity, efficiency, and growth), like the dominant economic and social interests (such as capital, labor, regional, ethnic group, rich, and poor) and the key political institutions (democracy, decentralization, budgetary), and economic institutions (free trade, protectionism, macroeconomic policy, and market structure) all interact in the formulation and implementation of tax policy. This changing interplay over time affects the level of taxation, the structure of taxation, and many of its critical details, such as the progressivity of rates. Indeed, taxation is one of the major battlegrounds on which we can observe the working out of these complex forces.

Viewed from this perspective, only recently have some Latin American countries begun to experience the cycle that produced the (more or less) redistributive fiscal state now found in most developed countries. During this long preparatory period, the idea of the desirability, and perhaps necessity, of a more effectively progressive fiscal system becomes sufficiently established such that when the time is ripe, progressive taxes are in fact adopted. Governments in many Latin American countries have struggled both economically and politically. Even those governments with a certain degree of political legitimacy and stability have faced substantial constraints on fiscal policy. Until countries achieve an adequate degree of political consensus on what should be done, no significant tax changes are likely to be made. As Lledo, Schneider, and Moore (2003, 47) noted, the problem in Latin America for many years has been that most countries lack "an (implicit) social contract between governments and the general populace of the kind that is embedded in taxation and fiscal principles and practices in politically more stable parts of the world." Over the last decade, however, some signs of change have begun to emerge, as economic growth has led both to greater economic mobility and more robust democratic governments resulting from a larger and more empowered middle class (Ferreira et al. 2013). On the other hand, some observers in the United States have recently expressed considerable concern about the apparent fracturing of the social contract in that country in recent decades (Roemer 2011), as reflected not least in

the bitter and unresolved battles taking place over both the size and structure of taxation and expenditure (Bargain et al. 2013).

LESSONS TO BE LEARNED

What lessons may developing countries draw from the divergent experiences of Latin America and the United States, particularly with respect to the design, redistributive effect, and effectiveness of tax policy and with respect to the appropriate role of the state and its fiscal system in achieving an environment that is both conducive to economic growth and to the development of a stable and sustainable political system?[40]

Had Latin American countries adopted the common 1960s prescription for much heavier reliance on income taxes in designing their tax regimes (Bird 2012), would they be better or worse off than they are now? If the United States had followed the rest of the world and adopted a national VAT some years ago, would it be better or worse off? A strong argument can be made that Latin America is better off for having ignored the conventional wisdom and adopted the VAT route to developing somewhat larger states, not least because the stronger tax administrations that resulted from following this less conflict-strewn path may now enable them to strengthen their income taxes. And it may be that the United States would have been better off by joining Canada, Japan, and Australia in adopting a VAT years ago. Even if the United States seeks to maintain its current size of government, the United States could both improve its competitive position and reduce its continuing political struggle by ceasing to rely so heavily on the personal and corporate income tax to solve most of its fiscal problems.

Breceda, Rigolini and Saavedra (2009) note that the structure of both social spending and taxation in Latin America are closer to that in the United States than in Europe. They suggest that the underlying fiscal contracts in the United States and Latin America appear to be converging because both derive most of their tax revenues from the wealthy, who get little in return from the state. This results in a minimalist welfare state, in contrast to the more inclusive (and more redistributive) models found in Europe and even, to a lesser extent, in Canada.[41] This conclusion may be supported to some extent by the evidence cited earlier suggesting that in many important ways attitudes and basic social norms in Latin America are closer to those in North America than those in northern Europe. Nonetheless, a stronger welfare state may be needed in some countries to maintain socio-economic stability. If so, the overlapping economic and political elites that still dominate in most Latin American countries may

soon have to follow the path (familiar from European fiscal history) of choosing between prolonged and even violent political confrontations on redistributive issues, or continuing in the direction of turning formal political democracy into a more socially inclusive process of participatory development of the underlying social (and fiscal) contract.[42]

The poor have little choice but to rely on public services, no matter how scanty or low-quality they may be. The emerging middle class may, in some countries, have the choice of focusing on improving the social security system with respect to health and pensions, but in all countries they have to choose whether to educate their children in the public system or in the generally better private system now utilized largely by the wealthy and upper-middle class. The public sector may finance such access to private education, as to some extent is done in Chile and Colombia, just as it may make the social insurance system more equitable and efficient. But these alternatives, like the straightforward extension of access to (and improvement of the quality of) the public sector, will cost money and require additional tax revenue. The conundrum facing Latin American policymakers is thus whether to focus on expanding and improving traditional public sector services, or instead to focus on providing increased access for more people to the better alternatives now available from private providers. In some instances, the latter approach may be more likely to deliver perceptible benefits to more individuals, presumably increasing their willingness to support the increased taxes needed to finance expanded public sector social spending. In addition, many Latin American countries have decentralized public sector provisions primarily to better match public services with the wishes and needs of local communities (Brosio and Jimenez 2012). The welfare state that might result is more likely to resemble the smaller American model than the much more lavish European one, but it would still be a major improvement for many Latin American countries.

The obvious answer to the fiscal dilemma arising from the combination of increased political pressure for more services and less political support for income taxes is to rely more heavily on consumption taxes. Consumption taxes generally impose a relatively larger burden on lower than on higher income groups, but they are paid much more by the middle class than by the poor.[43] In the United States, where the distribution of tax expenditures is skewed towards upper and upper-middle income-earners (those who pay the bulk of the income tax), recalibrating the fiscal balance between expenditures and revenues may prove an even more difficult exercise than in many Latin American countries. In Latin America, however, where VAT burdens fall most heavily on the growing (and consuming) middle classes, and where those

middle classes are becoming more critical to political success, it is not surprising that considerable attention has been paid in recent years to the major redistributive expenditures on education and health, with lower-income groups also benefiting to some extent. On the other hand, the wealthy in Latin America, as is also increasingly true in the United States, are basically outside the public service delivery system, which does not necessarily augur well for the future sustainability of either fiscal contract unless a greater effort is devoted to creating a consensus in terms of social norms and the acceptance of national political goals (Alesina and Reich 2013).

Countries can maintain or increase state capacity to collect tax revenues only if the fiscal contract is adhered to so that taxpayers believe that the funds will be spent wisely and efficiently – that is, in ways that they perceive as benefiting them either directly (in terms of providing valued public services) or indirectly (in terms of strengthening a sustainable legal and political framework to support property rights). How well the Americas, North and South, will manage this difficult task in the years to come remains to be seen.

NOTES

1. In a recent detailed analysis, Azevedo et al. (2013) show that the decrease in inequality in the region has been driven largely by changes in labor income reflecting both improved levels of education and demographic factors, although they caution that more investment in the right kind of education and training is needed to sustain recent trends.
2. Lustig and Higgins (2012) show with respect to Brazil, however, that even when taxes and transfers have significant effects on poverty and inequality, not every 'poor' or 'non-poor' group is likely to be affected in the same way.
3. Because almost every study, survey and commentator seems to have a different definition of the 'middle class' (for examples, see Banerjee and Duflo (2008), Lora and Fajardo (2011), and Atkinson and Brandolini (2011)), it is not possible here either to examine the details of the different classification approaches found in different studies or consider the implications of these differences for cross-national comparisons.
4. In an earlier discussion of these issues, we also emphasized the latter point in the context of developing countries (Bird and Zolt 2005).
5. For three quite different contributions to the US discussion, see Zolt (2013), Kleinbard (2012) and Roemer (2011).
6. In an interesting analysis of fiscal redistribution in Latin America, Barreix, Roca and Villela (2007) emphasize the need to strengthen (and make more progressive) both these pillars of the tax system. However, on the spending side, they urge still more targeting of expenditures on distributive grounds rather than the 'universalist' expansion to include significant benefits to the middle class we suggest may be required.

7. Although we broadly adopt the 'fiscal contract' view of the state set out by North and Weingast (1989) and developed further by Timmons (2005) and others, many discussions that take a similar approach at least implicitly limit the analysis by either focusing on only two groups, rich and poor (e.g., Ardanaz and Scartascini 2011) or by essentially ignoring the critical link between the two sides of the budget (e.g., Hart 2010). In contrast, our focus here is specifically on the critical changes in the middle class that may explain much of what has happened in many countries as well as the possible implications of these changes for both sides of the budget.

8. There are a number of ways to measure Gini coefficients, see http://website1. wider.unu.edu/wiid/WIID2c.pdf as well as Goni, Lopez and Serven (2011). Although the measures shown in Table 7.1 do not all refer to exactly the same concepts in all countries at all periods, for the most part they are based on household estimates (in per capita terms) of disposable income, that is, gross money income less direct taxes plus direct transfers (Goni, Lopez and Serven 2011). The coefficients in Table 7.1 appear to provide about as good a set of numbers as exist to make broad comparisons between countries over this time period.

9. How much inequality has changed depends on not only what is measured but for whom it is measured. The data in Table 7.1 (and Table 7.2) are at the household level (in per capita terms). Data on individuals emphasize changes in labor income and wage differentials, but data on households better measure the economic well-being of individuals living together. Some consider that measures based on relative changes in consumption would provide a better indication of actual welfare. Duncan and Peter (2012) in a recent interesting analysis suggest that, if properly measured, reduced tax progressivity in countries with high levels of evasion may actually improve welfare as measured by the consumption Gini even if such changes may appear to increase the Gini for observed income. This approach, which reduces the apparent equity costs of more efficient taxes, lends some support to the case for dual income taxes in developing countries made in Bird and Zolt (2011). As noted there, an argument for adopting this approach to broadening the income tax base and making it more effectively progressive was made earlier by Barreix and Roca (2007) in a study of Uruguay. Subsequently, Barreix, Bes and Roca (2012) extended the argument to Latin America more generally.

10. Calculated from data in http://websie.eclac.cl/sisgen/ConsultaIntegrada.asp.

11. Excluding personal residences, the concentration of wealth has increased from .84 in 1962 to .93 in 2010 (Wolff 2012). As with income there are different ways of measuring wealth distribution, which may often yield different results. For a comprehensive discussion, see Davies (2008).

12. As Torche and Spilerman (2008) show, however, land ownership is much more concentrated in Latin America than in the United States.

13. As with income inequality, however, there are many ways to measure income mobility and different measures may give very different results. Measuring income persistence across a single generation may not be the best measure of inter-generational income mobility (see Jantti et al. 2006). The measures reported in Table 7.4, however, are the only ones available for many Latin American countries; moreover, other studies, such as that just cited, which employ different measures, show comparable results when comparing the United States to European countries. On the other hand, Clark (2013), using a quite different approach (based on surnames) estimates both that the rate of social mobility in the United States is no lower than in other countries and that it has not declined in recent years. And in a recent study, Krebs, Krishna and Maloney (2013) find that most estimates of income mobility in Mexico are subject to measurement error or transitory income shocks and likely provide little evidence of economically significant effects. As with all other

aspects of assessing inequality, there is still much to be learned both about how to measure social mobility and how to interpret the results.

14. On the latter point, see the analysis of PISA data in Ferreira et al. (2013) as well as http://en.wikipedia.org/wiki/Programme_for_International_Student_Assessment#2000. E2.80.932006.

15. A similar rising trend is shown for social spending per capita, especially in Argentina, in Afonso et al. (2012) who use essentially the same dataset as Table 7.5.

16. In 2009, for example, social insurance accounted for 86.4 percent of government expenditure on health in the US (a big increase from the 33.5 percent in 2000) compared with 59.4 percent in Argentina, 54.6 percent in Mexico, 48.6 percent in Colombia and 44.5 percent in Peru. In Canada, however, less than 2 percent of government expenditure on health was financed by social security and in Brazil none was (WHO 2012).

17. Interestingly, a significant share of transfers to the elderly in Canada are income-conditioned, which, along with the slightly larger (VAT-financed) size of the state, may explain why fiscal redistribution is more important in Canada than in the United States (Bird and Zolt, forthcoming).

18. The exceptionally sharp drop in Canada's tax ratio from its 1990 all-time high reflects the strong fiscal retrenchment required during the 1990s to reduce the high budget deficit and the much more restrained spending of subsequent years. For a more detailed comparison of recent trends in Canada and the United States, see Bird and Zolt (forthcoming).

19. This conclusion is even more tenuous than the others because in addition to the general problems of different sources, different methods, and different time periods, the scope of the 'consumption' and 'income' taxes being compared varies from country to country and year to year.

20. Gravelle (2013) generally supports Clausing's argument that much of the corporate tax is borne by owners; however, two other papers in the same journal argue that varying proportions of the tax may be borne by labor.

21. Some scholars assume that most corporate taxes in Latin America are passed on to consumers in the form of increased prices (Aronson and Bergman 2012). However, no good studies exist on the incidence of the corporate income tax in any Latin American country. Barreix, Roca and Villela (2008), recognizing the uncertainty of the incidence of the corporate income tax simply leave it out of their analysis as do Breceda, Rigolini and Saavedra (2009). Although we have not reviewed all the studies relied on by Lustig et al. (2011) and Mahon (2012), the importance of corporate tax revenues in Latin American tax structures (Jimenez, Gomez-Sabaini, and Podesta 2010) and the uncertainty of the incidence of the corporate income tax suggest that conclusions about the distributional effect of increasing 'income taxes' in Latin American countries are at best tentative.

22. An important variant of this approach is to assume that the state is not an actor in itself but simply the instrument of specific groups: social classes (Marxism), organized interest groups (Olson 1965), or partisan political parties (Hibbs 1977). These groups act in a self-interested way to increase their command over resources. In all these cases, however, it is usually simply assumed that those who control the state can use its power as they wish.

23. Of course, this statement is too sweeping because there is a vast literature on tax evasion and compliance and on the effects of taxation on output. Nonetheless, it captures the flavor of much of the tax policy literature.

24. Although Alesina and Reich (2013) do not discuss the fiscal aspect of 'nation-building,' the positive and punitive approaches mentioned in the text are broadly aligned with the 'benevolent' and 'odious' methods of 'building' a country that are the subject of their paper.

25. Aronson and Bergman (2012) offer an interesting example of the implicit acceptance of the welfarist approach where they note that one contributor to the conference summarized in their paper noted that part of the failure of Mexico to introduce major tax reforms may be blamed on what he calls the "ideological principle" of the benefit approach. Note 29 (and the accompanying text) offer several possible alternative explanations.
26. Others have emphasized various aspects of the fiscal contract approach when discussing recent and possible future developments in Latin America. For related, but distinct, views see, for instance, Mahon (2011, 2012), Cornia, Gomez-Sabaini and Martorano (2012) and ECLAC (2013).
27. For an interesting further discussion, see ECLAC (2013).
28. http://www.pulsamerica.co.uk/2013/02/25/brazil-over-12-million-currently-pay-income-tax/.
29. Although this point is not discussed further here, ECLAC (2013) properly emphasizes the role played by natural resource revenues in affecting both tax levels and tax structures in Latin America.
30. The index of tax reform is the simple average of four figures: the average income tax rate (calculated as the average of the maximum personal income tax rate and the corporate rate), income tax productivity (calculated as the ratio of income tax revenues to GDP divided by the average income tax rate), the standard VAT rate, and VAT productivity (c-efficiency), which is similarly defined as the ratio of VAT revenues to GDP divided by the VAT rate (Lora 2012).
31. See Table 7.8, as well as further discussion in ECLAC (2013) and Wang and Caminada (2011).
32. For example, see the reforms proposed by Bird, Poterba and Slemrod (2005) as well as Moller (2012).
33. History seldom supports the case for an 'intelligent designer' of the tax system. See, for example, the story told in Bank (2010) of how a long series of erratic changes over time led to the evolution of the current US corporate income tax regime.
34. To some extent, policies may also reflect the long persistence of national and regional social and cultural norms, as emphasized by Inglehart and Welzel (2010) and, in a different way, by Acemoglu and Robinson (2011).
35. Lora (2012, 31) suggests that, despite the many tax reforms mentioned earlier, most Latin American countries have used perhaps "only 30 percent of the space of reform" although this assertion is at best tenuous given the narrow definition of the "reform space" considered in his study (see note 30 above).
36. Portions of this section follow closely some of the material in Bird (2014), although the argument is developed here in more detail with respect to the Americas.
37. http://www.pewglobal.org/question-search/?qid=1458&cntIDs=@2-@6-@6.50-@8-@32-@38-@50-&stdIDs=@201201.
38. Similar pressures have been at work in developed countries also in recent years. Krugman (2002) provides a nice review of the efforts to eliminate the estate tax in the US, a story told in much more detail in Graetz and Shapiro (2006) and one that is similar to the earlier Canadian experience (Bird 1978).
39. As one businessman interviewed by Pinhanez (2008) said: "It is not that we are really collaborating with each other. But we are talking now." A tax official's take was a bit more cynical: "It is not that we are helping out or consulting for the private sector. We are showing them that we know their business. They have to abide by the law. We have the data on them and that's it." Nonetheless, one of the most striking outcomes of the reform has been the generally more open relations between state tax administrations and taxpayers groups. They are not friends; but they talk to each other within a similar framework of understanding of how different sectors work.

40. See Brautigam, Fjeldstad and Moore (2007) on the limited but still potentially significant role of fiscal policy in this respect.
41. Interestingly, Breceda, Rigolini and Saavedra (2009, 722) exclude pensions from their analysis on the ground that it is "difficult to assess their redistributive nature" owing to their intertemporal dimension and the mix of financing. This is a bit odd, because it is not that hard to disentangle the financing side as Bird and Smart (2013) do for Latin America. However, this omission makes little difference to their argument since public pensions in Latin America go largely to the middle class although financed in many countries to a significant extent from general revenues.
42. For interesting discussions of the paths traced by the 'fiscal sociology' of different countries, see, for example, the studies in Martin, Malhotra, and Prasad (2009).
43. Although at present consumption taxes in many countries may nonetheless impose a heavy and undesirable burden on the poor, it is not difficult to design and implement fairer taxes. See Bird and Miller (1989) for suggestions on how excise taxes and user charges can be made less burdensome in developing countries and, more recently, the important proposal by Barreix, Bes and Roca (2012) on how the same can be done for a broad-based VAT by creating an offsetting credit for lower income groups administered in the same way as the conditional cash transfers already in place in a number of countries in Latin America, including Brazil, Colombia and Mexico.

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8. Reforming subsidies for fossil fuel consumption: Killing several birds with one stone[1]

Charles E. McLure, Jr.

As most fuel subsidies benefit higher income households, it should be possible to eliminate or substantially reduce subsidies, use some of the budgetary savings to finance better-targeted programs to compensate the poorest households, and still have funds left over. (Baig, Mati, Coady, and Ntamatungiro, 2007, p. 14)

8.1 INTRODUCTION

Many developing countries subsidize uneconomic activities. Besides distorting the allocation of resources, subsidies squander scarce public funds, aggravating the problem of revenue mobilization. Governments of developing countries could pick low-hanging revenue fruit by eliminating uneconomic subsidies.

Subsidies for the consumption of fossil fuel are especially wasteful. In addition to the negative impacts on resource allocation and public finances mentioned above, they fritter away foreign exchange, complicate demand management, aggravate energy insecurity, and encourage traffic congestion and air pollution. In addition to these undesirable effects, which, with the exception of some forms of air pollution, affect primarily the country subsidizing fuel consumption, these subsidies encourage the emission of CO_2, the most plentiful greenhouse gas (GHG) thought to be responsible for climate change. Because climate change is a global problem, Annex 1 signatories of the Kyoto Protocol (essentially advanced countries and some countries in transition from socialism) pledged:

Progressive reduction or phasing out of market imperfections, fiscal incentives, tax and duty exemptions and subsidies in all greenhouse gas emitting

sectors that run counter to the objective of the Convention and application of market instruments.[2]

In September 2009, leaders of the Group of Twenty (G-20) largest industrialized and developing economies, in a bid to advance their energy security and climate change agendas, made a non-binding commitment "to rationalize and phase out over the medium term inefficient fossil-fuel subsidies that encourage wasteful consumption."[3] In November 2009, leaders of the Asia-Pacific Economic Cooperation, which includes some developing countries, as well as advanced countries and countries in transition, made a similar commitment.[4] Recognizing the costs described above, many developing countries have made unilateral commitments to reduce subsidies.[5]

This chapter examines subsidies for the consumption of fossil fuels provided by developing countries and oil-exporting countries. (In what follows all unqualified references to fuel subsidies are to subsidies for the consumption of fossil fuels, including electricity that is generated by combusting fossil fuel. Thus neither production subsidies nor subsidies for other types of energy, such as hydro, solar, wind, and nuclear, are considered.[6] In this context, "consumption" does not mean only household consumption; it includes consumption by business and governments.)

The next section describes the negative effects of fuel subsidies mentioned above in greater detail. Although emphasis in this chapter, as in most of the literature and in policy discussions, is on eliminating fuel subsidies, it should be emphasized that reforming fuel subsidies does not necessarily mean eliminating them quickly. There may be cases in which temporary, limited, and well-targeted fuel subsidies are appropriate. No effort has been made to identify these cases, which would require case-by-case analysis of the situation in particular countries.

Progress has been made in recent years in reducing or eliminating subsidies to the consumption of fossil fuels, but much remains to be done.[7] Section 8.3 discusses briefly how fuel subsidies are defined, describes the price-gap methodology commonly used in cross-country comparisons of consumption subsidies, indicates some shortcomings in that methodology, and notes that the level of subsidies is quite sensitive to international fuel prices, moving in concert with them. Section 8.4 presents estimates of fossil fuel consumption subsidies for the 37 countries on which the International Energy Agency has complete data. The section then briefly describes some of the implications of eliminating subsidies, focusing on potential budget impacts in countries that, as a

fraction of GDP, run significant budget deficits and spend significant amounts on fuel subsidies.

Fuel consumption subsidies are often defended as alleviating poverty, and some subsidies may further this objective. But, because fuel subsidies are often poorly targeted, the distributional impact of many subsidies is regressive, or at best proportionate to income. Regressivity is especially likely in most of the countries of Sub-Saharan Africa and some of those in Asia, where only a small minority of the population – fewer than 10 percent in many countries – uses modern fuels and may not even have access to them. It is often the middle class who benefit the most from fuel subsidies – and who defend them most adamantly.[8] Section 8.5 discusses the distributional impact of eliminating subsidies, which varies from country to country, as well as by the type of fuel subsidized.

Although fuel subsidies are costly and are not well-targeted to relieve poverty, eliminating subsidies may impose onerous burdens on the poor. It may thus be necessary, for humanitarian as well as political reasons, to accompany subsidy reform with measures to alleviate the burden on the poor. Section 8.6 examines measures that can be used to protect the poor when fuel consumption subsidies are reformed. Lack of space and expertise precludes discussion of the important issues involved in implementing fuel subsidy reform, including means of increasing support for reform by addressing distributional concerns.[9]

The use of biomass (firewood, charcoal, straw, agricultural residue, or dung) or coal for cooking and heating has several serious disadvantages: inter alia, emissions of GHGs are greater than with fossil fuels other than coal, dangerous indoor air pollution leads to impaired health, especially for women and small children, use of biomass often requires devotion of many hours to gathering fuel, again commonly by women and children, and, where dung is used for fuel, it causes deterioration of soil fertility. In recent years substantial attention has been devoted to assuring access to clean energy for all.[10] An alternative argument for subsidizing the use of fossil fuels, albeit one that probably does not explain the prevalence of subsidies, is thus to induce poor households to shift from biomass and coal (solid or "traditional fuels") to modern (non-solid) fuels (kerosene, gas, and electricity). Section 8.7 discusses the use of fuel subsidies to encourage consumers to switch from traditional fuels to modern fuels.

A short concluding section draws some tentative conclusions, based on the analysis presented earlier. There is clearly a strong case for reforming subsidies to the consumption of fossil fuels, as reform would improve environmental, economic, and budgetary, performance in countries now providing fuel subsidies. Care must be taken, however, to avoid or offset adverse effects on the real income of the poor.

A caveat is in order at this point. The author is not expert in the topics examined here. Moreover, the appropriateness of these conclusions for any given country should be subject to further much more detailed examination, as it is unlikely that "one size fits all." Rather, as the UNEP has warned, "The right policy approach for each country must take account of local market conditions, the structure of the energy sector, patterns of energy use, institutional characteristics, and changing circumstances."[11] See also the third caveat at the end of Section 8.3.

8.2 DISADVANTAGES OF SUBSIDIES FOR FOSSIL FUEL CONSUMPTION[12]

In the absence of external costs and benefits, prices paid by consumers reflect social benefits, and marginal costs of imports and local production represent social costs, as does the price that can be obtained for exports. (In the case of exports the cost is an opportunity cost – what could be derived from exportation.) If, in addition, there are no non-competitive influences, prices reflect social costs.

8.2.1 The Economic and Environmental Costs of Fuel Subsidies

If these assumptions hold, consumption subsidies drive a wedge between the costs of products and their prices, and thus between the social cost and benefits of subsidized products. At the margin, subsidized consumption is worth less than it costs. (This is perhaps most easily seen when scarce foreign exchange is being used to import subsidized petroleum products or when excessive amounts of subsidized petroleum products are being consumed domestically, rather than being exported to earn foreign exchange. In either case foreign exchange could be used to buy imported goods and services that are valued more highly than the subsidized petroleum products.) The result of excessive consumption of subsidized fuel is a sacrifice of potential welfare, often called deadweight loss. Even though the extreme assumptions underlying this model of welfare maximization do not accurately describe reality, it is generally thought that, with some important exceptions, free market prices approximate values fairly closely. This is the reasoning that underlies both the case for subsidy reform and the price-gap methodology described in the next section.

In the case of subsidies for fossil fuel consumption, the assumption that there are no external costs is not valid. The combustion of fossil fuels releases carbon dioxide and other greenhouse gases, gaseous air

pollutants (notably nitrous oxides and sulfur dioxide), and particulates that cause respiratory disease. This means that the optimal price for fossil fuels would lie above what it costs to produce or import them or what could be gained from exporting them.[13] Subsiding the consumption of fossil fuels thus creates a twofold distortion of resource allocation: by encouraging both overconsumption (even if there were no environmental impact) and environmental damage. Subsidies for other kinds of consumption, although uneconomic, generally lack the second form of distortion.

It is common for fuel that is subsidized to be in short supply; after all, because of the subsidy, it costs less to buy the fuel than it is does to produce or import it.[14] Aggravating shortages, kerosene can be substituted for unsubsidized diesel fuel for use in motor vehicles and stationary engines,[15] and subsidized fuel may be smuggled to other countries, where it can be sold for more than its subsidized price. When shortages occur, it is likely to be the poorest members of society who must do without fuel, because of "petty corruption and favouritism," even if fuel is rationed.[16] Moreover, implementing fuel rationing and preventing diversion of fuel to unsubsidized uses and smuggling is a complex activity that absorbs administrative resources that are commonly scarce in developing countries and could be put to better uses.

Fuel subsidies do not merely result in overconsumption, deadweight loss, environmental damage, and shortages, which can be characterized as static effects. They can also have negative dynamic effects. By suppressing opportunities for profit and restraining cash flow of state oil companies, subsidies can deter investment in the energy sector. The poor, ostensibly the target population for subsidies, are likely to bear the brunt of the resulting energy shortages, as occurred in India.[17]

Fuel subsidies also discourage investment in energy-efficient technologies by businesses (including those engaged in agriculture), households (for example, in the choice of automobiles, building design, and appliances), and governments and, by cheapening the cost of transportation, encourage energy-inefficient urban development. Since many of these investments have long lives, countries that subsidize fossil fuel can be locked in to energy-inefficient investments for long periods. The result is excessive emissions of GHGs and pollution, as well as unnecessary economic costs.

The deadweight loss and external costs associated with fuel subsidies may actually be fairly small in the short run, when fuel consumption is relatively unresponsive to changes in price (that is, fuel demand is price-inelastic). In that case the primary cost is budgetary (discussed

below). But costs increase over time, as demand becomes more respon-
sive to price. Moreover, both smuggling to markets where fuel prices are
higher and substitution of subsidized fuel for unsubsidized fuel are likely
to be quite price-elastic.

A shortage of foreign exchange is a chronic problem for many
developing countries. Subsidizing the consumption of fossil fuels aggra-
vates such shortages, regardless of whether the country is a net importer
or a net exporter of fuel, by either encouraging imports of fuel or
discouraging fuel exports, other than cross-border smuggling. Even if
fuel exporting countries do not feel the pinch immediately, they may do
so in the long run, as excess consumption hastens depletion of fuel
reserves and thus the decline of exports and eventual reliance on imports.

One often overlooked implication of the inefficient use of energy is
fuel insecurity. It requires more fuel – and thus more foreign exchange, in
the case of fuel importers – to power an energy-inefficient economy.
Even countries that export fuel, or could, if domestic prices reflected
opportunity costs, may experience energy insecurity because of their
addiction to consumption of subsidized fuel. When energy is unavailable,
or is available only at a prohibitive cost, economic activity grinds to a
crawl, homes and workplaces grow cold and dark, transportation, for
both business and pleasure, is curtailed, and national security suffers.
This effect is more pronounced, the more energy-inefficient is a country's
consumption and production. Given that fuel subsidies encourage profli-
gate use of energy, energy security would be enhanced by their elimin-
ation.[18]

8.2.2   The Budgetary Cost of Fuel Subsidies

Many developing countries have difficulty mobilizing adequate public
revenues. As a result, they under-provide public services or rely on taxes
that distort resource allocation or on excessive borrowing or inflationary
money creation. As documented in Section 8.4, fuel subsidies constitute a
significant drain on government revenues in some developing countries,
countries in transition, and oil-producing countries.[19] These budgetary
costs increase when international fuel prices rise, unless domestic fuel
prices are adjusted to reflect those increases. Smuggling and the use of
subsidized fuel for unintended purposes aggravates the budgetary cost of
subsidies.

Fuel subsidies may be either explicit, requiring budgetary expenditures,
or implicit. Baig et al. (2007, p. 10) observe, "Explicit subsidies mainly
reflect compensation to the national energy company for the increased
difference between the wholesale domestic price and the world price of

fuels." By comparison (p. 9), "The initial cost of implicit subsidies is typically assumed by the national oil company without explicit compensation through the budget."[20] Only explicit subsidies are likely to be reflected as current expenditures in government budgets. Implicit subsidies may eventually be reflected in revenues not realized, for example, as taxes or dividends not received from state-owned oil companies.[21] In some cases subsidies may not entail a fiscal cost, as when export bans increase supply to the domestic market and drive down end-use prices of fuels.

Eliminating fuel subsidies may offer an attractive source of revenue. Besides avoiding distortions in fuel prices, eliminating fuel shortages, preventing illicit use and smuggling of subsidized fuel, alleviating foreign exchange problems, enhancing energy security, and curtailing pollution and the emission of greenhouse gases, such a policy would allow, in some combination, the expansion of public services, the reduction of taxes that distort the allocation of other goods and services (including those of labor and capital), and the avoidance of excessive and perhaps unsustainable borrowing and inflationary money creation. The magnitude of this "multiple dividend"[22] will depend on how much of the revenues saved by not subsidizing fuel consumption must be diverted to protect the real income of the poor, the topic of Section 8.6.[23]

8.2.3 Caveats

There are three important caveats, two specific and one general, to the case for eliminating all fossil fuel subsidies – and perhaps a case for subsidizing consumption of fossil fuels other than coal under certain circumstances. First, despite the negative effects of fossil fuel subsidies described thus far and the undesirable distributional consequences of subsidies to be described in Section 8.5, eliminating all such subsidies could have an onerous effect on the poor in some countries. It may thus be appropriate to retain some fuel subsidies. But subsidies should be much more limited in scope and much better targeted, and thus less costly, in terms of economic distortions, environmental degradation, and negative impacts on public budgets, balance of payments, energy security, and the distribution of income. Cash payments or the expansion of key public services that benefit the poor disproportionately are often better options. See also Section 8.6.

Second, in some of the poorest countries, biomass (wood, charcoal, straw, agricultural residue, and dung) or coal are the primary fuels used in cooking and household heating. The IEA estimates that in 2010 almost 2.6 billion persons worldwide, 38 percent of the global population, relied on biomass;[24] if users of coal are added, the figure is about 3 billion.[25]

Ninety-five percent of these using biomass are found in Sub-Saharan Africa and the developing countries of Asia. More than 90 percent of the population of several African countries relies on biomass, and this rate is 68 percent for the continent considered as a whole, even though it is only 1 percent in North Africa.[26] Section 8.7 considers whether fuel subsidies should be used to induce switching from these traditional fuels to modern fossil fuels.

These two caveats lead to a third and more general truth, that there is no "one size fits all" when it comes to the reform of fossil fuel subsidies. The UNEP has captured both the general case for market allocation of resources, which implies the elimination of fuel subsidies, and the possibility that subsidies may be needed under some circumstances, in stating:

> The right policy approach for each country must take account of local market conditions, the structure of the energy sector, patterns of energy use, institutional characteristics, and changing circumstances. However, there is a broad consensus on the need for an approach that promotes efficient, competitive energy markets as the foundation upon which government policies should be superimposed. Getting market signals right so that prices better reflect the true costs of producing and consuming energy – i.e., taking account of the environmental and social consequences – should be a key guiding principle in all cases.[27]

> However, there may be instances in which subsidizing modern energy use might bring some environmental benefits. For example, encouraging the use of oil products can curb deforestation in developing countries as poor rural and peri-urban households stop using firewood. This can in turn boost carbon sinks and potentially offset the emissions from fuel combustion. Additionally, subsidies for oil products and electricity in poor countries can reduce indoor pollution by encouraging inhabitants to switch away from traditional energies like wood, straw, crop residues and dung.[28]

While there may be a presumption that fuel subsidies should be eliminated, this cannot be known without a careful analysis of the details of the subsidies provided in a particular country. Since lack of both time and expertise precludes such analyses, no attempt is made, with a few exceptions, to draw firm conclusions regarding proper policy for a particular country from the results presented below.

8.3 METHODOLOGICAL ISSUES IN ESTIMATING FOSSIL FUEL CONSUMPTION SUBSIDIES

Following a very brief and general definition of fuel subsidies, this section describes the price-gap methodology that is commonly used to

estimate fuel subsidies and compare them across countries and indicates some of the problems inherent in the use of that methodology. The final subsection notes that estimates of the amounts and rates of subsidization can be quite volatile, varying with the international price of fuels.

8.3.1   General Definition of Fuel Subsidies

Before fuel subsidies can be quantified, it must be known what they are. The Organisation for Economic Co-operation and Development (OECD, 1998) has defined a subsidy as "*any measure that keeps prices for consumers below market levels*, or for producers above market levels *or that reduces costs for consumers* and producers."[29] (Emphasis added to highlight aspects relevant to the definition of consumption subsidies.) Although this definition is quite general, it is adequate for present purposes.[30] The price-gap methodology below, as well as the previous discussion of the disadvantages of fuel subsidies, is consistent with it. Subsidies for the consumption of fossil fuels occur primarily because governments fix prices for fuel, which is often sold by state-owned enterprises, below market prices.

8.3.2   Two Ways to Estimate Fuel Subsidies

Estimates of fossil fuel consumption subsidies for a given country can be built from the bottom up, by detailed analysis of subsidies. While such estimates are essential in informing subsidy reform in a particular country, including the design of policies to mitigate economic dislocation felt by vulnerable populations, they are time- and data-intensive, they are not available for many countries, and it is difficult to compare them across countries.

   The most common way to estimate fuel subsidies involves the price-gap methodology. This approach simply calculates the difference between the average end-use prices paid by consumers of fossil fuels and the full cost of fuel, commonly called the reference price. Although estimates based on this methodology are less precise than bottom-up estimates, and for that reason generally cannot be used as the basis for designing fuel subsidy reform, they can more easily be produced for many countries, utilizing a common methodology, facilitating comparisons across countries. Moreover, they can be produced without the cooperation of governments that may not want to reveal the details of their subsidy programs or provide the data required for the bottom-up approach. But, as explained below, implementation of the price-gap methodology is not as simple as the description above may suggest, and

there are many problems with it. The International Energy Agency (IEA) emphasizes that its estimates of consumption subsidies should be considered a lower bound on the economic cost of fuel subsidies.[31]

8.3.3 The Price-gap Methodology

The reference price is derived by adding the cost of internal transportation, insurance, distribution, and applicable value-added tax (VAT) to the cost of fuel, exclusive of those costs, which here will be called the "basic cost."[32] For imports of oil products, natural gas, and coal, the basic cost is the landed price of fuels, adjusted for differences in quality; for exports, it is the export price. (The calculation is somewhat more complicated in the case of exported fuel; it may be necessary to net out the cost of transportation to shipping terminals before adding in the cost of domestic transportation.) For countries that both produce and import fuel, the basic cost is a weighted average. For non-traded fuel and electricity the basic cost is the long-run marginal cost of production.[33] The reference price of electricity generated by combusting fossil fuel is based on the annual cost of production, which depends, inter alia, on the mix of fuels used in generation and the reference prices of fuels.[34]

It is important to emphasize that the cost of production is not relevant in calculating the subsidy in most fuel-exporting countries. As indicated earlier, the relevant cost is the opportunity cost of fuel – what it would bring in the export market. In low-cost countries this may be well above the cost of production, in which case basing calculations of subsidies on production costs would produce a substantial understatement. Confusion on this issue – and the fact that subsidies may be implicit – may help explain why fuel-exporting countries subsidize consumption of fossil fuels, often quite heavily.[35] Whether or not such confusion exists, subsidized pricing of fuel may represent a way of sharing mineral wealth with the population, albeit a highly distortionary and undesirable way.[36]

Some difficulties of implementing the price-gap methodology

Implementing the price-gap methodology can be challenging. Only a sampling of the most important challenges can be described here.[37] First, it may not be possible to determine reference prices for some fuels accurately for all countries.[38] Although global prices are readily available for some petroleum products, such as gasoline and diesel fuel, prices for natural gas and coal are not uniform and transparent. Moreover, most coal is sold under long-term contracts, whereas the prices that are reported are those associated with spot sales or sales under short-term contracts. Even in the case of oil, adjustments must be made for the type of fuel.

It is especially difficult to establish reference prices for energy sources that are not traded. Natural gas may be "stranded" without access to world markets, due to the lack of pipelines and facilities for liquefying gas.[39] In such a case, the reference price may appear to be quite low – essentially production cost, plus the cost of domestic transportation, distribution, insurance, and VAT. In fact, the reference price should depend on the (perhaps unknown) opportunity cost of leaving the gas in the ground for future exploitation.

Since electricity, the primary outlet for coal, is generally not traded internationally (at least among the countries that subsidize its consumption), international prices cannot be used to establish a basic cost. Long-run marginal cost (LRMC) is thus used as a proxy. The volatility of commodity prices and the dysfunction of credit markets may make estimates of LRMC unreliable. (Raw materials are an important element of construction costs, and financing is crucial for long-lived investments in generating capacity and transmission facilities.) Moreover, there may be substantial differences in regional costs within a country.

Second, world prices must be adjusted to take account of the cost of moving fuel to export markets or from import points to points of consumption, which depends on the type of fuel and the geographical characteristics of countries. Accurate information on transportation margins may not exist for some countries or may vary in quality. It is common to employ a single estimate (or a few estimates) of unit costs of transportation for each type of fuel in calculating reference prices, regardless of country-specific factors, such as terrain, distance traveled, quality of transportation infrastructure, and economies in bulk shipments.[40]

Third, there is some disagreement on the proper treatment of taxes.[41] The World Bank does not include taxes in end-use prices. By comparison, the IEA includes value-added taxes in calculating reference prices, the argument being that they are a normal cost of doing business. Some other taxes are really user charges collected to pay for amelioration or remediation of damages related to energy use.[42] As such, they should also be included in costs, rather than being netted from the end-user price.

8.3.4 The Sensitivity of Fuel Subsidies to Movements in International Fuel Prices

Pricing of fossil fuels can be characterized in one of three ways: as sporadic and ad hoc price setting; as automatic price adjustments, perhaps based on formulas; and as liberalized pricing that reflects market forces. Subsidies are generally greatest under the first regime[43] and

essentially non-existent under the last, except when generally applicable taxes are not applied to fuel and/or electricity.

If fuel prices are held constant or modified only infrequently, higher international fuel prices will imply greater subsidies, and thus larger economic distortions, more serious shortages, increased smuggling, more negative budgetary impacts, and greater deterioration of the country's foreign exchange position.[44] Formula-based automatic price increases would mitigate this effect, if only with a delay. But automatic adjustments have often been suspended in the face of large and rapid increases in international prices, to mitigate the deleterious effect on household incomes. Liberalized pricing helps assure that subsidies do not occur and that they do not grow when international prices rise. Even in that case, fuel prices may be frozen or fuel taxes may be lowered temporarily to prevent the full pass-through of increases in international fuel prices.[45] Subsidy reform may thus be a casualty of increases in international fuel prices.[46]

Subsidies to the consumption of fossil fuel were 35 percent greater in 2010 than in 2009 ($409 billion versus $300 billion) and 28 percent higher than that in 2011 ($523 billion). Increases in subsidies did not necessarily reflect a decision to increase subsidy rates. Indeed, many countries were reducing or phasing out subsidies. Rather, it commonly reflected the fact that subsidized prices did not rise in step with the international price of fuels.[47] Table 8.1 shows that the percentage changes in subsidies and in international oil prices in each year from 2007 to 2011. Except for the relatively small change in subsidies from 2010 to 2011, the percentage changes in subsidies exceeded the percentage changes in oil prices, as might be expected a priori.[48]

A survey of 51 developing and emerging market countries reveals that pass-through of increases in international prices for gasoline during the 2003 to 2006 period was far higher in oil-importing countries (an average of 109 percent) than in oil-exporting countries (an average of 46 percent). This is perhaps to be expected, since the latter group of countries may feel less pressure to pass price increases through to consumers, since the budgetary impact of higher fuel prices is positive. But the oil-exporting countries in the sample were not the fabulously rich countries of the Middle East, which were not included in the sample. (Azerbaijan, Indonesia, Nigeria, and Russia were included; Venezuela was not.) The countries with the lowest pass-through ratios were Lebanon, Bangladesh, Argentina, Egypt and Azerbaijan. In these countries prices increased very little or actually declined from 2003 to 2006, even though international fuel prices rose.[49] Pass-through ratios were smaller for kerosene and diesel fuel – an average of 83 percent, compared with 96 percent for

gasoline. This "probably reflects their relative importance in the consumption basket of poor households and a desire to limit increases in transport and industrial costs."[50]

The sensitivity of fuel subsidies to movements in international fuel prices implies that the information on fuel subsidies in 2011 presented in the next section should be seen as indicating only orders of magnitude, based on a snapshot for that year. For earlier or later years in which fuel prices are higher or lower, subsidies – as a fraction of reference prices, in dollar terms, as a percent of GDP, and relative to budget revenues, expenditures, and deficits – may be higher or lower. Of course, the last-mentioned percentages are also sensitive to the magnitudes of these budgetary figures, which are affected by macroeconomic conditions, as well as policy decisions.

Table 8.1   *Estimated subsidies to the consumption of fossil fuel, 2007–2011 ($ billions); percentage changes in subsidies, compared with percentage changes in oil import prices*

	2007	2008	2009	2010	2011
Oil	186	285	122	193	285
Gas	74	135	85	91	104
Coal	0	4	5	3	3
Electricity	81	130	88	122	131
Total	342	554	300	409	523
% change from prior year	n.a.	+62.0	–45.8	+36.3	+27.9
IEA average price of oil imports ($/barrel)	69.33	97.19	60.4	78.13	107.61
% change from prior year	n.a.	+40.2	–37.9	+29.4	+37.7
% change in subsidies as fraction of % change in price of oil imports	n.a.	154.2	120.8	123.5	74.0

Sources: IEA (2011) p. 508; IEA (2012a, pp. 69–70); "Crude oil import prices and index," available online at: http://stats.oecd.org/BrandedView.aspx?oecd_bv_id=eneprice-data-en& doi= eneprice-data-en. Pre-2011 figures do not reflect revisions.

8.4 QUANTIFICATION OF FUEL SUBSIDIES AND THEIR EFFECTS

This section presents IEA global estimates of subsidies for the consumption of fossil fuels in 2011, estimates of some of the most important effects of eliminating subsidies, and country-specific estimates of subsidies for the 37 countries for which the IEA has complete data.[51] See Table 8.2. While some of these are fabulously oil-rich countries, which together provide the lion's share of fuel subsidies, others, including some that export oil, are poor. In Table 8.3 these subsidy data are combined with fiscal data from the IMF to calculate the budgetary impacts of subsidies offered by the 37 countries.

8.4.1 The Magnitude of Fuel Consumption Subsidies

The IEA estimates that subsidies to the consumption of fossil fuels in those 37 countries amounted to $523 billion in 2011, nearly 28 percent more than the figure for 2010. Subsidies to the consumption of oil products ($285 billion) represented 54 percent of the total. Electricity generated by burning fossil fuels ($131 billion) accounted for just over 25 percent of the total and natural gas ($104 billion) for 20 percent. Coal, with less than 1 percent of the total ($3.2 billion), may appear to be strangely absent, but its primary contribution is included in the figure for electricity, as is the contribution of oil and gas for that purpose. (The estimates reported here do not identify the composition of fuel inputs for subsidized generation of electricity.) China, Thailand, and Kazakhstan are the only countries in which subsidies to coal consumption, per se, amounted to as much as $500 million.[52] The weighted average subsidy rate for all fuels was 24 percent.[53]

8.4.2 The Global Benefits of Removing Fuel Subsidies

The IEA has produced illustrative estimates of the energy savings, reductions in CO_2 emissions, and increases in global GDP that would result from phasing out fossil fuel subsidies between 2012 and 2020. Because subsidy rates fluctuate from year to year, the initial subsidy rate employed in making these estimates is the average for the three year period, 2008–2010. The baseline assumes that subsidy rates remain unchanged at that level.[54]

Table 8.2   Level and composition of subsidies to the consumption of fossil fuel; subsidy rates, 2011

Country	Dollar amount of subsidies ($ billion)					Average subsidy rate (%) (f)	Subsidy per person $/person (g)	Subsidy as a share of GDP (%) (h)
	Oil (a)	Gas (b)	Coal (c)	Electric (d)	Total (e)			
Iran	41.39	23.4	0	17.4	82.19	70.0	1102.2	17.0
Saudi Arabia*	46.12	0	0	14.82	60.94	79.5	2291.2	10.6
Russia*	0	21.87	0	18.28	40.15	18.4	283.4	2.2
India	30.86	3.03	0	5.81	39.70	18.6	33.4	2.4
China	18.45	0	1.39	11.21	31.05	4	23.1	0.4
Venezuela*	21.97	1.89	0	3.22	27.08	80.5	920.0	8.6
Egypt*	15.27	3.78	0	5.42	24.47	54.2	296.5	10.4
Iraq*	20.35	0.29	0	1.59	22.23	64.3	772.5	19.3
UAE*	3.93	11.52	0	6.37	21.82	69.1	4172.	6.1
Indonesia*	15.72	0	00	5.56	21.28	23.2	90.7	2.5
Mexico*	15.9	0	0	0	15.90	16.6	144.4	1.4
Algeria*	11.26	0	0	2.13	13.39	60.7	372.2	7.0
Uzbekistan	1.06	9.09	0	2.59	12.74	60	448.5	28.1
Kuwait*	4.34	2.08	0	4.68	11.10	87.8	3729.3	6.3
Pakistan	2.79	5.54	0	2.75	11.08	35.4	83.0	5.3
Thailand	3.29	0.48	0.85	5.67	10.29	20	150.0	3.0
Argentina*	1.7	3.76	0	4.57	10.03	25.4	246.1	2.2
Ukraine	0	6.68	0	2.66	9.34	25.5	205.4	5.7

Malaysia*	5.35	0.89	0	0.94	7.18	18.4	253.4	2.6
Qatar*	2.03	1.86	0	2.09	5.98	78.6	3622.0	3.4
Kazakhstan*	3.19	0.33	0.58	1.75	5.85	32.6	359.3	3.3
Turkmenistan	0.83	4.36	0	0.65	5.84	81	1115.4	22.7
Bangladesh	0.87	1.89	0	3.00	5.76	44	34.7	5.1
Ecuador*	5.44	0	0	0.12	5.56	53.7	378.6	8.4
Nigeria*	3.62	0	0	0.73	4.35	33.2	26.7	1.8
Vietnam*	1.02	0.16	0.02	2.92	4.12	15.5	46.7	3.4
Libya*	2.26	0.21	0	0.66	3.13	76.9	487.3	8.5
Azerbaijan	0.65	0.83	0	0.47	1.95	35.8	215.9	3.1
Taiwan	0.45	0	0.15	1.02	1.62	3.9	70.3	0.3
Philippines	1.46	0	0	0	1.46	4.3	15.3	0.7
South Africa	0	0	0	1.38	1.38	4.6	27.6	0.3
Angola	1.06	0	0	0.28	1.34	26.8	68.7	1.3
Sri Lanka	0.82	0	0	0.28	1.10	24.1	52.9	1.9
Colombia*	0.65	0	0	0	0.65	4.8	13.9	0.2
El Salvador	0.26	0.35	0	0	0.60	29.7	97.1	2.7
Brunei	0.31	0	0	0.16	0.47	36.5	1158.60	3.0
Korea	0	0	0.19	0	0.19	0.3	3.8	0.0

Notes: Fossil-fuel consumption subsidies designated as "electricity" represent subsidies that result from the under-pricing of only electricity generated by fossil fuels, i.e. factoring out the component of electricity price subsidies attributable to nuclear and renewable energy.
*Net oil exporter.

Source: IEA (2012b).

Table 8.3   Subsidies, revenues, expenditures, and budget deficits as a percent of revenues, expenditures, and budget deficits, 2011

Country	Subsidies as a share of GDP (%)	Revenues as a share of GDP (%)	Expenditures as a share of GDP (%)	Budget surplus as a share of GDP (%)	Subsidies as a share of revenues (%)	Subsidies as a share of expenditures (%)	Subsidies as a share of budget surplus (%)
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
Iran	17.0	24.8	25.0	−0.2	68.5	68.1	−10000
Saudi Arabia*	10.6	53.3	39.3	14.0	19.9	27.0	76.0
Russia*	2.2	38.4	36.8	1.6	5.7	6.0	141.0
India	2.4	18.5	27.5	−9.0	13.0	8.7	−26.7
China	0.4	22.7	23.9	−1.2	1.8	1.7	−32.45
Venezuela*	8.6	35.2	40.7	−5.4	24.4	21.1	−159.3
Egypt*	10.4	22.0	32.0	−9.9	47.3	32.5	−105.1
Iraq*	19.3	78.1	70.5	7.6	24.7	27.4	253.9
UAE*	6.1	35.0	23.9	11.2	17.4	25.5	54.7
Indonesia*	2.5	17.8	18.6	−0.8	14.0	13.5	−328.9
Mexico*	1.4	22.1	25.5	−3.4	6.3	5.5	−41.3
Algeria*	7.0	39.6	39.8	−0.2	17.7	17.6	−3684.2
Uzbekistan	28.1	40.2	31.2	9.0	69.9	90.1	312.2
Kuwait*	6.3	67.6	38.5	29.1	9.3	16.4	21.6
Pakistan	5.3	12.8	19.2	−6.4	41.4	27.6	−83.3
Thailand	3.0	22.7	24.2	−1.6	13.2	12.4	−187.5

Argentina*	2.2	37.3	40.3	-3.0	5.9	5.5	-72.4
Ukraine	5.7	42.4	45.1	-2.7	13.4	12.6	-211.1
Malaysia*	2.6	21.9	28.8	-6.9	11.9	9.0	-37.8
Qatar*	3.4	38.6	26.5	12.1	8.8	12.8	28.2
Kazakhstan*	3.3	27.8	21.9	5.9	11.9	15.1	55.9
Turkmenistan	22.7	18.9	15.2	5.6	120.1	149.3	405.4
Bangladesh	5.1	11.9	16.0	-4.1	42.9	31.8	-124.4
Ecuador*	8.4	40.9	41.9	-1.1	20.6	20.0	-800.0
Nigeria*	1.8	29.5	29.2	0.2	6.1	6.2	900.0
Vietnam*	3.4	27.7	30.9	-3.2	12.3	11.0	-106.3
Libya*	8.5	38.5	63.0	-24.5	22.1	13.5	-34.7
Azerbaijan	3.1	45.5	34.2	11.3	6.8	9.1	27.4
Taiwan	0.3	18.8	22.5	-3.6	1.6	1.3	-8.3
Philippines	0.7	17.3	18.1	-0.8	4/0	3.9	-87.5
South Africa	0.3	27.5	32.1	-4.6	1.1	0.9	-6.6
Angola	1.3	48.8	38.5	10.2	2.7	3.4	12.7
Sri Lanka	1.9	14.5	21.4	-6.9	13.1	8.9	-27.5
Colombia*	0.2	26.9	28.7	-1.8	0.7	0.7	-11.1
El Salvador	2.7						
Brunei	3.0	62.2	32.0	30.2	4.8	9.4	9.9
Korea	0.0	23.4	21.6	1.8	0.0	0.0	0.0

Note: *Net oil exporter.

Source: Column (a): IEA (2012b); government spending (inclusive of grants), revenues, and deficits as a percentage of GDP: IMF (2012). Figures for Angola, Argentina, Colombia, Iran, Iraq, Korea, Kuwait, and Venezuela are IMF staff estimates.

Not all the benefits of eliminating subsidies reported here are likely to be realized, because it is unlikely that all subsidies will be eliminated. Indeed, leaving political opposition aside, it may be appropriate, for reasons discussed in the next two sections, to retain some subsidies either for distributional reasons or to encourage fuel switching. On the other hand, because subsidies are likely to be greater than reported above, the benefits of eliminating them would also be greater. Since consumption subsidies are heavily concentrated in oil-rich countries, especially in the Middle East, results are heavily dependent on whether and to what extent subsidy reforms occur in those countries.

The cost of fuel subsidies is projected to reach $660 (in 2010 dollars) or 0.7 percent of global GDP by 2020, if no further reductions occur. Some of these costs would be explicit, exerting pressure on budgets, and some implicit, initially affecting the financial condition of state oil companies. A review of six studies revealed an increase in global GDP resulting from the elimination of fuel subsidies ranging from 0.1 percent in total by 2010 to 0.7 percent per year to 2050.[55]

The IEA estimates that if fossil fuel subsidies were eliminated, global energy demand would be lower by 3.9 percent in 2020 and by 4.8 percent in 2035. Energy savings increase over time because consumption becomes more price-elastic with the passage of time. Percentage reductions vary from country to country, depending on the country-specific price elasticity of demand and the country's subsidy rate.[56]

The IEA does not attempt to translate these estimates into excess burdens avoided. Four economists at the IMF have estimated for 1999 the deadweight loss resulting from fuel consumption subsidies offered by oil-producing countries.[57] These estimates alternatively ignore environmental externalities or assume that they amount to $0.10 per liter of fuel. They also take account of the possibility that some of the largest oil exporters exert monopoly power over petroleum prices or that OPEC does so. The authors find that, except in the case of monopoly power by OPEC, the optimal price would entail a tax in all countries, instead of a subsidy, and that the implied tax rate is substantially higher if account is taken of environmental externalities than if they are ignored. Only if OPEC exerts monopoly power and environmental externalities are ignored is a member of OPEC justified in subsidizing fuel consumption. The argument is that, from a point of view of members of OPEC (and contrary to the view underlying the price-gap methodology), domestic prices should not be as high as export prices that reflect market power. Even in that case the implied subsidy rate is only one-half the actual rate.

Emissions of CO_2 would fall with the consumption of energy. The IEA estimates that CO_2 emissions would fall by 4.7 percent in 2020 and by

5.8 percent in 2035. Environmental benefits that were not modeled include reductions in sulfur dioxide, nitrous oxides, and particulates.

8.4.3 Country-specific Estimates of Subsidies

The 37 countries for which the IEA provides data on fuel consumption subsidies are all either developing countries, countries in transition, middle-income countries, or – by far the most important – petroleum-producing countries.[58] (Of course, some countries fit in more than one of these categories.) The dollar magnitude of Iran's subsidies ($82 billion) was by far the largest, despite reforms introduced in 2010,[59] followed by those of Saudi Arabia ($61 billion) and Russia ($40 billion). Together these three oil-producing countries accounted for roughly 35 percent of global subsidies to consumption of fossil fuel. India and China, each with more than $30 billion in subsidies, together accounted for roughly another 10 percent of the total. Pakistan ($11 billion) and Bangladesh ($6 billion) are other particularly poor countries lacking significant oil production that are found high on the list of countries subsidizing fuel consumption, ordered by the monetary magnitude of subsidies. Incredibly, Pakistan is in 15th place, just behind Kuwait, and Bangladesh is in 23rd place, two slots ahead of Nigeria.

Dollar amounts are not the most relevant way to characterize fuel subsidies for many purposes. As noted, the weighted average subsidy rate across all 37 countries was 24 percent. Average subsidy rates were at least 75 percent in five net oil-exporting countries, Kuwait (87.8 percent), Venezuela (80.5 percent), Saudi Arabia (79.5 percent), Qatar (78.6 percent), and Libya (76.0 percent), and in Turkmenistan (81 percent, primarily for the consumption of gas), were between 60 percent and 70 percent in three more, Iran (70 percent) the United Arab Emirates (UAE) (69.1 percent), and Algeria (60.7 percent), and exceeded 50 percent in three others, Uzbekistan (57.1 percent, also primarily for gas consumption), Egypt (54.2 percent), and Ecuador (53.7 percent). What is more astonishing and disturbing, given the relatively low rates of access to modern fuels in these two countries (9 percent in Bangladesh and 32 percent in Pakistan), the subsidy rate was 44 percent in Bangladesh (where 52 percent of subsidies went to electricity and 33 percent went to natural gas) and 35.4 percent in Pakistan (50 percent to natural gas and 25 percent each to oil and electricity).

Per capita subsidies to the consumption of fossil fuels – a measure that illustrates clearly just how wasteful subsidies are – exceeded $2,000 per year in 4 countries, all of them oil-rich Middle Eastern countries (UAE: $4,172; Kuwait: $3,729; Qatar: $2,622; and Saudi Arabia: $2,291). Per

capita subsidies also exceeded $750 in Turkmenistan ($1,115), Brunei ($1,159), Iran ($1,102), Venezuela ($920), and Iraq ($773).

The economic cost of subsidies is perhaps easiest to understand if expressed as a percentage of GDP.[60] In this regard, Uzbekistan is the clear winner – or loser – with 28.1 percent. Turkmenistan (22.7 percent), Iraq (19.3 percent), and Iran (17 percent) are the only other countries in which subsidies exceed 15 percent of GDP. This figure exceeds 10 percent in Saudi Arabia (10.6 percent), and Egypt (10.4 percent), and 5 percent in Venezuela (8.6 percent), Libya (8.5 percent), Ecuador (8.4 percent), Algeria (7 percent), Kuwait (6.3 percent), the UAE (6.1 percent), Ukraine (5.7 percent), Pakistan (5.3 percent) and Bangladesh (5.1 percent). Although Egypt and Ecuador both export oil, they like Ukraine, Pakistan, and Bangladesh do not belong on a list dominated by oil-rich countries. In particular, Bangladesh and Pakistan can ill afford to devote this much of their GDP on fuel subsidies, even if per capita subsidies are small in dollar terms ($35 in Bangladesh and $83 in Pakistan). The level of subsidies in Bangladesh is particularly worrisome, since only 9 percent of the population have access to modern fuels.[61] Although providing large dollar amounts of subsidies, India (2.4 percent) and China (0.4 percent) devote relatively small amounts of GDP to fuel subsidies.

8.4.4 Budgetary Impacts of Fuel Subsidies

Table 8.3 compares fossil fuel subsidies with government spending, revenue, and budget deficits for 2011.[62] Subsidies as a share of budgetary spending were extremely high in three countries whose governments might be described as benighted: 149.3 percent in Turkmenistan, 90.1 percent in Uzbekistan, and 68.1 percent in Iran. Other countries where this ratio exceeded 20 percent were Bangladesh (31.8 percent), Egypt (32.6 percent), Saudi Arabia (27.0 percent), Iraq (27.4 percent), UAE (25.6 percent), Pakistan (27.6 percent), Venezuela (21.1 percent), and Ecuador (20.0 percent). While the shares were more modest in other countries, they exceeded 10 percent of expenditures in nine of them. Subsidies exceeded two-thirds of budget revenues in Turkmenistan (120.1 percent), Uzbekistan (69.9 percent), and Iran (68.1 percent) and exceeded 40 percent of revenues in Egypt (47.3 percent), Bangladesh (42.9 percent), and Pakistan (41.1 percent).

A comparison of subsidies and budget deficits makes sense only if the latter are large enough to matter. Subsidies were greater than budget deficits that exceeded 4 percent of GDP in Ukraine (12.6 percent versus 5.7 percent), Venezuela (8.6 percent versus 5.5 percent), Bangladesh (5.1

percent versus 4.1 percent), and Egypt (10.4 percent versus 9.9 percent). Other countries combining subsidies of at least 2 percent of GDP and budget deficits of at least 4 percent of GDP were Pakistan (5.3 percent versus 6.4 percent), Malaysia (2.6 percent versus 6.9 percent), and Libya (8.5 percent versus 24.5 percent). These figures suggest that deficits in these countries could be reduced substantially, if not eliminated, by reforming fuel subsidies, even if some of the savings from subsidy reform were devoted to income maintenance for the poor. Where deficit finance is not a problem, reduction of fuel subsidies could provide badly needed public funds.

The names of certain countries that are not major oil-exporters (e.g., Bangladesh, Ecuador, Egypt, Pakistan, and Ukraine) appear repeatedly in the above description of the magnitude of subsidies. It is reasonable to ask whether the populations of some of the countries with high ratios of subsidies to spending and revenues, if fully aware of the cost of subsidies, the distribution of benefits, and alternatives, might not prefer spending on social services, rather than fuel subsidies.[63] Information on the distribution of benefits of fuel subsidies across income classes and on alternative ways of providing income support, described in the next two sections, suggests that the provision of subsidies for the consumption of fossil fuels is misguided. Clearly, it is not the best way to deal with poverty, if that is the objective.

It must be emphasized that the calculations presented in the previous paragraphs are intended only to illustrate that fuel subsidies may represent low-hanging revenue fruit. But, as noted earlier, the IEA has warned that the estimates produced using the price-gap methodology should be considered a lower limit on the size of subsidies. Considerably more detailed analysis would be required to determine, for each country, the nature and size of fuel subsidies and how much of the cost of fuel subsidies could realistically be shifted to deficit reduction or expansion of public spending. That would, of course, depend on the necessity, feasibility, method, and cost of compensating low-income households for the loss of purchasing power represented by fuel subsidies, as well as the possibility of mobilizing for public purpose revenues needed to replace subsidies that are only implicit.

8.5 THE DISTRIBUTIONAL EFFECTS OF FUEL SUBSIDIES

Subsidies to the consumption of fossil fuel are commonly introduced and defended ostensibly as a means of reducing the burden of fuel prices on

the real incomes of the poor. In fact, a variety of studies show that fuel subsidies are quite ineffective in achieving this result. Because the studies cover different collections of countries, rely on different kinds of data, and employ different methodologies, it is difficult to integrate them.

Based on a survey of 11 of the countries that subsidized consumption of fossil fuels in 2010, the IEA estimates that only 8 percent of the $409 billion spent on fuel subsidies benefited the poorest 20 percent of the population.[64] The percentage of subsidies benefiting this group varied from only 2 percent in South Africa to 11 percent in Pakistan. If fuel subsidies were truly disproportionately benefiting the poor, this figure would exceed 20 percent.[65] Often poor households lack access to subsidized natural gas and electricity and they cannot even dream of owning a vehicle that runs on subsidized motor fuel.

Subsidies to kerosene consumption are the most effective in reaching the poor, despite the incentive to smuggle this fuel to other countries or divert it to uses not intended for subsidization. Nearly 15 percent of kerosene subsidies benefited the lowest quintile of populations. By comparison, subsidies to liquefied petroleum gas (LPG), diesel fuel, and gasoline were the least effective in reaching the poor; only 5 to 6 percent of their benefits went to the poorest quintile. In the case of LPG, the heavy initial cost of equipment and the practice of selling gas in large quantities (compared with sales of kerosene) creates a barrier to its use by the poorest households. With shares of 9 and 10 percent, respectively, benefiting the poorest quintile, electricity and natural gas fall in the middle of the range. These results demonstrate that fossil fuel subsidies are an inefficient means of helping the poor and suggest that there are probably more cost-effective and less distortionary ways of achieving the same distributional objective, namely cash grants and social welfare programs.

Subsidies to the consumption of fossil fuel affect real incomes primarily through two channels.[66] The direct impact occurs when households pay lower prices for fuel and electricity used for heating, lighting, cooking, and private transportation. Its distributional effects depend on the distribution of subsidies across types of fuel and the importance of expenditures on each type of subsidized fuel purchased for these purposes at various points in the income distribution. The indirect impact is transmitted through higher prices paid for non-fuel goods and services, including public transportation. Its distributional effects depend on the fuel-intensity of various products (particularly utilization of diesel fuel and electricity as inputs to transportation and other sectors), as well as consumption patterns and the distribution of subsidies among fuel types. Since estimates of distributional effects generally do not allow for

substitution away from fuel and other products that become more expensive, they should be interpreted as either short-run impacts or upper limits on long-run impacts.

That fuel consumption subsidies are an ineffective way to benefit the poor is hardly surprising. In many of the poorest countries, including several that subsidize fuel consumption, a large share of the population does not even have access to modern fuels.[67] Instead, they utilize wood, charcoal, straw, agricultural residue, dung, or coal for heating and cooking. The UNDP and WHO (2009, p. 14) lists 22 countries in which no more than 5 percent of the population has access to modern fuels. The access rate is less than 10 percent in 29 countries and below 25 percent in 42. Almost all of these countries are located in Sub-Saharan Africa or Asia. Households without access to modern fuels are almost certainly the poorest in each country.

In Bangladesh, where the subsidy rate was 44 percent in 2011, less than 10 percent of the population relies on modern fuel; the other 90 percent are thus unlikely to benefit from fuel subsidies, except indirectly. In Pakistan, both the subsidy rate (35 percent) and the percentage of the population lacking access to modern fuels (68 percent) were lower, but it is again unlikely that fuel subsidies have much impact in reducing the burden of acquiring fuel at the bottom of the income distribution. Even in Nigeria, an important oil exporter that has a subsidy rate of 33 percent, less than three-quarters of the population relies on modern fuel.[68]

The direct benefits of subsidies to fuels that are used by only a small percentage of a country's population accrue primarily to the elites; they are inevitably highly regressive.[69] It seems highly unlikely that the indirect effects of fuel subsidies would be weighted so heavily in favor of the poor that the overall effects of fuel subsidies would not be regressive.

Arze del Granado, Coady, and Gillingham (2010) review studies of the distributional implications of subsidy reform in 20 countries, 9 from Africa, 4 from Latin America, 5 from Asia, and 2 from the Middle East, by examining the effects of a US$0.25 per liter increase in the price of fuel in each of the countries. The result, on average, is a 5.9 percent decline in real income, with a low of 3.8 percent in the Latin American countries and a high of 9.6 percent in the Middle East. Significantly, more than half of the impact is indirect. Data for 12 of the countries (8 of them in Africa) reveal that, although transportation represents only 3.3 percent of household expenditures, it accounts for 10 percent of the indirect impact fuel subsidies have on real income, due to the high energy intensity of the sector. Food accounts for just under 40 percent and non-food for just over 50 percent.[70]

The composition of direct impacts differs quite markedly across countries. In Ghana and Indonesia the posited increase in the price of kerosene would cause real income to fall by 5.0 percent and 4.1 percent, respectively. In only three other countries is the decline as much as 1.0 percent. By comparison, reflecting the lack of access to automobiles in the poorest countries, increasing gasoline prices reduce real income by more than 0.7 percent only in Lebanon, where the decline is 1.9 percent. Because many households lack access to certain types of fuel, figures on direct impacts may substantially understate the impact of a price increase on households that do have access. Thus, for example, if the access rate is only 10 percent, a 0.4 percent overall impact on real income would translate into a 4.0 percent impact on households with access.[71]

Fuel subsidies were found to be neutral in their impact on the distribution of income across quintiles in these countries. This means that, as a way to support the income of the poor, fuel subsidies are badly targeted. But distributional impacts varied considerably by type of fuel. Subsidies to the consumption of kerosene provided relatively more benefit to the poor, as a percentage of income, while gasoline and electricity subsidies worsened the distribution of income. Estimates of the distribution of subsidy benefits tells the same story. The top quintile receives roughly six times as much in benefits as the bottom quintile (42.0 percent versus 7.3 percent). In the case of gasoline and electricity this ratio was much higher, 20 and 14 times as much, respectively. In the case of kerosene, each quintile received roughly 20 percent of the benefits of subsidies.[72]

Electricity subsidies provide relatively more benefits, the greater is household income. This phenomenon may reflect lack of connections for the poor more than differences in consumption patterns for those that are connected. In El Salvador, for example, for those with positive consumption, electricity subsidies represent about the same percentage of income in all quintiles but the top one, where it is lower. But almost one-third of households in the bottom quintile lack connections, compared with an average of about 6 percent in the other four quintiles. While lifeline tariffs have the potential to minimize electricity costs for households that are connected to the grid, they provide no benefits to those that are not. Extending access to the poor may thus be one of the most effective ways to provide fuel subsidies to the poor.[73]

There is often an urban bias in the availability of subsidized fuel. Thus the UNEP (2008, p. 15) observes regarding LPG subsidies in India:

> LPG subsidies mainly benefit higher-income households. … An estimated 76 per cent of this subsidy is allocated in urban areas, which contain only one

quarter of the population. Of this urban subsidy, over half is enjoyed by approximately one quarter of households. This means that almost 40 per cent of the LPG subsidy benefits a mere 7 per cent of the population. Moreover, the subsidy represents less than 5 per cent of expenditure for this segment of the population. This is a far lower share than what Indians living below the poverty line spend on kerosene.[74]

One implication is, of course, that subsidizing use of kerosene is a far more effective anti-poverty policy than subsidizing use of LPG.

8.6 PROTECTING THE POOR WHEN FUEL SUBSIDIES ARE REFORMED

In the absence of fuel subsidies, the cost of fuel consumption can impose an onerous burden on the poor.[75] But, as a means of providing income support for the poor, fuel subsidies are generally poorly targeted and highly ineffective. They simply do not provide much "bang for the buck." According to Arze del Granado et al. (2010, pp. 11–12), it would cost $14 dollars in subsidies, on average, to transfer $1 to households in the lowest quintile of the income distribution. Subsidies for kerosene are better targeted, as this ratio is only about $5. But even this is an inefficient way to help the poor. The cost-effectiveness of kerosene subsidies is limited by the risk of smuggling and substitution of subsidized kerosene for unsubsidized diesel fuel. Even if fuel subsidies are relatively well targeted to relieve burdens on the poor, they distort resource allocation and put a strain on public sector budgets. Thus, as Baig et al. (2007, p. 14), note, "As most fuel subsidies accrue to higher income households, it should be possible to eliminate or substantially reduce subsidies, use some of the budgetary savings to finance better targeted-programs to compensate the poorest households, and still have funds left over."[76] This section discusses how to protect the poor when fuel subsidies are reformed.

Subsidies to the consumption of fossil fuel do not only affect real income, through what economists call income effects. They also have substitution effects; by altering the relative prices of fuels and other goods and services, they distort consumer choices, encouraging over-consumption (and perhaps waste) of fuel and the emission of greenhouse gases. Moreover, unless targeted carefully, they also benefit the non-poor and distort their choices. This line of reasoning suggests that, subject to the possibility (discussed in the next section) that fuel subsidies can have a desirable substitution effect, by inducing switching from biomass and

coal to modern fuel, policies that have only income effects and that benefit primarily the poor should be utilized to protect the real income of the poor when fuel subsidies are reformed.

The case for mitigating the negative impacts of subsidy reform varies from country to country. It is useful to distinguish, as in the previous section, between direct and indirect effects of subsidy reform. Only households with access to modern fuels would suffer directly from subsidy reform, though many more may suffer indirectly. In the 22 countries in which no more than 5 percent of the population has access to modern fuels (or the 29 in which less than 10 percent of the population has access to modern fuel), the case for offsetting the direct impact of subsidy reform would seem weak, as few of those who would be harmed directly by subsidy reform are likely to be the poorest members of society.[77] In such countries it is probably more sensible to concentrate on trying to offset the indirect effects of reform, which would not be so heavily concentrated at the top of the income distribution. The case for compensation for direct impacts of reform would be stronger in countries where large fractions of the population rely on subsidized fuel. Even in those cases, it may be difficult to compensate the poor for the direct impact of subsidy reform.

The feasibility of mitigating negative impacts that subsidy reform would have on the poor also varies from country to country. The choice of techniques to be used to mitigate burdens on the poor as fuel subsidies are phased out will depend in part on the institutions and administrative capacity of the country and its government. Where social safety nets exist, they can be expanded or improved, by using information on socioeconomic and demographic characteristics to target relief to particularly vulnerable parts of the population (e.g., the elderly, children, the unemployed, and those living in areas of high poverty).[78] It may be possible to exploit local knowledge (for example, that of teachers or community leaders) to target cash payments.[79] Better targeting makes it possible to achieve the same or better distributional results, while avoiding distortions and spending less.[80] But any such techniques are vulnerable to abuse or outright corruption.

Where social safety nets do not exist or are inadequate, it may be necessary to use more indirect ways of helping the poor, such as subsidized school meals, reduced fees for education and health care, subsidies to urban mass transport, lifeline tariffs, and, where feasible, cash transfers to vulnerable groups. Public spending that is especially beneficial to the poor can also be expanded, such as health and education expenditures, expansion of rural roads, and electrification.[81]

Arze del Granado et al. (2010, p. 15) describe the experience of five countries (Gabon, Ghana, Mozambique, Indonesia, and Jordan) in

reforming fuel subsidies. Among the actions taken to relieve the burden on the poor in one or more of these countries were the following: cash payments to the poor, assistance to single mothers, increased funding of microcredit programs targeting disadvantaged rural women, lifeline tariffs for water and electricity, waiver of school fees, free textbooks, investment in rural health services, electrification, and drinking water supply, increased access to LPG, and an increase in the minimum wage.

There is a strong case for eliminating most subsidies to consumption of fossil fuels. There would be allocational, environmental, budgetary, and foreign exchange benefits. But there may be a case in some countries for temporarily retaining well-targeted fuel subsidies (e.g., temporarily retaining subsidies to kerosene, while phasing out other fuel subsidies), recognizing the limitations of such a policy (budgetary cost, limited distributional impact, economic distortions, the risk of smuggling and diversion to replace diesel fuel) – and the risk that subsidies retained "temporarily" will become permanent. Among the reasons are the difficulty of quickly implementing well-designed alternatives (cash grants and spending programs), the advantages of reducing reliance on biomass and coal, and the benefits of electrification. As UNEP says:

> In practice, there may be a good case for retaining an element of subsidy to improve access to modern energy sources for the poor – especially where social welfare infrastructure for distributing income support to the poor does not exist. This argument is particularly strong for electricity because of its key role in economic and social development, in alleviating poverty and reducing indoor pollution. Therefore, subsidies are likely to remain a major part of pro-poor energy policies in developing countries for some time. The challenge is to make sure that they do not lead to excessive levels of energy consumption and environmental damage. UNEP (2008, p. 21)

That there may be a case for well-targeted fuel subsidies in some cases does not mean that most subsidies should not be eliminated. All too often, and for too long, fuel subsidies have been promoted, enacted, and retained on the grounds that they are needed to protect the poor from high energy prices, when in fact they benefit primarily the non-poor.

8.7 INCENTIVES TO SWITCH FROM TRADITIONAL FUELS

As noted in the Introduction, the use of traditional fuels (biomass and coal) for cooking and heating is associated with serious problems – problems not associated with the use of modern fuels (kerosene, gas and

electricity) – and is unsustainable in many countries. Cooking and heating with biomass or coal in poorly ventilated quarters causes respiratory diseases (mainly pneumonia, chronic respiratory disease, and, in the case of coal, lung cancer), especially among women and young children, and carries a risk of burns and uncontrolled fires. The need to gather wood and carry it home, which may consume several hours per day in some cases, takes women and children from more productive activities, participation in the remunerated economic activities in the former case and education in the latter.[82] The use of cow dung for fuel reduces the organic content of soil and thus soil fertility, and deforestation leads to soil erosion and eliminates an important carbon sink.[83] Many of those who use traditional fuels do not have access to improved cook stoves, some of which reduce the need for fuel used in cooking by as much as 30 percent. In 26 countries, almost all of them in Sub-Saharan Africa, no more than 10 percent of those using solid fuel have access to stoves that embody improved technology.[84]

There is also a distributional element to this problem, as access to modern fuels is least common in the least developed countries, is less prevalent in rural areas than in urban areas, and is especially uncommon among the poorest members of society. Indeed, since income is generally higher in urban than in rural areas and access to modern fuels is substantially lower in rural areas, fuel subsidies are almost inevitably regressive, even leaving aside the regressive distribution of subsidy benefits among those who do utilize the subsidized fuels.

It may appear that there is a case for subsidizing the consumption of fossil fuels other than coal, in order to induce fuel switching.[85] Thus the UNEP says, "Where they result in switching from traditional fuels and in improved access to electricity, those subsidies can bring considerable benefits to poor communities. These include less indoor pollution and a reduction in the time women and children spend gathering fuel and, therefore, more time for productive activities like farming, and education."[86] A case study for Uganda that focuses on these issues advocates government intervention to encourage transition to modern fuels.[87]

According to this reasoning, it may not always be enough to provide cash grants to the poor or provide public services of special significance to them when fuel subsidies are eliminated. Elimination of fuel subsidies does create a level playing field between traditional and modern fuels. But, compared with the distorted situation with fuel subsidies, such a neutral policy means that there is a substitution effect that encourages the use of biomass or coal instead of fossil fuels.[88] Thus, a "Citizen's Guide to Energy Subsidies in Bangladesh" warns, "Fuel subsidy reform could lead to an increase in biomass consumption. This should be an important

consideration for government when designing reform policies and accompanying support measures for low-income groups."[89] This reasoning suggests that in extremely poor countries there may be a case for retaining (or providing) well-targeted subsidies to the use of fossil fuels other than coal.[90]

On the other hand, there is evidence that fossil fuel subsidies are not effective in inducing the poor to shift from biomass to modern fuels, except perhaps in urban areas, where access to, and use of, modern fuels is much more common and access to biomass is not as easy.[91] Heltberg (2004, p. 885) states:

> There are not many policy options for promotion of fuel switching. Price subsidies for modern fuels have historically been used in the name of promoting fuel switching – but price subsidies are often undesirable because of their high fiscal costs, poor targeting (especially in the case of LPG), and leakage (in the case of kerosene). Kerosene subsidies would in many cases have the most pro-poor distribution, but kerosene sold for fuel is inevitably re-directed to automotive uses on a large scale. … Subsidized kerosene is therefore little effective as a tool for fuel switching, despite the fact that among all the modern cooking fuels kerosene probably competes the closest with firewood.

The UNEP document quoted above goes on to say:

> In reality, however, these subsidies often benefit mainly the energy companies, equipment suppliers and the better-off households, especially in the towns and cities. In some cases, they may not even reach the poor at all. As a result, many energy-subsidy programmes intended to boost poor households' purchasing power or rural communities' access to modern energy through lower prices can, paradoxically, leave the poor worse off, since the costs are shared by the entire population including the poor.[92]

The choice of fuel to use for cooking and heating appears to be highly dependent on income level and education, the latter perhaps because of the higher implied opportunity cost of using solid fuel.[93] About 3 billion people currently rely on traditional fuels and, since income and educational achievement are unlikely to be increased rapidly, an estimated 2.8 billion will do so in 2030.[94] Thus, "clean energy" efforts have been directed not so much at fuel switching as at improved use of traditional fuels – assuring adequate supplies of fuelwood, improved ventilation, and uptake of clean stoves, which can decrease emissions of GHGs and particulates, health risks, and the amount of time spent in gathering fuel.[95] Some energy-efficient stoves are more affordable than switching to stoves that burn kerosene or LPG. Even so, subsidies for clean stoves

have been disappointing, leading to poor maintenance and abandonment of malfunctioning stoves, as well as high budgetary costs.[96] Microfinance may facilitate the purchase of an improved stove by the poor.[97] In some contexts there may be a case for subsidizing the development, manufacture, and distribution of improved stoves, rather than subsidizing either the consumption of fossil fuels or the purchase of energy-efficient stoves.[98]

8.8   SUBSIDIES FOR ELECTRIFICATION

The IEA (2011, p. 472), estimates that 1.3 billion people worldwide, or 19 percent of the global population, do not have access to electricity.[99] Of these, more than 95 percent live in either Sub-Saharan Africa or the developing countries of Asia, and more than 80 percent live in rural areas. Ten countries, four in Asia and six in Africa, together account for almost two-thirds of those without electricity. While Bangladesh is the only one of these four Asian countries with an electrification rate less than 50 percent, in five of these six African countries, from 77 percent to 92 percent of the population lacks access to electricity. Whereas the electrification rate is 92 percent in urban areas of developing countries, in rural areas it is only 64 percent. UNEP (2008, p. 27) states the case for subsidizing electrification, especially in rural areas, and perhaps the ongoing use of electricity by the poor:[100]

> Access to electricity services is essential to alleviate dire poverty and improve living standards. Certain energy services can only be provided effectively by electricity. It is the only practical means of running basic domestic appliances, such as telephones and refrigerators. And it provides the best quality and cheapest form of lighting. … Good lighting allows people to extend the day, which, in turn, enables them to read or study longer, raising educational levels. Access to electricity also boosts economic productivity, by reducing manual labour. It also leads to better health, by replacing polluting indoor fuels, by improving hygiene with the use of refrigerators and by making it possible to provide modern health services. Electricity, for example, enables doctors and clinics to keep vaccines and medicines refrigerated, so that routine and emergency treatment can be offered locally.[101]

This is a tough nut to crack. If the objective is universal access to electricity, it may be necessary to subsidize electrification, including costs of connecting to the grid, because the poor may lack the ability to pay these costs, either up-front or spread out and included in monthly charges. Improved access to credit could help, if the problem is lack of access, but not if it is low income.[102] In any event, it is probably

appropriate to subsidize both connection and the use of electricity in schools that serve primarily the poor, because of the public benefits of education.

In theory, limiting subsidies for the use of electricity to the poor is most effectively achieved through the use of lifeline tariffs – setting a low price for the first tranche of use. By making these low rates available only to those with consumption below a very low level, defined in terms of capacity or average consumption, it is possible to avoid applying the low rate to electricity use by other consumers.[103] But experience has been mixed, in part because of poor design. Until recently, eligibility for the lifeline rate was so generous in Tanzania that many well-off households qualified.[104]

More generally, Komives et al. (2007) find that quantity-based subsidies generally do not perform well in targeting benefits to the poor. They observe (p. 673), "the poor targeting performance of quantity-based subsidies is the combined effect of a coverage gap between the poor and non-poor, the poor performance of quantity consumed as a proxy for income, and the presence of general subsidies and fixed charges." They conclude that geographic targeting is often more effective in limiting benefits to the poor. Data on socioeconomic circumstances of areas can be used to determine where subsidies to electrification are appropriate.[105]

If tariffs are limited to what consumers can pay, investments in electrification may not be financially viable; subsidies are likely to be required. The result may be, in addition to economic distortions and unsustainable budgetary impacts, the inability to serve those who would benefit most from electrification. In India, for example, subsidies were so generous (about 50 percent of costs for households and 90 percent for farmers) that electricity boards incurred such large losses that they could not meet targets for connecting new villages and rural households.[106]

8.9   CONCLUDING REMARKS: REACHING MULTIPLE GOALS WITH SUBSIDY REFORM

The previous discussion suggests the following criteria for judging the efficacy of policies related to subsidy reform: environmental effects (reduced emissions of GHGs, gaseous pollutants, including carcinogens, and particulates); economic effects (reductions in economic distortions, foreign exchange shortages, difficulties of demand management, and energy insecurity); effect on the public budgetary situation; protection of the real incomes of the poor who use fossil fuels directly (including access to public services); and improvement of the situation of the poor

who do not now use fossil fuels directly (increased income, including access to public services; improved access to affordable clean fuel and modern stoves). Table 8.4 is an attempt to indicate the effectiveness of various combinations of policies, as measured against these criteria. A politically important column is omitted from the table: the effects on the real incomes of the non-poor; in all cases these effects are likely to be negative. These groups are, of course, likely to try to undermine attempts at subsidy reform.

Option 1, subsidy reform, which might involve partial or complete elimination of subsidies to the consumption of fossil fuels, with nothing more, would provide environmental, economic, and budgetary benefits, but would reduce the real incomes of both the poor who use fossil fuel directly and, through indirect effects on prices, the real incomes of the poor who do not now use fossil fuel directly. It is unlikely to be politically viable.

Options 2 and 3, which combine subsidy reform with either income support or increased public services, would mitigate, and perhaps outweigh, the negative effects on the real incomes of those who consume fossil fuel directly, and might also improve the situation of the poor who do not now consume fossil fuel directly. These distributional effects would, of course, depend on the coverage of income support (especially whether it reached those who do not now consume fossil fuel directly) and the nature of the increased public services.

Option 4 combines subsidy reform with an effective program to provide clean energy (improved stoves or better ventilation and greater access to biomass) to those who do not now consume fossil fuel, as well as either income support or increased public services. It would provide even greater environmental benefits than the other options, by resulting in less particulate pollution (and, if coal would otherwise be burned inefficiently, fewer carcinogens), and greater economic benefits, by freeing women and children to pursue education and more productive work than gathering firewood. Whether the budgetary situation would improve is unclear.

In short, in many of the countries that subsidize the consumption of fossil fuels it should be possible to kill several birds with one stone – or a few stones. Reforming fuel subsidies would improve resource allocation and have environmental benefits. Details of what is possible beyond that are country-specific, but it probably would be possible to use either cash payments or increased public services to protect the real income of the poor. Since the distribution of benefits of subsidies is commonly regressive, in many countries this could probably be achieved while

generating budgetary savings. A clean energy program would benefit those not consuming fossil fuels directly.

Table 8.4   How to kill more than one bird

Instrument	Objectives				
Subsidy reform, with:	Environ-mental benefits	Economic benefits	Improved budgetary situation	Protecting the real income of the poor using fossil fuel directly	Improvement of the situation of the poor not using fossil fuel directly
1. Nothing more	Yes	Yes	Yes	No	No
2. Income support	Yes	Yes	Probably, but less	Yes	Depends on scope of support program
3. Increased public services	Yes	Yes	Probably, but less	Yes	Depends on nature of services
4. Option 2 or 3, with clean energy program	Yes, greater	Yes, greater	Unclear	Yes; as in options 2 and 3	Yes

NOTES

1. The author thanks Richard Bird for useful comments on a preliminary draft of this chapter, but assumes sole responsibility for the views expressed here and for any errors.
2. Kyoto Protocol (Article 2(a)(v)).
3. G-20 Leaders (2009).
4. APEC Leaders (2009).
5. Issues of *World Energy Outlook* for various years describe some of these commitments, progress in fulfilling them, and political impediments to doing so.
6. On subsidies to non-renewable energy, see IEA (2011, pp. 527–540) and IEA (2012a, pp. 233–236). Fuel subsidies are commonly characterized as being related to production or to consumption. Production subsidies are important in both advanced and developing countries. Most fuel consumption subsidies occur in non-OECD countries. IEA (2011, p. 509).
7. "Subsidies are thought to have fallen sharply in the early to mid-1990s, with the transition to market economies in the former communist bloc countries, but may have risen in recent years as many non-OECD countries have sought to prevent higher international energy prices from feeding into final prices for social reasons" UNEP

(2008, p. 10). In addition to fostering energy-inefficient manufacturing, the Soviet system failed to price properly the electricity and heat delivered to commercial and residential customers. Petri, Taube, and Tsyvinski (2003). See also *World Energy Outlook* for various years.

8. If, as Dr. Samuel Johnson famously proclaimed in 1775, "Patriotism is the last refuge of the scoundrel", perhaps protecting the poor is the scoundrel's next-to-last refuge.

9. See, however, Gupta et al. (2000), UNEP (2004, pp. 147–154), UNEP (2008, pp. 20–29), Victor (2009), Laan (2010), IEA, OPEC, OECD, and World Bank (2010, pp. 33–37), IEA, OECD, and World Bank (2010, pp. 27–36), IEA (2011, pp. 522–527), and APEC (2012, pp. 54–68).

10. The IEA (2011, p. 471), notes that the UN has declared 2012 to be the "International Year of Sustainable Energy for All." IEA (2012a), Chapter 18 is devoted to "Measuring Progress towards Energy for All."

11. UNEP (2008, p. 7).

12. Among the many places these disadvantages are discussed are Gupta, Clements, Fletcher, and Inchauste (2003), UNEP (2004, pp. 147–154), OECD (2009, pp. 101–109), IEA, OPEC, OECD, and World Bank (2010), and APEC (2012), all of which provide extensive bibliographies. IEA, OECD, and World Bank (2010, pp. 27–36), provides an excellent synthesis. Reducing the problems associated with fuel subsidies is sometimes said to be essential to achievement of the millennium development goals and the three pillars of sustainable development: economy, social welfare, and environment. See, for example, UNEP (2008, p. 5), IEA, OPEC, OECD, and World Bank (2010), and UN-Energy (2005, pp. 6–7).

13. It can be argued that, from the perspective of any one country, the price of fuel should reflect only social costs occurring in that country – that it should not reflect the worldwide damage caused by the release of greenhouse gases. In other words, the price that is optimal for a single country may not be optimal from a worldwide point of view. Measurement of price-gaps generally does not take account of external costs. If it does, it generally does not distinguish between external costs that are experienced within the country and those that are experienced outside.

14. UNEP (2008, p. 15), notes that state-owned suppliers of LPG in India were forced to ration supply to limit their losses.

15. Baig et al. (2007, p. 16, note 7), cite a World Bank study that estimates that half of the subsidized kerosene sold in India is used to power vehicles.

16. UNEP (2008, p. 14).

17. See UNEP (2008, p. 29), regarding financial impediments to rural electrification.

18. In principle, global energy security is undermined by the presence of fuel subsidies in any country. The oligopolistic production ceilings set by OPEC offset (some, all, or more than all of) the global effects of fuel subsidies.

19. For example, Indonesia and Yemen both spend more on oil subsidies than on health and education combined. UNEP (2008, p. 13).

20. Baig et al. (2007, p. 10) present figures for explicit and implicit fuel subsidies, as a percentage of GDP, for 2003 (actual), 2005 (estimated), and 2006 (projected), for 16 countries.

21. Espinasa (2003) points out that the effect on the government take (tax receipts and dividends) will be lower, the lower is the income tax rate and the lower the share of after-tax profits of state oil companies paid in dividends.

22. Using a Pigouvian tax to cause prices to reflect the social cost of environmental damage related to pollution and using revenues from the tax to reduce distortionary taxes entails a double dividend. The first dividend is the reduction in environmental damage caused by the tax and the second is the improvement in resource allocation resulting from the use of revenues from the tax to replace those from distortionary taxes. See Goulder (1995). As noted in the text, eliminating fuel subsidies involves

several other dividends, in addition to dividends analogous to these two. In either case the second dividend may be the expansion of valuable public services or the avoidance of debt or money creation, rather than the reduction of distortionary taxes.

23. Referring to subsidies that "harm the environment, bring few social benefits and carry large economic costs," UNEP (2008, p. 22), notes that "subsidy removal, in this case, would be a triple-win policy reform." Similarly, IEA, OECD, and World Bank (2010, p. 3), says, "Phasing-out fossil-fuel subsidies represents a triple-win solution. It would enhance energy security, reduce emissions of greenhouse gases and bring immediate economic gains." In both of these descriptions, budgetary savings and positive foreign exchange effects are included in economic gains. Thus, referring to subsidies, IEA, OECD, and World Bank (2010, p. 3), says, "they are creating market distortions, imposing an unsupportable fiscal burden on government budgets and are weakening trade balances." It is clear that there are more than three "wins."

24. IEA (2012a, p. 532, Table 18.1). The countries with the largest reliance on biofuels are India, with 772 million, China (387 million), Bangladesh (149 million), Indonesia (128 million), and Pakistan (111 million). In Bangladesh 91 percent of the population relies on biomass; that percentage is lower in the other Asian countries mentioned here.

25. Roughly 400 million people, most of them in China, rely on coal. IEA (2012a, p. 532, note 5).

26. IEA (2012a, p. 532, Table 18.1). For a more comprehensive survey of biomass use, see UNDP and WHO (2009) and Ekouevi and Tuntivate (2011, pp. 2–5).

27. UNEP (2008, p. 7).

28. UNEP (2008, p. 15). It is now understood that using wood for heating and cooking does not ordinarily cause deforestation, since most of wood is gathered, not cut. Also, it appears that fuel subsidies may not be effective in inducing fuel switching. See Section 8.7.

29. Similarly, the International Energy Agency (IEA, 2011, p. 509) has defined energy subsidies as "any government action that concerns primarily the energy sector that lowers the cost of energy production, raises the price received by energy producers or lowers the price paid by energy consumers."

30. The US Energy Information Administration (1992, p. 2) is more expansive, describing an energy subsidy as "any government action designed to influence energy market outcomes, whether through financial incentives, regulation, research and development or public enterprises." GSI (2010) discusses alternative ways of defining fuel subsidies. APEC (2012, pp. 13–14), is one of many publications providing more specific descriptions and examples of policies that subsidize the production or consumption of energy.

31. IEA (2011, p. 513).

32. This term is not commonly used; it is employed here solely for expositional convenience. Coady et al. (2010, pp. 4–6), distinguish "tax-exclusive" and "tax-inclusive" subsidies. The latter include "optimal taxes," in addition to marginal supply costs. Optimal taxes, which are not included in the reference prices on which the current discussion is based, include charges for environmental damage, and, in accord with the Ramsey rule for optimal commodity taxation, may be inversely related to the price elasticity of demand, in order to minimize distortion in consumption choices. The inelasticity of demand for fuel, at least in the short run, as well as the existence of important external costs, suggests that taxes on fossil fuel should be higher than those on other products. See Coady et al. (2010, p. 5). Tax inclusive subsidies would therefore be larger than tax-exclusive subsidies. Moreover, whereas subsidies for fuel consumption calculated on a tax-exclusive basis occur almost exclusively in developing countries, subsidies calculated on a tax-inclusive

basis would also occur in developed countries and would be quite large in the United States and China, the largest emitters of GHGs.

33. IEA (2011, p. 512). Gupta et al. (2003, pp. 385–389 and Appendix), also provide an excellent description of this methodology. As noted below, Koplow (2009) points out deficiencies in the methodology.

34. Underpricing of fuel may not result only from setting end-use prices below reference prices. Under-collection of bills, which may or may not reflect a conscious policy, and theft of energy (for example, through illegal electric connections and diversion of fuel from pipelines) may also contribute to the de facto underpricing of fuel. See IEA (2011, p. 515). Under-collection and energy theft arguably should not be considered to be subsidies, even if they are reflected in price gaps, unless condoned as a matter of policy. It is unclear whether the IEA estimates of subsidies include the effects of under-collection and theft.

35. In a 2010 report to the G-20, the OPEC Secretariat stated that "for countries that are well-endowed with energy … the benchmark used should concern the cost of production rather than the international market price." See OPEC (2010). Because of this view, OPEC did not associate itself with estimates of subsidies based on the price-gap methodology in IEA, OPEC, OECD, and World Bank (2010). The author encountered this misunderstanding in Venezuela in the early 1980s. He was assured that there was little or no subsidy to the consumption of petroleum products, because prices covered the cost of production, which was well below the export price.

There is a sense in which the OPEC view displays economic logic – although not for "countries that are well-endowed with energy" that are not members of OPEC. From the point of view of any of the 12 members of OPEC (Algeria, Angola, Ecuador, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, United Arab Emirates, and Venezuela), the existence of production quotas means that, aside from the benefit of conserving oil reserves for future years (and cheating, which will not be considered further), the world price of petroleum does not really represent an opportunity cost. Except for the fact that reserves have future value, there would be no reason for these countries not to make petroleum products available to their populations at prices below world prices, as long as they covered costs of production. The specter of exhaustion of reserves would, of course, change the calculation. If, for example, a country thought it had only two years' worth of reserves left, it would rationally assign a value to depletion in the current year equal to the discounted value of the price that could be realized one year hence. The enormous reserves that some OPEC members hold makes it understandable that they might not assign a high opportunity cost to domestic consumption.

36. In advanced countries sharing of resource wealth commonly takes the form of lower non-resource taxes or higher spending, rather than consumption subsidies. Alaska provides each resident an annual cash "dividend." In Texas the permanent school fund receives royalties from minerals (especially oil and gas) produced on land that it owns. Some resource-rich nations have established sovereign wealth funds and some US states and Canadian provinces have "heritage trust funds". IEA, OECD, and World Bank (2010, p. 44), provides a brief description of some of these. It notes, p. 43, "The main objectives of oil funds are to shield the domestic economy from the volatility of world prices, to foster investment in branches other than natural-resources exploitation, and to share income equitably across generations." Lack of time and expertise precludes a thorough discussion of this topic. See, however, Davis et al. (2003).

37. On the difficulties of implementing the price-gap methodology and the implications of these difficulties, see Koplow (2009).

38. See Koplow (2009, pp. 6–7). Kaplow notes that global prices for energy may be distorted by non-competitive elements such as OPEC and by fuel subsidies in other

countries. The implication seems to be that the basic assumption underlying the calculation of subsidies, that reference prices represent the social cost of energy, may not be valid. Seen from the viewpoint of any single non-OPEC country, this point seems irrelevant. The social cost of energy to that country is the world price; whether or not those prices are competitively determined seems to be beside the point. If one were interested in estimating the magnitude of subsidies offered by a member of OPEC that can exert significant market power or of those offered by all OPEC countries considered together it would be relevant to consider non-competitive forces. See the discussion in the text at note 57.

39. In this case there is no difference between a consumption and a production subsidy.

40. See Koplow (2009, pp. 7–8). Noting that domestic transportation and distribution costs in developing countries are, on average, "remarkably similar" to those in developed countries, Gupta et al. (2003, p. 387), use costs from G-7 countries. At only about 2 percent of total costs, differences in international transportation costs could not matter much. These authors note, however (p. 387), that shipping costs may be higher than assumed in the former Soviet Union, because of ice-blocked ports and pipeline constraints.

41. See Koplow (2009, p. 8).

42. Consistent with the discussion of note 32 above, it can be argued that the external cost of CO_2 emissions should be included in the calculation of costs used to measure subsidies. On the other hand, it can be asserted that costs external to the country are not relevant in calculating subsidies; see note 13 above. Generally, no adjustment is made for external costs.

43. Baig et al. (2007, p. 9), note "in several cases, ad hoc adjustments translated into prolonged price freezes".

44. Effects on emissions of CO_2 are hard to tease out. In theory, greater subsidies induce more emissions. But this effect is properly measured relative to a level of emissions that would be lower in the no-subsidy counterfactual, due to the higher international price of fuel.

45. UN-Energy (2005, p. 15) gives such a policy qualified support: "In countries that impose high taxes on imported petroleum fuels, lowering these taxes when oil prices are high and volatile is a way to protect the poor. Helping and protecting poor households requires governments to balance short-term support in terms of subsidies with the longer term need to let market forces influence the choice of fuels and energy practices."

46. Arze del Granado et al. (2010, p. 16) note that both Ghana and Indonesia abandoned efforts to reform fuel subsidies in response to increases in fuel prices and (in Appendix table 5) cite evidence that the pass-through of international fuel price increases deteriorated when fuel prices rose between 2004 and mid-2008. See also Baig et al. (2007, pp. 8–9), and IEA (2012a, pp. 71–72).

47. "The increase in the cost of fossil-fuel subsidies between 2010 and 2011 primarily reflects higher international energy prices and rising consumption of subsidized fuels. The estimated subsidy bill would have been even higher had it not been for policy interventions to reform subsidy programmes in a number of countries" (IEA, 2012a, pp. 69–70). Citing IEA (2010), APEC (2012, p. 15) notes, "The considerable variations of figures between years are mainly due to fluctuations in world prices … but also the result of changes in domestic pricing policies, variations in exchange rates with the US dollar and shifts in demand." For an analysis of how subsidies and taxes on petroleum in various types of countries changed as oil prices changed between 2003 and 2008, see Coady et al. (2010, pp. 6–10).

48. A simple example is instructive. Assume that in year 1 the international price of oil is 100 and the domestic price of fuel is 60, so the subsidy is 40 or 40 percent. Assume now that the price of oil rises by 40 percent or 40, but the domestic price of

fuel is unchanged at 60, so the subsidy increases to 80, or by 100 percent. The ratio of the percentage increase in the subsidy to the percentage increase in the price of oil is 100%/40% = 2.5.

The above example assumes implicitly that the quantity of fuel consumed is the same in both years. If 120 percent as much fuel is consumed in the second year as in the first, increasing from a normalized value of 1.0 to 1.2, the subsidy in the second year 2 is 96, or 120 percent more than in the first year, and the ratio of percentage increases is 120%/40% = 3.0. If, on the other hand, consumption falls by 20 percent, the ratio would be 2.0.

More generally, let O be the international price of oil in the first year and let F be the domestic price of fuel in the first year. If consumption is constant at a normalized value of 1.0, both the subsidy per unit of consumption and the amount of the subsidy are $(O - F)$ and the subsidy rate is $(O - F)/O$. If the price of oil increases by I, the price of oil in the second year is $O + I$ and the fractional change in the price of oil is I/O. If the domestic price of fuel is unchanged at F, the per unit subsidy in the second year becomes $O + I - F$ and the fractional increase in the subsidy is $I/(O - F)$. The ratio of the fractional change in subsidies to the fractional change in the price of oil is thus $[I/(O - F)]/[I/O] = O/(O - F)$ which is the inverse of the subsidy rate in the first year. It is, of course, possible to allow for changes in consumption.

49. Baig et al. (2007, pp. 4–5). The survey was conducted among IMF economists working in 51 countries, but results are not reported for all these countries for all types of fuel.
50. Baig et al. (2007, pp. 5–6).
51. There are probably many more countries that subsidize the consumption of fossil fuel, for example, in Sub-Saharan Africa. Arze del Granado et al. (2010) list 15 countries that subsidize fuel consumption that are not included in Table 2. Of these, 9 are in Sub-Saharan Africa, 3 are in South America, 1 is in Asia, and 2 are in the Middle East. Since most of these countries are very poor, their fuel subsidies are not likely to be large in monetary terms, either in the aggregate or on a per-person basis. Nor are global environmental effects likely to be significant. (In at least some countries, they are likely swamped by those resulting from inefficient combustion of biomass.) But subsidy rates, local economic effects, and perhaps subsidies as a percentage of both GDP and budget variables may be fairly large.
52. UNDP and WHO (2009). Coal is used for cooking and heating by as much as 4 percent of the population in only a few countries: Chad (4.9 percent; rural: 1.1 percent), China (28.9 percent; rural: 29.8 percent; urban 27.7 percent), Guinea (19.2 percent; rural: 3.1 percent; urban: 59.6 percent), Laos (21.2; rural:10.8 percent; urban: 44 percent), Mongolia (19.4 percent; rural: 3.8 percent; urban: 31.3 percent), Mozambique (12.6 percent; rural: 0.9 percent; urban: 40.8 percent), Paraguay (13.8 percent; rural: 7.9 percent; urban: 17.5 percent), and Vietnam (5.2 percent; rural: 4.5 percent). The rural figure is also high in Brazil (5.4 percent). The figure for coal use in rural Mongolia is so low because an astonishing 49.5 percent of the population relies on dung.
53. IEA (2012b, pp. 69–70).
54. Except as noted, this discussion is based on that in IEA (2011, pp. 520–522), which is more extensive than that in IEA (2012a). Attempts are made to model a shift to a more energy-efficient world in IEA (2012a).
55. Ellis (2010). The studies cited employ the price-gap methodology. See also OECD (2009, pp. 101–109).
56. IEA (2011, p. 521).
57. Gupta et al. (2003, pp. 389–396). These estimates assume an optimal uniform consumption tax of 10 percent and a price elasticity of demand of –0.5.

58. Except for the data for El Salvador, which the IEA provided the author, the figures reported in this subsection are from IEA (2012b). To obtain data for a particular country from the map, it is necessary to click on the country. It appears that the map for 2011 is no longer (May 2014) available on the Internet. The link listed in the references is to a map for 2012.

59. The importance of these reforms is indicated by the near constancy of the dollar amount of Iran's subsidies, which rose by only $1 billion from 2010 to 2011, compared with an increase of 25 percent for all countries – or about one-third if Iran is excluded.

60. This is, however, not necessarily the best way to express economic costs. Deadweight loss is proportionate to the square of the subsidy rate.

61. UNDP and WHO (2009, p. 71). GSI (2012, p. 22) notes that Bangladesh has agreed to liberalize fuel prices, with automatic formula-based adjustments of fuel prices, as part of an agreement with the IMF.

62. Data on government revenues, spending, and deficits as a percentage of GDP are from IMF (2012). Figures for Angola, Argentina, Colombia, Iran, Iraq, Korea, Kuwait, and Venezuela are IMF staff estimates. The table reports surpluses, rather than deficits, which appear in the table as negative numbers.

63. Increasing awareness of the distribution of benefits of subsidies is a standard and important component of descriptions of strategies for implementing subsidy reform. See the sources cited in note 9.

64. This discussion and that of the next paragraph draws heavily on IEA (2011, pp. 518–521). A chart showing the percentage of benefits reaching the poorest quintile in each country appears on page 519. The countries, listed in decreasing order of the percentage of subsidies benefiting the poorest quintile of the population, were Pakistan, China, Vietnam, Thailand, Indonesia, Angola, Bangladesh, India, Philippines, Sri Lanka, and South Africa. The IEA selected these 11 countries "on the basis of data availability for those that have low levels of modern energy access, and have an aggregate population of 3.4 billion" (IEA, 2011, p. 519). Bangladesh is the only one of these 11 countries that is among the 42 mentioned in the discussion that follows results reported in UNDP and WHO (2009).

65. The accuracy of this statement depends on how proportionality is defined. Because of inequality in the distribution of income, far less than 20 percent of the benefits of a fuel subsidy that increased all incomes proportionately would accrue to the poorest 20 percent of the population.

66. Like most of the literature, this discussion focuses on the effects on real incomes that are transmitted through the effects fuel subsidies have on fuel prices. There may also be effects on employment and incomes in the fuel sector and in sectors in which fuel is an important input, such as transportation and agriculture. GSI (2012) emphasizes the link through agriculture in Bangladesh.

67. For this purpose, access to modern fuels refers to use of these fuels for cooking, which generally implies use for heating as well. Access to electricity, which means an electrical connection, is included in access to modern fuels only if electricity is used for cooking. See UNDP and WHO (2009, p. 6). Access rates for electricity are much higher than those for modern fuel. They are at least 25 percent in all but six of the world's poorest nations, all of which are small island nations, and they are at least 75 percent in many (UNDP and WHO, 2009, p. 12).

68. Information on the percentage of populations that rely on modern fuels are from UNDP and WHO (2009, pp. 71–77); see also Ekouevi and Tuntivate (2011, p. 2), which indicates that the share of the population relying on traditional fuels exceeds 70 percent in five oil-exporting countries in Sub-Saharan Africa, the highest share being Chad's 91.2 percent. These authors note (p. 5) that in 2008 the IEA estimated that, over the period 2006–30, 10 oil- and gas-exporting countries in Sub-Saharan

Africa could provide minimal energy services, such as electricity and LPG cylinders and stoves, to households at a cost of only 0.4 percent of revenues from oil and gas exports.

69. This result is confirmed in Bangladesh, where only 8.8 percent of the population has access to modern fuel (UNDP and WHO, 2009, p. 71) and the top two income classes enjoy almost 80 percent of the direct benefits of subsidies to natural gas and LPG and almost 90 percent of the direct benefits of subsidies to petrol and diesel; see GSI (2012, p. 16). Unfortunately, there is no indication of the percentage of households that have each level of income or of the percentage of income accruing to them. Moreover, this analysis does not include the indirect benefits of fuel subsidies. GSI (2012, p. 15). Much more of these would, of course, accrue to lower income groups.

70. Arze del Granado et al. (2010, p. 10).

71. Arze del Granado et al. (2010, pp. 8–10).

72. Arze del Granado et al. (2010, pp. 10–12). The appendix to that paper contains breakdowns by regions.

73. Arze del Granado et al. (2010, p. 12).

74. Subsidies to electrification may, in principle, benefit rural households, but if they result in deficits for the state-owned electrical company, it may be the poor who endure power outages.

75. On the topic of this section, see the references in IEA, OECD, and World Bank (2010, pp. 38–41).

76. Arze del Granado et al. (2010, p. 13).

77. Readily available data do not reveal whether these countries subsidize consumption of fossil fuel, except in the case of Bangladesh, where the average subsidy rate is 44 percent and subsidies amount to 5.1 percent of GDP, although only 9 percent of the population have access to modern fuel. In five of the countries examined in Arze del Granado et al. (2010), which are presumed to subsidize fossil fuel consumption, less than 5 percent of the population has access to modern fuel, and in three more countries (including Bangladesh), less than 10 percent do.

78. It may make sense to means-test cash transfers, but being overly ambitious would, in effect, introduce many of the complications that plague ill-advised attempts to implement universal income taxation in developing countries. It would require an attempt to determine the income of households that are generally exempt from income tax, for administrative reasons, as well as on equity grounds. For a useful discussion of targeting income maintenance programs, including a "Checklist of Economic Considerations in Price-Subsidy Reform," albeit not in the context of reform of fuel subsidies, see Gupta et al. (2000). There is also a useful discussion of political considerations in the design of subsidy reform.

79. For a review of experience with social safety nets in Indonesia, Mexico, and Brazil, see IEA, OECD, and World Bank (2010, pp. 40–42).

80. IEA, OPEC, OECD, and World Bank (2010, p. 38), notes that "some of the better known and effective programs spend around 0.5% of GDP." This compares favorably with the figures for subsidies as a percentage of GDP for most countries reported in Table 2.

81. Arze del Granado et al. (2010, p. 13).

82. For a useful survey of issues related to the combustion of biomass and coal, see von Schirnding et al. (2002); see also Ekouevi and Tuntivate (2011, pp. 5–9).

83. von Schirnding et al. (2002, p. 22), note, however, that deforestation and erosion resulting from the burning of wood may be overstated, because most wood used for cooking and household heating is collected, rather than cut. Moreover, Ekouevi and Tuntivate (2011, p. 9), note, "It is now widely accepted that the clearing of land for arable and pastoral agriculture is the main cause of deforestation rather than the use

of wood for energy, as was believed in the past." The last authors note (p. ix) that there are, however, exceptions, such as areas surrounding growing urban areas in some Sub-Saharan African countries and Haiti.

84. WHO and UNDP (2009, p. 21). In Bangladesh, one of the two Asian countries on this list, only 2 percent of those using traditional fuels have access to improved cooking stoves.

85. A given household does not use only one type of fuel, moving up the "energy ladder" as its income improves or it is induced to switch fuels because of shifts in relative prices. Heltberg (2004, pp. 870-71) observes:

> The 'energy ladder model' underlies much of research, analysis, and policy formulation in the area of household energy. The energy ladder model conceptualizes fuel switching in three distinct phases. The first phase is characterized by universal reliance on biomass. In the second phase of fuel switching households are hypothesized to move to ''transition'' fuels such as kerosene, coal, and charcoal in response to higher incomes, urbanization, and biomass scarcity. The third and final phase of fuel switching is characterized by households switching to LPG, natural gas, or electricity for cooking. Growing incomes in conjunction with relative fuel prices are seen as determining factors for the speed with which households fuel switch by moving up the energy ladder. The major empirical achievement of the energy ladder model is the ability to capture the strong income dependence of fuel choices. … Yet the ladder image is perhaps unfortunate because it appears to imply that a move up to a new fuel is simultaneously a move away from fuels used hitherto. … In fact, uptake of a new cooking fuel far from always displaces traditional fuels. Many households in developing countries routinely use multiple cooking fuels.

86. UNEP (2008, p. 14).

87. Mwaura, Okoboi, and Ahaibwe (no date).

88. The IEA (2011, p. 497) observes, "While advanced cookstoves can help cut wood fuel use substantially, the economic arguments alone may not be compelling for many households, especially if wood fuel is considered 'free' and the time of the persons collecting it – typically women and girls – is not sufficiently valued." The health benefits of fuel switching, which accrue mainly to women and children, may also not be recognized or valued highly.

89. GSI (2012, p. 19). Citizen's Guides have also been prepared for India, Indonesia, and Nigeria.

90. Access to fuel (e.g., connections to the electrical grid and the ready availability of LPG in containers small enough that the poor can afford them) may be as important as price in determining switching to modern fuel. Thus policy should sometimes be targeted to providing more widespread access. Also important is the availability of microcredit that allows poor households to make the capital investments needed to use clean fuel.

91. Heltbert (2004). See also Ekouevi and Tuntivate (2011, pp. 18–19), which emphasizes the role of consumer preferences.

92. UNEP (2008, p. 14).

93. Heltberg (2004, p. 885). See also the references in Ekouevi and Tuntivate (2011, p. 8).

94. IEA (2012a, p. 532). These figures include those cooking with coal.

95. See Heltberg (2004, p. 886). Ekouevi and Tuntivate (2011, pp. 10–21) review the results of World Bank projects focused on household energy access.

96. Ekouevi and Tuntivate (2011, p. 26).

97. Ekouevi and Tuntivate (2011, p. 27).

98. UN-Energy (2005, p. 12).

99.   The data reported here are from IEA (2012a, pp. 532–533). For further information on electrification rates in the least developed countries, see WHO and UNDP (2009, pp. 10–12).
100.   See also UNEP (2008, pp. 27–29).
101.   In addition, "In general, subsidies for liquid fuels are particularly difficult to target, given the ease with which such fuels can be sold on the black market. In comparison, the distribution of electricity and piped natural gas is more easily monitored and controlled." IEA, OECD, and World Bank (2010, p. 13).
102.   The "Citizens' Guide to Energy Subsidies in Bangladesh" notes, "[a]chieving this goal [extending electrification to all villages by 2020] depends on tackling rural poverty more effectively, as poor households have little incentive to access electricity when suffering from severe deprivations" (GSI, 2012, p. 19).
103.   In theory there would be a "notch" – a discontinuous jump in payment – at the point at which eligibility for the lifeline tariff ceases. This is unlikely to be a serious problem if the threshold is set low enough.
104.   UNEP (2008, p. 23).
105.   For a review of experience in this area, see IEA, OECD, and World Bank (2010, pp. 37–40).
106.   UNEP (2008, p. 29). By comparison, see the description of favorable experience of Chile in subsidizing rural electrification, p. 28.

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PART III

Below the center: Subnational taxation

9. Why theory and practice are different: The gap between principles and reality in subnational revenue systems

Paul Smoke

INTRODUCTION

Ensuring adequate subnational revenue is a core concern of fiscal decentralization. Public finance principles for selecting and designing subnational revenue sources have been widely used during the prominent wave of decentralization efforts in developing countries over the past three decades. Available empirical literature, however, suggests that subnational revenue generation often fails to meet needs and expectations, even where normative advice has been or seems to have been followed.[1]

Are the principles inappropriate, or are they just poorly applied? This chapter argues that both factors are often at play. Basic principles are valuable, but they can be challenging to use and do not cover certain critical factors. Even if the principles are relevant and well applied, implementation commonly faces powerful constraints. Yet despite unsatisfying performance, revenue system design remains substantially based on a conceptually narrow normative framework that lacks a sense of pragmatic strategy and is often overwhelmed in practice by contextual factors it fails to or only weakly considers.

The necessity for "context specific" fiscal decentralization reforms is by now well accepted. Bahl and Bird (2008) recently underscored the need for adopting an inductive approach that helps to determine what works rather than a deductive one that makes theoretical statements about what should work. Less explicitly recognized is that the breadth and diversity of relevant contextual factors extends well beyond the realm of those typically considered, such as political will, level of development, federal versus unitary system, public sector capacity, etc.[2] These are

important factors because, for example reforms suited for capacitated and dynamic urban governments in more advanced and more democratic developing countries may offer little to new rural councils in least developed countries. At the same time, national political and bureaucratic structures and dynamics, local political factors, and civic capacity, among others, also affect how subnational revenue reforms play out, whether or not they are taken into consideration in designing and implementing reforms.

The next section provides an overview of the broader context of fiscal decentralization, followed by a section that summarizes key mainstream principles of subnational revenue assignment and challenges commonly encountered in applying them. The fourth section turns to a number of prominent underexplored factors that contribute to the divide between theory and practice but have not been sufficiently considered by fiscal decentralization academics and practitioners. I close with a few summary comments on thinking about the divide between subnational revenue theory and practice.

THE BROADER CONTEXT OF INTERGOVERNMENTAL FISCAL SYSTEMS

Subnational revenue assignment occurs in a broader national context, both fiscal and beyond. Tanzi (2010) outlines four distinct approaches to intergovernmental fiscal arrangements that are observed globally. These include: (1) empowering subnational governments to set up their own tax systems; (2) retaining all taxes centrally and sharing proceeds with subnational levels through transfers; (3) assigning certain taxes exclusively to subnational governments; and (4) sharing revenue from particular nationally collected taxes (perhaps with limited minor tax options for subnational governments).

There are advantages and disadvantages to each approach, and in multi-tier systems, arrangements may differ among levels. As Tanzi argues, there is no "optimal" solution, since the choices a country makes depend on technical matters, historical trajectories, political forces and other factors. The usual fiscal decentralization considerations regarding an appropriate balance between central control and local autonomy, the desired degree of redistribution, and the extent of tax competition, among others, are important. How reformers make design decisions is at least implicitly shaped by the relative importance of national goals in pursuing decentralization – democracy, development, conflict resolution, etc. – as they evolve with broader economic and political dynamics.

Within this larger fiscal context, sustained successful use of revenues depends on developing a multidimensional constitutional/legal/administrative framework and the means for its implementation and enforcement. The requirements, however, go beyond typical fiscal decentralization factors, such as the legal status, powers, functions and autonomy of subnational governments. Subnational revenue generation also depends ultimately on creating a more extensive enabling environment, including elements not specific to decentralization.[3] The nature of property rights, for example, affects property tax policy and administration, and legal provisions for local governance (elections and beyond) and civil society rights create space for developing citizen engagement to discipline local government performance.[4] These factors heavily influence how accountable subnational governments are likely to be to their constituents.

FISCAL FEDERALISM AND REVENUE ASSIGNMENT

Fiscal federalism principles remain the policy cornerstone for decentralizing expenditure and revenue functions. These principles, which are largely based on standard economic concepts interpreted in a spatial and multi-level context, are generally well defined and accepted.[5] They have been repackaged from time to time, and a few have been added or embellished to move beyond basic concerns of the original theory. They remain generally relevant for designing overall systems and individual revenue sources.

The Basic Principles

Many versions of the basic principles, both simple and elaborate have been outlined over the years.[6] Desirable subnational revenue characteristics typically include the following:

- Adequacy: covering subnational budgetary needs (based on the "finance follows function" principle).
- Buoyancy: growing in proportion to the economy and expenditure needs.
- Stability: avoiding large fluctuations in revenue yields that would undermine the ability of subnational governments to provide services.

- Efficiency: minimizing distortions of economic decisions made by individuals and firms (e.g., resulting from differentiated base definitions and rates); and ensuring correspondence between payments and benefits (including limiting tax exporting).
- Equity: ensuring fair treatment among equals (horizontal) and across different groups (vertical) framed in terms of income but can use other points of reference.
- Autonomy: allowing subnational governments discretion to make independent decisions (creating a link between revenue generation and service delivery).
- Administrative feasibility: ensuring the scale and complexity of administration is consistent with available capacity and affordable to the subnational government.
- Political feasibility: maximizing the likelihood of acceptance of a source through consistency with political reality, e.g., taxpayers see value for money, fair treatment, less visible/onerous (small payments over time versus large lump sums), etc.
- Integration/consistency: ensuring the logic of the full set of subnational revenues and consistency with the rest of the national fiscal system (e.g., limiting overlap with central taxes and revenue disincentives in transfer and lending mechanisms).

This set of principles is in the first instance intended to ensure that subnational revenues meet core public finance principles in the context of a multi-level government system with distinct territorial jurisdictions. Key concerns include that: each level of government should have clear functions and bear responsibility at the margin for financing them; own-source revenues should ideally be sufficient for subnational governments with the greatest fiscal capacity to fully finance their functions, and so on. The extent to which the principles are actually applied in the design of the system and prevail in its operation is no simple matter to assess.[7]

The Reality of Subnational Revenue System Design and Implementation

There are three broad issues relevant for assessing subnational revenue assignment. The first is whether the division of revenue sources between central and subnational governments generally meets accepted principles. The second is whether individual sources are designed to meet accepted principles and are collectively consistent with core principles (given that different sources are better at meeting certain individual principles). The

third is how well the subnational revenue system as designed is implemented on the ground.

International experience suggests that central governments do not often devolve inappropriate revenue sources, e.g., taxes on mobile bases, taxes that seriously compete with national revenue sources, etc. Common subnational sources include property tax, user fees and charges, various types of licenses and fees and limited types of business taxes, and at intermediate or urban levels, motor vehicle revenues and business or sales taxes.[8] Piggybacking on selected national taxes, especially by intermediate levels, is also often recommended and sometimes practiced. The common local revenue sources are rarely controversial, although the details of how they are structured and managed may be.

There is some debate over a few sources, such as natural resource taxation, VAT and business taxation. Such debate draws on the principles, but it is often also related to the type of system involved (federal or unitary), the need to manage interregional conflict, and financing regional/metropolitan versus other local governments.[9] In some cases, problematic revenues emerged in a particular context, became productive, and were difficult to modify or eliminate later. Examples include the octroi and its variations (in South Asia and elsewhere), the regional services council levy (a combination payroll and turnover tax) in South Africa, and the graduated personal tax in Kenya and Uganda (an unusual and complex hybrid of a PAYE tax, a presumptive income tax, a wealth tax, and a poll tax).

It is fair to say that most developing countries err on the conservative side and assign fewer revenue sources than could be justified by fiscal federalism principles, often, keeping the most productive sources for the national budget. Central management of these major sources, however, is often justified because of the nature of the bases and the inherent advantages of centralized administration for some taxes. If and exactly how these resources are shared with subnational governments, of course, matters a great deal.[10]

The design of individual revenues and their aggregate effects are harder to definitively assess because of the diversity of experience, but there seem to be nontrivial lapses in adherence to basic principles. First, although there is great variation, own source revenue assignments are often inadequate.[11] Determining overall revenue adequacy (including transfers), however, is complicated by the vagueness, inconsistency, and incomplete adoption of functional assignments. One indicator of inadequacy is the tendency for subnational governments to use unproductive or unofficial sources, although the former can reflect historical factors or unwillingness to collect productive allowable taxes.[12]

Adequate buoyancy is elusive due both to the types of revenues assigned to subnational governments and their not uncommon failure to take administrative actions needed to ensure base growth (e.g., revaluing and indexing property assessments). In principle, subnational revenues can be relatively stable, but this depends on good administration and the willingness of subnational governments to enforce collection during more difficult economic times or periods of political pressure, e.g., leading up to subnational elections.

Subnational revenue systems often compromise efficiency to various degrees. Examples include the choice of instruments (e.g., turnover taxes); differential treatment of taxpayers or sectors in pursuit of policy objectives (e.g., favorable tax rates to spur development in some locations or industries); poorly developed or enforced assessment and collection (increasing possible political manipulation of tax burdens); and the adoption of taxes with "exportable" burdens (although this is not universally opposed and may be to some extent seen as desirable in certain instances, such as taxes that fall primarily on foreign tourists).

Horizontal equity is generally a greater concern of subnational tax policy than vertical equity given potential spatial inefficiencies created by subnational redistributive taxation. How this plays out, however, depends on certain design and implementation decisions. Equity can be affected, for example, if there is preferential treatment of certain taxpayers or groups due to subnational tax regulations and weak or selective administration.

Revenue autonomy varies considerably, but it is often limited by the central government due to concerns over national fiscal policy management and/or local capacity. At the same time, subnational governments may fail to take advantage of autonomy that is granted because they do not know how to do so where decentralization is new or capacity is weak. In addition, disincentives in the fiscal system or political conditions may undermine the motivation of subnational governments to exercise their revenue powers.

Administrative feasibility may be compromised by pursuing non-revenue raising objectives and/or adopting poorly defined or unduly complex administrative procedures.[13] Political feasibility is often difficult to determine and effective adoption of subnational taxes may be challenging in developing country environments, especially in the poorest countries where citizens are not used to receiving and/or paying for services.

Inconsistencies in the overall fiscal framework are not uncommon. These may appear in the form of insufficient harmonization of central

and subnational taxes. Weak incentives for subnational revenue generation are common in intergovernmental transfer programs, which may also undermine subnational borrowing even by fiscally capable subnational governments. The central government may set up lending mechanisms for capital investment when subnational governments do not have access to the financial market, but then fail to enforce loan repayment, undermining revenue generation incentives.[14]

The extent to which allowable subnational revenues are successfully adopted varies considerably. In some cases, constitutional or legal assignments of subnational revenues have not been implemented. National agencies with regulatory power may choose to restrict how certain sources are used, and individual subnational governments may not use sources assigned to them. Such behaviors usually result from fiscal and political incentives or capacity issues, as suggested above and discussed more fully below.

Overall Assessment

Central governments often follow basic fiscal federalism principles in devolving revenues, but they do so conservatively, and legal frameworks may not be fully implemented. Individual source design is unevenly consistent with principles, and central governments commonly exert more control than needed. Several other factors contribute to the gap between theory and practice. First, technical aspects of revenue design are not straightforward. Some tough trade-offs are embedded in the fiscal federalism principles, and this complicates their use in determining a workable mix of subnational taxes and the design of individual sources.[15] Even if principles are followed such that each source is designed to best meet its comparative advantage, the principles can be prioritized to different degrees, and how the full set of revenues works together is important.

Second, the lack of appropriate and reliable information for good policy design and administration can create challenges. Information that is available may be kept in different agencies and some definitions may change over time, making the assembly of data challenging and compromising data consistency.

Third, there is a common perception that there is often insufficient "political will" for decentralization in general and for allowing subnational governments' revenue autonomy in particular. Various explanations are given for the lack of political will, but the bottom line is that it influences the revenue sources assigned to subnational governments and

the extent to which these are implemented by the central and subnational governments.

Fourth, incapacity is often cited as a key factor in limiting the access of subnational governments to revenue. The underlying logic is that even if the central government meaningfully devolves revenue powers, subnational governments do not have sufficient or appropriate capacity to implement them. In addition, some have charged that revenue reform initiatives may build the wrong type of capacity, e.g., too much focus on valuation and not enough on collection in property tax administration.[16]

Finally, economic realities constrain subnational revenue generation. Intermediate and metropolitan governments are often in a position to raise substantial revenues if given the opportunity, but the situation can be rather different in rural areas with a high incidence of poverty. Even in productive agricultural areas, appropriate revenue sources are often controlled by the central government, leaving subnational governments dependent on transfers and creating challenges for developing a subnational benefit–revenue link.

In short, although revenue assignment principles are known and used to define reforms, weak or uneven revenue generation and poorly designed subnational revenue systems are among the most prominent flaws of decentralization in developing countries. Even where progress has been made, broader systemic reform has been elusive.

BROADENING THE ANALYSIS FOR MORE EFFECTIVE REVENUE POLICY

Both the academic and practitioner literatures recognize many constraints outlined above and take them into account in conducting analyses. At the same time, mainstream analysis does not sufficiently consider other factors that can influence the extent to which even the most conceptually adherent reforms are properly designed and implemented.

National and Intergovernmental Political Economy

Fiscal decentralization and revenue assignment obviously have political as well as technical foundations. There are literatures on the political economy of taxation and decentralization. Second-generation fiscal federalism has taken up related issues, but in a somewhat ad hoc way.[17] Generally speaking, this work does not get enough consideration in thinking about the challenges of subnational revenue design and implementation.

An interdisciplinary social science literature focuses on the political economy of taxation, considering how the shape of revenue systems relates to the structure of the public sector, government capacity and state–civil society relations.[18] Among the most influential approaches are the public finance approach, which focuses on minimizing the impacts of taxation on economic development and other national goals; a taxpayer-focused approach, which considers how ideology, value and culture influence taxpayer willingness to pay and compliance; a political institutions approach, which explains the development of state capacity and tax systems through historical analysis; a crisis-based approach that considers how conflict drives tax expansion and modernization; and a fiscal contract approach in which revenue maximizing governments use state-provided benefits to "negotiate" with payment minimizing taxpayers. Some of this work is technical, but most recognizes that deeply embedded historical factors, the nature of political systems, and the relationship between the state and citizens condition how much and which revenues can be raised.

The political nature of decentralization is reflected in a considerable academic literature on the political economy of decentralization.[19] In policy circles, the role of politics is often abstractly and simplistically framed, as noted above, in terms of the need for adequate "political will" to decentralize.[20] In the world of practice, the term political will implies the commitment of a munificent and unified center to improving the lives of the people by empowering locally elected governments. A key message of this literature is that the main motives for decentralization are usually complex and may be rather less benign, depending on incentives to decentralize faced by legislatures, political parties and government administrators. Sometimes the motivations for decentralization have little or nothing to do with normative fiscal or political justifications. Furthermore, even strong (or apparently strong) political will is not sufficient. Many countries that have developed robust constitutional and/or legal decentralization frameworks have only incompletely designed and implemented them or have even undermined them in practice.

The main consideration is why, under what conditions, and how decentralization was undertaken, and what this implies for the level and durability of "political will" to genuinely empower subnational governments. It is well known that decentralization efforts in developing countries have often been responses to domestic crises that create pressures or opportunities for major change.[21] Since crisis implies urgency, there may not be enough time (or genuine intention) to develop more than a shallow consensus on the shape and process of reform. Frail or rushed consensus may go hand in hand with a limited appreciation of

the nature of decentralization, adoption of poorly designed frameworks, insufficient attention to implementation, and indifference or resistance from important actors who – after reform is already official – come to perceive decentralization as damaging to their interests and act accordingly. The bulk of these dynamics occur in the response of the bureaucracy (see below) to political decisions to decentralize.

National politics obviously support or undermine fiscal decentralization policy. Politics influence which functions and revenues are decentralized, the degree to which the center is willing to grant subnational autonomy, and the process and support structures that enable subnational governments to assume new responsibilities. Reluctance to decentralize may reflect an unwillingness of the center to relinquish functions and resources, or efforts to pursue reforms superficially may result from clashes between the legislature and the executive or among groups within legislatures, which can be based on party politics or factions within dominant parties. On the other hand, a regime may also strategically decentralize to gain support and to consolidate power.

Intergovernmental political dynamics may also play a role. In many developing areas, subnational governments are not strong, but in some countries, particularly in Latin America, politically influential subnational governments may take advantage of a crisis or an unstable situation to place demands for greater empowerment on the central government.[22] In other cases the impetus may not come from below, but the central government makes decisions based on intergovernmental relations considerations.

Ethiopia, for example, pursued a decentralization in which ethnically identified states were empowered by a new constitution to hold the country together after secession of an important state, Eritrea. Indonesia faced a similar situation after the 1997 Asian financial crisis, the fall of the Suharto regime, and the loss of the province of East Timor. In that case, however, the reform empowered cities and districts and initially marginalized the provinces in the hope of averting secessionist ambitions. In a few federal systems where states have power over local governments, the center has tried to ensure that intermediate tiers do not unduly control lower tiers. Brazil, for example, directly supports municipal governments, and India tried less successfully with constitutional amendments to push state governments to empower local governments. Many more examples could be given, but the point is that these intergovernmental attitudes and political dynamics matter because they can determine subnational empowerment and revenue assignments.

Finally, although many political scientists adhere to the idea of path dependency in political dynamics, they recognize that situations can

change rapidly, as demonstrated by some of the preceding examples. In competitive political environments or when a crisis suddenly develops, incentives to shift course by recentralizing or decentralizing (or appearing to do so) can quickly emerge.

The National Bureaucratic Environment

Ultimately most of the national responsibility for detailed design and implementation of decentralization falls to administrators rather than politicians. These actors, however, often have diverse views on decentralization, which often takes place in complex and poorly coordinated bureaucratic environments.[23] A wide variety of central agencies often has a role in developing, implementing and overseeing key reform parameters. These include local government oversight ministries (Ministry of Local Government, Home Affairs, Interior, etc.), coordinating ministries with a broad mandate to oversee an aspect of public sector operations (Ministry of Finance, Planning, Civil Service, etc.), special purpose ministries (Ministry of Rural Development, Urban Development, Special Areas, etc.) and ministries involved in service delivery (education, health, transport, etc.).

Even if there is (or appears to be) broad national consensus for decentralization, these agencies may have incompatible opinions regarding how far decentralization should go and what their role in it should be. The impetus for reform may even come from ministry-based policy analysts, but if it comes from one ministry without consulting others that perceive the initiating agency as a rival, broad support may be withheld during implementation even if the initiative has political support to become law. In some cases, central agencies may overtly or covertly obstruct decentralization when it reduces their power and control over resources. Such behavior can be related to the relationships between agencies and political parties or legislatures, but it may also result from bureaucratic competition or the unwillingness of an agency to accept a diminished role.

Another critical problem is that even if major central government agencies are not overt rivals, they may have little or no incentive to work together cooperatively, although this is crucial for effective decentralization. In some cases, powerful agencies may engage in direct competition for control of the decentralization agenda (or some aspect thereof) and the substantial internal and external resources that may be involved. Weak cooperation can hinder the development and operation of the subnational system.

One might argue that such concerns are likely to be relevant for larger decentralization policies, but that control over fiscal decentralization is concentrated in a Ministry of Finance and/or a Ministry of Local Government. This is often true, particularly on the revenue side. In poorly coordinated environments without clarity on responsibilities, however, serious problems can arise even between core actors, resulting in incomplete and/or inconsistent policies that complicate subnational government assumption of rightful powers and functions. In Uganda, for example, the Ministry of Finance and Ministry of Local Government separately developed local financial management systems within a few years of each other, and revenues promoted by one were undermined by actions of the other. Similar situations have arisen between the Ministry of Finance and Ministry of Home Affairs in Indonesia, the Ministry of Economy and Finance and the Ministry of Interior in Cambodia, and comparable bodies in other countries.[24]

The actions of other central agencies can also affect how fiscal decentralization plays out. In some countries, development budgets are under the Ministry of Planning, while the Ministry of Finance oversees recurrent budgets, complicating effective use of overall subnational resources. The Ministry of Finance or special bodies subject to government control may manage subnational lending. Civil Service Commissions may have authority over subnational employment, and sectoral ministries may control aspects of subnational sectoral budgets, determine conditional transfer formulas, and manage user fee policies. Special districts or corporate entities may in some cases substantially manage particular services. Not all of these instances of central roles in subnational finances involve direct interference in revenue generation, but they can compromise subnational autonomy and may weaken subnational government incentives to collect own-source revenues.

These concerns do not justify limiting the exercise of legitimate central government authority, such as national standards for service delivery, financial management, or information and monitoring schemes. These are important elements of a well-designed intergovernmental system if reasonable and principle based. Inadequate regulations and oversight can result in substantial subnational variation in bases or tax rates, which can create problematic interjurisdictional competition and complicate local tax effort comparisons needed for policy design. The problems highlighted here result from fragmentation and competition among central agencies or their indifference to the legitimate roles of others in overseeing subnational governments. Of course, control and oversight can be excessive. Even with agreement to devolve revenues, efforts to limit the autonomy with which they are executed can be overbearing. Many

decentralization frameworks, for example, devolve the property tax, but onerous regulations and arbitrary central interventions can limit local autonomy and revenue productivity.

It would not even be safe to assume that a single ministry will act consistently. Different departments within ministries can compete to control policy agendas and resources. Within a Ministry of Finance, various aspects of fiscal reform – local revenues, transfers and lending – may be under different departments that function independently, resulting in policy inconsistency. In Indonesia, for example, bureaucratic battles across directorates in the Ministry of Finance were long a major factor in obstructing property tax decentralization (which finally occurred in 2009) and subnational borrowing reform.[25] More generally, the problems of poorly coordinated elements of the subnational fiscal system – inter-governmental transfers that create disincentives for local revenue generation and/or borrowing – are well known and well documented.

Finally, the role of international development agencies as partners of government bureaucracies should not be underestimated.[26] Although they have arguably modified their behavior, donors long supported primarily technical approaches to subnational revenue reform, not uncommonly through parallel mechanisms that were not politically and institutionally workable and sustainable. There was also a (now increasingly dissipating) tendency to draw on experiences of advanced countries, recommending reforms that were difficult for many developing countries to implement successfully. Perhaps most important, large international development agencies suffer from competition among internal departments, and these may reinforce the rivalries among government agencies outlined above. In some aid dependent countries, donors have contributed to the development of internally inconsistent fiscal decentralization policies and systems.[27]

Subnational Political Dynamics and Accountability

It is well known that some of the key subnational governance assumptions (explicit and implicit) of mainstream fiscal federalism and democratic decentralization theories are only weakly met in many developing countries.[28] Even if policies and systems are consistent with key fiscal principles and under the most favorable national political and bureaucratic conditions, subnational revenue generation can face daunting subnational political challenges. Some are specific to revenue generation, but the general nature of subnational political systems and dynamics is the overarching concern. Unfortunately, these issues are highly complex and hard to study formally. Available empirical evidence is limited,

conflicting and sometimes hard to interpret. This section outlines some of the key issues (with a focus on electoral, non-electoral and other accountability mechanisms), selectively reviews some empirical literature that sheds light on these issues, and briefly explains how decentralized government accountability can be further compromised by other influential actors in the subnational institutional landscape.

How subnational governments use revenue powers depends in great part on where local political power really lies – economic elites, certain ethnic/religious groups, members of particular political parties, labor unions, civil society movements, etc. – and the resulting incentives faced by local politicians. Subnational governments, for example, may tax businesses relative to individuals or some sectors too heavily or too lightly, creating both behavioral distortions and inequities. Under certain scenarios, high levels of autonomy may lead to considerable elite capture, the exploitation of certain groups and arbitrary or politicized enforcement of revenue compliance. Corruption may be more or less likely under decentralization depending on the nature of social and political relationships.

A well-conceived fiscal decentralization framework that includes an appropriate degree of upward accountability and performance incentives for subnational governments can help to reduce politicized revenue behavior, but the character and exercise of local accountability also matters a great deal. Ultimately, how this all comes together in terms of revenue generation and service delivery will affect whether citizens feel fairly treated (in terms of benefits received for revenues paid and relative to other local residents), and, therefore, whether they will be inclined to make local revenue payments demanded of them.

Certain subnational revenue sources are particularly complex for politicians to deal with. The property tax, for example, is considered to be a good local tax (although administratively challenging), but it is very noticeable to those who pay it directly. Concentration of land ownership and a stark division between the rich/elite and the poor in developing countries also complicate effective use of this tax. Certain groups may have sufficient political power to limit their tax burden. Visible inequities in administration and uncertainty about how tax proceeds are used can create resistance to compliance and generally undermine citizen trust in their subnational government.

Elections are typically considered a cornerstone of decentralized governance, and much effort has gone into expanding citizen participation in subnational elections and civic engagement/feedback mechanisms, even in environments where Western-style political competition is limited (e.g., Vietnam). Cultural traditions, ethnic identification, and

political party loyalties (which may be linked to ethnic loyalties), however, can influence elections and lead to politicization of decisions and revenue generation, such that patronage, clientelism and non-democratic behavior prevail. Further challenges include weak (poorly understood by the general population) civic engagement processes and dominance of civil society by interest groups, local elites or external actors. In some countries, an array of accountability channels with various roles, revenue sources and decision-making processes can co-exist with subnational governments. Any of these factors can compromise the downward accountability required for the expected benefits of decentralization to materialize. They can also exacerbate the effects of or directly interact with national dynamics outlined above, such that some subnational governments and actors are privileged through party, ethnic or commercial linkages with the national legislature and/or key central government agencies.

Subnational elections

Fiscal federalism assumes the existence of a political mechanism for subnational governments to determine citizen preferences for how revenues are raised and used.[29] The democratic decentralization literature would frame this in terms of the need for fair and competitive subnational elections, although there are other ways for local governments to be held accountable. A growing number of countries hold politically competitive subnational elections, but councils may be only partly elected, elections may be from closed party lists that limit voter choice, or one political party may dominate.

The specific nature of electoral processes can also matter, but the precise effects of using different systems can be quite mixed from a fiscal federalism perspective. An interesting example is the Mexican state of Nayarit, which recently reformed its constitution to move away from the dominant Mexican system of local elections from closed party lists for municipality-wide council seats.[30] Nayarit adopted a system in which a portion of seats is based on open electoral competition for positions attached to individual constituencies within the municipality. Preliminary evidence suggests that service delivery expenditures have been decentralized away from the central areas. This may or may not be efficient for economic development, but it suggests that internal decentralization of representation induced more responsiveness to constituents of territorially based councilors.

At the same time, case studies suggest that some expenditure shifts, especially in social services, occurred according to more personalized, clientelistic principles, and that local revenues have declined relative to

states not subject to electoral reform. There is, however, an interesting exception – the largest municipalities in Nayarit did not suffer revenue declines, perhaps suggesting that greater distance of councilors from constituents in large jurisdictions facilitates action for the common good. Another puzzle is that revenue declined even though the federal constitution prohibits re-election, a provision intended to offset a "favors for votes" mentality. This may suggest that despite the impossibility of re-election, councilors behaved to promote future electoral prospects of their party, although one goal of the reform was to reduce party power in local elections.

This single untidy case illustrates – admittedly simplistically and in a specific context – the great complexity involved in developing local electoral systems and the effects that this may have on accountability and revenue generation. Unfortunately there is not much broader evidence, although a few recent studies in Europe are interesting. One study found that less competent mayors in an Italian region are more easily re-elected if they favor less visible revenues (surcharges on personal income tax) than when they rely on more visible ones (property taxes).[31] The former, however, decrease transparency and compromise the accountability of local government action. There is also research documenting that tax rates decrease as party majorities increase in French departmental assemblies, and that this effect is more pronounced for right-wing majorities than for left-wing majorities.[32] Of course, revenue reduction is presumably what voters wanted, so it may indicate good subnational governance, and reducing subnational tax burdens is more likely to be desirable in an industrialized rather than in a developing country. The key point here is that more research is needed to understand the fiscal effects of subnational electoral practices and outcomes in developing countries.

Another critical issue here is horizontal accountability – between elected local councils and staff who execute the local budgets. It is critical to have a clear division of roles, for example, with elected councilors setting policies in areas where they have responsibilities and overseeing technical staff members who implement them. It is not uncommon in newly decentralizing countries for staff transferred from the central to subnational governments to maintain strong upward accountability relationships, leaving elected local councils in a weak position to deliver on their downward accountability commitments to their electorates. The degree of control that councils have over staff is important, but how it is executed also matters – councilors can, of course, undermine revenue collection by local staff.

There are no simple conclusions regarding the effects of subnational elections on decentralization or revenue behavior. Much depends on the

numerous elements of context outlined above and the specific rules and processes surrounding electoral and fiscal systems, which can be the product of both central and subnational constitutions and laws. What can be said is that subnational elections can matter a great deal for fiscal performance, and that no presumption should be made that the adoption of cutting-edge fiscal decentralization reforms will result in the normative benefits attributed to them if local political processes do not provide an adequate environment for this to occur.

Non-electoral governance mechanisms

Even where the subnational accountability challenges outlined above are not prominent and adequate electoral competition exists, elections are recognized to be a blunt means for improving downward accountability. Moreover, local elections are not an important accountability channel in some developing countries. There has been considerable attention in recent years to adopting other types of local accountability mechanisms, such as participatory planning and budgeting, town meetings, general or service-specific oversight boards or user committees with various non-governmental representatives, and social auditing of local resource use, among others. These can be useful both in promoting better public understanding of how revenue sources are defined and levied and how the proceeds are being used for subnational expenditures. Improved political mechanisms supplemented with more broadly based partici-pation and citizen engagement mechanisms have the potential to lead to better subnational service delivery performance, which can in turn improve the use of subnational taxing powers and help to develop local social capital.[33]

There are, however, two important qualifications. First, participatory mechanisms can be just as technical as fiscal mechanisms, and their intended benefits can just as easily be undermined by politics. Rules and processes for participatory budgeting or planning, for example, can be well articulated to meet normative principles, but what matters is how they are applied. If they are used but participation is token or non-inclusive and advisory rather than influential, broad improvements in service coverage/quality and citizen willingness to pay subnational taxes should not be expected. If such mechanisms are captured by elites, whether political parties, business leaders or even powerful but non-representative citizens groups or NGOs – their impact is likely to be limited or different than intended. Even well intentioned explicit attempts to improve inclusivity, such as a mandatory share of involvement of underrepresented groups (e.g., a certain percentage of women or ethnic

minorities) in formal processes, do not automatically make participation meaningful in terms of its impact on decision-making or outcomes.

The second qualification is at the heart of all subnational processes: the use of accountability mechanisms requires a degree of awareness, capacity and interest on the part of citizens. Local budgets or participatory forums may be available to the public, but not everyone may even know that they exist. Equally important, people may not know how to access these mechanisms or how to interpret or use them, and they may feel uncomfortable about participating or expressing their true opinions. In terms of subnational revenue specific arrangements, mechanisms to appeal property tax assessments or local business license fees, for example, will not be effective if people do not know about them or face barriers in using them, such as the lack of appropriate knowledge, poor access to advice, or even outright intimidation.

Subnational Politics, Decision-making and Public Sector Reform

A neglected consideration is how subnational dynamics affect the adoption of public sector reforms and performance. A core question is how subnational politics affect resource allocation in decentralizing environments, and what this implies for revenue compliance. Another concern is how politics affect the adoption and impact of reforms specifically undertaken to improve performance, including revenue generation.

A central theme in the literature on the subnational resources is corruption. On the one hand, corruption could decrease if decentralization improves accountability and citizen trust. Alternatively, it could increase if reform personalizes relationships between the electorate and their representatives. Most studies on this subject are anecdotal or based on case studies (that use different methodologies and are of uneven quality), perceptions of citizens and business leaders or questionable measures/indicators of corruption.

Recent literature on corruption offers some encouragement. For example, one study found that fiscal decentralization is associated with reduced corruption even where political representation is high.[34] A less-definitive/more-nuanced assessment argues that the nature of the relationship depends on fiscal arrangements and political features in each country.[35] Specifically, incentive systems set by the center for local governments, and the alignment of local government interests with those of the local constituency influence whether decentralization increases or decreases corruption. If citizens understand the dynamics, revenue compliance is likely to be affected.

Evidence on the use of local revenues suggests the role that local politics might play in altering rule-based allocations. Education allocations in Uganda, for example, often did not reach intended end-users (schools).[36] Whether or not the resources were used productively elsewhere, politics undermined the formal budget system. Also notable is that within local governments, there were considerable variations in terms of how much of a school's entitlement was received. This suggests that certain schools had power to claim more of what they were due. A judgment about whether this constitutes corruption would require more information, but the existence of such disparities in budget execution (and presumably outcomes) should be expected to influence the willingness of residents to engage in local affairs and to pay local taxes.

Some experiences suggest that expected benefits of adopting technocratic reforms to improve revenue systems can be offset by behavioral adjustments rooted in political and social dynamics. Revenue growth and stability, for example, improved in Uganda with private collection of local taxes, but leakages persisted.[37] They simply shifted from the collection point (the collector–taxpayer transaction) to the district administration (the contractor–local government transaction). Research on the Uganda Revenue Authority, which was established to reduce corruption, found that behavior of individuals depends on the interests of social groups to which they belong.[38] Formal rules were initially followed, but over time shifted back to behaviors based on social relations. Thus, technocratic reforms (in this case promoted by donors) perhaps halfheartedly, naively or opportunistically (in search of other objectives) embraced by national or subnational bureaucrats, may not recognize that effective reform requires stimulating foundational changes in the behavioral culture of the public service. This is a time consuming process and does not happen easily even with major reforms to formal structures and procedures.

Compliance and local political dynamics

Tax compliance is obviously critical for effective subnational revenue generation. There is limited empirical evidence, but available analysis indicates that compliance can improve or deteriorate under decentralization. The effect seems to depend on economic conditions, citizen attitudes about subnational governments, and variations in subnational political dynamics, including the willingness and ability of subnational governments to enforce the tax code.

On the optimistic side, the city of Porto Alegre (Brazil), which is famous globally for pioneering participatory budgeting, mobilized considerable support for tax reform and substantially improved compliance

through local participatory mechanisms.[39] The city dramatically increased revenue yields during a period of national reform when transfers were also rising rapidly. Of course, Brazil has more developed institutions and political mechanisms and a more active civil society than many developing countries. On the opposite end of the spectrum, tax compliance in Senegal decreased after collection was devolved to local councilors due to poor service provision and weak confidence in local authorities.[40] Compliance was found to be best among foreigners and new residents who strategically paid taxes to establish themselves as legal community members.

Local tax compliance in Tanzania was positively related to ability to pay and (perceived) probability of prosecution, but negatively related to perceptions of oppressive tax enforcement and weak satisfaction with services.[41] Although the research suggests that unduly harsh treatment may weaken compliance, some element of coercion seems to improve performance. Successful enforcement, in turn, is associated with the capacity of individual local governments and the insulation of revenue collection from direct influence by elected councilors. Inability to pay played a role in declining service charge payment in South Africa, but variations in compliance within and between communities with similar socioeconomic characteristics suggest that poverty does not tell the whole story.[42] A key factor again seems to be whether citizens believe that local governments are providing adequate services and treating them fairly. Similar sentiments emerge from a survey in Uganda, where local tax compliance is poor. Only 11 percent of respondents believed that local taxes were devoted substantially to improving services, but 75 percent indicated a willingness to pay more for better services.[43]

Definitive conclusions cannot be drawn from this brief review of limited literature, but the findings do suggest that revenue compliance is related to taxpayer perceptions of value for money and fairness in the subnational revenue system and that appropriate enforcement can be productive. It also suggests, however, the need for efforts to inform and actively engage citizens around the mobilization and disposition of subnational revenues, something that is often lacking in decentralization reform programs.

The broader subnational accountability landscape

As if the complexity of subnational government institutions and politics was not challenging enough on its own, another important consideration is the murky landscape of subnational accountability relationships that not uncommonly prevail in developing countries. The above discussion focuses on subnational governments, but they may be far from the only

actors on the scene. Devolved systems of government may exist in parallel with deconcentrated administrative systems, and both may have operational departments in the same sectors and jurisdictions. This is not necessarily a problem if their respective roles are defined and respected. If this is not the case, or if the deconcentrated system has superior funding and is delivering services that are the legal responsibility of the local governments (with the approval of or at the explicit direction of a parent ministry at the national level), there is a serious accountability problem.

Other problems of this nature also exist. In some countries, such as Kenya and the Philippines, national political dynamics have resulted in the creation of constituency development funds, which award parliamentary constituencies (which may be geographically identical to or overlap subnational government jurisdictions) funds for service delivery. These can be considerable. In Kenya, for example, until recent constitutional reforms that restructured the intergovernmental system, more resources flow through the constituency fund than through transfers to local governments. Community driven development programs, which provide grants from a national ministry or body (often funded by international agencies) for service delivery to (mostly nongovernmental) local actors, may compete with nascent subnational governments. In some countries, nongovernmental service providers play a major (independently from subnational governments) role in delivery of basic services. In situations where there are so many lines of accountability and funding channels for service delivery with insufficient clarity on specific responsibilities and many actors providing the same types of services, citizens are likely to be confused about what to expect from elected local governments. This, in turn is certain to affect their willingness to pay subnational taxes.

Capacity and Leadership

At the risk of raising perhaps the most clichéd point in the literature, capacity and leadership can matter greatly in how fiscal decentralization and revenue generation play out. At one level, this is obvious, but what seems to matter is the nature and location of the capacity and whether the political incentives to use it are in place.

Empirical work on this topic is limited, but mostly confirms that capacity and leadership can shape outcomes realized by decentralized systems. The capacity and qualifications of municipal mayors in Colombia have a positive effect on local public finance.[44] In a study comparing two islands in the Philippines, the more economically successful and higher capacity island had strong local leaders who were more successful

at using the room for maneuver provided by decentralization to improve performance.[45] A study of selected districts in Indonesia found that variation in tax performance among districts is associated with concrete actions initiated by district heads, presumably in response to the enlargement of their official powers and incentives to improve governance.[46]

If capacity matters, a few comments about capacity building are in order. A large share of resources for fiscal decentralization goes to capacity building, but critics argue that it is often treated in a perfunctory, boilerplate way.[47] Capacity building can be "supply driven" (by the central government) or "demand driven" (by subnational governments), and it can be "classroom based" or "on the job." Many developing countries continue to focus on traditional supply driven classroom training. There is anecdotal evidence and a growing consensus that "on the job" training demanded by local governments for specific tasks they are in the process of implementing is a better way of developing and retaining skills. Thus, a general course at a training institute on property valuation or setting user charges may be less useful than, or should be supplemented by "on the job" training provided as subnational revenue administrators are in the process of undertaking these functions. Although not strictly a revenue issue, how capacity building is handled may well affect the ability of subnational revenue administrators to perform effectively.

Another key capacity issue is the preparedness of civil society to play its critical role in improved decentralized governance and its presumed impact on improvements in subnational government performance. Holding a training seminar on participatory budgeting does not constitute much of an effort at citizen capacity building in the context of the issues discussed above, but that is mostly how this has been approached in developing countries. Some international agencies and NGOs place greater emphasis on civic engagement, but they tend not to link those efforts to local government incentives. The importance of a more engaged and capacitated citizenry for the success of decentralization and willingness to pay local taxes cannot be emphasized enough.

Finally, capacity is an issue at the national government level as well. The various central actors developing subnational revenue powers, systems and related local capacities may themselves not have sufficient capacity to meet these obligations. A related concern is that, especially in aid dependent countries, much of the capacity applied to develop subnational revenue systems is external or externally financed (above civil service remuneration), and this capacity may not be transferred to national institutions. Even if it is, skills may not be used effectively in the absence of appropriate incentives.

Lack of Strategic Orientation in Decentralization and Fiscal Reform Programs

The preceding discussion documents the complexity of making fiscal decentralization – whether in general or with respect to revenue assignment – work effectively. In various explicit and implicit ways the analysis points to weaknesses in how decentralization reforms are implemented – often too quickly or too slowly, and with relative inattention to embedded political and institutional constraints that affect performance. In recent years there has been a growing interest in how to better implement and sequence fiscal decentralization.[48] Most of this work is not specific to, but is relevant for, subnational revenue development.

Even a well-designed subnational tax on a high-value base, for example, may not be productive unless sufficient care is given to how it is implemented – not only in technical but also in political and institutional terms. The central government must be willing to devolve the tax and develop reasonable systems and procedures for operating it. Subnational governments need to face incentives – from the central government and their constituents – to adopt the new taxes and develop the capacity to use them. Citizens and businesses must learn to pay new taxes, which they will resist doing unless they believe that subnational governments are being responsive and treating them fairly. None of these things happen quickly or easily in the context of many developing countries.

Decentralization (including local revenue) implementation has both national and local dimensions that can be developed in various ways. The conventional approach might be called the "framework" approach because it involves developing an intergovernmental framework – based on normative principles adapted to country context – by the central government and creating systems and procedures for its operation. Some awareness raising and training is involved, but the core expectation is that if correct incentives are built into the new system, relevant actors at all levels will adopt its provisions, including developing capacity. At the other extreme, the center pursues a managed process for implementing the subnational framework over time according to nationally determined rules. Decentralization is not fully automatic under this approach – it happens through a centrally managed process according to centrally determined criteria. I have elsewhere called these models the "sink or swim" and the "paternalistic" approaches.[49]

A pure framework approach is not appropriate for most developing countries. It can only work under certain conditions, including where central ministries face incentives to comply with decentralization mandates; a hard budget constraint is adopted to discipline subnational

governments; subnational governments clearly understand what is expected of them and have adequate capacity and incentives to comply; and citizens see benefits of engaging with subnational governments and trying to hold them accountable. The management approach involves a more active role for central government in overseeing reform, but it is prone to move slowly and treat capable subnational governments too conservatively, hindering their ability to manage their fiscal affairs.[50]

The merits of a more strategic approach somewhere in between the two extremes – which recognizes key political and institutional constraints – are gradually being recognized. Such an approach might involve, for example, consultative mechanisms with actors critical for reform; asymmetric treatment of subnational governments to recognize their different characteristics (e.g., urban versus rural) and capacities (fiscal and administrative); negotiated reform trajectories, such that subnational governments share some responsibility for agreeing to adopt particular reforms over a specific timeframe; and performance based approaches to create incentives for reform. As certain steps are successful, more advanced stages of reform can be progressively undertaken.

This type of implementation strategy is subject to risks. Assessments and negotiations involved could become politicized, and reforms might stall at an early stage. But this seems to be a danger with all decentralization reforms, and carefully crafted processes and accountability mechanisms could alleviate risks. The specific situation will also differ among countries that are at different stages of reform. Some countries already have a local revenue system that they are trying to improve. Others are transferring centralized revenues to local governments. Still others are creating new local revenues. Such differences in the nature of the system – along with political and institutional factors outlined above – should inform the strategy for a particular country.

It is also important to consider an implementation strategy from the perspective of a subnational government. Even capable ones must be strategic in adopting revenue reforms that require major increases in what residents pay and other behavioral changes. Simple and more politically acceptable reforms could be undertaken before complex or controversial ones, and revenue improvements could be tied to specific service improvements. For example, in places where movement to full property valuation is intended and current valuations are low, assessment ratios could be phased in and related to particular service improvements. Similarly, new user charges could move gradually towards cost recovery in order to avoid harsh equity effects, undesirable changes in service use, administrative and political resistance, etc. New systems and procedures could be tested through pilots, allowing for modifications before wider adoption.

Institutional innovations can be used to help overcome political connectivity constraints noted above. Adoption or tailoring of citizen engagement and oversight can facilitate public acceptance of local tax reforms, as some of the empirical work noted above suggests, and public education may improve citizen awareness and compliance. User committees for specific services have been used in some countries to connect citizens to subnational service delivery and associated revenue generation, although they can also be used to bypass subnational governments.[51] Working with community-based groups on service delivery and revenue generation for certain services, such as urban trash collection and maintenance of minor rural irrigation canals, can be productive and benefit subnational governments, the partner community groups and local residents. Small steps can change how subnational governments function as well as how citizens view them.

Some may argue that subnational revenue reforms in developing countries already bridge technical and political matters to some degree, and there is often an element of strategy as well. It is true that many technical aspects of revenue reform discussed above, such as more transparent and simplified property valuation, incrementally increasing assessment ratios or user charges over time, and the like, have been in part a strategic response to political constraints on revenue administration and compliance, even if not explicitly portrayed as such. Many such reforms, however, are promoted unilaterally by a single agency, involve largely technical procedural changes, and fall short in incorporating features that could help to alleviate other constraints that hinder developing a relationship between local governments and taxpayers. Many strategic elements are also partial and ad hoc, focusing on one aspect of the local revenue system that may not be sustainably improvable without attention to other factors.

There is no magic formula for developing an implementation strategy, and the complexity of the context in which fiscal decentralization reforms occur necessitates finding a manageable approach. This means that not all considerations and constraints that one might wish to consider in a perfect world can be taken into account. There is likely, however, to be significant room for improvement over current practice. The goal is to better understand the opportunities for and constraints on a desired reform and the relevance of likely sources of support and opposition for how to approach implementation in a particular case.

USING AND MOVING BEYOND MAINSTREAM THEORY FOR MORE EFFECTIVE PRACTICE

Central governments in developing countries often do follow, at least to some extent, basic fiscal federalism principles in developing formal frameworks for subnational government revenues. There is, however, a tendency to limit revenue decentralization. Equally significant, frameworks are often general, leaving much room for detailed design of individual revenue sources to stray from principles. Perhaps most critical, even if design principles are closely followed, implementation can easily go off course.

Some deviations between subnational revenue theory and practice can be explained by the theory itself. There are, as noted above, trade-offs among some principles. Other constraints on applying them – data scarcity, basic socioeconomic characteristics (e.g., economic base and poverty), heavy administrative demands of certain sources, capacity deficiencies, weak commitment, etc. – are recognized as factors underlying compromised design and lackluster implementation of subnational revenue reform. These are all valid explanations for divergence between theory and practice, but they do not do justice to the complexity or depth of the forces involved, some of which are a manifestation of more fundamental phenomena. Several additional factors contribute to the challenges of crafting, adopting and institutionalizing robust subnational revenue systems.

First, decentralization is rarely adopted primarily for the reasons considered desirable by democratization and fiscal federalism theories. Instead, it is often a response to crisis, demands from influential subnational governments, or shifts in political dynamics. The intention to decentralize may be genuine, or reform may be a superficial response to domestic and/or external pressures. Related concerns include whether reform is broadly supported and if its likely effects are understood. If adopted too quickly, there may not be a genuine consensus or sufficient appreciation of its political or fiscal implications. There is rarely anything that policy analysts can do to influence these underlying forces that dominate in the heat of the moment, but they can try to be more aware of the broader political context.

Second, if the decision and steps to decentralize did not involve consultations with the range of national agencies involved in reform design and implementation and they did not properly understand the reforms, they may develop concerns if they later feel threatened. These agencies shape reform details, and they may have diverse views on

decentralization and face conflicting incentives to support or undermine it, either overtly through how they define systems and procedures or more informally through how they implement reform. Poor coordination of the actors in this competitive policy development and support structure environment – and its common reinforcement in aid dependent countries by international development agencies – can lead to policy inconsistencies and limit the effectiveness of subnational reforms, including revenue generation.

Third, local political realities can severely constrain implementation of even a well-designed intergovernmental fiscal system endorsed by national legislators and administrators. The form of local elections and non-electoral accountability mechanisms; the nature of the local economy and social relations and associated power dynamics and informal non-democratic practices (clientelism, patronage, etc.); the strength and characteristics of civil society; and other diverse contextual factors affect whether subnational governance mechanisms can have their intended effects broadly or in a particular jurisdiction. Taxpayer compliance is substantially predicated on whether local citizen-voters believe that they are being treated fairly and receiving public services commensurate with the contribution to the public purse being requested of them.

Fourth, capacity issues are critical at both central and subnational levels. This is widely accepted and capacity building is a key component of reform, but it often fails to target the full range of relevant actors and is designed in a traditional way that is increasingly considered insufficient. On the first point, capacity building tends to focus on technical/managerial staff and the mechanics of new systems and procedures, with limited attention to improving the nature and quality of interactions among actors – levels of government and subnational actors (elected officials, bureaucrats and citizens) – whose cooperation is required for successful reform. On the second point, capacity building often involves classroom training that does not adequately prepare recipients for using new skills on the ground. There is an increasing recognition of the need for on-the-job, on-site capacity building that better supports and institutionalizes new ways of doing business.

Finally, there is a growing recognition of limited attention to implementation strategies. Mainstream approaches tend to be built around defining technical reforms, with more ad hoc consideration of political economy and practical factors. In the case of revenue reforms, there may not be enough consideration of their relationships with other elements of the fiscal system, much less the broader environment. Decentralization that is too rapid may overwhelm subnational absorptive capacity and threaten central bureaucratic tolerance, while unduly slow

reform will disillusion proponents and reinforce centralist practices. Various elements of strategic implementation have been proposed, such as the use of asymmetry, negotiated reforms, performance incentives, demand driven capacity building, innovative subnational civic engagement, etc. An appropriate strategy may incorporate some or all of these, but it must be crafted in the context of a particular country, and at the subnational level in the context of local conditions.

Given the diversity of context and experience among developing countries, it is not sensible to generalize about how to approach the theory–practice gap beyond a few basic points. Considering all of the diverse forces and the many ways they could interact to shape appropriate decentralization and subnational revenue, reform may even seem overwhelming. The dynamics are multidimensional, and it is a challenge even to identify them, much less to appreciate their effects and know what to do about them.

At the same time, an exhaustive analysis is not necessary to improve on the status quo. The basic theory remains a useful starting point, but effective policy development and implementation require interpreting it in context and looking beyond it. Policy analysts need to understand more fully the actors and factors that support and challenge reform and the relative power of each. At the national level this can facilitate the crafting of more workable reforms. It is also essential, however, to assess subnational political and civil society characteristics and dynamics, what they imply for the types of reforms that can be effectively pursued, and the best ways to make progress. It will often be more productive to engage in asymmetric and/or modest reforms that move the system in the right direction and build a foundation for future action rather than to pursue more comprehensive reforms that have little chance of taking root.

In the final analysis, there is considerable justification and scope for trying to build more robust theory to incorporate neglected factors and relationships that are known to be important for decentralization and subnational revenue generation. In the interim, more can be done to understand relevant national and subnational political and bureaucratic dynamics and to consider what these imply for pragmatic, strategic and productive subnational revenue reform. Better systematic analysis and documentation of individual cases would help scholars and practitioners to construct a better analytical framework.

NOTES

1. Bahl and Linn (1992); Shah (1994, 2004, 2006c); Prud'homme (1995); Tanzi (1996, 2001, 2010), Ter-Minassian (1997); Bird and Vaillancourt (1998); Litvack, Ahmad and Bird (1998); Smoke (2001); World Bank (2001, 2005); Ahmad and Tanzi (2002); Ebel and Yilmaz (2003); Bardhan and Mookherjee (2006), Bird (2006, 2011); Bahl and Bird (2008), United Cities and Local Governments (2010).

2. Diversity is a theme throughout the decentralization literature. Several volumes focus on single countries, including Bahl and Smoke (2003) and Alm, Martinez-Vazquez and Indrawati (2004). Some are regional specific and interdisciplinary, including Burki, Perry and Dillinger (1999), World Bank (2001), Smoke (2003), Wunsch and Olowu (2003), and World Bank (2005). Others are cross-regional, including Bird and Vaillancourt (1998), Ahmad and Tanzi (2002), Bardhan and Mookherjee (2006), Shah (2006c), Smoke, Gomez and Peterson (2006), Connerley, Eaton and Smoke (2010), Martinez-Vazquez and Vaillancourt (2011), and Dickovich and Wunsch (2014).

3. This is discussed in Shah (1994, 2004); Litvack, Ahmad and Bird (1998); Bahl (2000a); Ebel and Yilmaz (2003). Rodden et al. (2003); Ebel and Taliercio (2005); Smoke (2006, 2007); Bahl and Martinez-Vazquez (2006), and Boex and Yilmaz (2010).

4. Yilmaz, Beris and Serrano-Berthet (2010) summarize subnational accountability requirements.

5. Fiscal federalism is introduced in Oates (1972) and revisited in Oates (1999). Derivative work and critiques include Shah (1994), Prud'homme (1995), Tanzi (1996, 2001), Ter-Minassian (1997), Litvack, Ahmad, and Bird (1998), Bird (1999), Bahl (2000a), McLure (2000), McLure and Martinez-Vazquez (2000), Smoke (2001), Ebel and Taliercio (2005), Martinez-Vazquez, McLure and Vaillancourt (2006), Martinez-Vazquez and McNab (2006), Bahl and Bird (2008), Boadway and Shah (2009) and Bird (2011). Literature on "second generation" fiscal federalism includes Oates (2005) and Weingast (2006, 2009, 2014).

6. The most recent and perhaps the most succinct summary is provided in Bird (2011).

7. See, for example, Bahl and Linn (1992), Shah (1994), Bird (1999, 2011), Bahl (2000a), Bird (2001), Ebel and Taliercio (2005); Taliercio (2005); Ebel and Weist (2006), Bahl and Bird (2008), Smoke (2008).

8. Bird (2006, 2011), Bahl and Bird (2008), and Smoke (2008) review key literature in more detail.

9. This is a VAT levied on the basis of income (production, origin) rather than consumption (destination), which is advanced by Bird (1999, 2001, 2005, 2009).

10. Literature on intergovernmental transfers is reviewed in: Bahl and Linn (1992), Shah (1994, 2006a), Ter-Minassian (1997), Bahl (2000b), Bird and Smart (2002), Schroeder and Smoke (2003), and Mogues and Benin (2012).

11. See United Cities and Local Governments (2010) concluding chapter (Martinez-Vazquez and Smoke).

12. This is discussed in Prud'homme (1992), Lewis (2003b), and Taliercio (2004, 2005).

13. See, for example, Mikesell (2002, 2007), Bird and Wallace (2003), Lewis (2003a, 2006), Taliercio (2004, 2005), and Ebel and Taliercio (2005).

14. See Peterson (2000), Friere and Petersen (2004).

15. For example, sales, turnover and property taxes may be productive and buoyant, but difficult to administer, and they may create inefficiencies and inequities. User charges may be efficient but inequitable. A less visible tax may be politically feasible but reduce efficiency because the benefit–cost link is hidden.

16. For example, see Kelly (1993, 2000, 2003).

17. See, for example, Oates (2005), and Weingast (2006, 2009, 2014).

18. See, for example, Therkildsen (2001), Fjeldstad (2003), Sabates and Schneider (2003), Schneider (2003), Moore (2004, 2007), Addison and Levin (2006), Schneider (2006), Brautigam, Fjeldstad and Moore (2007), and Torgler (2007).
19. Various elements of the literature are reviewed in Manor (1998), Eaton (2002, 2004), Wunsch and Olowu (2003), Ribot (2004), O'Neill (2005), Ribot and Larson (2005), Bardhan and Mookherjee (2006), Smoke, Gomez and Peterson (2006), Ahmad and Brosio (2008), Connerley, Eaton and Smoke (2010), Hiskey (2010), Eaton, Kaiser and Smoke (2011), and Faguet (2014).
20. For a more detailed discussion of this issue, see Smoke (2003).
21. Literature on this issue is reviewed in Smoke, Gomez, and Peterson (2006).
22. Much of the relevant literature on this is reviewed in Smoke, Gomez and Peterson (2006), Hiskey (2010) and Eaton, Kaiser and Smoke (2011).
23. These issues are elaborated in Smoke and Lewis (1996); Tendler (1997); Litvack, Ahmad, and Bird (1998); Cohen and Peterson (1999); Smoke (2007), and Eaton, Kaiser and Smoke (2011).
24. Smoke (2008) provides these examples and references with more information.
25. Smoke (2008) and Smoke and Sugana (2012) discuss this case.
26. Donor behavior to support decentralization is discussed in Smoke (2000), Romeo (2003), Fritzen (2007), Development Partner Working Group on Decentralization (2011).
27. Examples are given in Blair (2000), Fjeldstad (2006b), Connerley, Eaton and Smoke (2010), Eaton, Kaiser and Smoke (2011) and Development Partner Working Group on Decentralization (2011).
28. Reviews of decentralization from various perspectives, mostly not specific to revenue generation, are provided in Tendler (1997), Manor (1998), Schneider (1999), Blair (2000), Olowu (2003), Wunsch and Olowu (2003), Ribot (2004); Shah and Thompson (2004), Ribot and Larson (2005), Bardhan and Mookerjee (2006), Shah (2006b), Cheema and Rondinelli (2007), Connerley, Eaton and Smoke (2010) and Faguet (2014).
29. A useful review of the literature and perspectives on local elections is found in Bland (2010).
30. Gomez-Alvarez (2012) reviews the Nayarit reform.
31. See Bordignon and Piazza (2010).
32. See Dubois, Leprince and Paty (2007).
33. See, for example, de Mello (2002), Blair (2006), Commins (2006), Platteau (2006), Manor (2007), and Brinkerhoff and Azfar (2010).
34. See Altunbas and Thornton (2012).
35. See Bjedov, Madies and Schnyder (2010).
36. See Reinikka and Svensson (2004).
37. See Iversen et al. (2006).
38. See Fjeldstad (2006a).
39. Schneider and Baquero (2006) review the literature and examine the Porto Alegre experience.
40. The nature of the system and the research are explained in Juul (2006).
41. Fjeldstad and Semboja (2001) and Fjeldstad (2001) elaborate on the research and the results.
42. See Fjeldstad (2004, 2005) for details.
43. The results are reported in Kjær (2004) and Kjær (2005).
44. See Avellaneda (2009).
45. See Lange (2010).
46. See von Luebke (2009) for a review of the literature and the empirical results.
47. Some examples are provided in Green (2005).

48. This is discussed to varying degrees in Smoke and Lewis (1996), Litvack, Ahmad and Bird (1998), Burki, Perry and Dillinger (1999), Falleti (2005), Smoke (2006, 2007, 2010), Bahl and Martinez-Vazquez (2006), Ebel and Weist (2006), Shah and Thompson (2004), and Bahl and Bird (2008).
49. See the discussion in Smoke (2008).
50. See, for example Bahl and Smoke (2003), and Smoke (2007, 2010).
51. See the discussion and examples in Manor (2004).

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10. Implementing sustainable property tax reform in developing countries

Roy Kelly

INTRODUCTION

Property taxation has tremendous potential for mobilizing improved revenue and equity, especially in developing countries. Currently the property tax generates 0.3–0.6 percent of GDP for developing and up to 2–3 percent of GDP for OECD countries (Bahl and Martinez-Vasquez, 2008; Bird and Slack, 2004). This international benchmarking suggests a high potential for significant increases in property tax revenues, along with improvements in equity and efficiency, especially in developing countries.

To realize these potential property tax revenue improvements, countries must undertake strategic reform, combining policy and administrative interactions to improve tax base coverage, property valuations, collection, enforcement and taxpayer services. The tax policy reforms must adjust tax base definitions and tax rate structures, along with making appropriate policy decisions linked to valuation standards, appeals, collection and enforcement. The tax administrative reforms must focus on improving tax base coverage, valuation, and collection, along with taxpayer services.

A major constraint to improving the property tax in developing countries is weak administration, often a result of political, institutional and capacity constraints. Property tax reforms must be designed cognizant of these constraints, the existing reform environment, legal and institutional structures, government administration capacities, and political will, as all tax reforms must be country-specific, adapting international best practice to each unique reform environment. Major administrative reforms, undertaken within a proper property tax policy framework, are crucial to ensure sustainable implementation of a more equitable and efficient property tax system.

Realizing improvements in property tax revenue, equity and efficiency objectives requires a multi-year, systematic and comprehensive property

tax reform. Although property tax policy can be adjusted overnight, international experience confirms that the translation of those policy and administrative changes into enhanced revenues, efficiency and equity will take time. Although certain reforms may yield immediate improvements in property tax revenues, generally speaking, property tax reform must be implemented so as to allow sufficient time for longer term, systemic and institutional reform.

Ideally property tax reform should be structured as an integral part of broader public sector management reforms, such as fiscal decentralization and governance, public financial management, local government and urban development reforms. This will help create demand support for the reform, making it easier to mobilize a broader set of the key stakeholders and resources, balance the impacts and incentives of other reform initiatives, minimize political, administrative and taxpayer opposition and generate the synergy needed to design, implement and sustain a successful property tax reform. Successful property tax system can then help support these other reforms which seek to enhance responsive, efficient and accountable government and public service delivery.

As with any reform, making the property tax work requires visionary leadership, an appropriate policy framework, strong administrative capacity, and appropriate incentives to mobilize the political, administrative and popular support needed to enhance property tax revenues, equity and efficiency. This chapter focuses on these requirements for successful property tax reform, identifying the key policy and administrative components and possible strategies needed to make the property tax work.

The next section outlines the broader public sector reform environment needed to facilitate and support sustainable property tax reform. Then, the policy and administration determinants affecting the realization of property tax revenue, equity and efficiency outcomes are identified. The third section focuses on the ingredients needed for successful reform implementation, while the final section summarizes the key recommendations for making the property tax work, especially in developing countries.

THE BROADER REFORM ENVIRONMENT

Countries everywhere are in the midst of development reforms to promote growth and improve living standards. These reforms are focusing on enhancing private sector led economic growth, adopting effective public sector regulations and improving efficient and accountable public service delivery. While the private sector focuses its entrepreneurial

energies to maximize market efficiency, governments are focusing their fiscal attention on issues of macroeconomic stabilization, distribution and allocation.

Although stabilization and distribution functions are largely central government responsibilities, the allocation functions are joint responsibilities of both central and local governments, depending largely on the geographic scope of the public good (Musgrave and Musgrave, 1989; Oates, 1999, 2005). Based on the subsidiarity principle, public goods and services are to be provided by the lowest level of government that can do so efficiently. This implies that most public expenditure functions should be assigned to local governments, with the exception of those functions with economies of scale and/or interjurisdictional spillovers such as national defense, monetary policy, and water basin management, among others.

Virtually all governments have adopted variants of decentralization reforms to improve public service efficiency, encourage more accountable and responsive governance, and promote more equitable distribution of services throughout the country. The goal is to bring public sector decisions closer to the people so as to empower local communities to actively participate in prioritizing, implementing and monitoring government resources to enhance efficiency with public and social accountability (Boex and Kelly, 2013). To be successful, these decentralization reforms necessarily involve a combination of political, administrative and fiscal aspects (Boex and Yilmaz, 2010), which must be strategically implemented in a country-specific approach (Bahl and Martinez-Vazquez, 2006).

'Finance should follow Function' is a fiscal decentralization rule stressing the need to provide appropriate funding for the expenditure functions allocated to local governments (Bahl, 1999). This requires a system of shared taxes, intergovernmental transfers and local own-source revenues, the mix depending on the nature of the allocated functions. Although intergovernmental transfers and shared taxes typically dominate the financing framework, local own revenues, although perhaps small, are critically important to enhance local autonomy, governance accountability, ownership and responsibility, while providing an important source of additional funding (at the margin) for local budgets.

Although largely dependent on central–local transfers, local governments everywhere tend to rely on fees and charges, business licenses, and the property tax for their own source revenues, with some local governments given access to broader taxes on motor vehicles, sales and income. The property tax currently finances about 40–80 percent of local government expenditures in OECD countries and between 20–80 percent in

developing countries (Bahl and Martinez-Vasquez, 2008). It has been suggested that the property tax should be able to yield between 1–2 percent of GDP and serve as the core local tax source for local governments throughout the world (UN-HABITAT, 2011).

Theory and international best practice identify the property tax as the ideal local tax to support ongoing fiscal decentralization strategies. The property tax has strong potential for revenue mobilization, especially in rapidly urbanizing areas. The tax base is immobile which minimizes economic efficiency costs, makes it easy to be identified and be captured and allows the properties to be the natural collateral in cases of nonpayment. Due to its immobility, the property tax base also captures the value of location-specific capital investments and benefits from government programs and services not captured otherwise through various fees, user charges and taxes. The property tax also, in many countries, tends to fall on those with the ability to pay, as immovable property can be the primary repository of wealth. And finally, as a highly visible and politically sensitive revenue instrument, the property tax can serve as a perfect tax to encourage more responsive, efficient and accountable local governments.

Despite being an ideal tax for local governments, with tremendous revenue potential, property taxes in most developing countries face a number of challenges emanating from central and local level political, institutional and administrative problems. At the central government level, reform measures must ensure that local governments are empowered with the responsibility, capacity and resources to effectively implement the property tax. At the local level, local governments must be given the adequate and necessary discretion, along with accountability constraints, to influence property tax policy and its administration (at the margin) and effectively link property tax revenue mobilization with improved levels of responsive, efficient and accountable service delivery.

Reforms should be structured to reduce excessive central government indirect and direct interference. For example, central governments should design their intergovernmental transfers and shared taxes so as to minimize disincentives for mobilizing local revenues; while the central government must be also constrained from intervening with ad hoc policy changes (e.g., granting special exemptions and curtailing local tax rates) and/or administrative regulations which can dramatically discourage local revenue mobilization.

Reforms at the local level should create an enabling environment to empower local governments to effectively enhance governance and improve public service delivery. Strengthened political legitimacy and credibility can better enable local governments to be more responsive

and work with their residents to mobilize additional tax revenues needed for local expenditure priorities. Enabling local governments to deliver quality services and to effectively link property taxes to these services will encourage voluntary compliance and grant local governments the legitimacy and credibility to undertake enforcement against noncompliance.

To be successful, property tax reforms should be linked in a "demand-driven" fashion to the broader public sector reforms such as decentralization, in order to build on the momentum, the stakeholder interest, the political will and the available institutional, financial and human resources. Isolated "supply driven" reforms rarely gain sufficient traction to generate sustainable momentum. Thus, a key design strategy for successful property tax reform could be to anchor it as a component of the broader decentralization reforms in a country. In this way, the property tax reform could become a demand-driven activity needed to realize the broader public sector reform objective. In this way, the property tax reform moves beyond just strengthening itself, to becoming a means of supporting the broader vision for improved efficiency and accountability of governance and service delivery.

To ensure that the property tax can deliver the needed revenues, equity and efficiency to support the broader decentralization reforms, reformers must focus attention on identifying the required policy and administration components and then designing and implementing an appropriate reform implementation strategy to make the property tax work.

PROPERTY TAX POLICY AND ADMINISTRATION

Within the broader political economy environment, reformers must understand the economic, policy and administration determinants of property taxation in order to design and implement appropriate, effective and sustainable interventions. As the property tax revenue identity equation shown below indicates, policy and administration factors closely interact to affect the equity and efficiency of property tax revenue mobilization (Linn, 1980; Kelly, 2000, 2013; UN-HABITAT, 2011).

The *policy factors* focus primarily on the structure of the tax base and tax rates which determine the legal tax capacity; while the *administration factors* directly affect the realization of that tax capacity through the tax base coverage (CVR), the valuation (VR) and the collection (CLR) ratios. In short, property tax revenues are equal to the tax base multiplied by the tax rate, adjusted for the administrative ability to capture the properties on the tax rolls, estimate accurate property valuations, and assess and collect the tax liability, all affected by the quality of taxpayer service.

Tax Revenue = [Tax Base * TR] * [CVR * VR * CLR]

[Policy Variables]   [Administrative Variables]

The Policy Variables

- The *Tax Base* is defined by government policy in terms of what is and is not included in the tax base, and on the basis on which the tax will be levied (i.e., area or value).
- The *Tax Rate (TR)* is defined by government policy to be the tax amount per value of a property under an ad valorem property tax system, or by the amount per unit of property under a pure area-based rating system.

The Administrative Variables

- The *Coverage Ratio (CVR)* is defined as the amount of taxable property captured in the tax registry, divided by the total taxable property in a jurisdiction. This ratio measures the completeness of the tax roll information and is determined by the administrative efficiency of identifying and capturing property data using field surveys, secondary property information, and/or taxpayer-provided information, and ensuring the correct application of legally approved exemptions, reductions and tax relief policies.
- The *Valuation Ratio (VR)* is defined as the value on the valuation rolls divided by the real market value of properties on the valuation roll. This ratio measures the accuracy of the property valuation level (i.e., what percent of market value is being captured through the valuation process). The valuation ratio level is determined primarily by the frequency and accuracy of the property valuation process.
- The *Collection Ratio (CLR)* is defined as the annual tax revenue collected over total tax liability billed. This ratio measures collection efficiency on both current liability and tax arrears, determined largely by political will, taxpayer service and the effective use of incentives, sanctions and penalties.

The administration variables can be grouped into those related to tax base administration (i.e., coverage and valuation) and those related to the treasury functions of billing, collection, and enforcement (i.e., captured under the collection ratio). These two separate but complementary groupings are important when structuring tax administration options so as to take advantage of distinct skill capacities, economies of scale, and avoidance of conflicts of interest and possible collusion.

To make the property tax work, reformers should identify a strategy to combine and sequence an appropriate set of policy and administrative interventions which can be accepted, adopted, implemented and sustained in an efficient and equitable manner. Any set of policies chosen must be implementable, linked to political, institutional and administrative realities. Policy choices may identify the potential property tax benefits, but it is the quality of administration that will realize those property tax revenue and equity objectives.

Policy choices appropriate for one reform environment may not be appropriate for another reform environment. While the same theories may apply to every situation, the exact mix of policy and administrative reform interventions will necessarily vary, cognizant of the unique reform environment situation. Herein lies the art of property tax reform. For the reform artist to be successful, the artist must understand the theory, the unique reform environment, and the array of policy and administrative alternatives and then creatively adapt and craft these various components into an appropriate, successful property tax reform strategy.

Let us now explore these components, focusing first on policy choices and administration options, followed by implementation strategy considerations. We will then summarize key recommendations for making the property tax work.

Exploring the Property Tax Base

Property tax policy must define the tax base composition and the tax rate structure, along with the taxpayer definition (owner, occupier and/or beneficiary), valuation standards (valuation – capital or annual rental value – or area basis) and the related assessment, billing, collection, enforcement and dispute resolution issues. There are similar patterns, yet with interesting diversity, in the adopted policy choices by different countries across income levels, geographic and population size, legal and institutional systems, political and administration structures, historical legacies and the degree of decentralization, among others [Almy (2001), Bahl (2009), Bahl, Martinez-Vasquez and Youngman (2008, 2010), Bird and Slack (2004), De Cesare, 2012, Franzsen and McCluskey (2005), Kelly (2000, 2004, 2013), McCluskey (1999), Rosengard (1998), UN-HABITAT (2011), Youngman and Malme (1994, 2002)].

To quickly summarize, most countries typically define the immovable property tax base to include both land and improvements (e.g., buildings), although there are some countries that only tax land (e.g., Jamaica, Kenya, New Zealand and Australia) or only improvements (e.g., Ghana,

Tanzania). Many taxing jurisdictions also include machinery and equipment in their tax base (e.g., US and Canada). Each tax base definition has advantages and disadvantages; and there are strong advocates for each alternative. However, regardless of tax base chosen, countries typically define that tax base coverage as broadly as possible to enable the capture of adequate revenue in an efficient and equitable manner.

The tax base definition as to whether to levy the property tax on land and/or building and/or equipment is not the major policy challenge. The real challenge is defining what will not be included in the tax base, that is, the exemptions. Although there are commonalities, tax base exemptions vary across taxing jurisdictions, based on such factors as nationality, ownership, property use, property characteristics and/or characteristics of the property owners/occupier.

Although exemptions may be well intentioned, reformers must recognize that all exemptions are implicit subsidies or tax expenditures affecting both revenue and economic behavior, which can in turn impact efficiency and equity. International best practice would be to minimize the number of exemptions and tax relief schemes, while more effectively targeting the remainder, so as to best achieve intended government objectives at least economic, administrative and compliance cost.

However, reforming these exemptions can be challenging. Aside from the political difficulties of dealing with constituencies benefiting from these exemptions, reformers even find it difficult to identify all the existing exemptions, as they are often spread throughout multiple laws including the Valuation for Rating Act, the Property Tax Act, and a myriad of other miscellaneous laws on foreign and domestic investment, economic development, mining, sector specific laws linked to hotels and tourism, commercial development, cinematography, among others. This fragmentation of exemptions, spread throughout different legislations and granted by different agencies, makes the reform process a technical, institutional and political challenge, especially in developing countries.

The common property tax exemption across all countries is diplomatic property based on the Vienna Convention on Diplomatic Relations. Countries also typically exempt government-owned properties used for government purposes, although some countries provide for a Contribution in Lieu of Rates (Kenya), Payment in Lieu of Tax (PILT) (Canada and US) or Grants in Lieu of Taxes (Provincial Level in Canada).[1] And there are also some countries that explicitly tax government property either at the full rate (South Africa) or at reduced differential rates (Malawi with a 50 percent reduction and Namibia with a 20 percent reduction) (Kelly et al., 2001, Franzsen, 2012).

Exemptions are also usually given to properties owned by religious institutions but limited to places of worship or other limited religious purposes. Education and health properties are often given a full exemption; although some countries provide only a partial exemption by taxing privately owned facilities at a reduced tax rate (South Africa), while other countries provide an option for voluntary Payments in Lieu of Taxes (USA) (Kenyon and Langley, 2010). Although there may be a constitutional or legal rationale for granting exemptions for religious, educational and medical facilities, it is also economically rational to allow some level of exemption/tax relief in light of possible positive social externalities generated from these properties.

Countries also commonly provide an exemption threshold to eliminate low value properties from paying the property tax, although some countries require every property to pay at least a minimum tax amount for services (Jamaica, Latvia, State of Hawaii, Perth, Australia) (UN-HABITAT, 2011; Perth, 2012). In Latin America it is common to provide exemptions/tax relief for social purposes aimed at low income families, widows, retired and elderly people, pensioners and orphans (De Cesare, 2012).

There are also exemptions, especially in developing countries, which are given to a large portion of the potential property tax base, such as residential properties and agricultural properties. Although the rationale given is a mixture of concerns for equity, administrative efficiency and political expedience, these exemptions can have major implications on equity, efficiency and revenue, depending on how they are structured.

For example, poor small subsistence farmers, especially in developing countries, should perhaps be exempt from property taxation to improve equity. In fact, taxing small rural farmers can cost more in administration and compliance costs than the amount of revenue collected, plus governments often provide very minimal public services to these rural properties. The same logic, however, does not apply to large commercial farmers. Countries which currently do not tax agricultural properties (e.g., Tanzania, Guinea, Tunisia and Zambia) should perhaps explore options to tax at least large commercial agricultural properties through introducing a minimum area rate on large commercial farmers.

Another popular exemption is the granting of tax relief to residential properties. In some countries, the push is to exempt all residential properties while in others it is to grant a single exemption to the owner-occupied residential unit (Egypt, Indonesia). While providing a blanket exemption for all residential properties may be politically expedient to garner popular support, it can generate a large loss in forgone

revenue and dramatically impact equity, without effectively targeting those most in need of tax relief.

Developing countries overall face a major administrative constraint in trying to target exemptions. For example, granting a single owner-occupied exemption requires tax departments to be able to link the property (i.e., the tax object) uniquely to the taxpayer (i.e., the tax subject) and to be able to verify that the person living in the house is the owner and is only receiving one exemption across all jurisdictions. This proves virtually impossible to implement and enforce in countries with limited coverage of legal and fiscal cadastres and a lack of information sharing across taxing jurisdictions. Thus, although well intentioned and designed to promote greater equity, such policies are often impossible to implement in developing countries.

Another set of exemptions often given are those linked to promoting economic development, which are quite common in OECD countries. The expectation is that these exemptions will attract and stimulate economic investment and growth to a specific region and/or to specific areas within a city. Although quite popular among politicians and the business community, there is little evidence that these tax exemptions are effective (Kenyon, Langley and Paquin, 2012). In general, it is important to remember that the property tax is primarily a revenue instrument, not a tool to fine tune economic development and/or affect land use development patterns.

Theory and international experience confirms that poorly designed and implemented tax exemptions can dramatically create a drain on revenues, increase inequity among taxpayers and introduce major inefficient behavior and distortions. These exemptions play havoc with the tax base making it imperative for reformers to review, evaluate, redesign and monitor the exemption structure to ensure that social and economic objectives are being obtained at least economic, administrative and compliance cost. While this requires both a political and technical process, reformers must recognize that the political aspects often dominate the policy discussion.

Exploring the Tax Rates

The second important policy choice is the determination of the tax rate structure. Once again, there is diversity throughout the world, with some jurisdictions levying a uniform single tax rate (either on a percentage basis or as a unit rate) while others apply differential rates across types or uses of property (e.g., a classified tax rate structure). Still other jurisdictions levy the tax on a progressive rate, taxing higher value properties

at a higher marginal percentage rate. Other countries require a uniform tax rate to be used, while allowing for valuation assessment ratios to vary by type of property, effectively allowing for a classified effective tax rate structure (Philippines) (Guevara, 2003). Given the often complex structure of the tax liability assessment process, reformers need to understand the link between the explicit statutory tax rate structure and the underlying effective tax rate structure.

Applying a uniform legal tax rate on all properties allows the property tax liability to vary only by the differences in the property valuation. A high value residential property would therefore pay the same amount as an equal value commercial or agricultural property. The tax would be truly an "ad valorem" tax, with the amount of the tax based solely on the property value, not a function of differential land use and/or ownership tenure. The property value itself would capture any differentiations caused by characteristics such as location, size, property use and ownership rights.

In terms of administrative feasibility, a uniform rate simplifies administration and reduces discretion during the tax liability assessment process. In many developing countries with weak zoning and land use regulations, tax officials are forced to use discretionary judgment to classify and determine the appropriate tax rate for each property use when properties have multiple uses – such as a residential property also serving as a medical clinic. Discretion, without clear accountability oversight mechanisms, can lead to the misapplication of the expected tax rate policy, leading to loss in revenues, equity and efficiency. It is therefore recommended, whenever possible, that a uniform tax rate be applied in developing countries.

However, many countries adopt a classified system, allowing the property tax rate to vary by property use and tenure. Although there may be legitimate policy reasons for doing so, it appears that the introduction of differential tax rates often may be for political reasons. For example, lower tax rates on agricultural land provides a subsidy to agriculture, taking pressure off those agricultural properties located at the urban fringe to be converted from agriculture to urban land use.

Higher tax rates on commercial and industrial properties are often justified as "fair" based on the business's "ability to pay" as a cash generating operation and with the argument that the business properties are not fully paying for the benefits they received from the government. However, the incidence of a business tax is quite complex, as property taxes levied on businesses may not be fully borne by the business owners but rather shifted backwards to the factors of production and forward to consumers in various ways, affecting both equity and efficiency. In terms

of capturing the benefits enjoyed by businesses, studies in Canada and the US show that the business sector is often overtaxed in terms of the net benefits received, thus there are economic arguments to lower the property tax rate on business properties (Kitchen, 2005). Taxing business properties above the threshold of benefits received allows local governments to 'export' the tax to non-residents, breaking the efficiency linkage between local expenditures and local revenues.

In developing countries, however, where commercial properties may not be fully paying for the local services received through user fees and local level income and consumption taxes, there may be a greater justification for applying a higher property tax rate on commercial properties as a 'benefit tax' for locally provided public services.

Some countries have chosen to apply progressive tax rates based on the individual property value (e.g., Colombia, Bolivia, Chile, Guatemala, Peru, Brazil, Egypt and India) (De Cesare, 2012, Kelly, 2011, NIUA, 2010).[2] The use of progressive rates is rationalized as a way of shifting the property tax burden to those properties with a higher "ability to pay." The validity of this argument is questionable, however, since there is little correlation between a property and taxpayer income. That is, there are many low value properties owned by wealthy taxpayers while there are higher value properties owned by "asset rich-cash poor" taxpayers.

Most countries do not use progressive tax rate structures for property taxes, but reserve the use of progressive rate structures for their income taxes. The only country that has successfully applied the property tax progressively on the comprehensive value of all land and residential properties is the Republic of Korea under their national-level Comprehensive Real Estate Holding Tax, which is applied on top of the regular property tax (Government of Korea, Ministry of Strategy and Finance, 2012). The Korean government is able to link the property ownership records with family registration records to aggregate total property holdings for progressive taxation. In most countries, however, comprehensively linking properties to individual owners is virtually impossible and thus it is administratively impossible to tax immovable property progressively in a comprehensive manner. And, in fact, the Government of Korea announced in 2008 that the Comprehensive Real Estate Tax will be replaced over time with a tax on the wealthy, with short-term changes introduced on its administration from 2012 (Chosun, 2008).

Rather than taxing properties under a progressive rate structure, most countries tend to adopt simpler property tax rate structures to ensure transparent and accountable revenues. Even countries which previously applied complex progressive rates are shifting to simpler tax rate regimes. For example, in 2005, Jamaica shifted from its complex, progressive rate

structure for its annual property tax to a simple flat rate structure to remove the tax rate complexity and improve tax payment compliance.[3] Shifting away from a progressive rate structure can have a number of advantages: First, it can reduce the incentive to sub-divide property for purely tax purposes. Second, it can lower the tax burden on high value properties, which may encourage greater levels of tax compliance. Third, it can eliminate the problem with bracket creep, where properties can naturally fall into the higher tax brackets as property values naturally increase, unless the brackets are indexed to the general property value increases. Fourth, it can make it easier to adjust the rate over time (Sjoquist, 2004).

Although a uniform tax rate may be the ideal option for developing countries, it often proves to be politically difficult, forcing countries to introduce multiple rates to cater to specific groups of properties. In countries that do adopt a classified tax rate structure, the number of different tax rates should, to the extent possible, be kept to a minimum, with perhaps a maximum of three tax rates being differentiated for agriculture, residential and non-residential properties.

Reformers should recognize that, unless the property tax is effectively administered, the statutory differential rates may not necessarily be the same effective differential rates. Therefore some tax systems require higher level government to provide oversight and approval to a minimum tax administration quality before being granted permission to adopt a classified tax rate structure (e.g., Department of Revenue in MA, US).

In order to effectively link property tax to fiscal decentralization efficiency and accountability objectives, reformers need to allow a degree of tax rate setting powers to the local government level. Some local tax rate discretion is critically important to support the decentralization process. Tax rate discretion can improve economic efficiency, allowing local governments to establish their spending priorities and set the tax rate to realize revenue needed in accordance with local demand. In addition, rate setting power can strengthen local government accountability with its citizens, encouraging residents to monitor both the revenue collection and local expenditures more carefully (Bahl and Bird, 2008; UN-HABITAT, 2011).

Despite the importance of granting local level tax rate discretion, in reality, there are many countries where the tax rate is determined by the central government, with no local government discretion. For example, most countries in Latin America have property tax rates set by the central government, with the exception of municipalities in Colombia, Ecuador and Honduras, which may set rates within a range defined in national legislation (De Cesare, 2012). In transitional countries, the national

government usually sets the tax rate, with two notable exceptions, namely Estonia and Poland, where municipalities are allowed to set their own rates within central government limits (Youngman and Malme, 2002). In North America, Europe and Asia, however, local governments are typically given the power to set their tax rates, at least within limits established by central government legislation. Indonesia's recent property tax devolution reform in 2010 provides a good example of local governments being granted tax rate discretion specifically to support decentralization reforms (Kelly, 2012).

To conclude, as regards tax rate policy choices, theory and international best practice suggest the need to allocate the property tax rate setting (at the margin) to the local government for efficiency and accountability reasons. A combination of central level and citizen oversight of rate setting is important to achieve the revenue, equity and efficiency objectives. To the extent possible, reformers should push for a uniform tax rate to simplify administration, allowing a greater focus on improving property tax administration linked to coverage, valuation and collection ratios. In the event that a classified system is inevitable, the number of tax rates should be kept to a minimum to avoid unintended distortions in revenue, equity and efficiency.

However, all government policies on the tax base and tax rates are only effective if these are implemented in a consistent, accountable and transparent manner. The implementation success is dependent upon the quality of tax administration as discussed in the following section.

Exploring Tax Administration Coverage, Valuation and Collection

"Tax Administration is Tax Policy" is now a well-recognized statement emphasizing the importance of tax administration in realizing tax policy objectives (Casanegra de Jantscher, 1990). Although tax policy choices are obviously important, the larger challenge is always in implementing those policies, especially in developing countries with weak administration capacity.

Property taxation is a very administrative-intensive tax which requires proactive, intentional tax base identification, tax base valuation, tax liability assessment, tax billing and collection, tax enforcement, and taxpayer service and dispute resolution (Mikesell, 2007). These various administrative functions must operate in an integrated manner, interactively supporting the achievement of the revenue, equity and efficiency objectives. While all of the administrative functions contribute to defining the potential tax revenue, it is the collection function that transforms these potentials to reality. Reformers need to recognize this crucial role

of the collection function when designing administrative priorities and sequencing property tax reform implementation strategies (Kelly, 2000, 2013).

To improve administration efficiency, property tax departments everywhere are structuring themselves along functional responsibilities, separating fiscal cadastre functions (i.e., tax base identification and valuation) from treasury functions (i.e., tax liability assessment, tax billing collection, and tax enforcement) to allow for specialization and to minimize possible conflict of interest and collusion opportunities. Throughout the world, dispute resolution and taxpayer service functions are managed separately to ensure independent objectivity and service to taxpayers on issues related to the fiscal cadastre and treasury functions.

Exploring the property tax coverage ratio

The first step in property tax administration is to assemble and maintain property tax base information, which involves the collection, recording and management of property information on both land and improvements, in accordance with the legal tax base definition. The tax base must be identified and information captured before one can levy a tax on that base.

Case studies in developing countries suggest that the coverage ratio for the property tax may range from 40 to 80 percent (Bird and Slack, 2004, Kelly, 2000, De Cesare, 2012, UN-HABITAT, 2011). The challenge is to ensure that this basic fiscal cadastre information is complete, up-to-date and accurate – that is, to maintain the coverage ratio as close to 100 percent as possible so as to capture the total potential tax base.

To do this in a timely and cost-effective manner, governments are increasingly following a partnership approach, where the government works together with taxpayers and third party government and private sector agencies and individuals handling property tax-related information to collect information on taxpayers and the properties. This partnership approach to fiscal cadastre maintenance essentially outsources the information collection and updating process to reduce direct tax administration costs, while improving information availability. The limited government tax administration resources can then focus selectively on auditing the submitted information and undertaking active field work to improve the coverage ratio.

Property tax legislation and regulations typically require taxpayers to self-declare taxpayer details and property characteristics (including physical and valuation-related information). The taxpayer self-declaration process is common in all property tax jurisdictions, but is often confused with self-valuation and self-assessment. Although each approach involves

a taxpayer declaration of information which affects the quality of the coverage ratio, the self-valuation procedure also involves the taxpayer in the valuation, assessment and payment components of the collection ratio, while the self-assessment procedure also involves the taxpayer in the coverage ratio, relies on the government for the valuation ratio and then relies on the taxpayer for the assessment and payment components of the collection ratio. While various countries may try either one or several of these approaches, reformers must understand the efficiency and equity implications of each approach when designing strategies to improve overall property tax administration.

In addition to taxpayers reporting on their individual property information, countries also typically require third party public and private sector agencies and individuals to submit their property-related information to the tax department in a timely manner. These third party agencies and individuals would include the Ministry of Public Works, Ministry of Public Housing, Ministry of Lands, Surveyor General, Titles Registry as well as all private sector agencies, such as utility companies, real estate agents, rental agencies, notaries, lawyers, banks, and others. Failure to submit this information should result in appropriate penalties.

The starting point for this partnership approach is to determine the minimum needed property-related information, design the data capture mechanism (either manual or digital) and implement a systematic capture, processing and analysis of the taxpayer and third party information, accompanied by an appropriate awareness, education and support campaign. The property declaration/reporting form should be simple, user friendly and strictly limited to information needed to build and maintain the fiscal cadastre. Information collected but not used to improve the coverage, valuation and collection ratios is very costly.

One challenge to this partnership arrangement in developing countries is that many third party agencies are also in the process of institutional development and reform. Thus, any property tax reform effort towards improving the fiscal cadastre is also dependent on the quality and timing of these other agency reforms. And, as international experience confirms, information sharing across agencies is not solely a technical exercise but faces many institutional and procedural constraints which can inhibit the free flow of accurate and timely information needed to support property tax administration reform.

As part of this partnership approach to fiscal cadastre maintenance, tax departments must occasionally take proactive action to undertake field work, in order to audit the taxpayer declarations and third party information as well as to conduct systematic property tax coverage activities to identify properties, collect and manage relevant information and

maintain and use that information to ensure a complete and up to date fiscal cadastre.

This proactive approach by government is also required to initially build a tax registry, update a tax registry after a period of no maintenance and/or when conducting a major property valuation reassessment. Increasingly, simple, field based procedures, accompanied by appropriate technology are being used, as illustrated in the Philippines (Dillinger, 1991), Indonesia (Kelly, 1996), and most recently as reported in Somaliland, among others (UN-HABITAT, 2011).

To take advantage of economies of scale, ensure equitable treatment in application and overcome capacity constraints, there are strong arguments to involve central government in fiscal cadastre maintenance activities, including property valuation (Mikesell, 2007). Many countries depend heavily on central government to directly support the property tax cadastre and valuation (Colombia, Jamaica, Bahamas, Kenya, Uganda) or on state/provincial governments (Maryland/Hawaii in the US, British Columbia/Ontario in Canada, Mexico, India). Meanwhile other countries depend on central/state governments to set and monitor the fiscal cadastre and valuation standards (US, Mexico, NZ, Malaysia) (UN-HABITAT, 2011; De Cesare, 2012). Based on the subsidiarity principle, each country should "unbundle" its tax administration activities, assigning relevant functions to the appropriate government level.

There is very diverse experience in the functional division of property tax administrative responsibilities across government levels. The fiscal cadastre/valuation functions are often under central government responsibility, unless local governments can demonstrate capacity (Colombia). In other countries local governments are given the responsibility, unless they transfer the responsibility to the higher level of government (Mexico). In some countries local governments are fully responsible for the fiscal cadastre, regardless of their institutional capacity (Brazil, Ecuador, and Venezuela) (De Cesare, 2012).

This division of responsibility and the role of the central and local governments in tax administration is a critical challenge currently facing the property tax devolution in Indonesia. According to Law 28 (2009), all administration responsibilities, including fiscal cadastre and valuation, are to be shifted to the local governments. A recent ADB study suggests that, while all local governments have the capacity to assume the treasury functions related to collection, only about 30 percent of the local governments could realistically assume the fiscal cadastre/valuation responsibilities in the short term with the remaining 300+ local governments (70 percent) needing some form of central administration and/or

joint administration support for the medium to long term, as local capacity is increased over time (Kelly, 2012).

Capacity building and effective human resource management at the local government level are crucial to implementation success. To make best use of scarce capacity, reformers should separate data collection functions from valuation functions. Property field information enumerators need to be experts in filling out the required property information forms and do not need to be valuation experts. Scarce valuation experts should focus on determining land value maps, building cost tables and other valuation-related models, which can be applied to information collected for the fiscal cadastre. In many countries this will require a change in the law and/or regulations, which currently stipulate that the valuation roll (including the collection of property information) is the responsibility of a qualified valuer or registered valuation surveyor (Uganda, Tanzania, South Africa, Zambia) (McCluskey et al., 2003; Kelly, 2000).

Although government policy measures can facilitate the systematic maintenance of property-related information, the coverage ratio can only be improved through adopting appropriate administrative procedures, relying on a partnership approach working with taxpayers, and third party agencies, taking advantage of the relative strengths of the central and local governments, providing capacity and incentives, and ensuring systematic and periodic cadastral information maintenance. Given the dynamic nature of urbanization, this is a continuous and information intensive activity.

Let us now turn our focus to the valuation ratio.

Exploring the property tax valuation ratio

The valuation ratio, as defined, applies only to property tax systems that levy taxes based on property value. Area-based systems only need accurate cadastre information on property characteristics. Valuation-based systems depend both on the quality of the cadastre information under the coverage ratio as well as the accuracy of property valuation estimates under the valuation ratio.

Case studies, especially in developing countries, suggest that the valuation ratio for properties may be no more than 30–40 percent, with large variations in the accuracy of the relative valuations (Bird and Slack, 2004, Kelly, 2000, De Cesare, 2012, UN-HABITAT, 2011). Although valuations may be relatively more accurate when first produced, this accuracy erodes over time due to shifts in relative and absolute market values. These low valuation ratios and the variation among the property

values create efficiency and equity distortions, which impact the compliance level and the revenue yield from the property tax.

Property tax valuation is needed to determine the amounts that each taxpayer will be expected to pay based on the relative property value vis-à-vis other taxpayers. Property valuation should be primarily undertaken to promote equity in the tax system so that properties of equal value should pay equal amounts; and not to determine the absolute level of tax liabilities. The absolute amount of the property tax revenue to be collected should be decided through a policy choice linked to property tax rates. If the government needs additional tax revenue in a particular year, the government should increase the tax rates, rather than relying on the adjustment of the absolute or relative property valuations.

The accuracy of the absolute and relative valuation ratios requires constant attention to ensure consistent and periodic updating of valuation rolls, so as to capture the changes in property market values. Within the legal and regulatory framework, countries need to adapt appropriate valuation standards tailored to institutional, system and human capacities and the availability of market-based information and appropriate valuation methodologies.

Although the absolute valuation level could be supported through indexing the tax base to an annual inflation rate, indexation itself does not adjust for the relative changes in values across properties. For those relative value changes, international best practice suggests that tax departments should update property values at least once every 3–5 years, perhaps annually in rare cases of dramatic increases in property values. Frequent revaluations are important to maintain equity and revenues as well as to reduce taxpayer resistance to periodic large increases in property values.

Tax departments must be proactive in updating the valuation rolls. This should be done through relying on valuation-related information from taxpayer declarations and third party agency reports as well as a separate, integrated set of activities related to the collection and analysis of property market trends and linking property characteristics to changes in property value over time. Market trend analysis can be used to update the property tax roll on a periodic basis.

There is a continuum of valuation methodologies available – ranging from simple market based land value maps and building costs tables used throughout Latin America and SE Asia to the more complex statistical estimation models used largely in North America. A uniquely different market value approach is the 'banding' system in England, which roughly classifies all residential properties, based on their estimated capital value, into eight interval 'bands' of value (Plimmer et al., 2002).

To implement the range of simple to more complex valuation systems, all countries need to access, collect, manage, analyze and monitor property market information. This information will largely come from third party sources such as conveyance documents, other government departments, banks and mortgage institutions, newspaper and other sources. Tax departments need to develop administrative procedures to systematically collect and analyze these various market values. This information can be used to develop land value zones and building cost tables under the simple market value based system or as inputs into various statistical models. The valuation accuracy and equity depends primarily on the quality of available market information, not on the sophistication of modeling.

To ensure consistency, transparency, accountability and equity in the property valuation and assessment process, all property tax systems must include an appeals and dispute resolution component. Taxpayers should be able to lodge an objection on the property assessment valuation and/or the tax liability calculations based on that valuation. Such appeals systems are essential to help ensure that property valuations are fair and close to market value, which produces a more accurate and high valuation ratio. International best practice provides for both administrative and judicial appeals, with multiple levels to ensure fair, cost efficient and quick resolution. To avoid frivolous appeals, countries typically require a taxpayer to pay either all or a part of the property tax liability before being allowed to file a judicial proceeding.

Several countries are constrained in the valuation of rent controlled properties (Egypt, India). These laws and regulations control the setting of the rents, which in turn affects the property values determined for those properties. Rent control constrains the equity of the property tax system. For example, although residents living in rental control units use the same government services as residents in non-rental control units, those in rent control units are being subsidized by being charged less property tax. Property tax revenues needed by government to pay for local level services are therefore underfunded or governments are forced to shift a larger tax burden to those occupants living in non-rent control units. To circumvent this rent control constraint, many Indian states have successfully shifted towards a simplified area-based valuation approach, basing the property tax valuations on a unit area values based system rather than on the annual rents themselves (Mathur et al., 2009, NIUA, 2010).

The valuation ratio is closely linked to the coverage ratio, as the combination of coverage and valuation determines the quality of the fiscal cadastre. The administrative procedures for capturing the taxpayer

and tax property information, combined with the technical capacity and property valuation information needed to estimate valuations, are essential for ensuring that the valuation roll effectively captures the potential property tax base. It is this potential tax base which is used by the tax department to levy the property liability for collection.

Let us now turn our focus to the collection ratio.

Exploring the property tax collection ratio

Property taxation is primarily an instrument designed to mobilize government revenue in an efficient and equitable manner, at the least economic, administrative and compliance cost. Identifying and valuing the tax base produces the valuation roll, which represents the potential legal tax base. Applying the tax rate to the valuation roll produces the tax roll, which represents the potential tax revenue. This potential tax revenue is then transformed into reality through the tax collection process. Without the ultimate tax collection, the property tax system will not realize its revenue, equity or efficiency goals.

Property tax collection levels vary considerably across countries. Collection rates in most OECD countries are close to 100 percent; while in most non-OECD countries collection ratios only range from an estimated 30-60 percent (Bird and Slack, 2004; Kelly 2000, 2013; NIUA, 2010; Youngman and Malme, 1994, 2002). These low collection ratios can be attributed to a combination of political, cultural, administrative and personal factors, requiring governments to implement policy and administrative changes to encourage voluntary compliance and to take proactive steps to enforce against cases of noncompliance.

To improve the collection ratio, countries should focus first priority on enhancing voluntary compliance, providing incentives to taxpayers to pay their taxes. Possible incentives can vary, from linking the property tax payment to improved public services, enhancing taxpayer service, reducing compliance costs, and/or providing discounts and incentives for timely and complete payment.

Linking property tax revenue collection to improvement in public services is very important. The property tax, unlike user charges for direct services such as utilities, cannot be easily linked to specific government services. Thus it is important that taxpayers understand the role of property tax as a general benefit tax linked to location-specific infrastructure and services, such as improved roads, drainage, street lights and parks as well as to fund broader-based services such as health and education. To encourage this understanding, governments need to provide taxpayer awareness and education, explaining the role and benefits of

property taxation and, even, more importantly, governments must effectively use property tax revenues to deliver those improved public services.

Taxpayer education programs are also critical to provide information on the property tax structure, payment procedures, appeals and dispute mechanisms, and enforcement provisions. This information, combined with simplified and easily accessible payment systems, can lower compliance costs and encourage voluntary compliance. In order to reduce administrative and compliance costs, countries are increasingly providing multiple convenient payment options through banks, post offices, ATM machines, or via Internet, electronic checks and credit cards, and/or allowing for direct bank deductions and/or payments through cell phones credit transfers. Some countries try to link the property tax to the electricity or water bills to facilitate collection (Greece, El Salvador, South Africa).

Effectively using social pressure to encourage property tax payment compliance has been effective in many countries. Publishing names of top compliant taxpayers recognizes outstanding compliant taxpayers as positive role models, thereby helping to encourage voluntary compliance (Philippines, Indonesia). Other countries publish the names of the delinquent taxpayers, who are given advance notice to pay the tax to avoid the negative publicity (Kenya, Malawi, Tanzania). Some countries provide a direct monetary incentive to encourage compliance by giving a discount for those paying in a timely and complete manner (Philippines, Barbados, Ecuador, and Kenya) (Kelly, 2013).

In addition to lowering compliance costs and providing incentives to encourage tax payments, countries also encourage voluntary compliance through stricter enforcement measures in the form of sanctions and penalties (e.g., the imposition of late payment penalties, possible interest payments, and various sanctions such as the use of tax clearance certificates, tax liens, and penalties). Credible, strict enforcement against noncompliance can encourage a culture of voluntary compliance in order to avoid being sanctioned or penalized.

In cases of outright noncompliance, countries apply sanctions and penalties. Sanctions can be applied to the withholding of location-specific public services (e.g., building permits, business licenses, land/title registration, withholding and/or suspension of utilities) typically enforced through "tax clearance certificates." Tax clearance certificates could also be required for private sector services (e.g., financial institutions issuing mortgages or home equity loans) and other public sector departments and private sector agencies to promote collection compliance.

In addition to requiring tax clearance certificates, countries should be able to impose a tax lien (or encumbrance) on the title of a property to

ensure tax payment when the property is sold or transferred. A tax lien on a property also affects the collateral value of a property for borrowing purposes. This tax lien approach should be encouraged for those non-compliant properties with legal title. A combination of tax clearance certifications and tax liens can be quite effective to deter noncompliance.

To complement incentives and sanctions, countries should apply a system of progressively strict penalties to encourage compliance. These typically include the imposition of a lump sum payment penalty and/or a monthly interest payment for late payment to encourage compliance by increasing the cost for non-payment (Bahamas, Indonesia). Government policy should make interest payments for late property tax payment consistent with other major taxes, such as VAT and income taxes, and these should be set higher than the prime interest rate to encourage early tax payment.

Ultimately these late payment and interest penalties must be enforced through tax debt recovery. Countries use various alternatives to secure legal debt recovery, including civil proceedings, the ability to garner wages and rents, seizure and sale of movable properties and/or the seizure and sale of immovable property (Philippines, Indonesia, the US, Canada, Chile). Other options for enforcing property tax collections include linking the property tax to location specific services. For example, South Africa allows cutting electricity in cases of non-payment,[4] while the court in Greece in 2012 has ruled that cutting electricity for non-payment would be unconstitutional.[5]

In North America, tax departments ultimately rely on property seizure and auction to enforce compliance leading to collection rates close to 100 percent. In contrast, enforcement using seizure and auction in developing countries is very rare, with three documented exceptions: Philippines, Indonesia and Chile (Kelly, 2013). Each of these cases illustrates the importance of strong political will and technical capacity to implement enforcement measures.

Improving the collection ratio on land owned under lease rights presents special challenges. While the government can take enforcement measures against freehold rights, through placing a lien against the property and ultimately selling the property to recover property tax debt, the government's only option for properties under leasehold is to take action against the individuals or businesses owing the tax, such as attaching taxpayer wages and bank accounts, seizing taxpayer movable assets, or canceling property leases. In cases where the property owner-ship is not clearly defined, not registered and/or communally owned, tax departments can rely on moral persuasion, communal social pressure, and/or seizure of movable properties.

Some countries have used the private sector to assist in the tax collection process (Uganda, Pakistan) (UN-HABITAT, 2011). These private sector approaches, often used for collecting market fees or parking/bus park fees, have been used for property taxation as well. Contracts are typically structured as a lump sum payment through a bidding process, with the winning contractor able to keep any amounts collected over the contracted amounts. A best practice would be to allow the government to be responsible for collecting all current liabilities and delinquent accounts for up to a year, after which the outstanding accounts could be contracted to collection agencies and/or lawyers to take legal action for recovery.

Other countries engage neighborhood organizations (Paraguay), urban neighborhood governments (Philippines), and village and/or traditional leaders (Indonesia, Sudan, Ghana) to encourage tax compliance.[6] To mobilize their active support, governments typically provide a collection incentive or institute a system of shared revenue from the property tax to ensure a portion of the collected property tax revenue is retained at the lower local government levels (Guevara, 2003).

In short, improving the tax collection ratio requires a comprehensive collection and enforcement approach to promote voluntary compliance through a combination of payment and collection incentives, sanctions and penalties, combined with the political will to ensure follow up action to the full measure of the law. Ultimately the property tax is a fiscal instrument to provide government revenues, and thus, governments must establish an efficient and equitable tax collection system to ensure that the fiscal cadastre information can be transformed into government revenue (Kelly, 2013).

All administration reforms require strong political and technical support, legal authority, institutional capacity and financial and human resources to implement and sustain improvements in the collection, coverage and valuation ratios. Combining these key ingredients into a successful reform strategy is the key for maximizing the chance of success and assessing risks of wrong sequencing, as well as synchronizing the reform effort to link effectively with the electoral, economic planning and financial budgeting cycles.

Let us now explore issues of reform implementation strategy design.

REFORM IMPLEMENTATION STRATEGY

Reform implementation is always a major challenge. Changes always disturb the status quo, affecting existing stakeholders both inside and

outside of government, creating losers and winners, as the system moves towards a more sustainable, efficient and equitable system of mobilizing revenues. Managing this change is a difficult process of political, technical, and social reengineering, simultaneously mobilizing sufficient support to overcome the natural resistance to change, while convincing the broader society of the inherent benefits to the proposed changes. This requires a mix of quick wins to overcome opposition and gain broader support, while allowing time to implement more systemic and institutional changes needed for sustainability. Designing and implementing the appropriate reform strategy is the true challenge facing reformers everywhere. It is the creative blend of the science and art within the entire reform process.

As Machievelli observed in the 16th century,

> [t]here is nothing more difficult to carry out, nor more doubtful of success, nor more dangerous to handle, than to initiate a new order of things. For the reformer has enemies in all those who profit by the old order, and only lukewarm defenders in all those who would profit by the new order, this lukewarmness arising partly from fear of their adversaries, who have the laws in their favour; and partly from the incredulity of mankind, who do not truly believe in anything new until they have had the actual experience of it. (Machievelli)

Designing an appropriate implementation strategy must recognize these natural areas of resistance and the importance of garnering broad political, technical and social support to ensure ownership of the reform objectives. This ownership of the reform, and the resulting commitment and support, is critical during the design and adoption phase, but perhaps even more important during the implementation phase, to ensure sustainability in the property tax system. Often the real impacts of a reform are not clear until the reform is being implemented. It is then that the various stakeholders see the reality of the policy and administrative choices made. It is then also that strong, consistent reform leadership is needed to sustain implementation and to effectively deal with all stakeholders throughout the reform cycle to enable reform objectives to be fully realized.

Mobilizing reform support requires stakeholders to appreciate the costs and benefits of the reform, to engage in the debate and to develop a consensus on the need for the reform, thereby gradually ensuring that the property reform becomes demand-driven by the broader community. Focusing solely on property tax reforms in isolation limits the ability to mobilize the broad support needed for success. Thus it is important to broaden the reform agenda to include the property tax reform as a

requisite to the broader decentralization reforms aimed at improving efficient and accountable public service delivery. Linking property revenue mobilization to improved public service expenditures will allow the government to mobilize a wider level of social support needed to implement and sustain the property tax reform efforts.

Linking property tax reform to these broader reforms needs to be a critical part of any reform implementation strategy. In addition to linking the property tax reform as an input to broader public sector management and decentralization reforms, it is equally crucial to ensure that the other reforms, which affect the property tax, are effectively linked back to the property tax reform strategy. For example, property tax reformers should be cognizant of possible ongoing reforms, such as those on land titling and registration, surveying and mapping, urban and rural development, land and property transfer taxes, housing and rent control, housing development and finance, infrastructure finance, water and sanitation management, and transportation, all of which can impact the design and implementation of a property tax reform.

Designing and implementing successful reform requires strong leadership. Garnering the political, technical, operational and social support needed for successful property tax reform requires strong leadership, not only at the top, but on every level throughout the entire property tax system. Political leadership is required to ensure a sound policy and legal property tax framework. Technical leadership is required to lead the analytical process to understand and monitor the policy and administrative challenges, identify the needed changes and develop the systems and procedures for implementing the changes. Operational leadership is required to apply those policies and administration systems in the field, while social leadership is needed to mobilize the public, encourage voluntary compliance and ensure social accountability. All reform implementation strategies should identify and empower leaders throughout the system with the authority, capacity and resources needed to support the reform effort.

Strong institutions are also essential to support successful property tax reforms. Although the primary focus may be on tax administration departments, successful reform depends on an array of supporting public and private institutions dealing with policy and administration aspects linked to land and mapping, property title registration, property valuation, public works, housing and infrastructure, business and economic development, banking and revenue management, media and communication networks, legal adjudication and enforcement and governance and social accountability, among others.

In countries with relatively weak institutions, property tax reformers must recognize these constraints and the dynamic nature of institutional reform in order to develop appropriate strategies that can be implemented immediately, but which are flexible enough to adapt and grow with the evolving improvements within the broader institutional environment. An important example is the adoption of appropriate valuation methodologies, which can gradually improve as the supporting institutions are able to provide better quality property value information.

To address these various political, technical and institutional constraints, many countries have effectively adopted a pilot project approach to strategically design and implement changes. These pilot projects allow for field experimentation to develop systems and procedures, create opportunities for training and capacity building and provide a demonstration effect, all of which can help facilitate successful reform roll out, while limiting the political and financial risks of introducing new reform policies and procedures (Indonesia, Philippines and others) (Bird and Slack, 2004, Kelly, 2012; UN-HABITAT, 2011).

In addition to these broad issues, a successful property tax reform requires an understanding of the integrated connections within the property tax system. Policy decisions affect administration feasibility, while administration decisions affect the policy results. Reformers must choose an appropriate combination of complementary and supportive policy and administrative options, in order to successfully realize the property tax reform objectives.

Similarly reformers must appreciate the integrated nature of a property tax administration system. Each administrative function of data collection, valuation, assessment, collection, enforcement and taxpayer service and dispute resolution is necessary to generate property tax revenue, equity and efficiency. Thus, in designing an implementation strategy, reformers need to think globally, but act strategically.

It is important to remember that prioritization and sequencing are not the same thing, but understanding the contributing importance of each administration function to achieving the property tax goals can assist in correctly sequencing the priority reform activities.

The key to property tax administration reform lies in finding how best to improve the coverage, valuation and/or collection ratios. While improvement in all three ratios is needed to achieve the *potential* revenue, equity and efficiency goals, it is the collection ratio that ultimately determines the *realization* of these goals. That is, without tax collection taking place, the potential revenue and equity impacts of the coverage and valuation will only remain hypothetical. Thus the collection

ratio must function well, in order to enable governments to effectively realize the quality improvements in the coverage and valuation ratios.

Understanding the relative priorities of each function, combined with a situational analysis of the current property tax system performance, the reformer should be able to identify an appropriate sequencing of reform activities. Where to start? Does one start by focusing on expanding the coverage ratio? Or does one start by increasing the level and accuracy of the valuation ratio? Or should one start by focusing on the collection and enforcement? Trying to improve all functions simultaneously ignores the importance of prioritization and sequencing, especially in reform environments with limited political, institutional, financial and human capacity.

In a stylized fashion, there are two basic sequencing strategies to undertaking a property tax reform process. Countries either tend to start with strengthening property tax collections (i.e., the collection ratio) through a "collection led" strategy or they tend to start with strengthening the fiscal cadastre (i.e., the coverage and valuation ratios) through a "valuation-pushed" strategy (Kelly, 1993, 2000, 2013). Let us identify the underlying rationale and appropriateness of each stylized implementation strategy, with some country examples.

The collection-led strategy places priority on improving collection and enforcement, along with taxpayer service. Secondary attention is placed on improving the quality of property information and the accuracy of property valuation. This sequencing strategy recognizes that the "collection" function is what "realizes" the revenue, equity, efficiency and accountability objectives of the property tax. Improved tax mapping, fiscal cadastre information and property valuations linked to the coverage and valuation ratios are seen as secondary, but complementary to the collection process.

The collection-led strategy recognizes that a credible collection and enforcement process becomes a catalyst to encourage reforms to improve the coverage and valuation ratios. That is, it is only when property tax is actually collected, and enforcement becomes a reality, that taxpayers are highly motivated to ensure that the property tax physical information and property values are accurate. Taxpayers then worry about appealing the property values to ensure they are not forced to pay taxes based on inaccurate valuations. Without real tax enforcement, taxpayers have the option just to ignore inaccurate property information and valuations by ignoring the property tax payment itself. Focusing on property tax collections sets in place the incentives for higher voluntary compliance and more active taxpayer participation, exerting pressure on tax administration to ensure accuracy in the property and valuation information.

This collection-led strategy approach was introduced in Indonesia following the enactment of the Land and Building Tax in 1986. The Indonesia strategy placed priority on the introduction of an effective payment collection system, which led to a credible delinquency list, thereby enabling government to undertake a historic seizure to enforce payment compliance in 1991 (Kelly, 1993). To build on the collection-led success, the reform introduced major improvements in improved property tax administration linked to the fiscal cadastre, including property valuation (Kelly, 1996).

This focus on collections lasted from 1988 to 1994, after which tax administration reverted to focusing more on routine fiscal cadastre and property valuation maintenance, to the neglect of systematic property tax enforcement. This said, it is important to note that the current, ongoing reform in Indonesia is transforming the shared property tax system to become a devolved own-source tax revenue system, now opening up 400+ opportunities for Indonesian local governments to possibly adopt and implement an effective local-government level collection-led strategy (Kelly, 2012).

A second, perhaps more successful, collection-led strategy experience is the case of Quezon City (Philippines). Through a combination of strong local political and technical support, Quezon has been able to sustain the collection-led strategy for over a decade. Quezon has actively pursued a collection led strategy, which blends voluntary compliance and strict enforcement, and is complemented by high quality taxpayer service and improvements in the fiscal cadastre and property valuation maintenance (Ignacio, 2005).

Both the Indonesia and Quezon cases show us the necessary ingredients for successful reform: strong political leadership, excellent technical support and the successful delivery of quality taxpayer education and awareness, lowering compliance costs, and ensuring equitable implementation of the property tax system. Although both cases followed a collection-led strategy, Quezon City appears more successful in sustaining the strategy. Quezon directly linked their property tax reform to local government management reforms, connecting the enhanced revenues with expenditures on improved local services. With its property tax as a local tax, Quezon City was able to successfully mobilize broad local stakeholder level support, by linking improved property tax mobilization with improved service delivery. This case clearly demonstrates how linking property tax reform to decentralization and local government service delivery reforms can be crucial to sustainable property tax reform implementation.

In contrast to the collection-led strategy, most countries follow a valuation-pushed implementation strategy. This approach places top priority on updating the property tax roll, through expanding the fiscal cadastre and improving the accuracy of property valuations. This approach assumes that the major improvement in property tax yield will come from improving property valuations. The assumption is often that the non-valuation administrative functions are fully functional, with the major constraint being low and inaccurate values.

Although this may be true in many OECD countries, this is typically not true in developing countries. Focusing on the fiscal cadastre and related improvements in property valuation is not necessarily as useful, when there is a primary problem of inadequate political will, collections and enforcement. At the same time, relying on a one-time valuation roll creation exercise, even by the private sector, may be expedient but not necessarily useful unless institutional capacity is simultaneously developed to ensure that the coverage and valuation ratios can be maintained over time and used to generate improved revenues.

A classic example of a valuation-pushed strategy was the USAID Real Property Tax Administration project in the Philippines in the 1980s. This reform initiative saw property tax revenues increase by less than 1 percent following a multi-million dollar project (Dillinger, 1988). Another example was the World Bank supported property tax reform in Tanzania in the mid to late 1990s (Kelly and Musunu, 2000; McCluskey et al., 2003). Unfortunately, almost all ongoing property tax reforms around the world continue to be structured as valuation-pushed reforms, placing priority on GIS-based tax maps, new valuation techniques to the neglect of improving the tax collection process.

Within the context of these two stylized extremes, each country should design the appropriate priorities and sequencing needed to strategically implement the reform. All administrative reforms need to be comprehensive, targeted strategically to ensure success in increasing the various ratios, leading to sustainable property revenue mobilization. Although each situation differs, it is critical that reformers think strategically in choosing the appropriate mix of policy and administrative reforms and identifying the appropriate sequencing of those reform components.

Property tax reforms which are introducing new systems for the first time should start by building the fiscal cadastre, perhaps by initially introducing a pure area-based system and putting in the necessary collection and enforcement mechanisms (Hergesia) (UN-HABITAT, 2011). Over time the area-based system can switch to include a valuation-based system, while maintaining improvements in overall property tax administration (Croatia, 2012). The key is to target the intervention appropriate to the

situation, but always keeping in mind the critical importance of property tax collection and enforcement to ensure that potential can be turned into the reality.

In OECD countries, with functioning collection and enforcement systems and related supportive institutions, a valuation-pushed strategy may be the appropriate choice. However, in most developing countries, a more comprehensive approach is warranted following a collection-led implementation strategy. In those countries which already have an operational property tax system but which are confronted by low levels of collection, coverage and valuation ratios, it is suggested that a collection-led strategy may be the more appropriate approach (e.g., India).

Overall emphasis should be placed on ensuring that the property tax reform places proper attention to the collection and enforcement of the tax system, mobilizing the political will and ensuring the availability of legally enforceable enforcement procedures, accompanied by the needed improvements in ensuring the highest coverage and valuation ratios. Revenue collection is the ultimate objective of a tax system, with mapping, fiscal cadastre and valuation activities supportive components to the collection function. Without the ultimate collection of the tax, the property tax system will not achieve revenue, equity or efficiency goals.

Although policy choices affect the potential property tax liability to be collected, it is the administration choices which directly affect the level of tax effort, that portion of tax capacity that is realized. This being said, however, inappropriate and/or complicated tax policy can make tax administration costly and/or impossible to effectively implement. Thus, reformers should carefully evaluate the policy alternatives, so as to choose tax policy options, which are implementable within the legal and institutional environment. The general rule is to keep the policy simple and appropriately tailored to the existing reform environment, cognizant of political will, legal structure, institutional capacity across property-related agencies, level of available property and market value information, human resource capacity and financial resources.

Let us now conclude by summarizing key recommendations for implementing sustainable property tax reforms.

SUMMARY THOUGHTS FOR IMPLEMENTING SUSTAINBLE PROPERTY TAX REFORMS

Theory and international experience identify an extensive array of best practices related to successful design and implementation of property taxation. The challenge for each country is to identify the right mix of

policy and administration choices, molding and adapting them to each unique reform environment, so as to strategically implement sustainable property tax reform. This chapter closes by summarizing several key recommendations for helping make the property tax work in developing countries.

- *Countries should link property tax reform to broader public sector management reforms.* Property tax reform should not be seen as an independent reform to be implemented in isolation. Rather, property tax reform must be recognized as a supportive input to broader public sector management reforms aimed at improving governance and public services. This would help link revenue mobilization and improved services, a necessary ingredient to encourage voluntary compliance.
- Public finance experts widely recognize the property tax as the ideal local tax. It has substantial revenue potential, with minimal efficiency distortions. It is able to capture location-specific net benefits and is relatively easy to administer. In addition the property tax is highly visible and politically sensitive, thus making it an excellent tax to generate local government revenues while forcing a degree of public and social accountability.
- By recasting the property tax reform as an essential requisite for successful decentralization, property tax reforms can take advantage of a broader reform momentum, along with political, technical and popular support, and access to human and financial resources needed for success. The property tax reform can serve as a possible cornerstone for empowering local governments with a degree of financial resources needed to improve efficient and accountable governance and service delivery.
- *Countries should adopt appropriate policy.* Ultimately property tax policy choices must be implementable to realize the revenue, efficiency and equity results. Therefore policy choices need to be adopted, cognizant of the institutional and administrative constraints, recognizing that these policy choices be structured to evolve over time in line with improvements in the broader reform environment and administrative capacity. All reforms are dynamic, thus requiring government to systematically monitor and periodically adjust the property tax policy and administrative options to ensure effective implementation and realization of the expected revenue, equity and efficiency objectives.
- Reformers must focus on the tax base and tax rate choices, always bearing in mind the need for simplicity to enable implementation.

Policy reform, especially in developing countries, should rationalize exemptions so as to limit tax expenditures, reduce excessively generous tax breaks, and target tax relief more effectively to reduce revenue loss, inequities and inefficiencies. Exempted properties, and those receiving tax reliefs, should be required to submit a formal request to facilitate a periodic review process. A situation of "once exempted, always exempted" should be avoided.

- Tax rate structures should be kept uniform, to the extent possible. Classified tax rate systems, if adopted, should be limited to few categories, such as residential, non-residential and agricultural properties. Progressive property tax rates should be avoided. Governments need to focus on realizing property tax equity, efficiency and revenue policy objectives through improvements in administration.

- *Countries should focus priority on improving property tax administration.* Priority must be placed on property tax administration to ensure that the coverage, valuation and collections ratios are close to 100 percent. The weakest link in property tax reforms, especially in developing countries, is the quality of tax administration. Cognizant of the institutional, systems and human capacity constraints, countries must adopt simplified data capture, data management and tax mapping procedures, appropriate valuation methodologies, transparent assessment procedures, accountable collection mechanisms, effective enforcement systems and targeted taxpayer services. These administrative procedures should be integrated into a computer-assisted administration support system which can improve the speed and accuracy of data management, valuation, billing, collection, enforcement and taxpayer service, as needed.

- Ultimately all tax departments should be rationalized, unbundling the functions, allocating those functions to the level of government and/or to the private sector based on factors such as efficiency, accountability, economies of scale, need for equity, need to avoid conflict of interest, and need to mobilize political will. Doing so will improve cost effectiveness, equity and efficiency of tax administration. A transitional, incremental approach should be adopted to phase in the reform implementation tailored to the absorptive capacity of the tax administration and the taxpaying public.

- *Countries should implement property tax reforms in a comprehensive, yet strategic manner.* Property taxation is ultimately a revenue instrument, which should generate revenues as efficiently and equitably as possible, while minimizing economic, administrative and compliance costs. The property tax administration is neither a

mapping agency nor a valuation agency; all mapping and valuation functions must be recognized as intermediate prerequisites needed to enable tax departments to collect revenue. Priority must be placed on collection functions, as it is ultimately only through tax collection that the revenue, efficiency and equity objectives can be achieved.

- Countries must recognize that an effective tax collection function is only possible, however, if supported by an effective supportive system of tax base coverage and valuation. Therefore countries must implement a strategic combination of policy and administration reforms to improve coverage, valuation and collection ratios. While analyzing the property tax system comprehensively, all countries must identify the specific areas of reform intervention and sequence those interventions to ensure results.

- In general, however, a critical priority, at least in most developing countries, should be on improving the collection system. Tax policy, which is not collected/implemented, will not generate the intended revenues, efficiency and equity objectives. International experience would suggest the need to adopt a 'collection-led' implementation strategy, supplemented by improvements in the coverage and valuations. Revenue collection is the ultimate objective of a tax system, with the mapping, fiscal cadastre and valuation activities supportive components to the collection function. Without the ultimate collection of the tax, the property tax system will not achieve revenue, equity or efficiency goals.

- *Countries must recognize that property tax reform is a long-term process.* Property tax policy can be changed overnight through passing a law and/or changing policy regulations. However, implementing those policy changes into "realized" policy success will take time. Policy changes must be translated into reality through effective administrative processes which require sustained political will, operational and technical capacity, systems and procedures, funding and time to be successfully implemented.

- In sequencing the reform it is always important to phase in "quick wins", giving time for more long-term systemic and institutional changes. Countries operating with manual systems need time to transform policy changes into results, using pilot projects to test reform procedures for further replication. Countries operating a pure area-based system will need time to evolve toward a valuation-based system, as valuation-related information and capacity is developed to improve buoyancy and equity of the property tax system. Countries must focus on a comprehensive approach to

property tax reform to ensure improvements in collection, valuation and coverage ratios. International experience suggests that nation-wide property tax reforms can take 5 to 15 years to realize sustainable results.

NOTES

1. See Corn (2012) on the PILT (USA), Government of Canada (2012) on the PILT for the Government of Canada, Muniscope (2010) on Provincial level 'Grants in Lieu of Taxes' to municipalities, and Kelly (2000) on Contribution in Lieu of Rates (Kenya).
2. NIUA (2010) reports wide variation in a country as diverse as India. Ahmedabad, Chennai, Indore, Kulkata, and Pune apply progressive rates; while Bangalore, Ludhi-ana, and Patna use a classified tax system applying a flat rate differentiated by residential and non-residential.
3. Jamaica simplified its tax rate structure by removing bands and caps, introducing a flat rate of J\$600 for values up to a threshold of \$300,000, and a flat rate of 0.5 percent on the amount in excess of \$300,000. In 2010, the tax rates were adjusted upwards to a flat J\$1,000 for values up to \$300,000, with a flat rate of 0.75 percent for amounts in excess of J\$300,000. See http://www.jamaica-gleaner.com/gleaner/20100425/business/ business4.html.
4. http://www.news24.com/SouthAfrica/News/Power-to-Shabangus-property-cut-off-201 20621.
5. In 2012, the Greek High Court ruled that it would be unconstitutional to cut electricity for nonpayment of the property tax. http://articles.businessinsider.com/2012-03-02/ europe/31115881_1_property-tax-ruling-electricity#ixzz24Ph9gdUy.
6. See USAID (undated) for Paraguay, Kelly (1993) for Indonesia and Radio Miraya (2012) for Sudan.

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11. Beneficiary charges: The Cinderella of subnational finance

Yeti Nisha Madhoo and Shyam Nath

11.1 INTRODUCTION

A comprehensive literature on the benefit principle and the ability to pay principle of taxation starts with Musgrave (1959). Olson (1969) instead stressed the importance of the 'principle of fiscal equivalence' in strongly linking expenditures to taxes in order to give rise to a greater degree of fiscal accountability. Olson's treatment of taxes and expenditures seems to imply that expenditures are a cost of providing a public service and taxes and charges are prices that the consumer-taxpayer pays to the government. A strong case is also made for benefit taxes and charges in the Tiebout (1956) model in which citizen taxpayers shop for localities and choose their residence along with a tax-expenditure package.[1]

Beneficiary charges are used to raise financial resources by governments at different levels. These revenue sources comprise fees, fines and user charges for public administrative services and the sale of public utility products such as water and sewerage services. In some cases, their proceeds are combined with data on non-tax revenues in government budgets. Local governments depend on beneficiary charges to meet part of the cost of delivering such community-based local public services as street lighting, water and sewerage services, municipal road maintenance, management of municipal markets and buildings, public education and primary health. Until the recent episodes of globalization and privatization, the significance of market efficiency and off-budget supply of local services was little recognized and benefit-based charges were largely ignored. The fiscal federalism literature is dominated by the expenditure assignment issue, leaving the financing of local expenditures mainly to the property tax and intergovernmental fiscal transfers (IGFT). However, it is necessary for local fiscal systems to be diversified with alternative revenue bases used to finance public projects (Sjoquist and Stoycheva, 2012). In this line of reasoning, community governments

should tend to recognize the trade-offs within their own revenue sources, namely between taxes, charges and fees, on one hand and between own funds and IGFT and loans, on the other. The overwhelming significance of IGFT including loans may, however, distort local fiscal choices and tend to displace local taxes in general and beneficiary charges in particular.

The revenue objective to cover *the identifiable costs* (*in full or partly*) is thus important with respect to both fees and charges. All revenue sources – taxes, fees, fines and user charges – are instruments of cost recovery to meet the financial obligations of public administration and the public and private supply of public goods and services. In the case of publicly supplied local goods, such as public administration, public education, health services, street lighting and sanitation, cost recovery may not be the dominant objective. But cost recovery is tremendously significant in the case of privately supplied local public goods, such as water supply, sewerage, electricity and telephone. In recent years, user fees and charges have gained significance at the subnational level mainly because of hard local budget constraints. Recession resulted in drastic cuts in intergovernmental transfers and reduced access to market loans. According to the 2009 International City and County Management (ICMA) State Survey in the US, for instance, 46 percent of reporting local governments increased existing fees by 23 percent and added new levies for additional funds (Ebel and Petersen, 2012). While these trends are encouraging, there is no systematic research to assess the efficacy of local government in collecting fees and user charges vis-à-vis perform-ance of other institutional arrangements such as off-budget supply and privatization.

The structure of this chapter is as follows. Section 11.2 discusses the principles and practices of user fees and charges and their revenue potential. Section 11.3 analyzes factors adversely impacting the growth of beneficiary charges in local government budgets, including the central-ization of revenue, intergovernmental fiscal transfers, and alternative fiscal strategies such as tax earmarking and piggybacking. Section 11.4 evaluates the trade-off between budgetary and privatization regimes of water supply and the efficacy of cost recovery policies. Section 11.5 examines the implications of water utility policies for full and partial cost recovery vis-à-vis the marginal cost of public funds. This section also includes an analysis of the impact of willingness to pay for water on the marginal cost of public funds. An empirical analysis is carried out using the results of a contingent valuation survey in Mauritius and estimating an empirical model for measuring the welfare effects of water charges in terms of the willingness to pay and the cost of providing water. When

willingness to pay exceeds the average cost of supplying water, the marginal cost of public funds is reduced, thus increasing the revenue potential of water charges. The last section concludes with policy implications.

11.2 BENEFICIARY CHARGES AND FISCAL PERFORMANCE

11.2.1 Taxonomy of Beneficiary Charges

Beneficiary charges encompass two significantly different sources of revenue, fees and user charges. In both cases, beneficiaries are identifiable but user charges, unlike fees, in principle require benefits to be measurable. Bahl and Linn (1992) set the following selection criteria for financing local governments and public utilities:

1. Where the benefits of public services are measurable and accrue to readily identified individuals in a jurisdiction, user charges are the appropriate financing instrument;
2. Local public services, such as administration, traffic control, street lighting and security, which are services to the general public in the sense that it is difficult to identify beneficiaries and measure benefits and costs to individuals, are most appropriately financed by taxes on local residents;
3. The cost of services for which significant spillovers to neighboring jurisdictions occur (e.g., health, education and welfare) should be financed substantially by state or national intergovernmental transfers;
4. Borrowing is an appropriate source to finance capital outlays on infrastructure services, particularly public utilities and roads.

While the above classification is useful in setting out different financial options for local governments, it does not allow for fees, which are designed to address situations where beneficiaries are identifiable but the benefits of local public services to them are difficult to measure. Examples of such services are providing permits, business/trade licenses, and birth and death certificates. In such specific cases, fees or flat levies may be the most feasible method of charging for administrative services rendered, irrespective of benefits receivable.

   A distinction is made in this chapter between administrative fees and charges and user charges. User charges are mainly imposed for public

services provided to specific persons, while fees and other beneficiary charges often correspond to the splitting of costs between specified groups of beneficiaries or all citizens in a local jurisdiction. Beneficiary charges may also be divided according to their obligatory character and the type of public service into "*price-like user charges*" and "*tax-like administrative charges*" (see Table 11.1 below). User charges are similar to prices because the user has some scope with regard to the use of the public service. The payment is therefore of a voluntary nature. Tax-like administrative charges are, on the other hand, fees for some entitlement and privilege. In addition, fines and penalties may be applied for noncompliance with rules and obligations. In some cases, however, the cost of administration may exceed the amount charged when there is some justification in terms of external benefits and regulatory objectives. Nevertheless, the allocative efficiency of different revenue sources would vary from lump sum or flat levies to progressive charges, with lump sum or flat taxes being the least distortionary but perhaps inequitable.

Table 11.1   Taxonomy of municipal functions and beneficiary charges

Beneficiary	Extent of Benefit		
	Easy to measure	*Hard to measure*	*Indeterminate due to spill over*
Assignable (Excludable)	Water and sewerage (User charges), Local public transport (User charges), Local roads (User charges), Municipal building (Rent)	Market services (License fees), Entitlement to privilege (Registration fee, birth and death registration fee), Local justice (Fees, fines)	Elementary education, Primary health (Tax)
Non-assignable (Non-excludable)		Street lighting, Fire-fighting, Local traffic control, Local police (Tax)	

Source: Author.

Fees and fines

In any cost recovery framework, administrative fees may be collected at all levels of government. The objective may be regulatory, administrative control or information building, with revenue generation as a by-product. Birth and death registration certificate fees are examples. The objective in

these cases is to obtain a privilege (*quid pro quo*) rather than use of goods and services for consumption purposes. Although these fees are utilized to finance services that are in nature more of a public good, they are extensively employed by community governments to raise revenue because direct beneficiaries can be easily identified and the benefits are more internal to the users (Chung et al., 2011).

Moreover, the advantage of fees is that they entail little conflict with consumption and production decisions of beneficiaries and no large loss of external benefits to the community. In this way, they are neutral and therefore efficient in terms of resource allocation. There is no market-like situation in which demand depends on price because parties cannot adjust their demands according to the amount of fees charged. Furthermore, it is easy to elicit contributions from all beneficiaries independent of the place where they are liable to tax. This may help solve the problem of inter-jurisdictional spillovers to some extent. Market-based taxes, however, are a different category of revenue source. Business license fees, registration fees, market fees (rent) and permit fees are small lump sum payments to obtain a certificate to do business, which usually do not have any well-defined relationship with the amount of business the licensee or permit will generate.

Fines and penalties are very different in nature. The objective of fines and penalties is to create deterrence. The social gains due to deterrence in such cases may exceed the revenue generated. A range of possible penalties can be imposed on offenders, including various fines, damages and restitution, probation, jail, and prison terms. The idea that penalties should be proportionate to the crime implies that society must maintain a relatively high level of monitoring and enforcement effort in order to deter violations of rules and laws rather than solely relying on high penalties. Fines sometimes fail to foster deterrence. Such substitutes as jail sentences, forfeitures, withdrawal of the right to carry on a business or profession, and even public shaming, must be taken into account in designing optimal fines (Polinsky and Shavell, 2000). Mookherjee and Png (1994) discuss various alternatives and find that penalties for lesser degrees of noncompliance should follow the principle of marginal deterrence and should be less than the marginal social loss so that citizens have an incentive to substitute away from higher levels of noncompliance.

User charges
There are four important dimensions of user charges – efficiency, equity, administrative feasibility and political economy. User charges promote efficiency by providing information on demand to the providers of public

services and also ensure the valuation of the public sector supplies (at the margin) by citizens. Moreover, they are built on the assumption that consumers can adjust their use in response to price changes, as there is a *quid pro quo* relationship. Huber and Runkel (2004) have shown that road user charges are efficient for congestible public goods and for public goods with negative externalities, such as traffic congestion and pollution. Hellwig (2005) discusses efficient financing schemes with cross subsidies. There can be some user fees that cover more than costs and can add to budget resources to finance other public goods. On the other hand, depending on their characteristics, user fees may recover less than full cost. This applies to water charges, for example, where marginal cost pricing results in less than full cost recovery and improves social welfare.

Public goods like water combine the characteristics of collective as well as individual goods. Hence, they are characterized, on one hand, by the presence of external effects and on the other, by the fact that the principle of exclusion is applicable for at least one component of the good. If full cost recovery is the objective, citizens may be asked to pay charges according to the marginal costs and fees and contributions (option prices) to cover the fix costs (World Bank, 1989). The other way of cost recovery can be a *multi-part tariff* in which the consumer pays a certain fixed sum (a fee, contribution) for the right to use the service plus a variable sum (a charge) dependent on the amount of the service consumed. The variable charge is related to the marginal costs of providing the service while the contribution should be designed so as to not affect the level of use. This alternative of cost recovery has the advantage that it can reconcile *marginal cost pricing* as well as the *principle of total cost recovery*. Finally, there is the possibility to vary the charges depending on the user (discriminatory charges) (Prud'homme, 1987). In this way – with varying price elasticity of demand by the consumers – more income is generated (fiscal aspect) and differences in purchasing power of the consumers are also taken into account (distribution aspect).

11.2.2 Revenue Significance

It is vital to note that the importance of user charges is greater in principle than the relatively small amounts of money most countries collect from this variegated group of levies (Bird, 2000). The fiscal significance of beneficiary charges varies from country to country and within a country between local government budgets. Moreover, data on beneficiary charges in developing countries is scarce. Table 11.2 portrays the case of South Africa, an advanced developing country. User charges

Table 11.2 Budgeted total revenue by source and municipality type: South Africa

Total budgeted Revenue	Metro (A)		Local municipalities (B)		District municipalities (C)		All municipalities	
R'000	Allocation	% share of total revenue	Allocation	% share of total revenue	Allocation	% share of total revenue	Allocation	% share of total revenue
Tax	11,031,369	26.7	3,590,280	16.7	1,363,612	43.0	15,985,260	24.2
User charges	18,871,713	45.7	11,069,240	51.5	192,106	6.1	30,133,058	45.7
Other	3,810,543	9.2	1,949,012	9.1	283,165	8.9	6,042,719	9.2
Special funds	565,060	1.4	262,326	1.2	22,257	0.7	849,643	1.3
Subsidies / grants	2,870,821	7.0	3,130,583	14.6	1,276,344	40.3	7,277,748	11.0
Debt	4,155,495	10.1	1,493,236	6.9	31,615	1.0	5,680,346	8.6
Total	41,305,000	100.0	21,494,676	100.0	3,169,098	100.0	65,968,774	100.0

Source: Whelan (2002). Original source: National Treasury 2002, Government of South Africa.

constitute about 45 percent in metro councils and 51 percent in local municipalities. Similarly, large (Top 5) municipalities in India raise only 17 percent from user charges but the bottom 5 municipalities show a much higher resource mobilization to the extent of 48 percent from user charges and fees (Table 11.3). The share of these levies varies dramatically in some African countries, from 23 percent in Ghana and Zambia to 5 percent in Uganda and Swaziland (Table 11.4). Developed country dependence on user charges and fees is, again, quite disparate. Although it is difficult to get data on a comparable basis, Table 11.5 presents some information using the data from EUROSTAT. Greece is followed by Finland, Luxembourg and Germany.

There are examples of some successful applications of user pricing in land development and public services (Mohanty et al., 2007). In Colombia road improvements, water supply and other public services have been financed by "valorization". Under valorization the cost of public works is allocated to the affected properties in proportion to the estimated benefits conferred on them by those works. Its success depends on (1) careful planning and execution, (2) active involvement of beneficiaries, (3) an effective revenue collection system, and (4) significant initial transfers to the 'valorization fund' by higher levels of government. In Korea and some other countries, large land parcels have been developed by local governments. After development, a part of the property is returned to the original owner in proportion to his original occupation. The balance is sold at market prices to recover the development costs. The scheme requires fairly sophisticated procedures of land management for success.

Table 11.3   Composition of revenues of municipal corporations in India (2003–04)

Share in total revenue receipts	Top 5 MCs (combined)	Bottom 5 MCs (combined)
Own Taxes		
(i) Property Tax	37.86%	23.96%
(ii) Profession Tax	8.47%	0.14%
(iii) Entertainment Tax	4.01%	0.5%
Non-Tax Revenue		
(i) User Charges & Fees	17.10%	48.32%

Source: Nallathinga (2009).

Development charges, impact fees and lot levies are popular in North America. They are levied to accommodate population expansion in new development areas. Levies are imposed on would-be property developers in proportion to the estimated cost of the needed infrastructure. Both off-site and on-site impacts are taken into account in the calculation of the fees. US impact fees are 'one-time' charges levied by local governments to pay for public infrastructure required by new development. They are imposed as a condition for approval to proceed with development. The facilities financed from impact fees may include on-site and offsite infrastructure, such as roads, water supply, sewerage, storm water drainage, flood control measures, open space, solid waste management, fire protection, libraries, schools, police services, public buildings and administrative set-up. In Singapore, Transferable Certificates of Entitlement for ownership of motor vehicles are auctioned every fortnight and the collections constitute a major source of government revenue (Chia, 1998).

Table 11.4   Composition of local government revenue in four Sub-Saharan African countries (%)

	Ghana	Uganda	Swaziland	Zambia
Own taxes	22	15	67	21
Shared taxes	0	0	0	0
User fees / charges	23	5	5	23
Single source revenues	18	0	1	18
Central government transfers	3	66	17	3
Donor contribution	0	11	0	0
Other non-tax revenues	34	4	5	34
Borrowing	0	0	5	0
Total revenue	100	101	100	99

Source: Dirie (2005).

Local business license fees in the Philippines have proven to be an important revenue source. The major form of business tax or fee is a gross receipts tax, with the tax rate varying according to the type of business and total sales. The second is an annual fixed amount, levied without regard to the volume of sales, resembling a license fee paid for the privilege of doing business in the local area. The third is an amusement tax, imposed as a flat percentage rate on admissions to places

of entertainment. While the first component is the largest revenue raiser, the three components together, in many jurisdictions, have surpassed even the local property tax (Bahl and Schroeder, 1983).

Table 11.5   User fees as percent of local government revenue in developed countries

Country	2005	2010
Austria	10.4	9.9
Belgium	7.4	7.8
Czech Republic	14.3	13.3
Denmark	5.6	5.5
Estonia	7.6	8.9
Finland	19.1	23.6
France	14.7	16.5
Germany	18.7	19.7
Greece	23.3	27.3
Hungary	10.3	9.3
Iceland	10.4	10.8
Ireland	13.5	14.8
Italy	6.5	6.8
Luxembourg	20.2	20.0
Netherlands	15.9	15.8
Norway	14.5	15.0
Poland	10.3	9.0
Portugal	14.6	12.7
Slovakia	13.8	12.5
Slovenia	13.7	14.8
Spain	8.7	10.2
Sweden	11.0	10.7
United Kingdom	12.1	13.7

Notes: In the absence of readily available information, data on user fees as percent of local government revenue are user charges and fees as percent of GDP divided by local government revenue as percent of GDP and multiplied by 100.

Source: Computed from EUROSTAT data (2010).

To sum up, 'beneficiary charges' is an open ended category comprising different combinations of fees and user charges, which exhibit disparate trends. In India, for instance, at times local functions were reassigned to higher levels of government while at other times functions were transferred to local bodies without any transfer of revenue authority (Nath and Purohit, 1995). Due to disparate coverage and this reshuffling of expenditure and revenue functions between different levels of government, the reported trends in revenue significance of beneficiary charges are tentative. Nevertheless, they indicate a significant degree of substitution between different sources of finance and a potential for additional revenue mobilization using the benchmark of high performing municipal governments within a country. We discuss this issue next.

11.2.3   Revenue Potential

It is worth noting that except for business license fees, fees and charges do not explicitly have the objective of raising revenues for general purposes. They are essentially instruments for the partial or full cost recovery for administrative and judicial services rendered and the sale of public utility products (e.g., water). Since the administration of fees and fines is done as part of public administration, they are not expected to raise any stipulated share to meet the rising cost of public expenditure so their buoyancy with respect to GDP is not relevant. The same can be said even of water charges because what is relevant is the extent to which the average cost of water supply is recovered and tax financing of water utilities is efficient as long as marginal costs are recovered.

   While political constraints are important in local revenue mobilization, the greater revenue significance of user charges and fees in some municipalities than in others suggests that there is a varying degree of underutilization of this revenue source. On the basis of available information, we can discuss some revenue potential estimates which may give a quantitative dimension to this problem. In one exercise, for instance, the Karnataka Revenue Reforms Commission (2003) in India estimated that the potential for additional resource mobilization from non-tax revenue in Karnataka was nine times higher than current levels. In another exercise, Mohanty et al. (2007) projected municipal revenue, which gives an idea of revenue potential in urban local bodies in India. Cost recovery was defined as the ratio of user charges to revenue expenditure. The optimal performer in terms of proportion of cost recovery was chosen as a benchmark. Thus, to work out the potential of non-tax collections (user charges and fees), the proportion of cost recovery of the optimal performer was applied to aggregate revenue

expenditures of other urban local bodies in the country. Projections for the year 2004–05 are presented in Table 11.6.[2] The table however does not report the projected revenues for different periods to help clarify an overall trend. Nevertheless, it is instructive to note that user charges and fees are expected to yield revenues very close to the property tax, which is about 30 percent of total potential revenue.

Table 11.6   Projection of potential revenues of ULBs in India (2004–05)

Revenue Source	Projected Revenues (Rs Crores)
Property Tax	10,577
Profession Tax	2,389
Advertisement Tax	510
All Major Taxes (1+2+3)	13,476
Non Tax (User charges & fees)	9,746
Grants in Aid	4,064
Total Potential Revenue (4+5+6)	27,285

Source: Mohanty et al. (2007).

In an interesting revenue potential exercise as part of a governmental municipal support program in Mozambique, financed by Austrian, Danish and Swiss development agencies, Boex (2011) used three criteria for the assessment of the revenue effort: (1) the quality and coverage of tax registers/cadasters ("coverage ratio"), (2) the assessment of the fiscal obligations of taxpayers ("assessment ratio"), and (3) the degree by which taxpayers comply with their obligations ("compliance ratio"). This method allows for estimating the unutilized reserves of own source revenue potentially available to the municipalities for the year 2009. The results show that the (untapped) revenue potential varies across the sample according to the size, localization and age of the municipalities, the existing type of urbanization, the institutional capacity of the municipal tax administration and other factors. In a way, each of the municipalities examined tells its own story about revenue collection policies, priorities and results. Despite these variations, however, revenues from market fees generally contribute relatively more and thus have less (non-utilized) potential.

   To understand the entries in Table 11.7, let us take economic activity tax first. It is assessed on the basis of the nature of business, location of the establishment and area occupied. More than three-quarters of all

business operators are covered by the tax, i.e., the coverage ratio is 80 percent. The assessment ratio tells us that, on an average, they pay 70 percent of the maximum charge fixed by the statute, and 64 percent of these imposed charges are actually collected and find their way into the municipal treasury. By multiplying the three ratios, we get the maximum potential collections for economic activity tax (36 percent). This implies an unrealized share of this tax collection to the tune of 64 percent of the revenue potential. Property related taxes are the least exploited and market based charges are relatively more tapped.

Table 11.7   Municipal revenue effort and potential in Mozambique in 2009

Revenue source	Collection ratio	Assessment ratio	Coverage ratio	Tax effort	Unrealized potential
Economic activity tax*	64	70	80	36	64
Market land use license fee	55	73	55	22	78
Market fees (Rent)	72	94	72	49	51
Property tax	11	31	24	1	99
Municipal property transfer tax	33	29	53	5	95

Note: *Business license fee.

Source: Weimer (2012). Original source: Boex (2011).

It is amply clear from the preceding analysis that for many municipal levies, sizable revenue potential remains unrealized and the factors contributing to these shortfalls are primarily administrative and political.[3] In reality, the revenue prospects of beneficiary charges would depend on the political will of the local legislature. For example, over a third of government non-tax revenue in Singapore, a country with no mineral or forest resources (unlike some Indian states such as Karnataka) comes from fees and charges (Chia, 1998). In German towns and cities more than four-fifths of local community charges come from only two revenue sources, namely sewage (42.8 percent) and waste disposal (38.2 percent) (Edling, 1998). Political will should be supported by prudent budgetary plans. For instance, revenue can be increased by indexing the levies in terms of the rising cost of public administration, growth of local expenditure, and growth of public sector employment or wages. Specifying the minimum share of beneficiary charges in local budgets might also

stimulate more use of this revenue source. While no attempt is made to measure revenue potential with international datasets, a discussion will be presented of additional factors that are found to drag the fiscal performance of beneficiary charges in the forthcoming section.

11.3 FACTORS CONSTRAINING GROWTH OF BENEFICIARY CHARGES

Political factors are the major stumbling block constraining frequent rate revisions and revenue performance of beneficiary charges. A different channel of political economy influences can be visualized when municipalities spend less on local services and, therefore, raise less in terms of taxes and charges (Gangopadhyay and Nath, 2006). What is instructive to note here is that the system of multiple financing of local public services is dominated by grants and shared taxes, which render beneficiary charges as marginal sources of local finance. Similarly, the overwhelming significance of property taxes in local finance is another constraining factor. While property taxes have been discussed as a user charge (Vickery, 1963; Netzer, 1973), in the tax incidence literature they are not treated as a lump sum levy (Zodrow, 2007). This would mean that property tax is not an extension of beneficiary charges. But in practice, this tax has served as a piggyback base for property-linked local public services in many countries. In a recent paper, Nath and Schroeder (2010) have examined the potential of property tax as an environmental levy on international tourists. The multiple use of property tax has an adverse impact on design and governance of innovative regimes of fees and user charges.

11.3.1 Intergovernmental Fiscal Transfers as Indirect Cost Recovery

The strong possibility of inter-jurisdictional spillover of benefits has created conditions favoring centralization of revenue collections and revenue sharing. The emphasis then shifts from 'tax assignment' to 'revenue assignment' and grants and loans significantly enter into the picture (Musgrave, 1983). Unlike taxes, Stehn and Fedelino (2009) find that fiscal transfers are pro-cyclical in Germany. That is, revenue sharing follows the trends in collection performance of the grantor. According to the literature on the "soft budget constraint", strong reliance on fiscal transfers and lack of own source revenue that would allow governments

to internalize the costs of their spending decisions both weaken incentives to spend with due consideration for debt sustainability (Rodden et al., 2003, Bordignon, 2006). It is also important to note that the flow of central transfers may not be regular and adequate because 'revenues stick where they are collected' (Bahl and Nath, 1986). Moreover, local revenues tend to be sluggish due to revenue centralization and expenditure decentralization as a vote maximizing political strategy (Brennan and Buchanan, 1980; Grossman and West, 1994; Nath, 2012). In the process, there is the surrendering of local tax authority to higher levels of government.

   While maximizing revenue, sub-central governments would prefer less reliance on sub-central taxes, thus giving way to central taxes with a constitutionally mandated arrangement for sharing central tax proceeds. States utilizing comprehensive tax bases, especially a personal income tax, have been able to generate higher levels of aggregate tax revenues (Nelson, 1986). Although each sub-central government would have an incentive to deviate from stipulated norms, Nechyba (1997) has empirically established that the institution of state grants funded through a state income tax as an alternative to a local property tax can play such an enforceable role. In other words, local authorities may decide to forgo the right to property taxes in favor of a state-administered income tax with an explicit mechanism of revenue sharing. Goodspeed (2000) finds that higher national income tax rates (and lower poverty rates) lead to lower local income tax rates, indicating colluding behavior in designing tax rates by different levels of government.
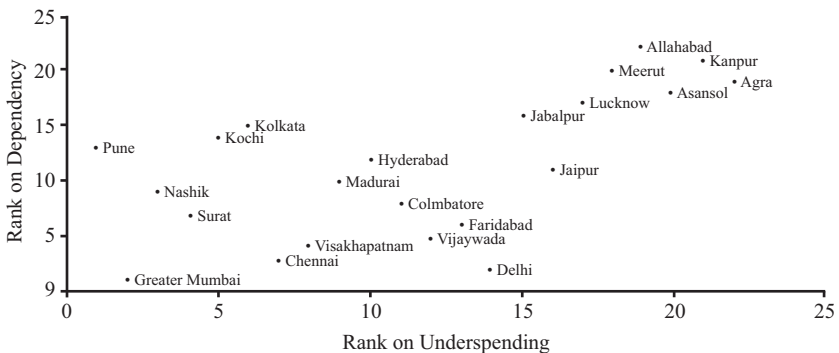
Source: Mohanty et al. (2007), p. 114.

Figure 11.1   Municipal dependency ratio and under-spending (1999–2004)

Zhuravskaya (2000), based on a unique dataset on Russian city budgets, shows that revenue sharing between regional and local governments provides local governments with no incentive to increase the tax base or provide public goods. It can be argued that grants may work as an indirect cost recovery channel. Mohanty et al. (2007) used the Zakaria Committee (1963) norms for minimum per capita municipal expenditure in India and demonstrated that under-spending is widely prevalent and it is, to some extent, positively related to the fiscal dependency ratio, that is, proportion of state grants in total spending (Figure 11.1). In other words, the municipal corporations which under-spend more are relatively more dependent on fiscal transfers, indicating the lack of local fiscal effort.

11.3.2 Piggybacking: A Substitute for Independent Beneficiary Charges

Subnational governments have attempted to diversify their revenue sources by resorting to piggybacking through tax base sharing in the form of supplemental charges and surcharges and tax base sharing by administering local taxes on the same base (for country experiences, see Martinez-Vazquez et al., 2006; Brunori, 2007). Surcharges on local property taxes are used extensively in developing countries to collect beneficiary taxes for which disaggregated data are generally not available. There are several other examples of piggyback supplements, namely flat rate profession taxes, like a local income tax, and surcharges on state taxes on passengers and goods, motor vehicles and entertainment in India. The advantage with independent local piggyback taxes is that they work like a user charge, which falls only on residents. Thus, there is no export of taxes to non-users of services. This is in contrast to the case of piggybacking on a tax base being administered by a higher government (in the form of a surcharge and supplementary cap) where the burden of such levies is also exported to non-residents.

11.3.3 Tax Earmarking as a Vehicle of Cost Recovery

Tax earmarking can take two forms. First, taxes or charges collected at the subnational level can be earmarked to finance a particular program at that level. The other form is in which a part of the tax proceeds of a tax collectible at a higher level is dedicated to a particular expenditure program at the subnational level. Earmarking of user fees and benefit taxes collected at subnational level is easy to justify, like a market transaction to obtain benefits. Dedication of the gas tax to pay for

highway fuels is an example of a benefit tax earmark. The strongest economic case for earmarking exists where there are clear benefit linkages between the taxes or charges levied and the expenditures financed, so that earmarked taxes act as an indirect form of user charges or public prices for services. Through the linking of user charges and specific benefit taxes to certain public services, earmarking facilitates the rational choice by taxpayers. However, the expenditure performance of such earmarking is less researched. In a recent article, Downing (2012) has shown that municipal expenditure levels may go down because of uncertainty in revenue collections of earmarked taxes.

The second kind of earmarking, however, is more interesting. While such earmarks may be implicit in the shared revenue and fiscal designs of many countries, these are explicitly in practice in some countries like Australia in different forms (for an extensive survey of literature, see Wagner, 1991; Bird and Jun, 2005; Carling, 2007). Buchanan (1963) argues that dedicating or earmarking revenues for programs with the greatest support among voters could constrain overall government expenditures. This contention is based on the premise that support for overall spending levels will decline if acceptable levels of spending are guaranteed for the most popular public programs. This condition typically applies to partial earmarking where users are simply paying for a quasi-private good which may also be subsidized by other public revenues.

There are isolated research findings which support or contradict the positive impact of partial earmarking on local revenue efforts. Dye and McGuire (1992) analyze the effect of state earmarks for three broad categories of spending – education, highways, and state aid to non-school local governments – using two years of data from 1984 and 1988 compiled by the National Conference of State Legislatures (NCSL). Controlling for a variety of economic, demographic, and other factors likely to affect spending levels, they found that the effects of state earmarks on local spending levels were ambiguous. They further show that a greater reliance on earmarking as a share of expenditures results in either no change in spending or lower expenditures. Nonetheless, Gwilliam and Kumar (2003) provide evidence that in a number of developing countries, earmarking revenues through 'road funds' appears to have improved allocative efficiency without either undermining fiscal flexibility or fostering rent-seeking.

The dampening impact of partial earmarking on revenue efforts will additionally emerge because the recipient government can treat the tax money as a fungible resource. This fiscal behavior gets eminent support when the fiscal environment suffers from a soft budget constraint. The

question of fiscal discipline is therefore very pertinent in this context. 'Bailout' and fiscal rescue operations by the central government, followed by a moral hazard type of fiscal extravagance at the local level constitutes one of the principal dangers (Prud'homme, 1995). Since fees and user charges constitute only a small portion of subnational budgets, the rest of the administrative and public utility expenditures are financed either from earmarked or general tax revenues or from earmarked or general transfers, including loans. The availability of funds from such sources may result in the underutilization of beneficiary charges. However, Bird (1997), drawing on earlier work by Buchanan (1963) and others, suggests that when earmarked taxes are viewed as substitutes for user charges, especially when the latter are difficult to collect, a benefit tax argument can be made for the optimality of earmarking.

Political economy factors

In the context of local public service delivery, politicians should favor imposition of beneficiary charges, but in reality, they may prefer taxes. This is because choosing between two revenue sources and choosing between two tax/charge schedules are different issues. In regards to the first, while the consumers may prefer beneficiary charges because of the correspondence between benefits and payments, a politician may prefer taxes for three reasons. First, it may be politically difficult to revise rates at regular intervals as it may result in a loss of popular support. Second, taxes allow authoritarian fixing of tax rates independent of expenditures and through the exploitation of fiscal illusion, because the payments are disguised. Third, maintaining political power frequently depends on the discretionary use of public funds. Yet, when it comes to choosing between flat rates and progressive rates, on theoretical grounds, the former will be preferred not only because flat rates are neutral in an allocation sense, but also because the lack of discriminatory progressive rates would engender effective control over the leviathan (Brennan and Buchanan, 1980). But revenue maximizing leviathan governments may prefer discriminatory progressive taxes. Moreover, beneficiary user charges also face political resistance on the grounds that these services are already being partly financed through taxes, so there is a need to clarify the difference between which portion of the public service is financed with taxes and which portion is more appropriate to be financed with user charges (Duff, 2004).

To sum up, there are fiscal practices that hamper the independent local revenue authority to raise fees and charges when higher layers of government transfer a part of their revenue collection to local governments as grants-in-aid. Secondly, higher level governments often administer and

collect taxes with the explicit objective of sharing the proceeds with local governments. Thirdly, local governments themselves may piggyback on their own major taxes, such as property taxes and sales taxes to collect fees and charges, again replacing beneficiary charges. What is vital to note is that there is a substantial transfer of fiscal authority from one tax to another and from one level of government to another and, as a result, local fiscal initiative is adversely affected. Moreover, local fiscal authority may be displaced or undermined when local public utilities are privatized in full or part, as discussed next.

11.4   IS PRIVATIZATION A LIFELINE FOR USER CHARGES? THE CASE OF WATER

Ownership change from public to private is not a smooth process. The private management of user charges would face stiff resistance from local government employee unions, as they will fear losing their jobs. Citizen-voters may stall such proposals for the fear of an increase in the cost of subsidized public services. What is relatively easier is to limit the role of the private sector to collection of service charges, development and maintenance of public parks and maintenance of streetlights and local roads. However, in the case of publicly provided quasi-public goods, such as water, sewage and waste management, there may be ample opportunities to involve the private sector in improving service standards and raising the level of cost recovery. Local governments have generally not succeeded in such efforts due to lack of capacity, lengthy legislative processes and political interference. If revenues from user fees are not forthcoming because the economy remains weak or there are political constraints in revising rates, governments may have to contract out such public services to private and non-profit vendors or renegotiate service responsibilities with other levels of government. We focus here on the case of water.

11.4.1   Water as a Quasi-Public Good

The decision whether to provide water publicly or privately would depend on such considerations as the costs of exclusion, externalities and cost structure of the industry. Higher exclusion costs and externalities as well as decreasing unit costs of production support public provision or private supply with regulation. Contestability, that is, potential competition in supply is another concern. If markets are less contestable, there will be the danger of monopolization of public production and pricing.

Table 11.8   Characteristics of piped water supply

Type of System	Nature of Good		Contestability	Externalities	Comment
	Rivalry	Exclusion			
Piped Water Supply					
● Trunk System (intake pumping station)	H[a]	H	L	PH, GD	Private good characteristics
● Distribution System	L	M	L	PH	Public good characteristics
● Terminal Equipment					
Common	M	L	H	PH	Public good characteristics
Individual	M	H	H	PH	Private good characteristics

Notes: L: Low; M: Medium; H: High; PH: Public Health; GD: Ground water depletion.
[a]: Depending on the degree of water resource scarcity.

Source: Based on World Bank (1993).

Table 11.8 shows specific demand and supply characteristics of water supplied by piped networks for different uses. We find that intake-pumping stations of the trunk system are characterized by a high degree of rivalry, assuming that water from the aquifer is scarce. As more water is extracted, less is available to other possible users of that aquifer. This result would also hold for surface water stations. Costs of excluding people from using water at the pumping station, on the other hand, are low so that there is a predominance of private goods characteristics. The costs of preventing people from using water at reservoirs are medium and could vary according to the size of the storage facility. If the reservoir is big, for instance, it could be difficult to monitor its use and prevent people from illegally drawing of water for irrigation or other uses. If the reservoir is located far from places that are inhabited or developed, we might expect the degree of exclusion to be lower.

Costs of monitoring illegal extractions from the distribution system or tampering with meters are high in some countries, so that this part of the supply system will entail a medium degree of exclusion. Exclusion at the terminal equipment end is potentially high, but in the case of common equipment, it may not be feasible due to social factors. Moreover, there are positive externalities associated with the consumption of potable

water, namely, the improvement of the general health of the community through the reduction in the incidence of waterborne diseases. Similarly, the existence of a large number of negative externalities in consumption like water-logging, salinization, and new diseases establish a general case for government involvement in its provision. Besides externalities, cost recovery arguments are dominant, which support surrendering of the local fiscal authority to a private operator.

11.4.2   Ownership Versus Cost Efficiency of Water Utilities: Theory and Evidence

Private sector participation in local public service delivery has been considered a way forward in recent years, considering its impact on cost recovery regimes. But the success of experiments with the privatization of such publicly produced goods and services is a mixed blessing. It is commonly argued that private ownership will result in higher cost efficiency as compared with public ownership, *ceteris paribus* (Megginson and Netter, 2001). The reasons for this contention are derived from three strands of the literature: principal agent theory, property rights theory and public choice theory. Principal agent theory predicts greater efficacy of private ownership in providing managers with incentives to act in line with the enterprise's goals. From the property rights perspective, public sector officials and politicians have lower property rights to the gains associated with improved public utility performance and diminished incentives to improve public sector enterprises. Public choice theory argues that public managers would seek to maximize their own utility, such as size of their own budgets, which may result in loss of social welfare gains.

Critics have challenged the above approaches on the grounds they do not consider the degree of competition faced by firms in assessing performance of such utilities (Rees, 1998; Vickers and Yarrow, 1989). Another problem with these approaches is that they assume cost-minimizing privatization of public and private utilities (McGuire and Ohsfeldt, 1986). Renzetti and Dupont (2003) argue that since the water industry is largely monopolistic, mere privatization would not necessarily lead to better performance. Saal and Parker (2000) use a time dummy to test for the impact of privatization and regulation on the industry's cost in the UK. Their results show that lower costs of utilities can be attributed to tightened regulation and are not necessarily due to privatization. Moreover, in the presence of regulation and transaction costs, threats of takeover and bankruptcy do not provide perfect incentives for managers to make efficient choices (Saal and Parker, 2001). Bakker (2003) notes

that the recent trend in the English and Welsh water industry suggests a move away from privatization towards mutualization, that is, ownership by customers and run as non-profit privatization. Erbetta (2006) shows that in an industry characterized by a high degree of monopolistic tendency, price reduction is more effective than price increase as an incentive mechanism for correcting technical distortions. That is, upward revisions in water charges by privatized public utilities may introduce distortions.

Evidence from developing countries is scanty and fairly recent. It is interesting to note that the findings emerging from developing countries generally do not support significant differences in performance between public and private utilities. Kirkpatrick, Parker and Zhang (2004), for instance, employ DEA and cost frontier approaches using data from 110 African utilities and find no significant difference in costs once environmental factors are accounted for. Regulation in their sample does not significantly impact water utility's cost. Similar results are obtained by Estache and Rossi (2002) who estimate a stochastic cost frontier with data from 15 firms in 19 Asian countries. Seroa da Motta and Moreira (2004) use DEA to analyze performance of 4000 municipalities in Brazil over the years 1996 to 2002. The authors conclude that there is no significant difference between public and private provision in terms of productivity. Only two studies are found to support gains due to privatization. Estache and Kouassi (2002) estimate a production frontier with data from 21 African water utilities and find that private operators are more cost efficient. The researchers also find that corruption worsens efficiency and in their sample, corruption matters more than ownership. Arikon (2008) shows that given the official-firm connection, increased privatization leads to an increase in corruption. Estache and Trujillo (2003), using an unbalanced panel of data from four provinces in Argentina over the years 1992–2001, conclude that significant improvements have resulted from 1990 reforms irrespective of ownership status.

Bayliss and Kessler (2006), conducting research at the International Poverty Centre, present an interesting discussion on privatization and commercialization of public services to help meet the MDGs and conclude that reliance on private supply of public services will fail to address the central challenges of public provision because privatization will undermine the accountability and capacity of the state to provide accessible and affordable public services. They argue against full cost recovery and support the case of capacity building of the state in these services. In their analysis, the importance of private sector participation in supply of public services and user fees is not underplayed.

In a recent research, Madhoo (2007a) develops a logit model to analyze cross-country determinants of cost recovery levels in water utilities to explore the likelihood of efficiency impacts of water utility ownership arrangements while controlling for other factors. An ordered cost recovery level variable is regressed on ownership, water availability, GNP per capita, Gini, external aid to water utility and good governance and corruption. An ordered logit model is estimated using data from developed and developing countries. It is postulated that the probability of achieving a higher level of cost recovery would be greater if the water industry has a higher degree of private involvement. While ownership is found to bear a positive sign, there appears to be a weak link between private involvement in water provision and the probability of achieving higher cost recovery levels, as the ownership variable is statistically insignificant. The insignificance of the ownership variable may be explained by a high degree of government regulation, political interference and consumer resistance to increases in water prices beyond certain levels. This contention is generally supported by findings in the empirical literature. In the absence of data, the author does not compare the performance of privatized utilities with autonomous (specific purpose and general purpose) utilities separately. One can, however, conjecture that the prospects of privatization may be further diminished if professional and commercial dimensions of off budget autonomous boards in the public sector are brought into the picture.

11.5 USER CHARGES AND MARGINAL COST OF PUBLIC FUNDS

User charges find their most appropriate role in natural monopolies of the government, such as water and sewer services. Pricing considerations are guided by the decreasing cost nature of water utilities and whether the total cost of the water supply has to be recovered from users. In the case of full cost recovery, charging a positive price – say to cover average costs – may deny some consumers access to a good that provides a positive community benefit at a low, non-zero marginal cost.

According to theory of public utility pricing, marginal cost pricing will result in efficiency prices and optimal water output, which is social-welfare maximizing. In the absence of government owned utilities, water can be provided by the private sector with government regulation. Private providers can be offered authority to charge the average cost including an allowable profit. The other alternative is to allow a water tariff equivalent to the marginal cost plus a subsidy equal to the difference between

average and marginal costs. Apparently there seems to be no difference between the two options, but private providers may choose option one, in which case the quantity produced will be lower than when the latter option is chosen. If there are enough private bidders, marginal cost pricing can be enforced. Other options may include incremental cost pricing and non-linear pricing structures, like two-part tariffs and graduated block prices with lifeline subsistence rates (see Madhoo, 2009). The latter, known as increasing block rates (IBRs) apply progressively higher prices to water users falling in higher consumption blocks. In this way, affordability is ensured for meeting basic needs (social goal) and cross-subsidization between users occurs. While such a pricing scheme can potentially help to achieve full cost recovery, it rarely succeeds in doing so. Developing country experiences show that partial cost recovery (through direct charges) is the norm when more users fall in the lower 'subsidized' consumption block(s). The economics of partial cost recovery rests on the notion that fixed cost components of the total utility expenditure are sunk costs, which have no alternative use and therefore need not be recovered. This brings us to the recovery of operation and maintenance costs of water utilities.[4]

11.5.1 Marginal Cost of Public Funds And Marginal Cost Pricing

Charging user fees in public utilities should reflect the marginal cost of an additional user of the publicly provided good or service. Since subnational governments are suitable for providing congested public goods (in comparison with pure public goods), the marginal cost of providing a service should be positive and less than the average cost. However, shifting away from average cost pricing would entail deficits in utility budgets, which will be financed from taxes and loans (deferred taxes). Given the current tax financing of public utility deficits, distortionary effects of taxes will have to enter into the revenue cost of water supply. Marginal cost of public funds is an accepted measure of distortion. It is the direct tax burden plus the marginal welfare cost produced in acquiring the tax revenue, which is a composite impact (effects of tax on labor supply, tax on consumption, and their relative effects on government expenditure and public utility) (Ballard and Fullerton, 1992). The welfare improving effect of a tax would require that

$$\partial U/\partial t > 0 \tag{11.1}$$

$$\partial l/\partial t < 0 \tag{11.2}$$

where U is utility, t is tax and l is leisure.

The first condition states that a balanced budget increase in taxes and government expenditure should increase utility and the second stipulates that given that leisure is normal, additional taxes should increase the supply of labor. Both conditions will be satisfied in the case of a lump sum tax (Ballard and Fullerton, 1990) (most beneficiary charges will be classified as lump sum taxes). For other taxes, since $\partial l/\partial t > 0$, an increase in taxes will increase demand for leisure and, hence, supply of labor will fall.

It is to be noted that the marginal cost of public funds will vary from one tax to another general tax (MCFgt) as against the cost of lump-sum taxes (MCFlump). Moreover, the efficient supply with optimal pricing would require that the sum of marginal benefits (MB) is equal to the marginal cost of a project (CP) with proper adjustment for marginal cost of public funds (MCF). If MCF is greater than one, the benefits of the projects must cover more than the cost of the project and vice versa (most empirical estimates show MCF exceed unity, see Ballard and Fullerton, 1992 and Bird, 2005).

Rewriting the conditions for a water project (wp), we get

$$\Sigma MBwp = CPwp^* \; MCF$$

$$MCF = 1 \; \text{(Samuelson (1954) efficiency, first best)} \qquad (11.3)$$

Since MCFgt > 1 > MCFlump < 1,

$$\Sigma MBwp = CPwp \; * \; MCFlump \; \text{(second best)} \qquad (11.4)$$

$$\Sigma MBwp = CPwp \; * \; MCFgt \; \text{(third best)} \qquad (11.5)$$

Conditions (11.4) and (11.5) show that since MCFlump is less than unity and MCFgt (income tax and sales tax, for instance including property tax) is greater than unity, beneficiary charges and general taxes are second and third best, respectively. This is because beneficiary charges do not change the relative prices between labor supply and leisure (as income tax does) or between two goods (as sales tax does). Lower MCF reduces the marginal cost of public projects and increases the quantity of water produced, due to greater availability of funds for water projects.

Willingness to pay for water and marginal cost of public funds
Consumer preferences are the building blocks of beneficiary charges and these preferences are manifested in the choice of a menu of public services and modes of raising public funds. The marginal cost of public funds

provides a working rule for choosing between taxes and beneficiary charges (on the basis of excess burden in consumption and supply of work effort that these resources entail during service delivery). Usher (2006) discusses that MCF is the appropriate mark-up of benefit over cost for public sector projects and programs and Lui (2006) proposes that MCF should be made person-specific to include distributional considerations. What is vital is that both decision-makers and citizen-taxpayers have their own choices about the mode of financing the program. Nath and Purohit (1992) show that increases in income commonly result in supplemental private financing of local services when there is inadequate response by public authorities and grant substitution of own revenue sources. We explore this mindset of the citizen-voter and posit that willingness to pay for different tax-service and charge-service packages can provide useful information about the marginal cost of public funds and choice-based social welfare. It can be postulated that higher willingness to pay would reduce the marginal cost of funds from beneficiary charges and taxes because there will be a lesser dependence on distortionary taxes and loans. Moreover, consumers' willingness to pay (WTP or wtp) would have substantial impact on design of user charges and taxes.

Let us take the case of water, which is an input in improving efficiency of labor (L). A higher willingness to pay for water through taxes or charges would imply more supply of labor. Furthermore, the benefits of user charges will be more visible than that of taxes (including property taxes) and therefore higher willingness to pay would engender a greater supply of work effort than those produced by other taxes. Symbolically,

$$\partial U/\partial wtp = \partial U/\partial L * \partial L/\partial l * \partial l/\partial t * \partial t/\partial wtp \qquad (11.6)$$
$$(?) \qquad (+) \qquad (-) \quad (+ . -) \quad (+)$$

Higher wtp will result in higher taxability (+); the impact of higher tax on demand for leisure is indeterminate (+ , –); higher demand for leisure will reduce supply of labor (–), and higher supply of labor increases utility (+). The impact of wtp on utility will depend on the interaction between the four components, which will vary from one revenue source to another (?).

Now higher willingness to pay for water would imply that beneficiary charges are welfare promoting, that is, $\partial U/\partial wtp > 0$, subject to

(i) $\partial l/\partial t > 0$ for general taxes; $\partial l/\partial t < 0$ for beneficiary charges
(ii) wtp (charges) > average cost of water supply
(iii) wtp (charges) > wtp (taxes)

It can be noted that if condition (i) is satisfied for general taxes, the following two results are in order.

a.   Condition (ii) indicates that since willingness to pay for water is higher than AC, MCF is lower than unity. This measures the impact of willingness to pay on MCF and shows that the dependence on distortionary taxes and loans for financing local water supply is close to zero at the limit.
b.   Condition (iii) explains the impact of willingness to pay on the design of beneficiary charges vis-à-vis taxes, keeping in view the pre-existing budgetary deficits.

Some empirical results for water utility in Mauritius
An attempt is made in this section to test the above assertion, that is, marginal cost of public funds raised through beneficiary charges is less than unity. For this we need to first establish whether WTP for water is greater than average cost of water supplied from the water utility in Mauritius. Current water prices were collected and LRMC (long run marginal cost) and AC estimates were computed using the budgetary data from Central Water Authority (CWA) in Mauritius.[5] Willingness to pay (WTP) estimates were prepared using data collected from a contingent valuation method (CVM) survey in Mauritius in 1997 in which focus group respondents were asked to reveal their willingness to pay for improved residential water supply. Whitehead (2003) empirically established that quality is a determinant of willingness to pay, but both reinforce each other. Focus groups were not informed about the magnitude of fiscal deficits in utility budget so that they do not get influenced by deficits and play strategies such as tactical over-responding or under-responding. To estimate WTP, logit specifications were tested with survey data on 215 observations. Bid, income and household size are found to be statistically significant. Education, gender, location, altitude and age were found to be statistically insignificant. Focus groups were not informed about the magnitude of fiscal deficits in utility budget so that they do not get influenced by deficits and play strategies such as tactical over-responding or under-responding. Mean WTP1 and Mean WTP2 were generated using bivariate and multivariate logit models, respectively.[6] Information on water prices, AC and LRMC, and WTP estimates are presented in Table 11.9.

Table 11.9   Revenue impact of residential price revisions: Mauritius

	TR Domestic	TR (all)	TC	Surplus / Deficit	Surplus / Deficit
	Rs Mn	Rs Mn	Rs Mn	Rs Mn	Rs/m3
Current water prices	273.34	358.81	528.91	–170.10	–2.01
Efficiency pricing					
AC (Rs6.25/m3)	415.88	528.91	528.91	0.00	0.00
LRMC (Rs5.60/m3)	372.62	459.66	528.91	–69.25	–0.82
WTP Estimates					
Median WTP (Rs7.55/m3)	502.38	589.41	528.91	60.50	0.72
Mean WTP1 (Rs8.31/m3)	552.95	639.98	528.91	111.07	1.31
Mean WTP2 (Rs8.80/m3)	585.55	672.58	528.91	143.67	1.70

Source: Madhoo (2007b).

The prices charged by CWA are well below efficiency prices as well as the different WTP estimates. In particular, both median and mean WTP exceed the first best AC prices. The excess of estimated WTP over AC may be attributed to a premium that households are willing to pay for improved water services. These results indicate that a uniform increase in domestic water prices to long run marginal cost or average cost levels would tally with consumer preferences. Although the information expressed is not believed to be tactically misrepresented in the CVM survey, it would obviously be useful to improve the quality of data and inferences on willingness to pay by greater interaction with focus groups that are included in the sample. Nonetheless, this analysis shows that estimates of WTP higher than AC or LRMC indicate higher willingness to pay among residential water consumers. In other words, higher WTP has the ability to reduce the marginal cost of public funds, if beneficiary charges are employed to raise funds. Moreover, distortionary means of financing water utilities can be minimized in this case.

   It is pertinent to ask why Mauritian residential water users are so enthusiastic about water supply services that they are willing to pay much higher water tariffs. There are two principal reasons. First, findings from the literature reveal that setting increasing block rates (IBRs) is not

a sufficient condition for achieving equity (Madhoo, 2009; 2011). House-hold characteristics, living patterns, metering coverage, and access to piped water supply appear to be important determinants of the success of this pricing structure. The regressive nature of IBRs is evident where income level is negatively correlated to household size or when people live in apartments with shared water connections. Mauritius is a rare country in the sense that demographic factors have dominated the water policy factors in making water tariffs more acceptable. The uncommon positive relationship between household size and income/expenditure in Mauritius (Table 11.10) makes IBRs more effective when progressivity in water charges is introduced. It is further unique that lifeline water prices effectively benefit low-income/low-volume users. In the absence of a positive relationship between income and household size, modifications of increasing block structure have been implemented in some developed countries to circumvent this limitation of IBRs. For instance to make IBRs effective in Barcelona (Spain), the size of the second block is linked to household size, as depicted in Table 11.11, thereby ensuring that the benefits of lower prices effectively reach the targeted lower income categories that are assumed to have larger families.

Table 11.10   Distribution of Households by Size and Geographical Regions, Mauritius (1997)

Expenditure Group	House-holds (%)	Cumu-lative (%)	Average House-hold Size	Urban (%)	Semi-urban (%)	Rural (%)	Average Monthly Expenditure on Water
less than 2,000	2.25		2.2	27.74	15.33	56.93	45.83
2000 < 5000	18.25	20.50	3.2	31.58	19.91	48.51	74.18
5000 < 7500	25.31	45.81	4.0	40.37	20.34	39.29	92.93
7500 < 10000	20.45	66.27	4.4	45.18	20.31	34.51	107.55
10000 < 15000	20.40	86.67	4.6	52.83	16.04	31.13	119.26
15000 < 20000	7.41	94.08	4.8	55.41	12.12	21.47	125.63
20000 < 30000	4.04	98.12	4.9	61.26	18.18	20.55	155.90
30000+	1.88	100.00	4.7	72.65	7.69	19.66	158.55
Total	100.00		4.1				

Source: Computed from CSO, 1997, Mauritius Household Budget Survey, 1996/97.

The impact of progressive water charges due to atypical household size pattern becomes more pronounced in a single owner occupancy domin-ated country such as Mauritius where about 85–90 percent of houses are owner-occupied separate structures rather than apartments. There is thus little shared water consumption from common connections inviting increased charges. Moreover, as Table 11.10 shows, implicit water subsidies in Mauritius benefit the rural areas inhabited mainly by relatively lower income households. The objective of passing lower prices to promote less developed areas by charging richer and more developed areas appears to be achieved in the Mauritian context.

Table 11.11   Water pricing in Barcelona, Spain (1998)

	Household size	Block Size (m^3 per quarter)	Water charge (ptas./m^3)
First block	–	0–18	44.10
Second block			89.30
	1–4	18–48	89.30
	5	18–55	89.30
	6	18–66	89.30
Third block			121.80

Source: OECD (1999).

Secondly, the impact of progressive incidence of IBRs in Mauritius is further enhanced by the wide coverage of metering including rural areas (about 99 percent of supplies are metered), and the wide coverage of the public water system which provides access to more than 90 percent of the population. While cost recovery is a major technical constraint in reaping the benefits of privatization, extensive metering of the water supply with an off-budget autonomous water board has been a remarkably successful experiment. To sum up, increasing household size with income/ expenditure, predominantly owner-occupied dwellings (not apartments) and extensive metering also covering rural areas largely explain why IBRs are effective and why consumers are willing to pay higher user charges for water in Mauritius.

11.6 CONCLUSIONS AND POLICY IMPLICATIONS

Beneficiary charges and fees have assumed a greater role in the fiscal management of subnational governments after the current recession in the world economy. The fiscal significance of beneficiary charges has varied from very low to high, sometimes surpassing local property taxes, in a cross section of both developed and developing countries. Local governments also have some limited experience of off budget activities like departmental as well as autonomous public utilities and episodes of partial and full scale privatization of quasi-public service delivery. These trends have gained additional significance at the subnational level because of the hard local budget constraint due to limited local fiscal capability, stickiness in revenue sharing and fiscal austerity resulting in drastic cuts in intergovernmental grants and limited access to loans. While the recent fiscal awakening about beneficiary charges holds a lot of promise for local budgets, nevertheless, the constraining factors are deep rooted.

Preference revelation and service delivery go hand in hand but financing of expenditures through 'user pays' and 'beneficiary pays' routes may seem to be politically difficult. What is politically more palatable is to raise general taxes at higher levels of government and resort to revenue sharing. Centralization of revenue collection, tax earmarking and piggybacking alternatives exert a dampening impact on the growth of beneficiary charges. Intergovernmental fiscal transfers on the grounds of interjurisdictional spillovers are taken as an instrument of indirect cost recovery. In other words, there is a tendency to surrender the local tax base to higher levels of government. However, what is vital is that even a more diversified subnational fiscal policy lacks the visibility of both service benefits and user charges and fees.

Charging user fees in public utilities should reflect the marginal cost of an additional user of the publicly provided goods or service. Since subnational governments are suitable for providing congested public goods (compared with pure public goods), the marginal cost of providing a service will be positive and less than the average cost. Charging a positive price – say to cover average costs – may deny some consumers access to a good that provides positive benefits at some lower marginal cost. So there is a challenge in setting the right price. While the charges tend to be proportional to benefits, equity objectives need to be imbedded in these cases. Unlike other public utilities (gas, electricity, bus transport and telephone), water possesses more public good properties that may necessitate well designed circuit breakers and comprehensive voucher

plans to alleviate incidence of disparate charges. The trade-off between efficiency and equity will always haunt policymakers and will test the strength of political will for financial viability of water public utilities.

In the case of quasi-public goods and public utilities, private sector involvement has increased in an effort to reduce budgetary deficits and establish feasible charges. Although our analysis does not provide more disaggregated information about off-budget activities (autonomous boards) vis-à-vis privatized water public utilities, the review of literature presented here and the empirical analysis utilizing international data do not confirm that privatization has improved the cost recovery perform-ance of water utilities. Partial privatization, however, has had some success – for instance, when water is supplied by a private water company, municipalities set charges and distribute it and collection is privatized. Private public partnerships with significant foreign direct investment in urban infrastructure have also provided some examples of good working arrangements. There seems little scope of privatization in managing administrative fees and charges payable for public goods however.

Benefit charges have the advantage of lump sum taxes that are neutral fiscal instruments with little distortionary effects on supply of labor and consumer budgets. Citizen-voter preferences are the building blocks of beneficiary charges and these preferences are manifested in a menu of choice of public services and mode of raising public funds. The marginal cost of public funds provides a working rule for choosing between taxes and beneficiary charges on the basis of excess burden in consumption and supply of work effort that these resources entail during resource raising and service delivery. We explore the mindset of citizen-voters by analyzing and quantifying their willingness to pay for different tax-service and charge-service packages. Higher willingness to pay through a beneficiary charge reduces the marginal cost of funds. Residents' willing-ness to pay in excess of the average cost of water (and much higher than marginal cost) indicates relatively lower marginal costs of public funds, presumably lower than the marginal costs of other means of tax finance.

We discuss a case study of water pricing policy in Mauritius to demonstrate the support of demographic and socioeconomic factors coupled with good governance in making water pricing policy effective. IBRs were designed on the basis of increasing volumetric tariffs coupled with metering, as in other countries. Both urban and rural inhabitants favored extensive and well managed metering. But these measures were not sufficient to make the water charges progressive. It is interesting to note that the support to progressive charges came from two important features of demography and socio-economy: household size increased

with income/expenditure and most households lived in owner occupied built houses (not apartments). This experience emphasizes the importance of such non-policy factors as household size, house ownership patterns and the scale of metering since these factors may substantially contribute to the design and success of progressive water schedules.

The weak exploitation of beneficiary charges by subnational governments indicates that there is untapped potential of revenues from the supply of local public goods and services. From the perspective of setting the prices right, tax financing of public administration should be discouraged. Revisions of administrative fees and charges should be periodically indexed by the cost of local government or the growth of local government employment. Subnational fiscal effort versus fiscal capacity estimates and representative charge system versus optimum performance analysis can provide useful information about the fiscal potential of beneficiary charges. It may be worthwhile to conduct more willingness to pay studies to compare citizens' preferences for taxes versus user charges as alternatives to reduce budgetary deficits in public utilities. Enhanced citizen-voter participation in fiscal endeavors may also increase the ability of local governments to prepare and implement revenue generating reforms that take into account the marginal cost of alternative financing modes.

NOTES

1. For arguments in favor of locality-based taxes and charges as part of the decentralization theorem, see Oates (1972).
2. The choice of best performer in revenue collection as a benchmark can be replaced by the representative tax system and taxable capacity factor. In the former, average rate base regimes are generated and applied to potential base or total cost or revenue expenditure. The taxable capacity method uses the regression method in which tax to income ratios are regressed on capacity factors and residuals serve as a measure of revenue effort. The fitted values give a rough magnitude of potential revenue. See Bahl (1972) and Bahl (1971) for the two methodologies, respectively.
3. For some discussion of these issues, see Bird and Tsiopoulos (1997).
4. Note, however, that depreciation of fixed assets and interest charges of loan financing are included in operation and maintenance costs.
5. While it is easy to compute average cost of water manufacturing, we need to generate estimates of LRMC, which is more hypothetical in nature. To measure LRMC, we estimate the following AC function by integrating the learning effect (see Berndt, 1991): $\mathbf{ln\ AC = ln\ k' + \varphi_1\ ln\ n + \varphi_2\ ln\ y + u}$, where $\varphi_1 = (\alpha_c/r)$ and $\varphi_2 = (1-r)/r$, and r is the returns to scale parameter, α_c is elasticity of average costs with respect to cumulative volume, k' is a technological coefficient, y is output level and n refers to cumulative volume of water. $r > = < 1$ indicates increasing, constant and decreasing returns to scale respectively. φ_1 is learning effect on average cost and φ_2 is returns to scale effect on average cost. Then $\mathbf{LRMC = AC + \varphi_2\ AC}$.
6. Econometric estimates are not reported here: see Madhoo (2007b).

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PART IV

Looking forward

12. A retrospective on taxation in developing countries: Will the weakest link be strengthened?[1]

Roy Bahl

INTRODUCTION

Nicholas Kaldor told us in 1963 that developing countries did not know how to tax, Richard Goode told us in 1984 that they still had trouble formulating and implementing tax policies, and Richard Bird tells us in 2011 that tax design and tax administration in developing countries have shown considerable improvement but there is a long way to go before taxation can properly support growth and distribution objectives. All three got it right for the time period they were studying. Some middle income countries have been closing the gap with the industrials in revenue mobilization, good tax policy and efficient administration, but the convergence in most low income countries has been much slower.

It is not an exaggeration to say that taxation is a weak link in the development policies of low income countries. In many countries, revenues are not large enough to provide a basic level of services or to develop infrastructure on which to build an economy that can capture its comparative advantages. Tax bases are narrow because of legal exemptions, poor enforcement, and hard-to-tax economies. This leads to a misallocation of resources that retards growth, perhaps to a significant extent, and to horizontal inequities that erode confidence in the tax system and encourage noncompliance. It is true enough that taxation is especially difficult in poor countries where both the capacity to pay and the capacity to collect are limited. But it is also the case that taxable capacity has grown, even in poor countries, and the path to better tax policy and administration has been more or less well learned. Why then have we not seen more improvements in the tax systems in poor countries?

   This chapter is about revenue mobilization and tax structure changes in developing countries since the 1970s, the factors underlying this pattern, and what this history suggests for the future. Several distinguished students of taxation have studied this set of questions for different periods of time (Chelliah, 1971, Tanzi, 1987, Bird, 2011a) and their conclusions are more or less in step with those reached here. But the longer time horizon of this study and the different take on some of the questions about the poor tax performance in developing countries may add some new value.[2]

   In the next section of this chapter, the evidence on long run changes in revenue mobilization is reviewed, and some explanations for the relatively weak performance in many low income countries are offered. We turn then to the same question for changes in the tax structures. The general conclusions reached here are that the rate of taxation in low income countries has not risen appreciably faster than GDP over this period, that countries have ignored the advice to broaden the tax base as often as they have acted on it, and that administrative improvements have been slow to come on line. The culprits in all of this have been a slow process of economic modernization, too little investment in the tax administration infrastructure and too little commitment to enforcement, and a political economy that often seems rigged against both more taxation and good taxation. Later in the chapter, I suggest that there are underlying factors that might cause this pattern to change during the next decade, and bring about more convergence in tax practices between developing and industrial countries. A final section concludes.

   The discussion in this chapter is limited to taxation in developing countries. I do not take up user charges or other non-tax revenues, nor do I address the important question of revenue mobilization from natural resources. Tax reform in transition countries is another very interesting study (Bahl, 1999, and Martinez-Vazquez, Rider and Wallace, 2008), but also too different to do justice to it here.

REVENUE MOBILIZATION

There is no one correct answer to the normative question about the percent of total output that ought to be diverted to government purposes through the tax system. It depends on the scope of responsibilities that is taken on by the public sector, the degree to which non-tax sources of revenue are used to finance the delivery of these services, on the costs of taxation and the benefits of expenditures, and on how the trade-off between growth and redistribution is viewed. Though growth models that

treat taxation as endogenous may ultimately lead us to an answer on a country-by-country basis, we are not there yet.[3]

Anyway, the question is more complicated than economics. The "right" level of taxation also depends on culture and on the views of voters and political leaders about the role of the state. The right level of taxation in the eyes of a Jamaican or a Dane will be very different from that seen through the eyes of a Guatemalan or an American. Tax evasion in one country might be a scarlet letter, but in another it might be a badge of honor. Two things we can count on in developing countries, however, are that taxpaying voters will feel overtaxed, and external advisers will see the level of taxes as too low.

Earlier tax reform studies took on the question of the "right" level of revenue mobilization, but from an economic growth perspective. The Musgrave Commission in Colombia derived a revenue gap from the projections of savings and investment necessary to achieve a target growth rate (Musgrave and Gillis, 1971, Goode, 1993). But few earlier studies started with expenditure needs in setting a revenue target. After the 1980s, most tax studies finessed the normative question. If the government asked the normative question, "How much should we tax", the (correct) response from the head of the study team was "how much do you want to spend". This usually led to a revenue neutral approach in the tax study, i.e., to raise the same amount of revenue as does the present tax system, but in a more efficient and fairer way, and then leave it to the politicians to decide on how much they want to tax this improved base. While all of this is nicely said, and allows the bigger question to be swept under the rug, in the end the tax study usually comes back to making estimates of revenue enhancements that will accompany the structural reform.

Those who do research on the level of taxation in developing countries have more often raised the positive question, i.e., what share of GDP is taken by taxes? This question does have an answer and can be used as a basis for comparison: on average in the 2000s, tax revenues are equivalent to about 16 percent of GDP in developing countries, a level that is well below that in industrial countries. To the extent there is comfort in averages, this approach has given governments some useful benchmarks and it has led to a large research effort, but still we are without an answer to the normative question.

Empirical Evidence

Comparing tax performance among developing countries is no easy matter. The best comparable data for developing countries are from the

IMF database (International Monetary Fund, 2010), but there are problems with these data, and these problems can compromise the findings of empirical work. In particular, tax revenue data are not reported for several countries and this makes both time series and cross-section comparisons hazardous (see Box 12.1).

Table 12.1   Tax revenues as a percent of GDP in developing countries

Decade	Average Percent
1970s	14.8
1980s	17.0
1990s	16.9
2000s	16.0

Note: Includes social security taxes.

Source: IMF (2010), with selected countries deleted from the series because of data problems (see Box 12.1).

BOX 12.1   MEASURING THE LEVEL OF TAXES

The ratio of tax revenue collections to GDP is the indicator of the level of taxation used in most comparative studies. But there are important limitations on how this measure can be used in comparative analyses. It excludes non-tax revenues such as user charges, so it will less accurately reflect the total revenue mobilization for public uses than it will reflect the choice of a financing method. It also does not make adjustment for inter-country differences in the scope of government, i.e., for the choice to deliver a service through government or through the private sector, or for different rates of nationalization of key industries.

   Matters are further complicated by several measurement issues. The only comprehensive database that allows international comparison of all countries is the International Monetary Fund's *Government Finance Statistics* (2010). However, there are shortcomings in these data. Among these shortcomings are missing data for some countries for some years, some debatable dis-aggregation by type of tax, the failure to report all subnational government revenues, and a

change in the classification of taxes that makes it impossible to exactly compare tax structures before and after 1990 (Martinez-Vazquez, Vulovic, and Liu, 2011; Ebel and Yilmaz, 2003). Still, the IMF data offer the best comparative fiscal information, and should provide a reasonably accurate picture of changes in total tax revenue mobilization and changes in broad categories of tax structure. With all of these caveats in mind, the results presented in this chapter are based on these data.

The results reported in Table 12.1 show decade averages for the 1970s, 1980s, 1990s and 2000s.[4,5] These results show that tax revenues rose by only about one percent of GDP over these four decades, from 14.8 percent in the 1970s to 16 percent in the 2000s. This finding is roughly comparable to that of the IMF (2011) which supplemented the GFS database with information gathered by other agencies and with their own country reports. The results from similar analyses for earlier periods (but still using IMF data) were not very different (Burgess and Stern, 1992; Tanzi, 1987; Bahl, 2006).

What to make of this finding? One impressionistic reaction is that holding revenues at a level as low as 16–17 percent of GDP over a 40 year time period did not enable the financing of an adequate level of government services. This proposition is not a new one. Adolph Wagner, writing at the turn of the 20th century, used data on the expenditures of European countries to argue that the normal course of things is for government expenditures to rise proportionately faster than total output.[6] The "right" growth of course will depend on the long run income and price elasticities of demand for government expenditures, but Wagner's guess, based on the performance of European countries, was that this will surely be greater than unity. Wagner's "law" does square with the increasing tax ratio observed in industrial countries since the 1950s (Pryor, 1985, Tanzi, 2011).

We might expect the same pattern from developing countries as they graduate to higher levels of development. A tax revenue growth roughly equivalent to that of GDP (as found here) was used to maintain the present level of services (pay salaries, cover running costs, maintain capital assets, etc.), repay debt, deal with emergencies, and to provide some upgrades to services and infrastructure. The lower the tax ratio, the less has been available for upgrades. User charges and other non-tax revenues, and foreign aid, may have provided additional resources to cover some of this financing gap, but this has varied from country to

country. The more likely scenario is that the infrastructure gap and the shortfall in the quality of public expenditures have continued to grow.

The situation in India might illustrate the point. The ratio of taxes to GDP averaged 12.8 percent in the 1970s but rose to 13.6 percent in the 2000s. A government-appointed commission recently estimated that the needed increase in urban infrastructure investment and maintenance expenditures to cover the existing gap is equivalent to 1.1 percent of GDP per year (High Powered Expert Committee, 2011). Neither recurrent public service needs nor rural development needs are included in this amount.

We might summarize by saying that the growth in tax revenues in developing countries, on average, kept pace with or bettered the growth in GDP during the 1970s and 1980s, but it has since been flat. However, it likely has been slow relative to the demand for public expenditures and the need to repair and expand infrastructure. Many low income countries find themselves in almost as difficult a position at the end of the first decade of the 21st century as they did in the 1970s. This is partly what has prompted the UN (2005) to call for an increase in taxes equivalent to 4 percent of GDP. However if this historical revenue performance continues, the millennium development goal of an increase in domestic revenues equivalent to four percent of GDP would not be reached until the 2040s.

Why So Little Revenue Mobilization?

A lot went on during this forty year period: two oil shocks, a financial crisis in East Asia, the dramatic growth in the Chinese economy, and more recently the great recession. All had important fiscal impacts. In addition, individual countries dealt with natural disasters, debt obligations that could not be repaid, spending that was not adequately controlled, and inflation. Revenue mobilization efforts in developing countries during this period sometimes were the result of crisis response to budget deficits. These were quick fix programs and often were either rate increases or "available" levies such as a bank debit tax, an export tax, or a new surcharge on imports. Sometimes they were given appealing names to make them appear to be earmarked for something acceptable, e.g., the "education tax" in Jamaica. As recently as the early 2000s, Colombia was forced into an emergency deficit reduction program that included a temporary surcharge on the individual income tax, a one-time tax on net wealth, some broadening of the VAT base, and a tax on bank transactions (Bird, Echavarria, Poterba and Slemrod, 2005). Deficit reduction was often in step with advice and pressure from the IMF.

In other cases, the governments initiated a more structured tax reform effort, aimed at rationalizing the tax system, but the goal of raising more revenue was usually not too far in the background.[7] These revenue actions were more driven by heavy debt burdens and fiscal deficits in the 1970s and 1980s but since the 1990s there also has been more of a response to the need to upgrade public services and to remove distortions in the tax structure. The revenue packages adopted during this period, and there were many, as well as the failures to act – and there were a lot of these also – have helped to keep the average rate of taxes somewhere between 15 and 17 percent of GDP for most low income countries.

A number of different factors were at work to slow revenue growth over this time period. Some had to do with economics, some with management problems, and some with the preferences of voters for smaller governments. Most important of all were the political factors which showed up as unwillingness to tax. I would identify the following as the most important of these dampening influences on tax revenue growth.

First, a steep learning curve. Membership in the UN grew from 39 to 93 between 1950 and 1969. Most of these new countries wanted to develop their tax systems, but local expertise was limited (Goode, 1993, pp. 2–3). Few developing countries had a tax system that had a base that was broad enough to be both revenue productive and fair, and relatively free of distortions, and a weak tax administration compounded the problems. This held back revenue growth.

Since that time, countries, bilateral donors and international agencies have invested a great deal of effort and funding to assist countries with the task of strengthening their revenue systems. More than 40 years of this kind of advice, and government efforts to upgrade the capacity of the tax administration machinery, have led to significant growth in the knowledge about how to build a better tax system, and about what to do when revenue growth gets off course. Moreover, the present leadership in Ministries of Finance is in most cases well trained and able to lead modern reform efforts. Countries have learned but they have been slow to apply these lessons, and this partly explains the continued limited growth in revenue mobilization. Apparently, there remains a gap between the practice in developing countries and best international practice, and technical assistance is still needed to close this gap.[8]

Second, narrow tax bases. The tax net in many developing countries does not include some of the faster growing segments of the economy, and this has led to a weak automatic revenue-income elasticity of the tax system. Significant parts of the fast growing service sector are not covered by VAT (Bird and Gendron, 2007), the self-employed and small

businesses escape payment of the individual income tax (Engelschalk, 2004), a significant amount of corporate profits are taken back in incentives, the progressivity in individual income tax rate structures has been reduced (Bird and Zolt, 2005), some excises are levied under specific rates (Cnossen, 2005), and capital gains on real estate are usually not taxed (Bahl and Martinez-Vazquez, 2008). The lowered automatic response of tax revenues to GDP growth has forced governments to rely more on discretionary tax increases which are highly visible to voters and opposition politicians.

Third, taxpayer resistance. The narrow tax base meant that the burden of taxes fell disproportionately on large taxpayers and on those in the formal sector. On this part of the population, the "easy to tax", the effective rate was much higher. The predictable result was that businesses complained that increased taxes were harming their competitive position and were unconvinced that further increases in taxes would buy better public services. Wage earners tracked their PAYE deductions but also knew that the self-employed were getting a free pass on the individual income tax. Some businesses faced a full tax burden under the corporate income tax and value added tax, but watched others enjoy incentives and holidays. The general public did not see much evidence that evaders were being caught and harshly punished. In this setting, taxpayer morale is low, which erodes confidence in government and further dampens the compliance rate and the willingness to accept higher levels of taxation (Bird, Martinez-Vazquez and Torgler (2006)). This resistance was no doubt a factor that held down the growth in tax revenues.

Fourth, a changing fiscal world. Increased taxation during this period was constrained by a changing world economic order that closed down some of the tax handles that developing countries made use of in earlier years. Trade liberalization brought a flattening of tariff rates on imports and customs duties have been declining as a share of GDP. The revenue loss was recovered by increased domestic taxes in middle income countries, but this was much less the case in low income countries (Baunsgaard and Keen, 2010). Customs duties will continue to decline in importance in the revenue structures of low income countries. The problem is particularly acute in some low income countries that continue to rely heavily on taxes on international trade, and in some very small countries that have little by way of a domestic commerce or manufacturing sector. For example, Lesotho and St. Kitts derive nearly one half of revenues from customs duties.

Increased capital mobility has dampened interest in taxing corporations and high income individuals at higher effective rates. This poses an especially difficult problem for revenue mobilization in developing

countries that depend heavily on collections from large taxpayers. Big companies have long been a good target for taxation, and the corporate income tax is a more important component of the revenue structure in developing than in industrial countries. But with global capital markets, there is an increased threat of capital flight and more pressure to reduce corporate income tax rates and provide stronger incentives. In order to attract foreign direct investment in more competitive markets, developing countries have given in to the pressures.

Fifth, globalization and competition. Economic development and more recently globalization has meant that economies in all countries have become more complicated. This makes the job of building the right tax structure reform much harder to do and strains the ability of the tax administration to collect from some of the new types of economic activity. The temptation, often not resisted during this period of globalization, was to simply raise the tax rate. This generated a revenue bump but usually did not increase the automatic revenue-income elasticity.

The consumption of services, electronic commerce, complicated partnership and corporate arrangements, small businesses and foreign investors all have become a more important part of the potential tax net. Engelschalk (2004) gives an interesting example of the magnitude of the problem with small business. Nearly two million small businesses were established in Poland in the 1990s, placing an enormous burden on the tax administration both because of the magnitude of the task and because the new small businesses had little time to organize proper books of account and develop good compliance habits.

Multinational companies pose a particularly difficult challenge because of their ability to avoid or defer taxes by using intra-group transactions. While industrial countries have the wherewithal to deal with these changing features of the tax net, developing countries generally do not (McLure, 2006). The failure to fully capture the potential tax base was another factor that held back revenue growth.

Sixth, the hard-to-tax sector. Particularly difficult sectors of the economy to bring into the tax net are small and medium size firms, self-employed professionals, farmers, and individual proprietorships. These so-called "hard-to-tax" may be in both the formal and informal sectors of the economy (Alm, Martinez-Vazquez and Schneider, 2004). Exact measurement of the revenue loss attributable to the hard to tax sector is difficult. Estimates of the size of the "shadow economy" – the market-based production of goods and services that is not counted in GDP – have been made (Schneider, 2002). These estimates show the shadow economy to be considerably larger in developing countries than in OECD countries, e.g., an average of 41 percent in Africa versus 18

percent in OECD countries in 1999–2000. Using these estimates of inter-country variations in the size of the shadow economy as a proxy for the "hard to tax" sector, Alm, Martinez-Vazquez and Schneider (2004) have estimated an average revenue cost equivalent to 25 percent of total potential revenue collections.

Sixth, corruption. Corruption has slowed the growth in revenue collections. The dampening effect on revenues has taken place in several ways. A bribe paid to a tax official in return for less than full collection of the amount due reduces the effective rate of taxation. Another impact was more indirect. The presence of corrupt government officials drove some activities to the informal sector of the economy and outside the tax net, and dissuaded investment (Martinez-Vazquez, Arze del Granado and Boex, 2007). A third issue is that the population who paid the bribes may have viewed this payment as a substitute for taxation, and the end result may have been to further stiffen the resistance to increased government taxes. Finally, corruption also took the form of favor-trading or outright bribery of political leaders who were in a position to influence tax legislation to benefit certain parties.

Though there is not conclusive evidence about the revenue costs of corruption, there is a growing body of research on this question. Martinez-Vazquez et al. (2007, p. 6) argue that it is a "poor country disease" and calculate the simple correlation between the transparency international corruption perception index and per capita GDP at 0.85. Using the Transparency International index, Bahl (2006) found that the increase in the tax ratio over the 1970–2000 period was about half as much in the 15 most corrupt developing countries as in the others. In cross-section regression analyses, Gupta (2007) and Bird et al. (2006) found that higher rates of corruption dampened the level of revenue mobilization.

Finally, politics. Revenue growth was held back and revenue structures weakened by the politics of taxation. Democratic governance grew significantly over this period, and relatively short election cycles gave politicians a high discount rate and therefore an aversion to tax increases. Moreover, politicians (elected or not) are driven to varying extents by interest groups who may push hard for more preferential treatments in the tax regime, and for less draconian enforcement measures. If politicians are swayed by the demands of these interest groups, the net result is a less buoyant tax system. It would be the rare external tax review during this period that has not commented on the unwillingness of the government to undertake necessary structural reforms or administrative improvements. It would not be too far off the mark to say that good politics has trumped good taxation during this period.

Inter-country Variations

The discussion above was based on the average tax revenue performance in low income countries. But averages sometimes lie. It paints with too broad a brush to conclude that the tax ratio in all developing countries increased by only 1.2 percent of GDP between the 1970s and the first decade of the 2000s. For example, we can note that the tax ratio increased by a significant amount in Brazil and South Africa during this period. However, in India the increase was smaller, and in Mexico and Pakistan there was a decrease.

The IMF (2011) examined a time series of data on the ratio of taxes to GDP for various groupings of developing countries. They found a general relationship between income level and tax ratio growth during the period, with upper middle income countries showing some growth, especially in the 2000s, but with other developing countries showing little or no growth between 1980 and 2008. Their analysis of performance by region suggests long term growth in tax revenue mobilization only in Latin America.

This variation in tax revenue mobilization has been examined in a more systematic way with statistical analyses. The dependent variable to be explained is the ratio of tax revenue to GDP. These analyses are not strictly comparable because the samples, time periods, specification of the estimating equations, and estimation methods differ, but most are cross-section analyses. A representative sample of these studies is Lotz and Morss, 1967; Bahl, 1971; Tait, Gratz and Eichengreen, 1979; Tanzi, 1992; Bird et al., 2006, and Pessino and Fenochietto, 2010. There is some consistency in the results of this research, and this may help us explain why some developing countries increased their tax ratio while others did not. Higher levels of per capita GDP and more openness in the economy seem to have driven higher tax ratios; larger shares of GDP in the mining sector and lower shares in agriculture are associated with higher tax ratios; and corruption has dampened revenue mobilization. Inferring a time path for the tax ratio for a country is tricky business. But these results suggest that the tax ratio will rise with per capita GDP.

THE STRUCTURE OF TAXATION

How a country taxes is as important as how much it taxes. Tax structure choices can lead to faster versus slower rates of economic growth, more or less redistribution, and more revenue volatility over the business cycle. The tax structure also affects fairness, the extent to which certain sectors

or activities are singled out for preferential treatment. There is by now a substantial literature that shows that taxes do matter, at least in the industrial countries. The results are more ambiguous in developing countries.[9]

The mix of taxes, as between direct and indirect taxes, or by type of tax, is one way to describe tax structure. The coverage of the tax base and the rate regime is another. The latter can give a richer answer to the questions about how taxes affect economic behavior, fairness and revenue flows, but it is very difficult to work with inter-country variations in tax rate and base details in an econometric analysis.

Tax Mix

At least in theory, there is an answer to the normative question about the best tax mix. Atkinson and Stiglitz' (1976) path breaking work led us to a statement of the conditions under which a tax on wages is a Pareto-efficient tax structure. Various researchers have expanded on this work to show how real world conditions (e.g., the cost of administration, the presence of tax evasion, horizontal equity considerations) could lead to an optimal tax structure that would include indirect taxes. While this work has been useful in setting a research framework, its implications have not been so easily absorbed by those responsible for the formulation of tax policy in developing countries.

The tax structure choices made by political leaders are pragmatic decisions driven by current circumstances in a country, by external events, and by politics. Overtime, the tax mix might change in response to a deficit in the budget, as when a country adopts a revenue enhancement measure. Or, it might be changed in bigger ways when it comes out of a comprehensive reform program. Lessons from the theory about how taxes affect the economy are less likely to lead tax reform in the case of annual budget adjustments than in the case of comprehensive reform. What is commonly referred to as "best practice" sometimes is copied, and it is here that theory may have an important indirect effect. The widespread adoption of the value added tax and its more or less careful implementation is a case in point.[10]

Long run changes in tax mix may be linked to economic development in a more or less systematic way. The "tax handles" explanation, originally developed by Hinrichs (1966) and more fully developed by Musgrave (1969), explain tax structure choices and until recently seemed to square with evidence on choices that have been made. The argument goes that at lower levels of development, countries will tax those bases that can be reached with least administrative effort, such as agricultural

land, imports and exports, and the largest companies. As the domestic economy begins to modernize, indirect taxes are imposed, initially as turnover taxes that are limited to importers, manufacturers and large distributors, and excises.[11] At the next stage they impose a more modern sales tax (VAT) alongside excises, and begin to move away from customs duties. Company income taxes play a role in revenue mobilization before individual income taxes and social security payroll taxes, which come later, with upper middle income and industrial status.

Actual changes in the tax mix over the past 40 years have pretty much followed this progression.[12] The growth in tax revenues as a percent of GDP in the industrial countries since the 1970s has been driven by VAT and social security contributions.[13] While the traditional personal and corporate income taxes seemed to have maxed out as a share of total taxes after the 1970s, the combination of income taxes and social security taxes now accounts for about 60 percent of tax revenues (Tanzi, 2011; Martinez-Vazquez, et al., 2011; and Bahl, 2006).

The reliance on direct taxes by industrial countries fits the "tax handles" explanation for tax structure choices in the development process. However, the rapid growth of VAT revenues and the flat growth rate of income taxes suggest a growing preference for consumption taxes, perhaps in response to the greater importance placed on economic growth, and the fear of capital flight. A good test of the tax handles theory of tax structure development in industrial countries must wait until economic growth resumes at normal rates and the objectives of tax policy change are more broadly focused.

Developing countries have steadily moved their mix towards domestic indirect taxes. The reliance on taxes on international trade has fallen and the share of income taxes has remained about the same since the 1970s. By the 2000s, developing countries raised about 40 percent of their tax revenues from domestic indirect taxes and about one-quarter from income taxes. While per capita GDP has increased in low income countries in the past four decades, and the graduation to more modern general sales taxes is evident, the move toward a heavier reliance on direct taxes has not happened. Reliance on the corporate income tax has increased in recent years but this is not likely to be sustainable, and there has been little if any growth in the individual income tax. The IMF (2011, p. 31) characterizes the individual income tax in developing countries as "stagnant".

If the tax handles explanation is correct, the ratio of direct to indirect taxes should rise with per capita GDP. Martinez-Vazquez et al. (2011) cannot find a significant relationship in their econometric analysis of 161 countries. They do find, however, that the direct tax share is higher where

the overall level of taxation is higher, suggesting a covariation with the stage of development. Their result (page 54) is a powerful one: a 10 percentage point higher tax to GDP ratio is associated with a 2.1 to 3.7 percentage point higher direct to indirect tax ratio.

Where we find things in the second decade of the 2000s is that countries lie all along the tax handles continuum. Some of the lowest income countries, particularly in Africa, continue to rely heavily on customs duties and excise taxes (e.g., Mozambique and Congo DR), many developing countries raise more than half of tax revenues from domestic indirect levies (e.g., Costa Rica), some middle income countries are graduating to a heavier use of direct taxes (e.g., Brazil), and the tax structures of most OECD countries are dominated by direct taxes. There does not appear to be a great deal of convergence in the way that high and low income countries tax, but there does seem to be a strong trend toward de-emphasis of income taxation and toward emphasis of consumption taxes.

Indirect Taxes

The major change in the tax mix in developing countries over the past four decades has been the continuing shift toward domestic indirect taxes (general sales taxes including VAT). The share in total taxes continued to increase in the 1990s and 2000s and now accounts for more than 40 percent, twice the share in industrial countries. Several factors explain this shift. Trade liberalization has led to a reduction in revenues from customs duties, with the replacement largely by domestic sales taxes. This has increased the premium on "getting it right" with the structure of domestic sales taxes.

Another explanation is that governments in low income countries see sales taxes and excises as a better way to protect revenue than income taxes. Some of the income that escapes the individual income tax net via self-employment or small business activity will be captured by a broad-based consumption tax. Moreover, while no tax is an easy political sell, consumption tax increases that do not include necessities might be more palatable than an increase in the PAYE or the corporate income tax rate.

The shift to indirect taxes is partly due to what some would see as the irresistible advantages of the VAT. In 1980, only about 15 non-industrial countries levied a VAT, but by 2000 this number had risen to about 80 (IMF, 2011). Few would argue that the VAT has not improved the tax structures in low and middle income countries.[14] It led to eliminating the cascading effects of turnover taxes, the tax treatment of exports was significantly improved and it is perceived to be friendlier to economic

growth than an equal yield income tax. It is also the case that the VAT was strongly urged by international agencies, and its successful implementation was greatly assisted by the IMF (Keen and Lockwood, 2010).

The shift toward indirect taxation could also be a result of the general sales tax having a greater elasticity than the rest of the tax system. However, the jury is still out on whether the adoption of VAT has led to higher rates of revenue mobilization in low income countries (Bird and Gendron, 2007, pp. 194–196). In some middle income and developing countries the revenue bonanza was realized, but in others the revenue performance of the VAT did not meet the high expectations. Most of the revenue disappointments were of countries' own making, i.e., narrow tax bases, "exemption creep", and weak enforcement.

The other major component of the indirect tax system is selective sales taxes or excises. The distinguishing feature of these levies is selectivity in coverage and discrimination in intent (Cnossen, 2005). In their basic form they focus on a few products, use physical controls and in some cases use specific rates. In low income countries, excises are levied against large tax bases (petroleum products, liquor, beer and tobacco products) which are relatively price inelastic in demand, and which impose some social costs. The two principal objectives of excises are (a) revenue, and (b) deriving compensation from consumption that generates social costs. The revenue function has always been more important in developing countries. The importance of the externality objective in poor countries is that it can provide good political cover for increases in excise tax rates.

Excises are the classic example of a tax handle. Because of their ease in administration, they were used especially heavily in countries at the lowest level of development. They continue to account for a significant share of tax revenue mobilization: 16 percent in Latin America, 15 percent in Asia, and 11 percent in Africa (Bird and Zolt, 2005). Even as countries moved to higher levels of development, they often held on to excises to protect revenues, e.g., the current 25 percent of total tax revenues in Singapore. In ASEAN countries, excises contribute more to total revenues than do import duties (Cnossen, 2011). However, excises are declining in importance as a tax source in developing and developed countries, because of the specific rates that are used in some countries, and because of the gradual migration of the excise tax base to general sales taxes.

Has the more intensive use of indirect taxes led to stronger economic growth and to distribution outcomes that match up with government objectives? The evidence on this point is not all that clear. Several

empirical studies report that replacing an income tax with an equal yield consumption tax would lead to a higher rate of economic growth, but the results are robust only for industrial countries (Martinez-Vazquez et al., 2011). Much the same result holds for the impact of the direct/indirect tax ratio on macroeconomic stability, redistribution and foreign direct investment. One explanation for this result is that there is no impact, that a general consumption tax dampens economic growth about as much as an equal yield income tax. A more plausible explanation is that a tax mix indicator, such as the direct/indirect tax ratio, hides the great inter-country variation in the rate and base structure and obscures the statistical result for developing countries.

Potentially, the VAT probably does lead to better economic growth outcomes than the income tax. But the full promise of the VAT has not been realized because countries have not been willing to structure it in the broad-based form that advocates have argued, i.e., a tax with exemptions limited to necessities and zero rating limited to exports, and the nominal rate set at "a reasonable level". In fact, many low income countries have chosen multiple rates, narrowed the base with numerous exemptions and zero ratings, and allowed rates to rise to levels that have encouraged avoidance. Perhaps even more important is the efficiency with which the VAT is enforced, which varies widely from country to country. The IMF (2011, p. 25) estimates that the C-efficiency of the VAT (the ratio of VAT revenue to the product of the standard VAT rate and consumption) is about 56 percent in high income countries but only 38 to 47 percent in low income and lower middle income countries.

Taxes on International Trade

In the early stages of development, imports can be more easily taxed than income or domestic consumption, because the tax base is so easily identified. Customs duties can be collected without lag with a simple rate increase, and because they can be highly targeted and easily used to protect domestic industry. Eventually, customs duties give way to taxes on domestic consumption as interest in protection wanes, as the formal sector of the economy grows and income taxes take on more of a revenue role, and, as we have recently seen, as the international community take an interest in reducing restrictions to trade. But passing through these stages has been a long process for some countries.

Chelliah (1971) reports that the share of import duties fell for the 35 developing countries he studied for the 1953–55 to 1966–68 period. The rate of decline seems to have accelerated in the past two decades, arguably due to the effects of trade liberalization in general and to

adherence to WTO rules and to new inter-country trade agreements. The impact of this decline on total revenue mobilization is less clear and seems to vary by the development level of the country. For most industrial countries trade revenues were not very important during this 40 year period. For low income countries that have long depended on customs duties, the declines have been much greater. Ideally, the revenue loss due to tariff reduction would be replaced by a broadening of the sales tax base and an increase in excises. In practice, the revenue losses in middle income countries have been recaptured, but with a variety of tax instruments. In most low income countries, there has been less success (Baunsgaard and Keen, 2010).

Taxes on Income

Income taxes have long been an appealing source of revenue in the industrial countries. The attraction to the ability to pay argument for distributing tax burdens, and the possibility of introducing a progressive rate structure for the individual income tax, seemed to be in step with notions about equity, at least up to the 1980s. The corporate income tax has held on, continuing to account for about 10 percent of tax revenues since the 1970s, despite many good arguments to scrap it. Together the individual and corporate income taxes, and social security contributions account for about the same percent of total tax revenue in the 2000s as in the 1970s (Tanzi, 2011).

The story in low income countries is a little different. The appeal of the corporate tax is that large corporations are relatively few in number, easily identified and especially foreign firms generally comply with the law. The corporation income tax accounts for a greater share of tax revenue in developing countries than in industrial countries.

Because the revenue yield is so important in low income countries, some of the problems have been ignored or assumed away. It has been popular to assume this to be a tax on capital that is either paid by higher income residents or exported to foreigners. The alternate view, that in small open economies it will be borne by labor, is sometimes dismissed (Echavarria and Zodrow, 2005). Another problem is the pressure from powerful interest groups to lower the tax, which often leads to a complicated incentive regime. This leads to a national industrial policy where politicians, rather than markets, pick the winners.

There are several reasons to question the sustainability of the corporation tax as a continuing productive revenue source in developing countries. If the practice and the results in the industrial countries is a guide, the corporate tax may lead to a slower rate of economic growth.

International capital mobility raises concerns about taxing away the mobile base, and transfer pricing possibilities for large multinationals pose tax administration challenges that many low income countries cannot meet. The response to the capital mobility concern has been a reduction in income tax rates, though not as steep as in industrial countries, and a continued proliferation of incentives.

The individual income tax is of a lesser order of importance in developing countries, accounting for about half as much revenue as the corporate income tax. The appeal of an individual income tax in low income countries is that it provides an easy target for the tax net – PAYE wage earners. It also offers the possibility for adding some progressivity to the tax system, though this is often overblown as an advantage because of the exemptions and deductions allowed, because of a low compliance rate by high income earners who are outside the formal sector, and because of the low effective rate at which individual income taxes are levied (Bird and Zolt, 2005).

Individual income taxes pose numerous problems for developing countries. Most developing countries levy the individual income tax as a payroll tax on withholdings on large formal sector firms. The coverage is usually quite narrow. A large proportion of the self-employed and small businesses are either outside the tax net or they underreport. This leaves a considerable horizontal inequity with PAYE sector workers, erodes confidence in the system, and drives some activity to the informal sector. The effects on the economy are an issue. For one, a PAYE system taxes labor in a labor-surplus economy. More important is the question of whether the findings from studies in industrial countries – that high marginal tax rates dampen investment – carry over to developing nations.

WHAT HAPPENS NEXT?

The gains in revenue mobilization over the past 40 years have been modest in low income countries, and have fallen far short of what many estimate to be needed levels. There have been some favorable changes in the mix of taxes used, in particular the widespread introduction of VAT and a declining reliance on import duties and specific rate excises, but the tax bases remain far too narrow in many countries, statutory rates tend to be high, and compliance rates are too low. The tax administration efficiency in most low income countries still has much room for improvement. Though this general description does not fit all developing countries, it probably is a reasonable description for most.

In light of this history, we might speculate about what is likely to come next for taxation in low income countries. The question raised here is whether there are reasons why developing country governments might renew their interest in tax revenue mobilization, and in modernizing tax structures and enforcement regimes. One answer to this question is that there are such forces in play. The most important are pressing public expenditure needs, especially the need to deal with a badly deficient infrastructure. This could call out increases in tax revenue mobilization that will be greater than the historical rate. There also are structural responses to external factors (trade liberalization and international capital mobility) that need to be made, some longstanding problems with preferential tax treatments that might supplant statutory rate increases to generate more revenues, and tax administration improvements that have been put off for too long. But before significant improvements can take place, the political stance toward tax increases and tax structure changes must soften.

Muddling Through

A pessimistic view about the future is that it will not be much different from the past in terms of revenue mobilization and tax structure change. Reform will continue to be tough going in developing countries. The anti-tax group wraps itself in the flag of higher taxes discouraging economic growth, and the existing tax structure is often protected by those who are dug in around their entitlements under the present system. Technocrats in developing countries, who understand the situation very well, are usually a step or two removed from the decision-making process. External advisors, who are not encumbered by real world political economy considerations, are usually among the few who will stick their necks out for technically good tax reform.

Political inertia is difficult to overcome, especially when the subject is taxation. One course for the coming decade is more of what the history reviewed here has shown. The rate of revenue mobilization will creep up on average, but political forces will hold it to about the same rate of growth as GDP. If total output in the poor countries grows enough, this may produce revenue sufficient to allow marginal upgrades in public services, but not enough to make the progress with infrastructure needs that the 4 percent of GDP target that the millennium development goals have identified.

This is not to attribute every slow rate of revenue mobilization entirely to forces of darkness. There may be a perfectly rational explanation. If finance really does follow function in developing countries, then the low

rate of revenue mobilization may be a reflection of a weak demand for government services and a weak ability of the government to deliver quality public services. Politicians and voters in some countries may feel that the size of government is about right, and that additional spending (beyond the growth rate of GDP) will not produce benefits that will outweigh the costs of the necessary taxation. This might explain, for example, the case of Mexico where the ratio of tax to GDP has been held at a low rate even by comparison with countries at the same income level.

Lindblom's "muddling through" (1959) implies gradualism but not the absence of change. The tax rate and base structure will change under a gradualism approach, but the changes will be mostly marginal. Preferential treatments will be added and subtracted, but big bang efforts at base broadening will not be brought to the table. Periodically, when some of the excesses are deemed to be too great, a commission will be appointed to examine the tax structure and some changes will be made, but these will not typically involve the big entitlements on the tax or the expenditure side of the budget.

Even if gradualism is the strategy adopted by most countries, there will be outliers, i.e., countries that do undertake major reforms that involve significant increases in the rate of revenue mobilization and significant base changes. These countries will close the gap with industrial countries, at least in terms of the share of GDP allocated to the government sector. For the period under study here, Brazil, China, and South Africa are among the countries that have significantly closed the revenue gap.

Expenditure Needs and Revenue Mobilization

There is an alternative to the gradualism scenario. Developing countries might be pushed into an increased rate of revenue mobilization by the weight of the expenditure needs that they will face. Current levels of public services are deficient in most developing countries, and there are wide disparities among regions inside these countries. The infrastructure gap is large and likely to grow further. Most developing countries have come to realize that an internationally competitive economic structure requires a higher quality infrastructure than is presently in place. In addition, there is the pressing problem of the woeful level of services and infrastructure that is available to slum dwellers. Almost all who have studied this problem argue that a significant part of this gap between needed and existing public services must be filled by increased tax revenue mobilization.

Estimates of the needed amounts are staggering, as the following discussions suggest:

- The United Nations (2005) estimates that taxes in developing countries should rise by 4 percent of GDP to meet the Millennium Development Goals. This would move the average tax ratio in developing countries up to about 21 percent of GDP. It is worth emphasizing that the average tax ratio in developing countries increased by only 1.2 percent of GDP in the last 40 years.
- In developing countries, about 1 billion people lack clean water and perhaps 3 billion lack access to adequate sanitation facilities. The annual infrastructure expenditure required to meet simply this one essentially local need has been estimated at 2.0 percent of GDP in Sub-Saharan Africa and 1.7 percent in South Asia, with about 40 percent of these amounts required for new investment and the balance for operation and maintenance (Estache 2010).
- Ingram, Liu and Brandt (2013) estimate that annual urban infrastructure costs will be equivalent to about 3 percent of GDP for new infrastructure and 2 percent for maintenance. On average, subnational governments in developing countries raise only about 2.5 percent of GDP in taxes.

Structural Reform

Revenue structures in most low income countries are saddled with a narrow tax base. In some cases the tax structure was badly designed when the system was implemented, in some cases it was not expanded to capture new activities that grew as part of the modern economy, in other cases the base was narrowed by deductions and exemptions as various pressure groups got their way, and in yet other cases some bad taxing choices were made. The base has been made even more narrow by poor tax administration practices. On this subject, Casanegra de Jantscher (1990, p. 179) spoke volumes in a phrase, "tax administration is tax policy".

In fact, the timing may be quite right for significant base broadening in developing countries in the next decade. The VAT has become the mainstay of the indirect tax system in most countries, and this gives the right foundation on which to build. Both excise taxes and customs duties are declining in importance. A start has been made on putting a viable administrative structure in place in most countries, and has advanced quite far in some. Perhaps more important, many of the undesirable options for revenue enhancement have been more or less closed off. VAT rates are high in many countries, international mobility of capital will head off increased income tax rates, and higher import duties are crowded out by trade liberalization.

This leaves base broadening under the general sales tax as arguably the most open alternative for structural tax reform. Of the perennials for revenue enhancement, only excise tax rates would appear to be still in play. Rolling back incentives under the corporation income tax is called for, but the revenue gains from this would almost certainly be offset by statutory rate reductions. The other options for base broadening all have to do with strengthening the tax administration.

Tax Administration[15]

An improved tax administration can lead to a significant broadening of the tax base and an increase in the effective tax rate for the system as a whole. In most countries, the focus needs to be on all components of the administration: increasing the registration of taxpayers, narrowing the gap between reported and true tax liability, and increasing the collection rate. The (hypothetical) results of gaining full compliance with the tax laws will vary from country to country, but easily would exceed the millennium development goal target of 4 percent of GDP.

The first step to improving administration is to design a tax system that can be administered at reasonable cost. This means that the laws should be clear, and it also means that the system should be as free of complications as possible. This is a lot easier said than done. Economies are modernizing with globalization and this requires more complexity in the tax code. But countries often make the situation worse with a plethora of exemptions, deductions and special treatments that forces the tax authority into allocating time to verify deductions that could be better spent on activities that are closer to the collection phase of administration.

The formula for strengthening tax administration is complicated, and has many variables, but by now it is well known. The IMF (2011, pp. 19–23) provides a summary of the needed core reforms: creating a specialized and highly professional institution to lead tax administration; segmentation of the taxpaying population, especially large taxpayers, so as to get a better allocation of audit effort; improved business processes; and adopting practices that can facilitate improved compliance. Underneath all of this is (a) the need to invest in higher quality staff and support services to get the job done, and (b) the need for a strengthened resolve to enforce the tax code.

It would be incorrect to say that no progress has been made, because there are many examples of significantly improved tax administration practices in some developing countries. But it would be equally wrong to say that most developing countries do not have the technical know-how

to get the job done. The IMF and other technical assistance providers have been helping with tax administration for nearly a half century. And, the favorable benefit–cost ratios from investing in tax administration improvements are well known. The major constraint has long been, and still is an unwillingness of governments to enforce their tax system. Bird (2011, p. 41) puts it well: "If the political will is there, the techniques needed for effective tax administration are not a secret".

One might even empathize with government officials and political leaders who face many political constraints, varying from the problems of bending civil service rules to support an efficient tax administration cadre, to the inability to resolve inter-agency disputes in the allocation of tax administration responsibilities, to the unhappy prospect of forcing tax payments from voters and special friends. Matters are complicated further in some countries because of a culture of non-payment where tax evasion is not a matter for great shame, and where corruption is sometimes accepted as being an inevitable part of things. Still, until government acts on a resolve to demand full compliance, the need for improved administration will continue to be high on the list of needed reforms in developing countries.

Taxing the Hard to Tax (HTT)

The informal sector, which accounts for perhaps as much as one half of the population in some countries, might be thought of as a below-poverty group with limited if any taxpaying capacity, and a non-poor group. The poor are for the most part outside the property tax and individual income tax base, have no capital income, consume only limited amounts of imported goods, and concentrate their consumption spending on goods that are generally outside the VAT (housing, necessities and unprocessed foodstuffs). But the non-poor in the informal sector also escape the individual income tax (and payroll taxes). It is the non-poor in the informal sector that can become important objects of taxation. As Alm et al. (2004) show, if this sector could be fully taxed, it would constitute an important component of the tax base.

Should the effort be made to broaden the base by taxing the HTT sector? There are a lot of good arguments to leave it alone. For one, we do not even know who they are, though we believe they include small businesses, self-employed professionals, and the agriculture sector. The HTT might also be thought of in terms of their characteristics: great in number, many have small incomes, many do not reveal adequate books of account to the tax authority, and most transactions take place in cash (Thuronyi, 2004). These characteristics suggest that the HTT will be

costly to tax. In describing the difficulty for the tax authority to get a fix on their activity, Bird and Wallace (2004) call them 'ghosts' (the tax authority does not know who they are) and 'icebergs' (the tax authority can only see the tip of their activities).

On the other hand, there are important reasons to bring the HTT into the tax net (Bahl, 2004). Fairness tops the list. This is perhaps clearest in the case of the individual income tax. PAYE sector workers generally fall within the tax net because they are easily withheld at source but informal sector workers usually escape income taxes because they are hard to catch. This creates a major unfairness, sends a message to society that noncompliance is acceptable behavior, erodes confidence in the tax system, and forces up effective rates on those who do pay income taxes. A tax administration that could catch the self-employed would appreciably improve the horizontal equity of the system and reduce excess burdens.

The possible revenue impacts are an especially interesting question. In practice, the taxation of this sector might be a revenue loser. The use of presumptive methods has generally led to a lower tax liability than the income tax or VAT systems (Engelschalk, 2004). For example, if a presumptive tax regime were adopted, setting the threshold too high could induce firms to migrate to this system and would provide an incentive to avoid graduation to the normal tax system. On the other hand, a presumptive regime might stimulate employment generation by the small business sector, and therefore boost revenues from consumption taxes. Either way, the small business sector would now be part of the formal economy and a member of the taxpaying community.

The case for going after self-employed professionals is clearer cut. They are usually registered to practice (doctors, lawyers and the like), and have significant taxable income. The revenue yield could be significant. Professional self-employed individuals should be relatively easy to identify, but as in the case of small businesses, will be costly to assess and audit.

Fiscal Decentralization

The assignment of more taxing powers to subnational governments could result, at least in some countries, in measureable increases in revenue mobilization. Provincial and local governments in developing countries raise 2.4 percent of GDP in taxes, which is about one-third the rate in industrial countries.

The involvement of subnational governments in the fiscal system in developing and transition countries varies widely from country to country. Comparative analyses show that the share of government expenditures made by provincial and local governments tends to be higher in large countries, in those with a higher level of per capita GDP, and in those with a more heterogeneous population (Bahl and Wallace, 2005; Boadway and Shah, 2009). But in only a few countries does taxation by subnational governments figure prominently in national revenue mobilization.

The low level of revenues raised by subnational governments in developing countries is cited often as a failing of the intergovernmental fiscal system (Bahl and Bird, 2008; Martinez-Vazquez, 2013). In most developing countries, subnational governments have only limited taxing power, but it is also the case that they often underuse the taxing power that they do have. Central (state) governments are loathe to give up their control over the tax base for fear that their own revenue mobilization efforts will be harmed by the competition, and elected local government leaders are not always anxious to have the accountability that comes with increased taxing powers. There also is a more pure political dimension. Increased local taxing power may enhance the success and hence visibility of local politicians, who may be present or future political rivals.

There are good prospects for significantly more revenue mobilization by subnational governments (Bahl, Linn and Wetzel, 2013). Three reasons might be cited. First, revenue targets such as 4 percent of GDP as laid out in connection with the millennium development goals are very large and passing some of this responsibility to lower level governments might be a more viable political strategy now than has been the case in the past. Second, much of the new expenditure pressure is coming from infrastructure and slum development needs in urban areas, and more financing from local sources could give a better match with benefits received.

Third, experience with subnational government revenue mobilization in recent years suggests good prospects for success. Though several types of non-property taxes can meet the revenue test and can satisfy efficiency norms to a reasonable extent, these options are not widely used in developing countries. Where they are used, they are often badly designed. This said, it should be noted that some metropolitan area local governments in developing countries have adopted broad-based taxes (Martinez-Vazquez, 2013). Where metropolitan local governments have provincial status, the assignment of sales and payroll taxes has been more easily done. The local business tax accounts for one-third of city and provincial

revenues in China, and the gross receipts tax accounts for 70 percent of revenues in the capital district of Buenos Aires. Various forms of local sales tax have also done well in Bogota and São Paulo where they account for about one-third of revenues.

A missing element in most tax structures in developing countries is the property tax. The average rate against GDP in developing countries is about 0.6 percent, by comparison with 2.2 percent in OECD countries (Bahl and Martinez-Vazquez, 2008). There is ample space for a property tax revenue increase in most countries, from a combination of structural and administrative reforms. The major structural reforms needed are to eliminate the widespread preferential treatments that are given to various sectors, and to implement regular revaluations to give the property tax base some elasticity. On the administrative side, there is much to be done, including increasing the rate of property registrations, reducing the gap between assessed values and market values by improving valuation methods, and improving collection efficiency. It is not uncommon to find an average ratio of assessed to full market value of less than 50 percent, and collection rates that are even lower (Bahl, 2009; McCluskey and Franzsen, 2013).

Property tax reform might be extended to the property transfer tax, the tax levied on the value of exchanges of real property. In principle, the property transfer tax is an attempt to capture a portion of the gain in property value realized by the seller, i.e., a capital gains tax on real estate. In fact, in most countries, it is a badly structured revenue measure. Usually, it is a gross sales tax on declared value of the transfer, which leads to a great understatement of the actual value of the property. Converting the transfer tax to a capital gains levy may seem a step too far for most developing country tax administrations, but one might consider that the present transfer tax is mostly levied on a notional basis (Bahl and Wallace, 2010). The merger of the administrations of the property transfer tax and the annual property tax would seem a natural step and could lead to significant improvements in the revenue mobilization from both taxes.

Finally, there is the case of the rural land tax. In most developing countries, the agricultural sector goes largely untaxed, even though an agricultural income tax may be in the tax code, as in Pakistan. A land tax, based on potential yield, has been discussed as a solution (Ahmad and Stern, 1989; Rajaraman, 2004). The difficult job of assessment might be manageable if the rural land tax were assigned to local governments, who have the advantage of familiarity.

Tax Reform or Fiscal Reform?

Differential incidence is the analytic framework used for most evaluations of tax structure change. Concern about effects on the economy has usually centered on tax impacts rather than expenditure impacts, equity dealt with the regressivity of the tax system rather than also include consideration of the distributional impacts of the expenditures made with this money, and the administrative dimension was focused on efficiency in assessing and collecting taxes independent of the efficiency of government spending.

The next decade might be the right time to ask the broader question about net fiscal benefits, i.e., an analysis that also takes account of the expenditure side of the budget. This would be a more difficult job, would require more resources and time, and will raise many more controversial issues, but it will allow the government to get a better picture of the overall implications of the financing reform under consideration. After all, it is increased expenditures that one is trying to sell, not increased taxes.

What would be the advantages of a balanced budget approach to studying tax incidence? Certainly it would open the door for a far-ranging analysis and for considering many more reform options. A few examples of the broader questions that might be asked are:

- The vertical equity question could be broadened to consider both tax burdens and expenditure benefits. The differential tax incidence approach to comprehensive reform often leaves the issue with a statement such as "the distributional effects are better dealt with on the expenditure side of the budget." The comprehensive fiscal reform would build this directly into the analysis.
- The revenue target of the financing reform could be identified in terms of the projected elasticity of desired expenditures. This would be a far better method of defining revenue needs than the "revenue neutrality," used in differential incidence analysis.
- A balanced budget incidence analysis would allow exploring the impacts of funding an expenditure program with a combination of taxes and user charges.

If the expenditure side of the budget were taken more directly into account, the case for greater rates of revenue mobilization probably would be more easily made. This would involve factoring in the positive economic development effects of increased spending for pro-development infrastructure and

services; the progressive effects of expenditure benefits, and even the political favor that comes with increased public expenditures.

Equity

If developing countries buy into the need to increase their rate of revenue mobilization and to make structural reforms, it will provide a good setting for revisiting the question of vertical equity in taxation. This is much needed. There is not much question about redistribution being an important role for government. Nor is there much debate about the need for fiscal redistribution in developing countries where the gap in living standards between the rich and the poor is so great. Nor has there been much debate about what policymakers would like to measure in evaluating a tax proposal – the change in effective tax rates across family income levels.

Unfortunately, those who must make the tax structure decision have not usually gotten the information they wanted to make the decision. Unfortunately, the equity discussion is sometimes confused, and often is not fact-based. Too often, a specific proposal for reform is simply declared to be regressive, based on impressionistic reasoning. To the extent there is a science in tax policy design, the analysis of vertical equity is arguably the weakest part.

The empirical work that is usually done in tax burden studies is heavily driven by assumptions about the final incidence of each tax. Once the question of who bears the burden is assumed, the distribution of this burden across income classes is estimated, usually by consumer expenditure surveys that are often limited in terms of the number of consumption categories reported, by data of asset wealth by income class (if such data exist), and by data taken from the tax files. The effects of evasion on vertical equity are usually not factored in, nor are the impacts of the proposed tax change on the pre-tax distribution of income. As a result of all of this, it may be the case that empirical burden studies, well-meaning though they might be, are so flawed that they are not helpful at all.

For these reasons, it can be argued to make vertical equity a secondary issue in tax reform, i.e., that vertical equity cannot be the driving force behind a comprehensive tax reform program in a developing country (Bahl, 1991). In part, this is because most developing countries cannot implement progressive tax systems, and in part it is because the costs of moving to a higher level of vertical equity are very high. These costs might include the revenue loss due to exemption of low income families from tax, the efficiency costs associated with the higher rates imposed elsewhere to make up for the revenue loss, and possibly the displacement

effects that might result from the introduction of "progressive" measures such as high marginal personal income tax rates. Finally, note that the tax instrument with the most potential for targeting on the wealthy, the individual income tax, does not weigh heavily in the tax structure of most developing countries (Bird and Zolt, 2005).

A better approach to the vertical equity issue is to concentrate on the impact on the bottom deciles of the income distribution, as was done in the Indonesia tax reform (Gillis, 1989). This might be a more manageable task because these groups are sometimes below the threshold for certain taxes, and because the major components of their consumption basket usually are reported in consumer surveys. If they are not, special surveys of the consumption habits of the poorest may be feasible (Bird and Miller, 1989).

Finally, the next generation of burden studies would do well to consider tax changes in a broader context, including the effects of the tax change on the pre-tax distribution of income, and on the expenditure benefits purchased by the increase in tax revenues. What really matters is the fiscal incidence on poor families. But this will call for an entirely new approach to studying fiscal equity, because so little is known about the impact of either taxes or expenditures on poverty reduction (Bird, 1992, Chapter 5). And, it might lead to a stronger case for increased revenue mobilization, than does the present approach that considers only the cost side of tax reform.

Willingness to Tax

The major constraint to the successful reform of tax regimes in low income countries is the absence of a willingness of the government to make tax choices that are politically unpopular, and to enforce its tax regime. The underlying problem is a combination of not being able to resist the temptation to choose reforms that take the path of least political resistance rather than reforms that would lead to a more efficient tax structure, the failure to muster the political courage to tax powerful (and tax-favored) groups in the economy, the propensity to try and curry favor with voters with well-intentioned but misguided tax structure decisions, and an unwillingness to enforce the tax regime that is in place. In some developing countries, the result has been a minimal growth in tax revenue mobilization and a level of public services that has continued to fall behind. The result has been the small increase in the average tax rate in developing countries, and the failure to significantly broaden the tax base.

Arguably the action that has held back increased revenue mobilization and structural reform, more than any other, is the special tax preferences that have been given to favored groups and the refusal to remove these entitlements once they are given. Economic development incentives have been given to targeted industries, arguably as part of a national industrial policy. But it is well known that these incentives are sometimes given on a basis of political considerations, without careful cost benefit analysis of the proposals. More often than not, incentives carry no sunset provision, under which review of the impacts would be required as a condition for continuation.

Exemptions from sales and individual income taxes are often justified on equity grounds, but just as often these incentives benefit the non-poor as well as the poor. Governments sometimes believe that they can identify social goods that ought to receive preferential tax treatment.[16] However, rarely is there a hard analysis of whether this targeting achieves its purposes. In some cases, sectors or consumption items or even firms have been targeted for special treatment for such a long time that the preferences become institutionalized. This strengthens the case for a regular re-evaluation of exemptions.

The other part of the willingness problem is the failure of governments to strictly enforce the tax regime that is in place. The problem is often cast as the administrative capacity not being adequate to do a strict enforcement of the tax regime. But governments in developing countries have had ample time to put the administrative capacity in place and to move it up the learning curve. The more likely explanation for poor revenue performance is that countries either are quite satisfied with low levels of public services and infrastructure, or that political leaders are not willing to address the tough enforcement decisions required, including dealing harshly with corruption and evasion.

Another shade of this problem is bureaucratic politics, i.e., the internal hassling that can slow or stop desirable fiscal measures. Tanzi (1987, p. 234) recites a good example: "in one country the recommendation to reduce the role of excise taxes and to expand that of broader taxes was blocked mainly because the head of the excise department would lose power as a consequence of loss of personnel assigned to these taxes." Everyone working in taxation can recite similar stories. We cannot calculate the costs of bureaucratic politics, but enough anecdotes like Tanzi's might add up to a serious problem.

CONCLUSIONS

On average, the tax revenue share of GDP in developing countries has not increased substantially since the 1970s. Whatever revenue enhancement advantages there were in the structural changes that did take place – the adoption of the value added tax and the decreased reliance on customs duties – were weakened by measures that narrowed the tax base. The estimate here is that the average tax ratio was 14.8 percent for the 1970s, and 16 percent for the 2000s.

One scenario for the next decade is that countries will continue to muddle through, i.e., the combination of automatic and discretionary revenue growth will be just large enough to keep pace with the growth in GDP. The implication of this future is that government expenditures will be held to an income elasticity of about unity. As in the past forty years, some countries will exceed this growth in tax revenues and some will fall short of it. The most important thing to note about this scenario is that it does not allow the uptick in revenues necessary to finance the growing infrastructure and public servicing gap. If historical trends are extrapolated, the target suggested by the United Nations to meet millennium development goals – an increase in tax revenues equivalent to 4 percent of GDP – will not be reached until the 2040s.

Another scenario is that developing countries will respond to growing expenditure needs and ratchet up their tax efforts considerably. The target suggested by the United Nations to meet millennium development goals is ambitious but within the reach of many countries over the next decade. To reach this level, a strategy of structural reforms that involve base broadening, administrative improvements, and revenue decentralization could both generate much of the needed revenue while increasing the efficiency and fairness of the tax regimes.

As in the past four decades, the biggest roadblock to increased revenue mobilization in developing countries will be the unwillingness of governments to make the difficult political decisions necessary to improve taxation. A displacement in the thinking about the need to put in place a more revenue productive tax system must come out of the political process, and more specifically, must reflect a change in thinking on the part of political leaders who come to believe that higher taxes to fund infrastructure and services will lead to a higher rate of economic growth.

NOTES

1. I am grateful to Musharraf Cyan for helpful comments and to Pushkaraj Savangaonkar for research assistance.
2. See also Bahl (2006) and Bahl and Bird (2008a) which lay the groundwork for this analysis.
3. Some authors have offered opinions about the right level of taxation, based mostly on personal experiences and hunches, and to some extent on historical data. Kaldor speculated that 25 percent of GDP would be about right, but Martin and Lewis (1956) placed the target level at about the current level, 17–19 percent of GDP.
4. For each decade, we compute the arithmetic mean of the tax ratio, ignoring all years where data are not reported. The IMF (2011) used medians to correct for this. Martinez-Vazquez et al. (2011) used five year moving averages to do time series comparisons. Decade averages have the advantage of taking the longer view of the trend in tax performance, but they miss the upward and downward movements within a decade.
5. Because of an absence of data, or incomparability in the data, we dropped 17 countries from the analysis. Clearly the choice of countries included in the sample can make a difference in these results. Chelliah (1971) found that the average tax ratio increased from 11.3 percent in 1953–55 to 13.8 percent in 1966–68. Only 8 in his sample of 27 less developed countries showed a decrease in the tax ratio during this period.
6. For a discussion of "Wagner's Law", which in fact was not very precisely described by Wagner, see Peacock and Wiseman (1961).
7. For discussion of various tax reform projects during this period, see Thirsk (1991), Tanzi (1987a) and Harberger (1989). Some of the country studies include Indonesia (Gillis, 1989), Jamaica (Bahl, 1991, and Bahl and Wallace, 2007), South Africa (South African National Treasury), and Colombia (McLure and Zodrow, 1997; Bird, Poterba and Slemrod, 2005, Musgrave and Gillis, 1971).
8. The Fiscal Affairs Department of the International Monetary Fund has been the most prominent in this area. In 2011 alone they reported 35 headquarters-led missions on tax policy issues and 61 in revenue administration (IMF, 2011, p. 46).
9. This literature is reviewed in Martinez-Vazquez et al. (2011).
10. Sometimes, more questionable practices are also copied, e.g., "keep your VAT payment receipts to receive some form of tax credit reward", improve tax compliance by giving amnesties, or tax bank deposits.
11. For a good discussion of indirect taxes at this stage of development, see Due (1970).
12. In this update, I use the IMF dis-aggregation of taxes: taxes on income, profits and capital gains; taxes on goods and services; and taxes on international trade. The computations discussed here are mine, based on GFS data, and those made by Tanzi (2011), Martinez-Vazquez et al. (2011), and IMF (2011). An important caveat to interpreting these results (when based on IMF data) is that the decade averages for the 1970s and 1980s are not comparable with those for the 1990s and 2000s, because of changes in the GFS classification of taxes. Within the comparable twenty year periods (1970s to 1990, and 1990s to 2000s), however, we can pull out some patterns.
13. For an interesting tracking and interpretation of changes in the mix of taxes in industrial countries, using OECD data, see Tanzi (2011).
14. For a good discussion of the VAT in practice in developing countries, see Bird and Gendron (2007).
15. For overviews of the current state of tax administration in developing countries, see Bird (2011) and IMF (2011).

16. Bird and Gendron (2007, pp. 126–129) give a number of examples – school bags, noodle soup in aluminum cans, basketballs – and emphasize the burden this places on the tax administration.

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