RED

Public Finance for Development:

STRENGTHENING THE CONNECTION BETWEEN INCOME AND EXPENDITURE

CAF DEVELOPMENT BANK OF LATIN AMERICA

PUBLIC FINANCE FOR DEVELOPMENT:
STRENGTHENING THE CONNECTION
BETWEEN INCOME AND EXPENDITURE

CAF DEVELOPMENT BANK
OF LATIN AMERICA

Prologue

The state is key to the development process. On the one hand, services related to defense, security and justice not only ensure basic human rights, but are also essential for economic activity that requires compliance with contracts and the protection of property rights. In addition, the state is called upon to provide universal access to health, education and infrastructure, which improves the quality of life and promotes economic growth. Besides this "allocative efficiency function", where the public sector provides goods that would not otherwise be adequately supplied by the market, modern states have taken on an increasingly important role in promoting a better distribution of income. This task has been carried out, first by tax systems that incorporate elements of progressivity, and secondly, through the establishment of social programs and transfers targeted to the employment and livelihood needs of the most disadvantaged families.

This new issue of the Economy and Development Report (RED, for its acronym in spanish) provides arguments and evidence that explain the central role of public finance in promoting development with equity. The report underlines the strong interdependence between decisions on taxes and spending and how this connection could generate a virtuous circle leading to higher levels of revenue that, in turn, would increase the quantity and quality of public goods. An example of the virtuous circle that can arise from such a connection is when public funding comes primarily from taxes collected on a broad base of taxpayers, which empowers citizens who demand more accountability and also induces a reciprocal kind of behavior towards the state through tax payment. A citizen who pays taxes has greater incentives to participate and to monitor public management, which leads public officials to be more transparent and efficient. This, greater efficiency improves citizens' willingness to pay and to comply with their tax obligations.

In consequence, the public sector will grow and build greater capabilities, so that fiscal policy may become a powerful tool to lead growth and development. Democratic participation and control through elections and institutions –such as parliaments and audit agencies- also limit the expansion of public revenues and expenses beyond the socially optimal level.

We find that in Latin America the tax structure , revenues, spending decisions, and the budget institutions have not always triggered this virtuous circle between revenue structure, participation and empowerment, reciprocity, budget size, efficiency and redistributive capacity of fiscal policies.

Even after the recent increases, the share of taxes on personal and corporate income, and wealth is low compared to other developing economies. This tax burden is also lower compared with the tax structure of high-income countries when these economies had GDP per capita levels similar to those of present-day Latin America. The contrasts are even more pronounced if one considers only personal income and wealth taxes. This feature of the tax structure has not only limited the state's ability to obtain new resources, it has also hampered the tax system's contribution to building a more equitable society.

The inability of taxes to improve equality has been partially offset by various spending programs with a clear redistributive orientation, such as the extension of social security coverage with non-contributory pensions

and CCT programs aimed at low-income families. Although improvements in equality are encouraging, in order to promote the aforementioned virtuous circle between revenues and expenses, it is also necessary that these programs be managed efficiently. Different methodologies to measure technical efficiency show, for example, that there exists a significant margin for improving the quality of education and health services in some countries of Latin America.

The hypothesis of a link between tax collection and good governance is supported by the results of the 2011 CAF survey, which shows a significant positive correlation at the subnational level between the perception of the quality of government and the willingness to comply with tax obligations. The connection between taxes and good governance is also found in the case of countries and regions with high fractions of revenues coming from the exploitation of non-renewable natural resources (e.g., oil). The evidence suggests that greater natural resource revenues, by disconnecting spending decisions from the need to levy taxes on the population, contribute to reduce the efficiency of the provision of public goods.

Finally, the report highlights the key role that the government budget plays in facilitating the connection between income and expenditure decisions. The open debate on the budget, with the participation of the population through the legitimate representation mechanisms, together with the establishment of independent audit and control agencies, allows a clear visualization both of social benefits and costs of budget decisions.

We hope that the study and analysis of the tax and expenditure systems contained in this new edition of RED provides the basis for a debate on the necessary changes in public finances, that given the particularities of each country, will contribute to foster development.

L. Enrique García
Executive President of CAF

Recognition

Index

CHAPTER 5

TAXES AND THE QUALITY OF GOVERNMENT **177**

CHAPTER 6

NATURAL RESOURCES AND THE LINK BETWEEN CITIZENS AND THE STATE **209**

CHAPTER 7

THE BUDGETARY PROCESS AND THE CONNECTION BETWEEN REVENUES AND EXPENDITURES 243

Figures Index

Tables Index

Diagrams Index

Boxes Index

1

The size of the state
and development:
redistribution, efficiency and
representation

The size of the state and development: redistribution, efficiency and representation[1]

INTRODUCTION

The state is a key player in economic development. Tax collection permits the provision of basic services related to defense, security, and justice that guarantee the fundamental rights of the individual, such as those related to human life, freedom, and private property. Tax collection also allows the direct production of public goods that foster economic growth, including health, education, and infrastructure. Furthermore, these public goods, together with social programs and transfers targeted at the unemployed and the most disadvantaged families and individuals, promote a more equal income distribution.

In most developing countries, and particularly in Latin America, despite these potential benefits of state intervention, the capacity of the public sector to collect the resources required to provide an adequate quantity and quality of these services is limited. This situation partly explains the development lag of Latin American nations. In this regard, the positive correlation between per capita income and the proportion of the economy's resources destined to produce public goods and services has been widely documented. In other words, as an economy develops, the level of taxes and public expenditures rises as a proportion of GDP. For example, between 1900 and 2000, per capita income in the UK quadrupled (from USD $5,000 to $20,000, 1990 PPP), while public expenditures increased from 10% to 40% of GDP over the same period. In more recent years (2000-2009), comparisons between developing and developed countries show similar results: while public expenditures reach 35% of GDP in high-income economies (over USD $12,300, in 2005 international prices), they account for less than 15% of GDP in low-income countries (less than or equal to USD $1,000). During the first decade of this century, Latin American per capita income stood at about USD $7,500 (PPP, 2005 dollars), with public expenditures of approximately 21% of GDP. As we will see below, the size of the public sector is smaller than expected given the region's level of economic development.

What explains the positive relationship, also known as Wagner's Law, between the size of the state (measured using the level of tax collection or expenditures) and per capita income? If higher levels of tax revenue and spending could potentially contribute to growth and to the reduction of income inequality, why have Latin American countries and other developing economies failed to implement the required reforms in their public finances? To what extent has the greater taxation effort and the observed increases in public expenditures of the past years helped to reduce the gap in the provision of public goods in Latin America? Has greater state intervention, through taxes and expenditures, improved income distribution? Have governments administered these programs efficiently? To what extent could better public administration, in terms of redistribution and efficiency, lead to higher levels of tax collection? And, conversely, could the way

in which the state collects resources (that is, the tax structure and the presence of other non-tax income) lead to a more efficient allocation of public goods?

This report seeks to answer these questions, emphasizing the need to strengthen and to make more transparent the connection between taxation and spending decisions at all levels of government. The main hypothesis explored throughout this publication is that the way in which the public sector finances its expenditures can impact its efficiency, the size of its budget, and its capacity to promote development with a more equal income distribution. In this sense, if public resources come primarily from taxes collected from a large base of contributors (families and firms), this may create a process of empowerment and reciprocity between the state and society that generates incentives for taxpayers to participate in and exercise greater control over public administration. In turn, this will lead policymakers to become more transparent and efficient in their responsibilities, strengthening citizens' willingness to pay and fulfill their tax obligations. Throughout this process, the public sector will grow as a portion of GDP. This growth is associated with higher state capacity (in terms of taxation and spending) to direct fiscal policy and lead the process of development and social inclusion. In addition, the processes of democratic participation and accountability, exercised through voting procedures and other institutions (such as parliaments, auditing agencies, and NGOs), would help keep taxation and expenditures at an optimal level from a social welfare point of view.

This report shows that Latin American tax structures, together with spending decisions and the performance of budgetary institutions, have not always been capable of promoting this virtuous circle among tax revenues, empowerment and participation, accountability, reciprocity, size of budget, efficiency, and redistributive capacity. As a result, some countries in the region may be trapped in a "bad equilibrium", where low tax collection, scarce provision of public goods, and a lack of efficiency prevent the state from playing an active role in the promotion of development.

To promote this virtuous circle (to break the "bad equilibrium"), personal and societal income and wealth taxes, fundamentally those on individuals, should represent a substantial portion of total public revenues. Unfortunately, this is not the case in Latin America. Even with recent increases in the level of tax collection, income and wealth taxes (on individuals and firms) account for only 28% of total tax revenues. This percentage is lower than that observed in rapidly growing developing countries that have successfully reduced income inequality (for example, South Korea, with a share of 40% in 2000). It is also very low when compared to the evolution of the tax structure of high-income countries (such as the USA and Canada), which had income and wealth taxes equivalent to 50% of total tax revenues when per capita GDP was equivalent to that of most Latin American countries today. These differences are even more accentuated with regard to personal income and wealth taxes.

The high level of informality observed in Latin American economies has limited the development of a tax structure with significant income and wealth taxation. The decision to engage in economic activity outside fiscal registries and the banking sector, however, is, to some extent, a response adopted by families and firms when the state is not adequately fulfilling its responsibilities in the provision of public services. The efficient supply of these services, by increasing the productivity of firms and the welfare of employees, would increase the benefits (and economic sustainability) of paying these taxes. In addition, low tax compliance is also a result of low institutional capacity among tax agencies to combat tax evasion. This enforcement problem has

not only resulted in difficulties to obtain new resources, but has also biased tax collection towards indirect taxes on consumption and financial transactions that are easier to collect, but that compromise the ability of the tax system to reduce income inequality.

In recent years the failure of the tax structure to improve income distribution has been partially compensated by the implementation of diverse spending programs with a clear redistributive component. In this regard, it is interesting to note how the increase in access to basic education (especially at a secondary level), the extension of the coverage of social security resulting from the expansion of non-contributive pensions, and the use of conditional transfers targeted to low-income families have led, in some countries, to a substantial reduction in inequality in income distribution.

These results are encouraging, but in order to promote the previously mentioned virtuous circle between tax and expenditure decisions, public services must also be managed efficiently in order to reach the established objectives at the lowest cost possible; or alternatively, given the budget, the level of coverage and quality of services offered must be maximized. The employment of various methodologies to measure this concept of technical efficiency shows, for example, that the improvement of public management of health and education services in some countries in Latin America could imply significant efficiency gains.

The connection between tax structure and good governance is two-pronged. On one hand, citizens will be more willing to pay taxes when they perceive the quality of government to be better (reciprocity hypothesis); on the other hand, when citizens make higher tax contributions, they have more incentives to actively participate in the monitoring and control of authorities (empowerment hypothesis). Both channels will reinforce each other and result in higher quality public management. The evidence described in this report is consistent with the existence of both channels. The results of the CAF's 2011 survey suggest that voting is perceived to be the most important mechanism to participate in and to reward/punish a good/bad government. Little is known about other direct participation schemes (like participatory budget initiatives), though there was general appreciation of such mechanisms, when they are available.

Regarding the reciprocity avenue, the different exercises presented in the report, particularly those related to taxes and public services at the subnational level, show that in some cities in Latin America there is a positive and significant correlation between the perception of the quality of public administration and the willingness to pay taxes.

The issue of how the public income structure can affect good governance could also be analyzed through case studies of countries and regions where a significant part of the public budget is financed by income from taxes and other levies applied to the extraction of non-renewable resources (e.g., hydrocarbons). In these cases, evidence suggests that separating spending decisions from the need to collect taxes may contribute to disassociating these higher fiscal resources from more and better public services.

Finally, the report highlights that the public budget (at all levels of government) fills a fundamental role in facilitating the connection between income and expenditure decisions. In particular, budgets institutions should offer the opportunity for all actors (the executive, legislative, lobby groups, NGOs, among others) to know and participate in the discussion of policies affecting the level and composition of taxes and expenditures. This transparent and open discussion should lead to a consensus that reflects a reasonable balance

between the social benefits and costs, while assuring fiscal and macroeconomic stability. For the budget to accomplish this role, it is imperative to revaluate the role of Congress in budgetary matters and to ease its interaction and coordination with the executive power.

The report develops the previous conclusions in seven chapters. This introductory chapter analyzes in further detail arguments about the determinants of the evolution of the size of the state throughout the development process, presents descriptive information about the levels of public income and spending in Latin America *vis-à-vis* other countries and regions, and summarizes the main conclusions of the book.

The rest of the book is divided into two parts. On one hand, chapters 2, 3, and 4 respectively analyze the redistributive impact of fiscal policy; the measurement of efficiency in the provision of public services; and the tax structure and its relation with taxation efforts in Latin America. These analyses are key inputs for the second part of the book that studies the hypothesis that the structure of state funding and its connection with spending decisions (mediated by budgetary institutions) determine the size of budget, the efficiency of public administration, and the redistributive capacity of the public finance system. To this end, chapter 5 offers evidence about the channels of empowerment and reciprocity. Chapter 6 takes national and subnational governments that use non-tax income from non-renewable resources as case studies to evaluate if this phenomenon affects the quality of public administration. Finally, chapter 7 analyzes how budget institutions function in Latin America, and evaluates to what extent these institutions, by facilitating the link between taxing and spending decisions, have offered opportunities for society to reach a consensus on increasing the levels of tax collection and public expenditures that is compatible with higher economic efficiency and lower levels of inequality in income distribution.

As was previously mentioned, one of the objectives of this report is to understand the evolution of the size of the public sector (and its functions) throughout the process of development. With this goal in mind, and to establish the basis for the analysis presented in the rest of the report, the following section examines total public spending (and total taxes) and its composition in Latin America compared to other countries and regions of the world. The third section analyzes the conceptual arguments that have been advanced regarding the determinants of the size of the state. The fourth section returns with further detail to the main messages of each chapter of the book, while the fifth section concludes with some remarks regarding public policies implications.

THE SIZE OF THE STATE ALONG THE DEVELOPMENT PATH: EVIDENCE FOR LATIN AMERICA AND THE REST OF THE WORLD

The measurement of the size of state using data on public expenditures and incomes presents serious challenges, especially when comparing among countries and across time. An obvious issue is that what is included in public expenditures and revenues should be consistent across countries and time periods. In this report, when the information is available, the preferred definition of the public sector is the one that includes the central and subnational level of governments (provinces and municipalities) together with the public social security systems (pensions and retirement taxes and payments). This definition excludes all public revenues and expenses of state-owned companies that provide utility services (e.g., water, waste management, energy, telecommunications, and transport, among others).

As mentioned before, the fact that the size of the public sector grows with the level of economic development is a well documented phenomenon. Figure 1.1 (see p. 26) describes Latin America's long-run trends relative to those of the United Kingdom and the United States. The graph shows the fraction of tax collection and public spending over GDP (left axis), and the evolution of per capita GDP in dollars, PPP 1990 (right axis), for these three regions/countries between 1900-2000. The comparison delivers very interesting results. On one hand, there is a positive time trend for both variables in all the regions/countries considered; however, while at the beginning of the 20th century the size of the public sector was very similar across the countries/regions (between 8 and 10% of GDP), by the end of the century public expenditures and revenues as a percentage of GDP for the US and the UK had reached a level close to 40% whereas the average for Latin America was approximately 21%.[2] These disparities in the growth of the size of the state partly reflect the different evolutions of per capita income; while in UK and US per capita income expanded by four and five times, respectively, in Latin America it only increased by two and a half times.[3]

By using data from more recent years, the comparisons of the size of the public sector can be expanded to a larger group of nations. Table 1.1 (see p. 27) describes information regarding public revenues and expenditures (as a percentage of GDP) and the level of public employment for a sample of approximately 150 countries from 1990 to 2009. The information was collected from the World Bank's World Development Indicators (WDI) and refers to the central government.[4] Table 1.1 differentiates this data according to the country's level of income and includes a separate value for Latin America. In general, the average Latin American state is smaller than that of the developed world (with public spending accounting for 21% of GDP versus 33%), and is larger than those of the poorest nations of the world (14.8% of GDP). Additionaly, the most recent period (2000-2009) has seen the growth of the public sector in Latin America compared to rich economies (which saw practically constant public spending). This differs from trends in middle-income and poor countries, where the state has contracted on all measures of size.[5]

Figure 1.2 (see p. 27) shows the relation between public expenditure (as a percentage of GDP) and the (logarithm of) per capita income using one observation per country (average 2000-2009). The previously observed positive correlation between both variables for a wider period of time (see Figure 1.1) is also

---

2. Data for Latin America and the United Kingdom refer to the central government level, whereas the information for the United States is for the general government. This should not seriously affect these comparisons since the United Kingdom and most Latin American countries (except for Argentina and Brazil) have very low levels of fiscal decentralization.

3. One final issue refers to the evolution of expenditure *vis-à-vis* public revenues. Generally, in Anglo-Saxon nations, periods of deficit (i.e., spending is greater than revenues) are followed by years of fiscal surplus (i.e., income is greater than spending). For example, during war years (such as World War I and II), we observe sharp increases in expenses, which are reflected, to a lesser extent, in the rise of income sources. Thus, the use of public debt has allowed these countries to smooth the higher tax costs of abrupt increases in expenditures during these periods. In Latin America, this pattern is much less common. In contrast, we observe that the level of expenses is consistently greater than the level of revenues. Clearly, this does not necessarily reflect public indebtedness; rather, it demonstrates the use of non-tax incomes, for example, the expansion of the monetary base (inflation).

4. Including data for the central government could, of course, imply downward bias in the size of the state for federal countries with high levels of fiscal decentralization (e.g., USA or Brazil). Chapter 4, which analyzes tax structure in Latin America, takes this issue into consideration by including –when the information is available – the level of tax collection of subnational governments.

5. The differences between the size of the state in high-income countries and that in Latin American countries continue to exist (in favor of the former) when considering public employment as a proportion of total employment. These differences are significantly smaller, however, relative to those observed in the indicators of spending and tax collection.

Figure 1.1 The size of the state and economic development (1900-2000)

United Kingdom

— Central government total spending (percentage of GDP)
— Central Government total tax collection (percentage of GDP)
— Per capita GDP

United States

— Central government total spending (percentage of GDP)
— Central Government total tax collection (percentage of GDP)
— Per capita GDP

Latin America

— Central government total spending (percentage of GDP)
— Central Government total tax collection (percentage of GDP)
— Per capita GDP

Source: Clark and Dilnot (2002), University of Oxford (2011) and Chantrill (2011a and 2011b).

verified when using cross sectional data.[6] Figure 1.2 also suggests that most Latin American economies have a lower level of public expenditure than expected given their per capita income.[7]

6. Using diverse databases and econometric techniques, numerous papers have shown evidence consistent with Wagner's Law. For example, Lamartina and Zaghini (2008) apply cointegration techniques to panel data for OECD countries between 1970 and 2006, and estimate the elasticity of expenditures to income to be higher than one, which is consistent with the idea that public expenditures rise more than proportionally with GDP. Easterly and Rebelo (1993) and Shelton (2007) also present evidence using cross-sectional data. Stein *et al.* (1999) compare the results for Latin America and OECD countries.

7. This is not the case in Argentina and Brazil, which are fiscally very decentralized. If the taxes and expenses of subnational governments in past years were included in the general government accounting, it would reach levels higher than 30% of GDP.

Table 1.1 Size of the government in terms of public spending, tax collection, and public employment (1990-2009)

Variable	Years	Country groups			
		High income per capita	Middle-high income per capita	Low income per capita	Latin America and the Caribbean
Public spending (percentage of GDP)[a]	1990-1999	33.3	29.4	18.3	19.3
	2000-2009	33.31	27.2	14.8	21.2
Tax collection (percentage of GDP)[a]	1990-1999	31.6	31.1	13.4	19.6
	2000-2009	33.6	28.9	13.1	20.8
Public employment (percentage of total employment)[b]	1990-1999	6.5	n.a.	n.a.	5.7
	2000-2008	6.7	n.a.	n.a.	5.4

a/ World Bank (2011).
b/ ILO (2011).
n.a.: not available

Source: author's calculations based on World Bank (2011) and ILO (2011).

Figure 1.2 Relation between per capita GDP (level of development) and the size of the State, measured using public spending[a] (as a percentage of GDP) (2000-2010)[b]
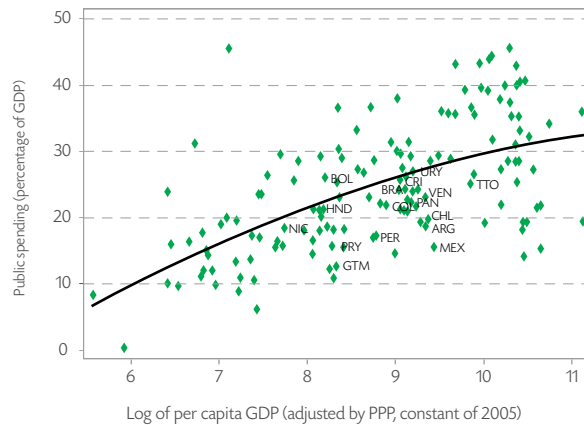
a/ Central government payments related to the operational activities for the provision of public goods and services. It includes payments to employees (salaries), subsidies and interests, social benefits, and other expenses such as rents and dividends.
b/ The sample includes 151 countries.

Source: author's calculations based on World Bank's WDI (2011) .

Public expenditures and taxes are also related to other characteristics of the economy, such as, the age structure of the population, the level of income inequality, and the degree of openness to international trade. Table 1.2 shows the correlations between public expenditures (as a percentage of GDP) and these variables. The results of the simple correlations (column 1) and those obtained from a linear regression that includes all variables at the same time (column 2) both suggest that the size of the state increases where the size of the population over the age of 65 is also larger, where inequality in income distribution is lower, and where the economy is more open to international trade.

Table 1.2 Correlation between public spending (percentage of GDP) and basic characteristics of the economy

Variable	Simple correlation Spending (percentage of GDP)	Partial correlation Coefficient
Per capita GDP adjusted by PPP	0.3846***	2.483788***a/
Gini Index	-0.3660***	-0.129337***
International trade (percentage of GDP)	0.1604***	0.017701**
Population over 65 years	0.5496***	0.585614***
Constant	n.a.	2.272106

a/ Logarithm of per capita GDP
n.a.: not applicable.
***p ‹ 1%, ** p ‹ 5%.

Source: author's calculations based on World Bank's WDI (2011)..

Evidently, these correlations do not imply any kind of causality among the involved variables. These results are very robust (Shelton, 2007), however, and some of them, such as the negative correlation with inequality and the positive correlation with demography, are very relevant for Latin America. As will be discussed later in the conceptual section, these results can be interpreted using recent theories.

The composition of income and expenditures throughout the path of development

In which areas does the state increase expenditures as it develops? What instruments for taxation does the state use to obtain additional resources? With regard to expenditures, recent research analyzing the long-term trends of public expenditures in developed countries (Tanzi, 2005; Tanzi and Schuknecht, 2000; Lindert, 2004) shows that the significant increase in the size of the public sector observed for these nations has been associated with an important change in government functions. Governments evolved from having limited responsibilities in the areas of defense, internal security, and protection of property, justice, and public investment, to carrying out extensive functions that also cover issues such as education, health, and social security (which includes pensions, unemployment benefits and transfers to poor families and households).

These trends are clearly observed in Figure 1.3 for the case of the United Kingdom from 1900 to 2009. The graph shows that health expenses have risen since the end of World War II. On the other hand, social security and transfers maintain sustained growth since the beginning of the sixties, and largely explain the increase of total public expenditures since then. Transport investments (infrastructure), together with education, occupied a significant part of total expenditures during the first four decades of the past century (during peace periods) but have declined since the fifties.[8]

Figure 1.3 Composition of public spending in the United Kingdom (1900-2010)
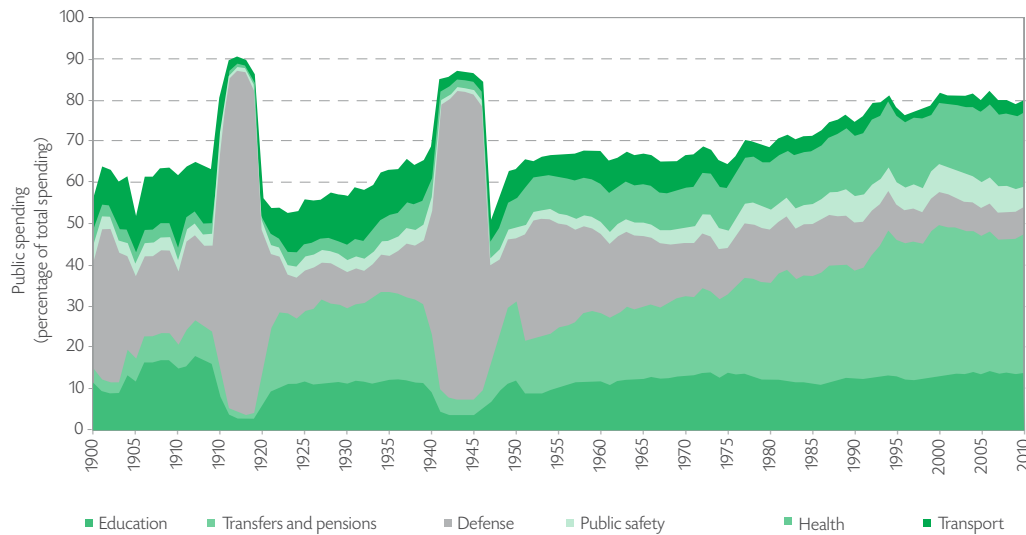
Source: Chantrill (2011a).

The analysis of the United States presented in Figure 1.4 also leads to a similar conclusion. In this case, the information on social expenditures distinguishes between pension and retirement expenditures (which are mainly contributive programs), and more redistributive spending, such as transfers directed to vulnerable or low-income families (unemployment and housing subsidies, non-contributive pensions, and subsistence allowances, among others). The graph also presents information regarding spending on education, health, and transport. It can be observed that public spending in transport (infrastructure) and education occupied an important fraction of total

8. Public spending in economic infrastructure (transport, energy, and telecommunications, among others) is a very relevant component of public investment and has important effects on productivity and economic growth (Holtz-Eakin, 1994; Fernald, 1999; Calderon and Servén, 2004; CAF, 2009). However, during the second half of the 20th century the private sector has become more involved in the provision of these services (Engel *et al*, 2008). This has been particularly relevant in the case of telecommunications and energy, but it has also been evident in areas such as transport and other basic services, like water and waste disposal. This phenomenon has reduced the need for state funding and investment. Latin America began this process in more recent years (since the mid-nineties). The evidence shows that in most countries of the region the decline in public investment was only partially offset with the new flows of private funding (CAF, 2009).

expenses between 1902 and 1930, while the share directed to health, pensions, and transfers was relatively small (the sum of the three categories is less than 10%). This composition has changed significantly since the end of World War II, when health services, pensions, and transfers gained as a share of the budget of the general government (each category reached between 10 and 15% of the total). The sharp increase in these components explains most of the growth of the US state in the second half of the 20th century.[9]

Figure 1.4 Composition of public spending in the United States (1902-2010)
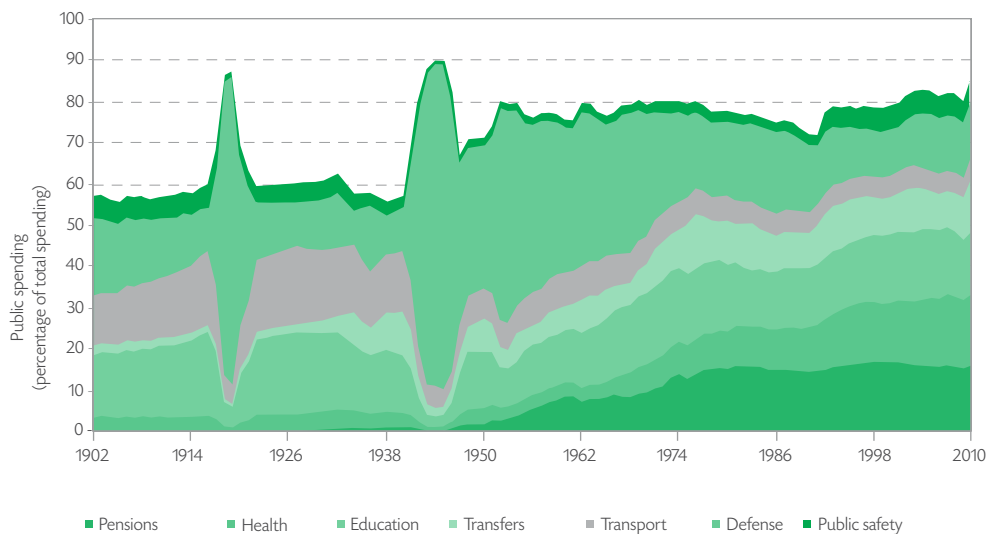
Source: Chantrill (2011a).

In addition to the previously described cases of United State and United Kingdom, it has been shown that the growth of the welfare state –that started since World War II and accelerated in the sixties– was a process that was observed in most OECD countries. Lindert (2004) has extensively documented the fact that social spending, especially the most redistributive components, has been one of the main determinants of the growth of public expenditures. According to Lindert's estimations for OECD countries, social transfers –including assistance to low-income families, unemployment and housing subsidies, public health expenditures, and non-contributive pension and retirement benefits– represented on average less than 2% of GDP until 1930, reached 11% by the beginning of the 1960s, and 22% by the 1990s.

9. Both in the US and the UK, the World Wars generated significant expansions in defense expenses, which were reverted during peaceful periods. However, the reduction of this kind of spending does not necessarily reduce total public spending proportionally. In contrast, part of these revenues, obtained as a result of higher taxes, is reassigned to other areas, such as social spending. The public finance literature has coined this phenomenon 'the ratchet effect.' Peacock and Wiseman (1961) provided one of the first analyses of this effect in the US. A more recent study, Durevall and Henrekson (2011), finds evidence of this phenomenon in the UK after World War II.

There are no good estimations of public spending composition for Latin America spanning long historic periods; however, as will be seen later, the increase in public expenditures between 2000 and 2009, which also coincided with a period of strong economic growth, was also partially pushed by a strong expansion of social spending. In particular, these expenditures represented 60% of total public outlays at the beginning of the period, and reached almost 70% by the end of the decade.

How were these higher levels of expenditures funded? Figure 1.1 showed that, in both the US and the UK, the increase in spending was accompanied by a similar increase in tax collection. The information available indicates that during the 20th century, this rise in government resources was associated with a significant change in the composition of tax revenues. For the US, Figure 1.5 demonstrates that at the federal level, excise taxes and income taxes on businesses lose share, while personal income tax and contributions to social security gain importance. Personal income tax increased its contribution to public resources during the first half of the century, reaching between 40% and 50% of total revenues by 1950; in contrast, contributions to social security began to expand only in the second half of the century, reaching approximately 40% of total public resources by 2009.[10] Clearly, this change in structure represents a change in trends towards a more progressive tax system (with a strong share of levies

Figure 1.5 Composition of tax collection of the federal government of the United States (1934-2011)
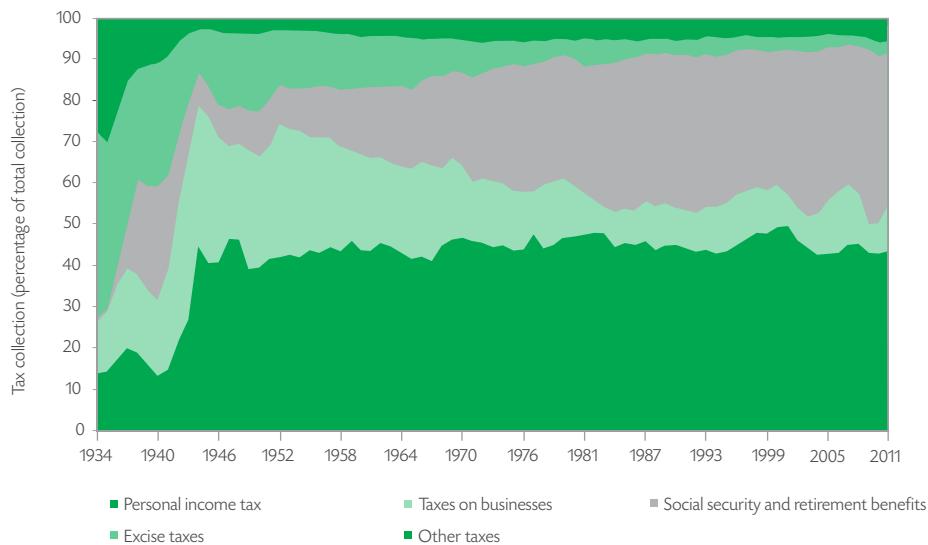
Fuente: *U.S. Government Printing Office* (2011).

10. During the period 2000-2009 federal taxes represented slightly over 20% of GDP, while state and municipal collection added another 10% of GDP. The latter also suffered an important change in structure during the XX century, in which housing taxes lost its share to personal income taxes. Towards 2009, these two direct taxes together represented 50% of the income perceived by states, while excise taxes contributed with 35% of total collection. The fraction of excise taxes was relatively constant since the forties.

on direct income). This suggests that the growth in the size of the public sector in the US was not only accompanied by an increased provision of universal and contributive public services (e.g., the pension system), but also adopted a strong income equalizing effect by including redistributive taxes (progressive personal income levies) and spending components (i.e., health and income transfers). Evidence from other developed countries –for example, the UK and other OECD nations– is very similar to that observed in the US.[11]

EXPLAINING THE GROWTH OF THE SIZE OF THE PUBLIC SECTOR ALONG THE DEVELOPMENT PATH

What explains the size and composition of public revenues and spending? What guarantees the economic and political sustainability of progressive taxes (with potentially higher efficiency costs) combined with highly redistributive spending programs? Why hasn't the growth of the state had any apparent considerable costs in terms of economic growth? What lessons can be extracted for the Latin American case?

A first answer to these questions was anticipated in Wagner's original article (Wagner, 1911), where he refers to two possible channels. On one hand, Wagner argues that as economies grow and diversify their productive structure, the requirements of public services to protect property rights, resolve commercial disputes, reduce transactional costs, and solve collective action problems (e.g., in the provision of economic infrastructure) also increase. This implies the establishment of public regulations, police and security, justice, and public works. The successful provision of these services also stimulates economic growth and productive activities, which in turn leads to higher needs of public intervention, generating a virtuous circle among income levels and the size of the state. On the other hand, he argues that the income elasticity of the demand for social goods, such as education and culture, is higher than one (luxury goods), explaining why the demand for these public goods rises more than proportionately when production and income increase.

The size of the state and the development of democratic institutions

As was previously documented, one of the main factors behind the growth of the public sector is the significant increase in social spending, which has an important redistributive component. Therefore, to understand the evolution of the size of the state, we need to explain the causes behind higher demands for redistribution. A fundamental determinant of this phenomenon has been the adoption of democratic institutions in Western societies, a process that coincides with the previously mentioned expansion of the welfare state. Downs (1957) was the first to propose that the extension of voting rights to the entire population may be associated with higher demands for public goods and services with important redistributive components. He argues that the median voter[12] –considered "decisive" in simple majority elections– is poorer and will enjoy the benefits of the new provisions in greater proportion than the costs he/she will have to bear given

---

11. The trend observed in the US could be considered a conservative scenario relative to that observed in countries in continental Europe, such as France, the Netherlands, Germany, and Nordic countries like Norway, where tax and expenditure levels are about 50% of GDP, and income taxes constitute an important source of public funding (between 40 and 60% of total income).

12. If the individuals of a country were ordered from the poorest to the richest, the median voter would be the individual who divides the population in two halves with equal number of people. In very unequal societies, the median voter's income will be much lower than the average income of the population; thus, it can be expected that he/she will be more willing to support (and his/her support is decisive to define an election) more redistributive policies.

the higher levels of taxes. The logic of this argument also suggests that the more widespread the access to political rights and the higher the level of inequality in the distribution of income, the higher the level of redistributive spending, and thus, the larger the size of the state.

There is evidence demonstrating that the extension of universal voting rights has favored the demand for public goods, and in particular, the demand for social spending. For example, Husted and Kenny (1997) and Lott and Kenny (1999) emphasize this phenomenon in states and cities in the US, while Aidt and Eterovic (2011) study this hypothesis for a sample of Latin American countries.[13]

On the other hand, the evidence on the relationship between inequality and the size of the state is much more controversial. In the previous section, we showed some correlations suggesting a negative relationship between both variables.[14] Similarly, Shelton (2007) uses time series and cross-sectional data for a sample of over 100 countries in the period 1970-2000 and finds that the level of inequality, together with the existence of democratic institutions, is negatively correlated with the level of public spending as a percentage of GDP. There are important reasons that could explain why even in the presence of strong levels of income inequality, and in the context of apparently universal voting systems, there are no significant increases in redistributive spending (and taxing). A key issue is that actual (or de facto) access to political rights may be correlated with income level. Indeed, there is broad evidence (e.g., Lijphart, 1997) that shows that citizens with higher incomes are those who actually vote in elections and who have access to alternative means of political participation (contribution to political campaigns, lobbying, and rallying, among others); therefore, they are more able to influence fiscal policy decisions. Given this difference in de jure and de facto political participation and the fact that high income individuals are better represented in the political process, the income inequality indicator (i.e., the difference between the mean and the median) in the politically active population is less pronounced than the indicator calculated for the entire population. This implies a lower demand for redistribution (Bénabou, 1996, 2002).

The previous argument weakens the relationship between inequality and higher levels of redistributive spending and tax collection. In fact, as reported in the previous section, it may induce an inverse relationship between both variables because highly economically unequal societies may inevitably imply inequality in the levels of access to political rights. The existence of a negative relationship between inequality and redistributive spending has been documented for different developed and developing countries over the last 200 years, suggesting an apparent public policy paradox, as the state redistributes less when it would be most important to do so (Lindert, 2004).[15]

Perhaps the answer to this phenomenon lies in the idea that very unequal economies are also relatively poor and unproductive. In this case, the political process that defines levels of spending and tax collection and their redistributive character cannot ignore the subjacent economic trends in terms of productivity and income growth, which in turn partly determine the economic costs of tax collection and transfers. In this

---

13. Lott and Kenny (1999) analyze the extension of women's voting and its effect on a 20% increase in state spending between 1870 and 1940. Aidt and Eterovic (2011) demonstrate that the extension of voting to the illiterate population in some Latin American countries was related to increases in public spending.

14. Consistent with these results, Pessino and Fenochietto (2010) report a negative partial correlation between tax effort and inequality using data for a broad sample of countries of the year 2006.

15. Sokoloff and Zolt (2007), Engerman *et al.* (2002), and Engerman and Sokoloff (2005) provide evidence for America, comparing, on one hand, the USA and Canada, and on the other, Latin American countries. Chapter 4 further develops this analysis when discussing the implementation of income taxes in Latin America.

sense, it is not surprising that the process of increased public expenditures and taxes in Western countries which begun in the 1880s coincided with the consolidation of the process of sustainable growth in productivity and per capita income of these nations. In other words, the advent of prosperity made the highest redistribution demands sustainable, which were induced by the extension of political rights. Increased prosperity was evidenced not only by higher economic growth, but also by public health indicators that significantly increased life expectancy and that were also accompanied by lower birth rates. These demographic changes generated higher demands for social spending, especially, for social security.

Has the expansion of the public sector had costs in terms of economic growth and welfare?

From the previous analysis we conclude that there is a mutual interaction between the extension of political rights and the changes in the dynamics of economic growth and demography, which together explain the evolution of the size of the public sector. This interdependence is important when defining whether the expansion of the state had an economic cost in terms of lower growth rates due to the effect of higher taxes on saving and investment decisions, incentives to innovate, and on the labor supply. These potential negative effects of taxation have been a key public policy concern that has led some experts to challenge the traditional view that the strong growth of the public sector in some European countries has necessarily increased welfare (Tanzi and Schuknecht, 2000; Tanzi, 2005).

A more optimistic vision is offered by Lindert (2004) in his exhaustive analysis of the evolution of social spending in Western Europe, USA, and Canada since the 18th century. In particular, the author argues that the expansion of the state did not generate a net economic cost in terms of a lower growth rate or lower quality of life. Lindert presents some statistical evidence supporting this hypothesis. Even more interesting, the author provides a detailed analysis of the institutional mechanisms used to implement the reforms that allowed the observed increases in spending and tax collection. He concludes that the very functioning of the democratic institutions, despite its problems and imperfections, kept the potential economic costs of a very large (or much reduced) public sector under control.

In particular, democratic participation led to budget debates on spending and tax collection programs occupying a central role in the public agenda of governments and other political actors. These relatively open public debates ensured that the outcomes considered not only the interests of the potential beneficiaries of the services, but also of the tax contributors. On the other hand, in the case of universal public programs (such as social security or education), both the costs and benefits of the programs were assumed by the same individuals (i.e., the middle class), which facilitated the economic and political evaluation of the net effect of state policy.

This political decision-making process, incorporating broad social participation, led to the expansion of expenditures and tax collection in times of economic expansion –resulting from more trade, international integration, and technological innovation– allowed for the implementation of new and higher taxes. In turn, this process was eased because the taxes that were used to fund the expansion of spending were such that they also minimized distortions. For example, most countries broadened the use of direct taxes on income and wealth (especially personal income taxes), and of general and uniform consumption taxes (e.g., VAT in European countries).

The higher levels of commercial openness that these countries maintained during periods of high economic growth and state expansion also imposed a certain discipline over tax collection and spending efficiency.

Not only did taxes not generate high costs due to disincentives to savings and investment, but spending programs also promoted the growth of income and productivity, as is the case with infrastructure services and programs that stimulate access to education and health.[16]

To some extent, the decision to increase taxes and expenditures also generated more conscience in public representatives and in the general population about the possibility that mistakes in their design may lead to large costs; thus, the decision-making process took place in the context of debates of the costs and benefits of these initiatives. In this sense, the expansion of the state occurred in parallel with the improvement of democratic participation, transparency, public information and accountability on the use of public resources (Lindert, 2004). This facilitated the control of the population over the public administration, whether through political representatives (e.g. Congress) or other institutions (comptroller, auditing agencies, NGs, among others).

Lessons for Latin America

To what extent does the previous debate on the determinants of the expansion of the size of the state in Western developed economies shed light on the current situation in Latin America? First, it is clear that the size of expenditures and tax revenues in the region lies somewhere between that observed in low and high-income countries. To a certain extent, this is expected given the middle-income status of most countries in Latin America. However, evidence from the previous section also confirmed that despite some cases where the size of the state has reached levels similar or slightly over 30% of GDP (e.g., Brazil or Argentina), on average the region still has a level of spending and taxation that is below what is expected given its stage of development (e.g., Guatemala, Paraguay, Mexico, and the Dominican Republic stand out as having levels of tax collection and public spending slightly over 15% of GDP).

Evidently, this does not imply that Latin American economies may (or should) try to double their levels of tax collection and spending to reach values similar to those of some developed countries. As was previously mentioned, the expansion of the size of the state accompanies income growth and demographic changes within fully democratic politics; therefore, it could be undesirable to drastically alter these in anticipation of future development. Nevertheless, it is important to assure that as these economies grow and develop, that the state will have enough resources and will offer the public goods demanded by society, and that growth opportunities will not be wasted due to lack of social and economic infrastructure.

This role of the state in supporting the development process, by offering public services in adequate quantity and quality, is not attained automatically. The population –through political institutions and representation (executive power and legislative branch)– must reach a consensus on the required fiscal policies on both expenditures and revenues. For this process to be effective, it is important that decisions on both sides of the budget be aligned, promoting a positive interdependence between higher (and less distortive) tax collection and more public services of higher quality (efficiency). This virtuous circle that increases the size of the state throughout the development path may be attained through tax structures with broader coverage of the popula-

---

16. This higher discipline does not, however, seem to imply smaller governments. In this context, Rodrik (1997) finds that more open countries have larger governments, and concludes that this phenomenon is related to the role of the state as a source of "insurance" against risks associated with increased openness to international trade. The "insurance" role of the state in richer economies is based primarily on the use of transfer systems in welfare states with well-developed business capacities. In poorer countries, this role is limited to the creation of jobs in the public sector in order to mitigate the higher risks associated to commercial openness.

tion and of businesses. On the expenditures side, the coexistence of programs of universal basic public services (e.g., health, education, social security) and transfer programs targeted at lower income or more vulnerable individuals and families may also generate the political consensus required to approve this type of fiscal policy with redistributive content.

As was previously mentioned, income and spending packages may generate a process of empowerment and reciprocity between the state and society that would entice contributors to participate in and control the public administration. In turn, this could lead public officials to become more transparent and efficient in their responsibilities, which could in turn imply a higher disposition among citizens to pay and fulfill their tax obligations.

TAX STRUCTURE, PUBLIC EXPENDITURES AND GOOD GOVERNANCE: MAIN CONCLUSIONS OF THE REPORT

To what extent does Latin America have a fiscal policy that could promote the creation of this virtuous circle between income and spending decisions in the context of a growing economy with democratic political institutions? The objective of this report is to answer this question. With this goal in mind, it is necessary to analyze if the actions of the state have implied a timely supply of public goods that not only meet the existing demands, but also promote a reduction in income inequality. Moreover, it is also necessary to investigate whether the provision of these public goods and social programs is efficient. These two issues are analyzed in chapters 2 and 3, respectively.

As was previously mentioned, the deficiencies in the quantity and quality of public services and their redistributive impact are also related to how the state funds these expenses. Therefore, chapter 4 studies the tax structure in the region and how this structure limits the capacity for tax collection and its redistributive effect. The hypothesis that there is a connection between tax structures and the size and the composition of budgets is studied in chapters 5 and 6. While the former evaluates this connection using the results of CAF's 2011 survey, the latter analyzes funding through fiscal revenues obtained from the exploitation of non-renewable resources (e.g., hydrocarbons) and its effects on the supply of public goods. Finally, chapter 7 analyzes budget institutions in Latin America and evaluates to what extent these have facilitated a consensus for the adjustment of the level and composition of taxes and expenditures that are compatible with greater economic growth and more efficient and equitable outcomes. The following sections provide a more detailed analysis of the conclusions reached in each of the chapters.

Does the state contribute to the improvement of the distribution of income in Latin America?

Latin American countries have been traditionally classified as the most unequal in the world in terms of income distribution. In this sense, they differ from what is observed in most developed economies, where inequality is much lower. Historically, Latin America has also differed in the strength of its welfare state. As previously described, while developed nations significantly increased public participation in the provision of social goods and services with an important redistributive impact during the 20th century, in Latin America the welfare state took a much weaker form, characterized by a segmented provision of relatively lower quality services.

Nevertheless, and despite the high levels of inequality and a weak welfare state, in the last 10 years Latin America has seen a significant improvement in the distribution of income and in access to certain public redistributive programs. This process began, in most countries of the region, around the year 2000, and reflected a reversion in the trend of the two previous decades.

One of the key drivers of the fall of inequality has been the returns of human capital investments. A declining skill premium has led to greater equality of labor income between skilled and unskilled labor because, as expected, the most skilled labor force is concentrated in the higher income strata. The causes of the decline in the relative wages of skilled labor are difficult to identify, as they involve issues related to both the supply and demand of labor. In this regard, the expansion of access to high school education observed in Latin America since the 1990s may have contributed to greater equality in labor income.

The improvement in income distribution observed in the past decade was also related to the behavior of non-labor income (income that does not come from wages obtained from the labor market). Public initiatives, such as conditional transfers to low-income families and non-contributive pensions to informal workers, have played a role in the reduction of inequality in Latin America.

Nonetheless, problems related to the effectiveness of redistributive policies persist. High informality rates (that hinder redistribution via transfers through the labor market), unequal and low-quality coverage in some public services (especially in the case of health, and preschool and higher education), and the lack of complementarities between direct income transfers and basic services that assure low-income families full access to universal public provisions all remain problematic.

The detailed analysis of the incidence of taxes and public expenditures (i.e., a comparison of the post fiscal distribution with the original or "primary" distribution of income) in Argentina, Bolivia, Brazil, Mexico, and Peru suggests that a large fraction of the redistributive effect is obtained through the delivery of public services and goods, such as education and health, especially in the case of Mexico, Argentina, and Brazil. Some of the previously noted direct cash transfers (especially the non-contributive pensions and some programs of conditional transfers) also contribute to higher levels of equality in some countries. On the other hand, taxes play no role in the struggle against inequality in all the countries considered.

Public spending and efficiency

The efficient use of public resources is a moral obligation that not only legitimates tax collection, but, according to the reciprocity hypothesis, can also be the center of a virtuous circle that promotes tax compliance. To make the notion of efficiency in public administration operational requires a clear definition and an approach to measurement. Unfortunately, the concept of efficiency in public policy debates is frequently restricted to the exploration of certain socioeconomic indicators or output measures (i.e., the results of standardized student tests; mortality rates among children, etc.), which, despite offering useful information, do not allow a correct evaluation of the efficiency of public sector performance. The reason for this is simple: an unfavorable result may reflect either or both a lack of resources (inputs) or adverse external conditions, and thus may not necessarily indicate poor use of available public sector resources.

Productive efficiency helps determine whether, for example, a national government produces a number of services in a way that is consistent with the proper use of its available inputs; or, conversely, if current levels of production can be reached using fewer inputs. Measuring the efficiency level of a public entity requires a comparison between the resources or inputs used and the results or output obtained in a specific environment, taking into account an ideal situation where these inputs and outputs are linked (e.g., using a set of best practices observed either globally or within a given country or set of countries).

The empirical evidence suggests that even though the relatively poor results achieved by Latin American countries on some indicators of educational and health services are at least partly explained by the lack of inputs and/or adverse external conditions, there is also an important component of inefficiency in the provision of these services. For example, using aggregate information of a broad sample of countries, we find that in Latin America secondary education, both in terms of coverage and quality (as measured by PISA test results), could be improved up to 20% given the resources currently destined to this sector and the external conditions faced by students in the region. A significant degree of inefficiency in the use of inputs has also been identified in the health sector, in spite of the notable improvement in some indicators during the past decade. Estimations made with more disaggregated data for schools in Chile and Peru confirm the need to improve public performance. This does not necessarily imply inefficiency in public management, however; rather, the distribution of efficiency indices in schools verifies that some public institutions can be as efficient as the best managed private establishments.

These results put the question of which practices or institutional arrangements favor an efficient public administration at the center of public policy debates. A non-exhaustive list of possible interventions include initiatives that align the incentives of public officials with the objectives of policies; effective design of programs in terms of the targeted population as well as spending and subsidies; the use of information and communication technologies in public administration; and the use of planning and evaluation mechanisms in all projects. The execution of these practices is, in itself, a complex task that is needed to attain the required efficiency of public management.

Tax structure and tax collection efforts in Latin America

Despite the recent increases in total public revenues and expenditures, Latin America still lags behind with respect to developed (and even some developing) countries, especially with regard to the levels of income obtained through regular taxation. The amount of tax revenues collected partly depends on the existing tax structure. In particular, it is critical to establish an adequate combination of direct and indirect taxes that expands the use of taxes that entail the lowest efficiency cost and at the same time have a positive effect on income distribution. There is relative consensus on the fact that this structure must consider the general use of VAT duties (with perhaps lower rates on products that are consumed the most by the poor) as well as relatively progressive personal income and wealth taxes (including duties on property), and taxes with uniform rates on businesses.

The implementation of such a tax structure in Latin America faces important obstacles. These are related to the high levels of inequality in income distribution; informality of firms and workers; political costs and interest group pressure faced by authorities when trying to expand the base of contributors and to establish a more progressive tax system; a lack of technical and institutional capacity by tax agencies to enforce tax compliance; and perceptions of poor public management and inefficiency, which weaken society's disposition to honor their tax obligations (low tax moral).

These limitations partly explain the deficient tax structure in which personal and business income taxes represent a low share (around 28%) of total tax collection. The same occurs with property taxes, which in many countries are under the responsibility of subnational governments. Evidence suggests that this problem is not necessarily justified by the economic structure and the per capita GDP of the region. Other developing countries, such as those in East Asia, and developed countries when they had per capita incomes similar to that currently observed in Latin America, implemented tax reforms that strongly increased the share of income taxes in overall tax revenues (reaching over 50%). These reforms have allowed them to strengthen tax collection while maintaining a balance between efficiency and redistribution objectives.

Of course the high level of evasion is another factor that explains the low tax effort in Latin America. Estimations using data from national accounts and household surveys suggest that average evasion rates are around 27% for consumption taxes (e.g., the VAT) and 50% for income and wealth taxes. Reducing evasion may help increase tax collection and could alter the tax structure. For example, when authorities face a higher probability of evasion in personal income taxes, they may consider reducing the rates of these obligations (especially the higher marginal rates) and replacing them with other indirect taxes that are easier to implement and harder to evade (e.g., specific taxes on consumption, or taxes on financial transactions). This increases the level of inequality of the tax system.

In addition to the distributive and efficiency considerations that could justify an important role for wealth and income taxes (especially those charged to the individual), this type of tax structure may also foster greater citizen participation and accountability among public authorities, which would improve the performance public administration. In other words, the tax structure must be evaluated in light of both the resources it will generate in the short-term as well as its impact on institutional capacity and the strengthening of democratic institutions.

Taxes and the quality of government: Empowerment and reciprocity

The funding of state activities has historically been tightly linked to the relationship between the government and society. When the public sector has required the contribution of businesses and citizens through taxes, these private actors have generally requested some involvement in the decisions related to the use of the funds; for example, by creating parliaments or congresses that define the government's boundaries and allows them to participate in decisions over spending and investment priorities. This process, well known by the expression "no taxation without representation" and that led to the emergence of democratic institutions in several European countries and the US in the 17th and 18th centuries, is still in force and constitutes a channel that can promote a virtuous circle between good governance and tax collection.

The connection between good governance and taxes could be achieved through two channels. On one hand, citizens (and firms) have an increased willingness to pay taxes if they perceive the quality of government to be high. On the other hand, when citizens make larger contributions to the public sector, they are more motivated to actively participate in politics and in the process of checks and balances, resulting in better public administration. These two mechanisms can work together creating a virtuous circle, where states finally reach an adequate level of funding and society performs its role by controlling public activities, which in turn guarantees that public policy is executed efficiently and appropriately with regard to citizens' demands and requirements.

Data from CAF's 2011 survey reveal that the channels through which taxes could increase civic participation, and thus, accountability, are still insufficient: the population perceives voting as the most relevant control mechanism and is somewhat skeptical towards other direct means of participation, partly due to the lack of knowledge about these instruments. Evidence concerning reciprocity, especially that regarding subnational governments' taxes and public services, shows a positive and significant correlation between the perception of good public management and the willingness to pay taxes. Even though the effects of reciprocity are small, the mere fact that a positive effect was found suggests that the real impact could be significant when the perception of the quantity and quality of goods and services used by households is significantly altered.

Public revenues from natural resources and their impact on tax and spending decisions

The fiscal income generated from the exploitation of non-renewable natural resources is significant in Latin America. The partial or total appropriation of rents generated by these activities by the state allows governments to finance an important portion of their budgets. The rise of international commodities prices in recent years has lead to a considerable increase in the importance of these resources for the budgets of producing countries, rising from 18% of budgets in 2000 to 35% by 2010.

The increase in the total resources available to the state as a result of these revenues allows for the expansion of the supply of public goods and services, in turn, promoting economic growth and welfare. However, the existence of this alternative source of public funding also weakens the connection between citizenship and the state. In other words, citizens lose incentives to monitor (directly or indirectly) the public administration and to demand the efficient use of resources, as the funding of the budget did not come entirely from their pockets. This reduces the pressure on public administrators to improve the quality of public services. In turn, when citizens perceive that the services they receive are of poor quality, they will not be inclined to pay additional taxes, generating a vicious circle of low tax collection, low civic participation, poor monitoring of the budgets, and poor quality public policies.

These problems could be accentuated if the state appropriates these rents through regimes that lack transparency and that use excessively complex or unstable legally regimes; this situation complicates society's ability to monitor public administration. In addition, in weak institutional contexts, the high rents involved in the exploitation of these natural resources may lead to rent-seeking struggles among interest groups and to political cronyism. This may also aggravate problems of governance and impair institutional development to the detriment of democracy and the quality of public administration.

International evidence shows that the availability of public revenues from the exploitation of natural resources does not necessarily translate into a more efficient performance of fiscal policies. On one hand, on average, less transparency is observed both in the administration of these funds and in the general budget management in countries with abundant natural resources, compared to those without such resources. On the other hand, even though countries that have these other sources of revenue invest more in the creation of physical and human capital, this has not led to more efficient spending in education or health or to better welfare indicators.

The same results are obtained when analyzing subnational level data for some Latin American countries. In particular, evidence from Brazil and Peru shows that the municipalities that receive income from the

exploitation of hydrocarbons and mines exhibit a larger increase in total spending and investment relative to those that do not have this source of income. These increased expenditures have not, however, led to improvements in welfare indicators, such as housing conditions, public infrastructure, schooling, or health.

The question of how to combine the presence of high rents from natural resources with an efficient fiscal administration that promotes development with social inclusion has been a source of concern for many natural resource-producing countries. One solution has been the establishment of budgetary rules or savings funds to improve the administration of these revenues. International experience suggests that the success of these arrangements fundamentally depends on their transparency; in other words, the ability to ensure the dissemination of clear and precise information about the evolution of these resources. This would encourage relevant actors (executive power, congress, and producing regions and industries) and society in general to participate both in the decisions around the allocation and management of funds.

Budget institutions and good governance: Transparency, control and civic participation

Public budget institutions have a fundamental role in facilitating the relationship between society and government because they represent the forum in which all interested parties, starting with the population at large through their political delegates, can be represented and can exert pressure in defense of their interests. Moreover, the budget constitutes the explicit connection between revenues and expenditure decisions. This is true for any level of administration, whether national, regional, or local governments.

Given that the public budget is where compromises and goals are defined, it is also the framework in which society can demand accountability from government; therefore, the public budget performs a crucial role in making the needs and demands of the population explicit and in promoting public debate regarding unaccomplished objectives and projects.

Thus, the legislative body, where budgets are discussed and approved, plays a leading role in generating more efficient public administration, focused on the needs of the population. The Congresses or Legislature Councils represent society's diverse interests and must ensure the fulfillment of the commitments made by the executive.

Unfortunately, the budget processes in Latin America do not always fulfill this purpose. In fact, budgets in the region are usually formal exercises that are not always politically or fiscally relevant. Generally, the need to rationalize fiscal policy and avoid increases in public expenditures and deficits led to the executive power absorbing many of the legislative's tasks and prerogatives. This delegation of legislative prerogatives also coexists with practices that give the executive power discretionary capabilities to modify the agreements established in congress (extensions, re-estimations of income, reallocation of expenditure commitments, and unbudgeted allocations, among others), making the budget process less credible.

Other limitations related to the capacity of the legislative body and of the general population to interpret budget information can also be added to the list of structural restrictions. This limits the ability to maintain constructive discussions among legislators and other representatives and hinders control. Also, constructive budget negotiations between the different political powers, in which decisions on expenditures and taxes are closely connected, are many times impeded by the fact that the executive branch of the government concentrates on the total amount of expenditures (and also their composition), while increases to or the creation of

new taxes fall to the legislative. Structural factors, together with these limitations, hinder the participation of the leading members of parliament and, indirectly, of society in general in the budgetary process.

The institutional difficulties and the previously mentioned policies prevent the budget from fulfilling its role of bringing government and society together, and in turn, of offering a space where the connection between revenues and expenditures is made visible.

Despite these difficulties, in recent years a number of initiates have been launched in different parts of Latin America to strengthen the budget process. These include actions that build the capacities of the legislative body, improve transparency in all stages of the process, establish audit and control institutions, and promote direct civic participation or through NGOs. Some of these initiatives have had a positive impact on public performance. The ultimate goal of these reforms is that the budget process and its discussion in the context of democratic institutions become an instrument to generate consensus to increase tax collection and expenditures that promote development with social inclusion, without compromising the economy's macroeconomic stability.

CONCLUSIONS

Throughout this chapter we have tried to argue that, in Latin America and other developing countries, the state may not be fulfilling its role to promote economic development due to a lack of resources required to provide an adequate quantity and quality of public goods and services. Furthermore, the failures with respect to tax collection and the provision of public goods could be mutually reinforcing, generating a *status quo* that is difficult to change. A tax structure that decouples the citizen from state revenues (by using taxes concentrated in a few enterprises, or the excessive use of indirect and other less visible levies with an undetermined final incidence) could reduce society's incentives to become interested in how public resources are used and to participate, by voting and other mechanisms (pressuring congress representatives, through NGOs, among others), in the control of the public administration. This, in turn, generates fewer incentives for governments to become transparent and efficient, resulting in poor public administration that will surely be reflected in a lower supply and quality of public goods. This situation further reduces the willingness of citizens to comply with tax obligations, a response that once again feeds this vicious circle between low tax collection and poor public management.

What kinds of policy interventions arise from this diagnosis? How can countries "break" this bad equilibrium that produces an inefficient state, which can be less legitimate from citizens' perspectives? Evidently, the recommendations that rise from this type of analysis are less related to particular measures taken in isolation regarding taxes or expenditures (e.g., the rise of personal income tax rates or outlays in education); rather, this analysis stresses the importance of a fiscal system that helps citizens to understand and evaluate (in terms of individual and general welfare) the connection between both sides of the budget. As Bird *et al.* (2004, p.12) say: "… the best that can be done to help make sound fiscal decisions is that everyone who benefits and everyone who assumes the costs are well informed and are aware of the consequences of these decisions…"

In other words, when deciding on taxes and spending, the only way to weigh the social benefits and costs of the package is to connect both decisions in the most transparent way possible. In this regard,

civic participation and the political system, through institutions of representation and the division of power, must facilitate two things: first, they must make the social costs and benefits of the different fiscal packages visible for all interested parties; second, they must offer a space for negotiation where all sectors can participate, so that the decisions ultimately taken maximize social welfare.

In this context, installing a public finance regime that efficiently increases public resources and spending and addresses issues of inequality requires improving the performance of political institutions, as this will give more legitimacy and capacity to the state (Lledo *et al.*, 2003). Even though this idea may not be easy to execute, the analysis presented in this report offers some suggestions regarding what kind of institutions or issues within the fiscal system may hinder the connection between spending and revenue decisions, impeding political authorities and society from adopting more adequate policies. These issues include unbalanced tax structures, where income and wealth taxes, though adopting some degree of progressivity, still do not reach an important fraction of the population and enterprises; the existence of non-tax revenues (e.g., rents for the exploitation of natural resources) within schemes that lack transparency and disconnect the population from the need to fund the state; significant levels of tax evasion that make the system less egalitarian and create low tax moral; a lack of efficiency and capacity for redistribution within social programs; and budget institutions with a poor balance and/or coordination between the legislative and executive and that do not act as a space for negotiation among diverse interests.

Even though this list of possible flaws in the fiscal system does not offer concrete solutions that can be quickly implemented, it could offer the necessary elements for a debate about the changes in public finance that, considering the particularities of every country, will help build consensus on possible courses of action.

2

Public Finance and Income Inequality in Latin America

Public Finance and Income Inequality in Latin America[1]

INTRODUCTION

Fairness in income distribution is, for many reasons, a key goal of public interventions. For instance, high levels of inequality may be considered undesirable not only on the basis of moral considerations, but also because it can hinder economic growth[2] or limit its ability to alleviate poverty (Bourguignon, 2002). Inequality may also be an important source of social tension and conflict (Esteban and Ray, 1999).

The usual classification of the roles of government in a market economy (Musgrave, 1959) includes redistribution as one of the three pillars of public intervention, along with resource allocation and macroeconomic stabilization. To achieve redistribution, a government collects taxes from households and firms and then makes expenditures in the form of cash transfers and the provision of public goods and services (in-kind transfers). When collecting taxes and making expenditures, government intervention changes the primary distribution of income –i.e., the distribution resulting from the remuneration of all production factors in the corresponding markets– and consequently shapes the post-tax distribution or secondary distribution of income, which accounts for the impact of taxation and public spending.[3] As this chapter explains, effective and sustainable redistribution requires not only to acheiving a progressive composition of public spending, but also to ensuring the high quality of public services and transfers.

In general, redistributive policies are more controversial than other government interventions, such as policies directed at improving efficiency, especially because of the difficulty in reaching a social consensus about 'how much' redistribution is desirable. Moreover, some concerns may arise about the effectiveness of public interventions in actually achieving a more equal distribution of income. These concerns, as well as the difficulty in reaching a social consensus, can limit the role of the state in redistribution. Nevertheless, in practice, most governments devote large shares of public resources to impact the distribution of income in their economies. For instance, most developed countries allocate about 75% of their total public expenditures to social spending, most of which has an important redistributive impact. Furthermore, as emphasized in Chapter 1, many explanations of the secular growth in the size of government in rich countries relate to the need to satisfy demands for redistribution.

Income inequality in Latin America is not only high, but also higher than would be predicted by its level of economic development. According to Gasparini and Lustig (2011), 10 out of the 15 most unequal countries

---

2. There are several hypotheses linking inequality and low economic growth. For instance, credit market imperfections, externalities in human capital formation, social conflict, and rigidities in markets for factors of production, among others, are channels through which any country with high inequality may underperform in terms of economic growth (e.g., see Ortega, 2003 and De Ferranti et al., 2003).

3. Public intervention may indirectly affect the distribution of labor income, as well as the distribution of rents obtained by the owners of other factors of productions, such as capital and land.

in the world are Latin American.[4] Moreover, the redistributive function of the state in this region is less effective than in developed economies. The weak redistributive power of public intervention may be related to: i) the lower quantity of resources directed to social spending; ii) the lower and more unequal coverage of certain public services; and iii) the lower quality of public goods and services in the region, relative to richer countries.

The left panel in Diagram 2.1 (see p. 49) depicts a typical public redistribution scheme. Tax collection can increase equity not only through a progressive tax structure, but also through the provision of cash transfers (contributory and non-contributory) and of universal public goods and services that promote equal opportunities.

In contrast, the typical redistributive scheme in Latin America is more similar to the illustration in the right panel in Diagram 2.1. On the one hand, low state capacity to collect taxes, driven by a tax structure that limits the expansion of the tax base and facilitates evasion and elusion (see Chapter 4), implies limited resources to be allocated to cash transfers and public goods and services. As a result, the ability of taxes to reduce income inequality is weakened not only by the direct impact of taxes, but also indirectly through the lower redistributive spending that they can finance. On the other hand, high levels labor informality in Latin America mean mechanisms for redistribution through the labor market in the form of cash transfers can be ineffective in reaching the poor. Moreover, the lower quality of basic public goods, such as education, health services or infrastructure, does not ensure the generation of equality of opportunities for low-income households. Lastly, the implementation of different types of subsidies as redistributive mechanisms often ignores the limited ability of the poor to access complementary goods and services, in turn restricting the redistributive potential of such subsidies. In addition, in practice, such subsidies absorb a large portion of public resources, are often enjoyed only by higher income individuals rather than the targeted segments of the population, and may interfere with allocative efficiency due to their impact on relative prices.[5]

Despite the traditionally high levels of inequality and the weak redistributive capacity of governments in Latin America, the region is now seeing declining inequality, together with expanding access to certain public goods and services for families in the lower deciles of the income distribution. Inequality began to decline from the late 1990s in many countries in Latin America, but over the last decade in particular this decline has accelerated and spread to almost every country in the region. This trend marks a notable shift from both the 'lost decade' of the 80s and the 'structural reforms' of the 90s, both of which witnessed increasing inequality across the region. The second section in this chapter analyzes the forces driving this recent process of equalization of incomes, emphasizing the importance of the fall in the skill premia and of new instruments of social protection –basically, non-contributory cash transfers– as the two most important factors contributing to the decline in inequality. Sections 3 and 4 analyze further the new forms of social protection as public interventions that aim to improve the fairness of income distributions.

The extent of tax collection and of public spending may influence the effectiveness of redistribution (more resources transferred in the form of taxes might result in more redistribution). During the last two decades

---

4. Latin America is widely known as the most unequal region in the world; however, as shown in Gasparini and Lustig (2011), the low quality of distributive statistics produced in very poor regions (e.g., Africa) may be an important factor in explaining part of the high Gini coefficient rankings among some Latin American countries relative to the rest of the world, as is similarly the case with the data from the *World Development Indicators* (WDI) of the World Bank.

5. Car ownership as a private complement required to actually benefit from subsidized gasoline is the typical example of the failure of many subsidy schemes to reduce inequality.

Diagram 2.1 Tools of redistributive policy

Traditional redistributive policy   Latin American redistributive policy

Tax collection

Cash transfers

Inequality

Public goods and services (in-kind transfers)

Low tax collection capacity (Tax structure, tax evasion and avoidance)

Tax collection

Informality in labor markets

Inequality

Cash transfers

Low quality and unequal coverage

Public goods and services (in-kind transfers)

Need complements

Subsidies

Source: own elaboration.

the size of governments in Latin America has grown; this is the key aspect analyzed in the third section in which, from an aggregate view of public spending (and to a minor extent, of taxes), we examine the relationship between this expansion of government and redistributive outcomes.[6]

The fourth section analyzes separatedly each component of redistributive public expenditures (cash transfers, spending on public goods and services, and subsidies), describing the current and shifting trends. This section addresses not only coverage of public services but also their quality. While there has been an expansion in coverage over the last two decades –especially in terms of basic education, non-contributory income transfers, and some urban infrastructure services– obstacles to ensuring the sustainability of this reduction in inequality and to strengthening the welfare state remain, including high rates of informality, inequitable coverage, low quality of services, and the lack of complementarities with certain basic goods and services.

The fifth section in this chapter brings together all the pieces of the puzzle, by analyzing the total impact of taxes and expenses on equity. In particular, the cases of Argentina, Bolivia, Brazil, Mexico and Peru are studied in detail. This section finds that an important portion of the (still low) redistributive effect in Latin America is achieved through the provision of public goods and services such as education and health (in-

6. Chapter 4 further addresses the tax structure in Latin America.

kind transfers), especially in the cases of Argentina, Mexico and Brazil. In some countries, direct monetary transfers also contribute to reducing inequality; in contrast, taxes make no contributions to reductions in inequality in any country. The last section summarizes the findings of the whole chapter, highlighting the redistributive achievements in the region, but at the same time offering a critical view on the sustainability of these achievements in the medium and long-run.

TRENDS IN INEQUALITY IN LATIN AMERICA

Levels of inequality in Latin American countries far exceed that predicted by their level of development (as measured by per capita GDP), as shown in the left panel of Figure 2.1. On the other hand, poverty levels in Latin America are more in line with the region's level of development (see right panel of Figure 2.1).

Figure 2.1 Inequality and poverty[a/] by levels of development[b/]
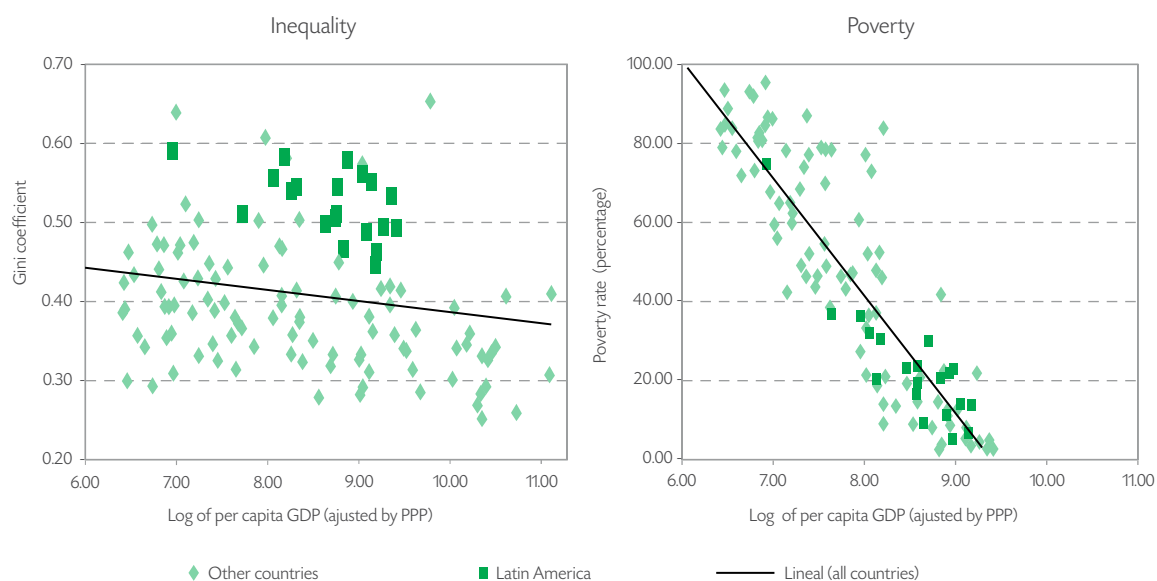
a/ Poverty is measured as the percentage of population below the poverty line of USD $2, PPP.
b/ Measured as per capita GDP (in logs). Each point represents the mean values of each country for the period 2000-2009.
Source: author's calculations based on World Bank's WDI (2011) .

Despite this "excess inequality", in the last decade there has been a significant equalization in the distribution of incomes in Latin America. As shown in Figure 2.2 (see p. 51), 11 out of the 15 countries listed have

experienced a reduction in their Gini indices between 1999-2001 and 2007-2009.[7] Moreover, the average increase in inequality in Honduras, Costa Rica, Uruguay, and Colombia was only around 3%, while the average reductions were greater with an average of 7%.

Over the last two decades, trends in inequality have seen marked shifts. In the nineties, inequality grew almost everywhere, but this trend was reversed around the year 2000. Furthermore, even though in this entire period –covering the two decades– there is some evidence of convergence in the levels of inequality between countries in the region (left panel of Figure 2.3, see p. 52), from 1999/2001 to 2007/2009 the evidence on convergence is slightly weaker (right panel of Figure 2.3), as countries with relatively low levels of inequality significantly reduced their Gini indices (e.g., Argentina) but other very unequal countries did not (e.g., Colombia and Honduras).

Figure 2.2 Gini coefficient[a/] for selected countries of Latin America (1999-2001 vs. 2007-2009)[b/]

a/ Gini coefficiet of per capita family income. The vertical axis does not start at zero to make more visible the changes in the coefficients.

b/ The countries included are those for which information on the Gini coefficients is available for the three-year periods 1999-2001 and 2007-2009 in the SEDLAC database. Countries are listed in order of increasing Gini coefficient in 2007-2009.

Source: author's calculations based on SEDLAC (CEDLAS and World Bank, 2011).

7. These computations do not consider the statistical significance of reductions in the value of coefficients between the two time periods. According to Lustig *et al.* (2011), between 2000 and 2009 in 13 out of 17 countries in Latin America (where statistics can be compared), the Gini coefficient declined. On the other hand, using data of ECLAC, Gasparini and Lustig (2011) calculate a reduction of inequality in 14 out of 17 countries for the period 2002-2008, and the data from the SEDLAC database show the Gini coefficient fell in 16 countries in the same time period.

Figure 2.3 Relationship between the rate of change of the Gini coefficient and its initial level (simple analysis of beta-convergence)

Period 1990-1994 vs. 2007-2009

Period 1999-2001 vs. 2007-2009
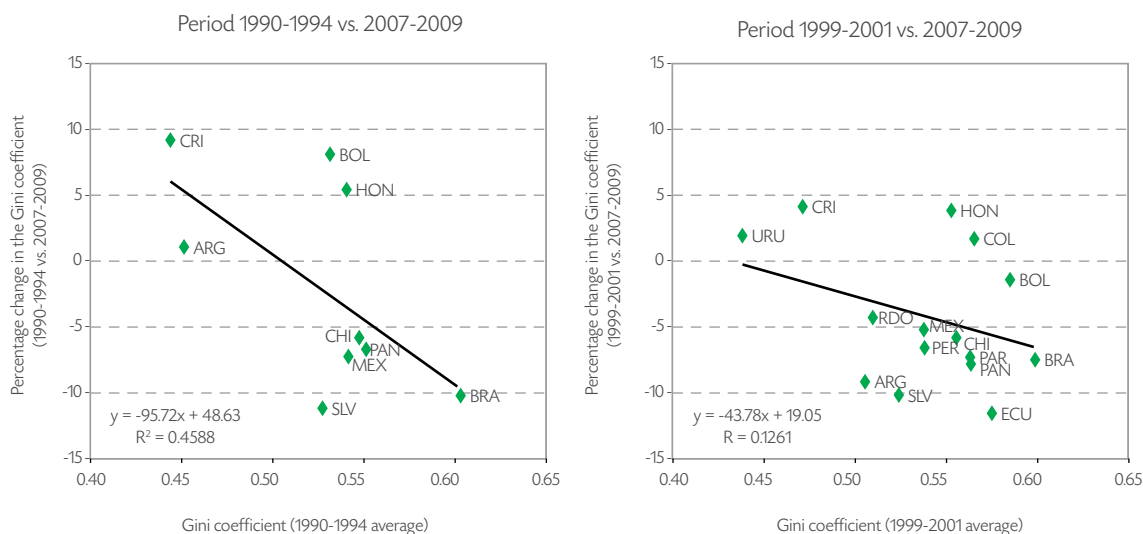
Source: author's calculations based on SEDLAC (CEDLAS and World Bank, 2011).

Then why did inequality fall in the last decade? Does this really represent a break with historical trends of high inequality in Latin America? The answers to these questions involve the multitude of factors that affect the distribution of income in a given country, which make the task of separating the incidence and duration of each equalizing force difficult. The Box 2.1 summarizes the evidence on the various factors driving the recent fall in inequality in the region. The arguments put forward highlight the role of two factors: the fall in skill premia, and the effects of income transfers targeted to the poor.[8]

Box 2.1. Causes of the decline of inequality in Latin America

The distribution of income results from the interaction of many forces: the distribution of ownership of productive factors, the structure of the markets where their services are traded, the technology available for production, the labor market behavior of individuals, and public interventions through taxes and expenditures. The complexity of such interactions make the counterfactual exercises that would be needed to separate the effects of each element on changes in inequality, as the one observed in Latin America in recent years, very difficult. There are, however, several hypotheses that attempt to explain the recent decline in the Gini indices in the region and that find reasonable support in the empirical evidence.

8. The role of cash transfers in the reduction of inequality is further discussed in the fourth section of this chapter.

The first hypothesis emphasizes the role of changes to labor income, which is the primary source of household income (about 75% of family income in Latin America). Available evidence suggests that most of the decline in inequality may have been driven by a more equal distribution of labor earnings. In particular, this equalization was induced by the fall in skill premia during the last decade, in contrast to trends during the 1990s (see Table 1). Since higher qualifications are more concentrated among richer income deciles, a lower price for education tends to imply a more equal distribution of labor income. The reasons behind the decline in skill premia are equally complex, involving shifts in both demand for and supply of skilled versus unskilled labor, both of which have been at work in the Latin American case. In explaining the decline in skill premia, there is some evidence of a relative expansion of the supply of skilled labor (López Calva and Lustig, 2010), while there is other evidence (Gasparini *et al.,* 2011) that emphasizes the importance of the lower demand for skilled labor. Each of these explanations may have more or less relevance in different countries within Latin America.

Table 1 Percentage changes in the skill premia (returns to skilled labor vs. returns to non-skilled labor) for selected countries of Latin America in the 1990s and in the 2000s.

Country	Percentage changes in skill premia	
	1990s	2000s
Argentina	3.5	-2.4
Bolivia	7.9	-4.6
Brazil	-0.4	-3.2
Chile	0.5	-1.9
Colombia	2.5	-2.0
Costa Rica	0.4	-0.2
Ecuador	n.a.	-3.2
El Salvador	1.7	-0.1
Honduras	0.0	-1.9
Mexico	1.8	-2.8
Nicaragua	3.5	-6.9
Panama	0.3	-2.3
Paraguay	0.8	-5.6
Peru	0.6	-2.8
Uruguay	2.3	-0.9
Venezuela, BR	1.1	-4.8
Average	**1.8**	**-2.8**

n.a.: not available.

Source: Gasparini et al. (2011).

Even though labor income is the main source of household income, its share has declined in favor of a greater fraction now occupied by non-labor income, such as pensions and other transfers (public and private). Part of this change may be explained by a more expansive social policy, which will be further analyzed in other sections of this chapter. According to Figure 1, even though (contributory) pensions became more regressive, other transfers (conditional cash transfers and non-contributory pensions, as well as remittances from abroad which form part of 'private' transfers) have become more equally distributed. Contributory pensions are now, in general, more regressive since they are tied to formal/registered status in the labor market, which became less common among the poor in previous decades (when current retirees were working and making pension contributions).

Figure 1 Elasticity of inequality (Gini coefficient) to changes in different sources of non-labor income in Latin America (1995-2009)
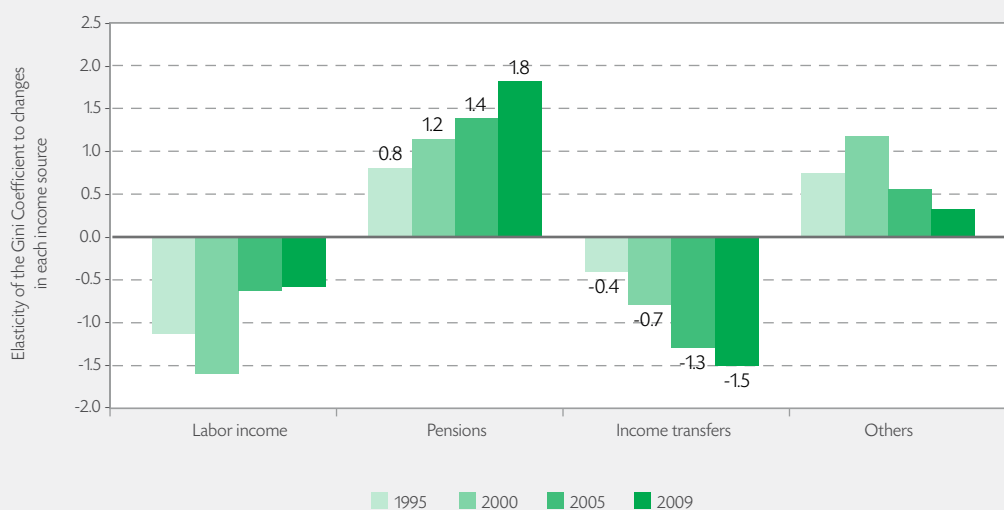
Source: author's calculations based on World Bank (2011).

Thus, Figure 1 shows that the marginal impact of a 1% increase in contributory pensions was associated with an increase of inequality (as measured by the Gini index) of about 1.8% in 2009 but only 0.8% by 1995. An increase of 1% in the category of 'transfers' was associated with a decline in inequality of 1.5% in 2009, but only of 0.4% in 1995. That is, inequality in the income distribution shows a positive elasticity to changes in pension income that increases over time, and a negative elasticity to changes in other types of transfers that decreases over time.

Source: Based on Gasparini *et al.* (2011), World Bank (2011), and López Calva and Lustig (2010).

REDISTRIBUTION AND THE SIZE OF GOVERNMENT

Growing public spending: What is the importance of redistributive components?

Governments in Latin America are smaller than in more developed economies. One way of comparing the relative sizes of government is with public spending as a share of GDP, which is of course much larger in OECD countries than in Latin America. For the period 2007-2009, while the average size of governments in Latin America, as measured by public spending, represented 27.8% of GDP, in the OECD countries it reached 43.3%.[9] In the early 1990s, public spending in Latin America averaged 22.9% of GDP, compared to 46.3% in OECD countries.[10] In other words, while the governments in Latin America grew in size, the developed world followed the opposite trend.[11] These averages mask a certain degree of heterogeneity –shown in Figure 2.4 – because in countries like Haiti or Guatemala public spending as a share of GDP does not even reach 15% and has not grown much in the last two decades.

Figure 2.4 Total public spending[a/] as a percentage of GDP for selected Latin American and OECD countries (1990-1992 vs. 2007-2009)
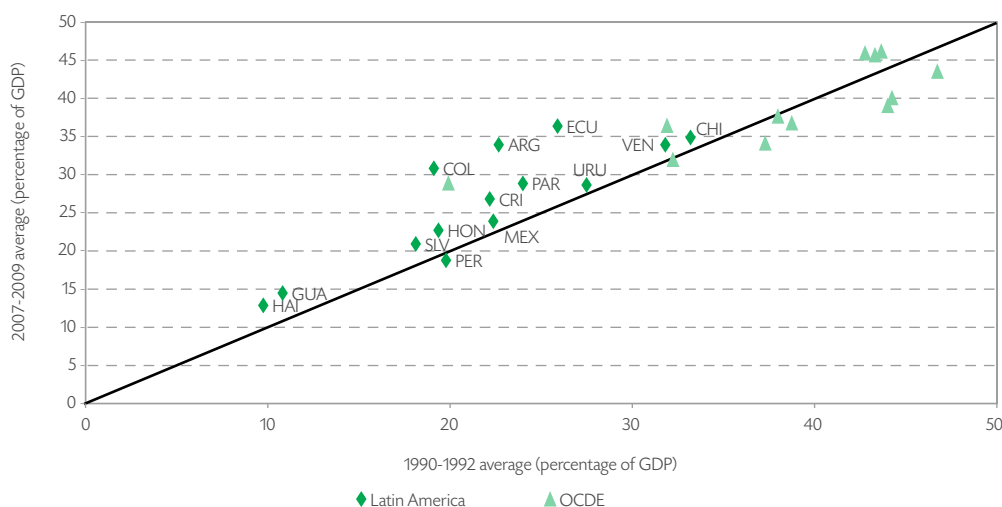
a/ Country data correspond to the following levels of aggregation: non financial public sector (NFPS) in the cases of Argentina, Bolivia, Colombia, Costa Rica, Ecuador, El Salvador, Mexico, Nicaragua, Paraguay, Uruguay and Venezuela, BR; general government in the cases of Guatemala, Haiti, Honduras; and the central government in the cases of Chile and Peru.
Source: author's calculations based on CEPALSTAT (2011) and OECD Statistics (2011).

---

9. Unweighted means for 2007-2009. GDP-weighted means are 32% in Latin America and 40.7% in OEDC countries.

10. GDP-weighted means were 23.6% in Latin America and 41.4% in the OECD by the early nineties (1990-1992).

11. The gap between unweighted means is 4.9 GDP percentage points. Brazil is not included in any of these averages due to a lack of information in the CEPALSTAT database for the period 1990-1992.

Not only has the amount of public spending changed in Latin America, but also its structure. The new composition of expenditures seems to give greater importance to some redistributive components. For instance, Figure 2.5 shows that subsidies and transfers have significantly increased as a share of public spending (from 29% to 39%) and as a percentage of GDP, rising from 5.3% to 8.9% over the last two decades.

Figure 2.5 Shares of wages, purchases of goods, interest and subsidies, and transfers in the total current public spending in selected Latin American countries [a/ b/] (1990-1992, 1999-2001 and 2007-2009)
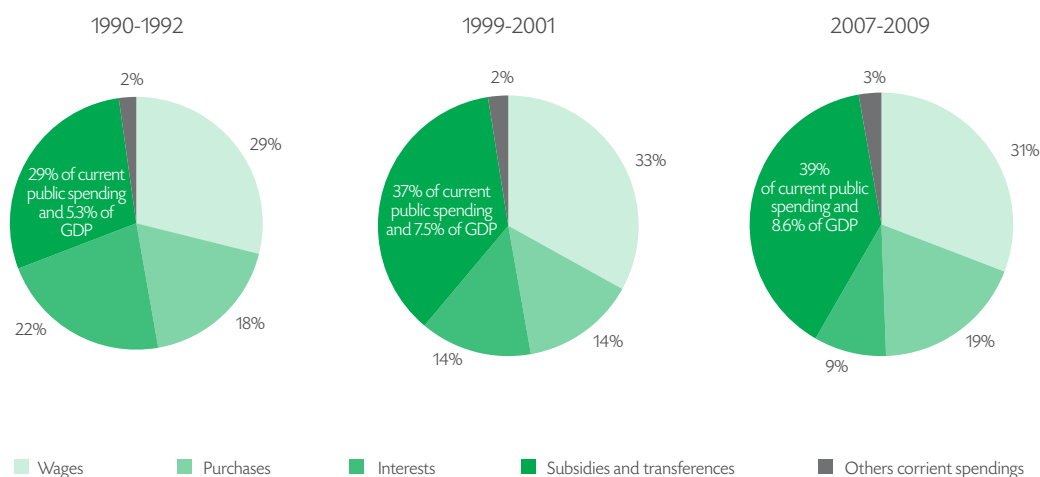
a/ GDP-weighted averages.

b/ Country data correspond to the following levels of aggregation: NFPS in the cases of Argentina, Bolivia, Colombia, Costa Rica, Mexico and Venezuela, BR, general government in the cases of Chile and Nicaragua, and the central government in the cases of Ecuador , El Salvador, Guatemala, Haiti, Honduras, Panama, Paraguay, Peru, Dominican Republic and Uruguay. Brazil was excluded from the calculation of averages because the comparable data are not available.

Source: author's calculations based on CEPALSTAT (2011).

Another view of the composition of public spending distinguishes its components according to the types of services it finances, which may include social spending, provisions to support economic activity, and expenditures on financial or administrative services.[12] From the point of view of redistribution, the most important items are those included in social spending (Public Social Spending, or PSS). The left panel of Figure 2.6 (see p. 57) shows that in Latin America, since 1995, the share of PSS in total public spending has been fairly stable at about 60%, until recently. Beginning around 2005, this share began to increase to reach nearly 70% by the end of the decade.

---

12. This is the so-called 'functional' classification of public spending.

On the other hand, the right panel of Figure 2.6 shows that between 1990 and 2009, the PSS increased its share of GDP by 53%, growing from around 12% to more than 18% of GDP. This type of public spending can be classified according to the specific provisions that fund education, social security, housing and other services, and health.[13] Within these spending areas, social security and assistance saw the highest growth, increasing by 67% as a share of GDP, while health saw the slowest growth rate at 35%.

Figure 2.6 Growth of social public spending in Latin America[a/]

Evolution of social public spending as a percentage of total public spending (1995-2008)

Social public spending as a percentage of GDP and its components (1990-1992 vs. 2007-2009)

Education Health
Social protection Housing and others
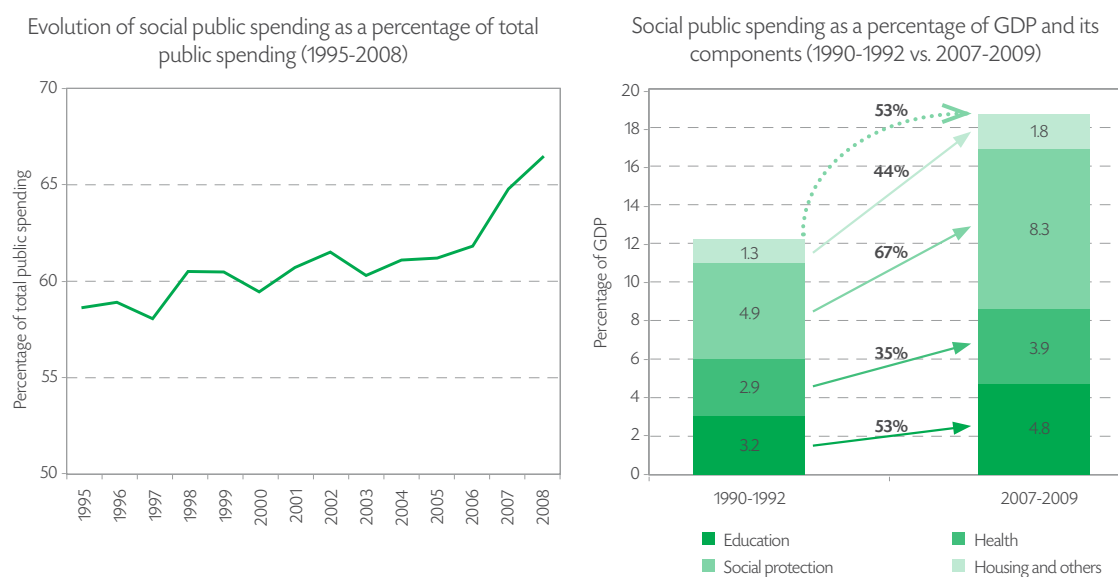
a/ GDP-weighted averages.
Source: author's calculations based on CEPALSTAT (2011).

It should also be noted that the growth of PSS was not uniform across countries. There is some evidence supporting the hypothesis of convergence of PSS; that is, countries that devoted a smaller share of GDP to PSS in the early 1990s also saw higher rates of growth of PSS as a share of GDP in subsequent years (see Figure 2.7, p. 58).

---

13. According to CEPALSTAT database, the item "education" consists of public spending in educational, cultural, sports, and leisure services, and in some countries includes nutritional programs in schools; "health" includes public spending in health and nutrition services and in some countries also includes sewerage; "social security" represents public spending on social security and social assistance, workfare and training programs; "housing and others" consists of spending on housing, water and sewerage, among other items not classified in any of the above categories (which, in some cases, includes some forms of social assistance). That is, countries use different classification criteria for similar types of spending, which makes cross-country comparisons difficult.

Figure 2.7 Change in PSS in terms of GPD as a function of its value in 1990 (simple analisys of beta-convergence) for selected Latin American countries[a/] (1990-2006)
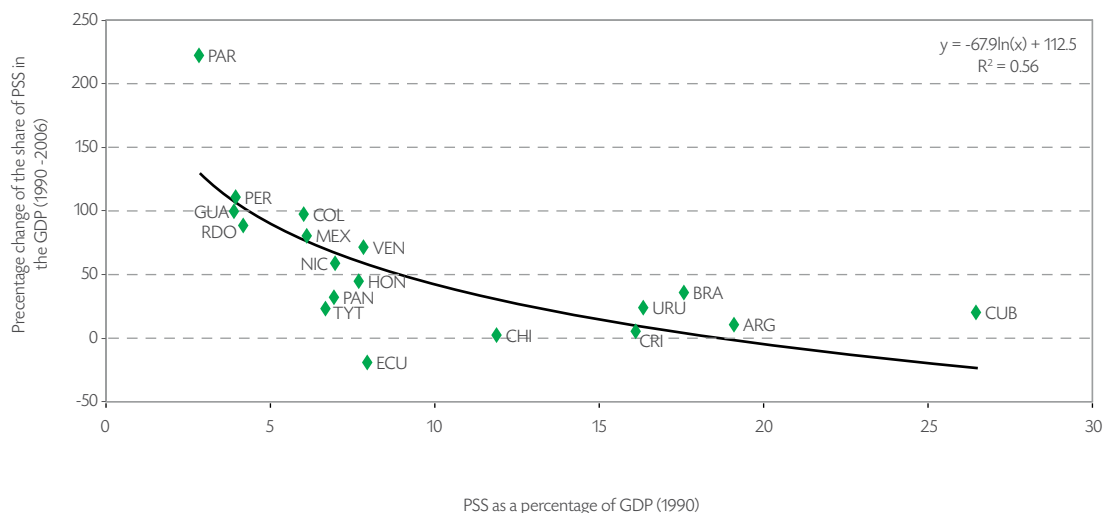
a/ The analyzed period was chosen according availability of comparable data (1990-2006 is the longest period with information available for a large number of countries in the region).

Source: author's calculations based on CEPALSTAT (2011).

Revenue growth and changes in the tax structure: Implications for equity

The counterpart of growing public spending is the expansion of its funding sources, implying that, along with an increase in public spending, there have also been noticeable changes in tax revenues in Latin America over the past two decades. This period has seen significant growth in the tax burden (see left panel of Figure 2.8, see p. 59), although, as in the case of spending, growth rates were not uniform across countries.[14] In terms of the composition of revenues (see right panel of Figure 2.8), in the last twenty years the share of indirect taxation (taxes on VAT and gross sales) has risen, the share of trade-related taxes has fallen, and there was a small increase in direct taxation (income and capital gains). Though Chapter 4 analyzes this issue in much more detail, it is worth noting here that these changes have not contributed to more equal post-fiscal incomes, since a higher share of tax revenues now comes from indirect taxes (traditionally considered to be more regressive).

---

14. For more details, see chapter 4.

Figure 2.8 Evolution of tax collection of central governments in Latin America[a/] (1990-1992, 1999-2001 and 2007-2009)

Size of tax collection as percentage of GDP

Composition of tax revenue

- ■ VAT and gross sales
- ■ Income and capital gains
- ■ Social security contributions
- ■ Excise taxes
- ■ International trade
- ■ Estate taxes
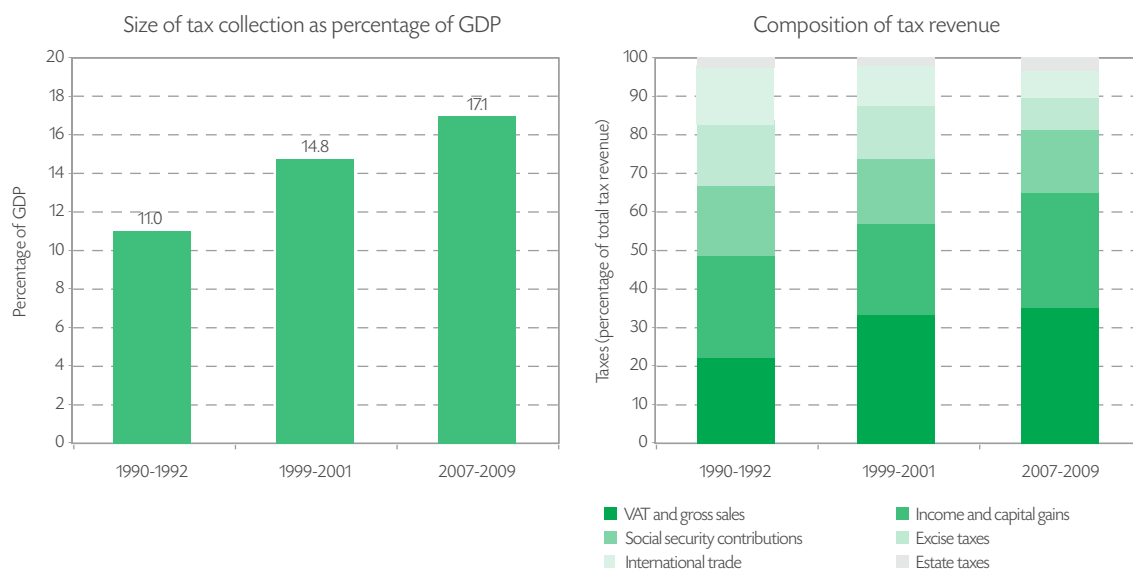
a/ GDP-weighted averages.
Source: author's calculations based on CEPALSTAT (2011).

Figure 2.9 (see p. 60) shows the concentration of payments curves[15] for direct and indirect taxes in a subset of countries in Latin America, taken from the work of Lustig (2012), prepared for this report. Indeed, these clearly show how direct rather than indirect taxes are more concentrated among the richest deciles, suggesting a more regressive tax structure.

This regressive taxation is partly the result of the regressive design of the tax structure; i.e., the "legal" tax rates applied to each tax base.[16] The average personal income tax rate in Latin America is 16 percentage points lower than the average for OECD countries (see Figure 2.10, p. 60), while there is very little difference between the tax rates for indirect taxes in both regions. This difference may be related to the possibility of using evasion as a threat in the political process that determines the final tax burden.[17] If it is easy for taxpayers to hide part of the taxable base from the tax authority, they can use this exit strategy as a threat in

15. Box 2.2 defines the concept of 'concentration curves'.

16. The tax rates design leads to the "legal" tax structure in a given country, which may differ from the "effective" tax burden (left panel of Figure 2.9) since the legal tax structure does not take into account tax allowances or exemptions or the impact of evasion/elusion.

17. Figure 2.10 also shows that tax rates on corporate income are pretty similar in Latin America and in the OECD region, which may be a consequence of greater difficulty in evading corporate income taxes compared to personal income taxes. This may also be a result of a form of global tax competition; that is, firms tend to be treated more equally – in terms of tax burden – than individuals because they are mobile and have incentives to invest more in a country with a lower relative corporate income tax burden.

Figure 2.9 Concentration of tax payments for selected Latin American countries [a/]

Concentration curves of indirect tax payments

Concentration curves of direct tax payments

Argentina — Bolivia — • • • Brazil — Mexico — Peru — Equidistribution line
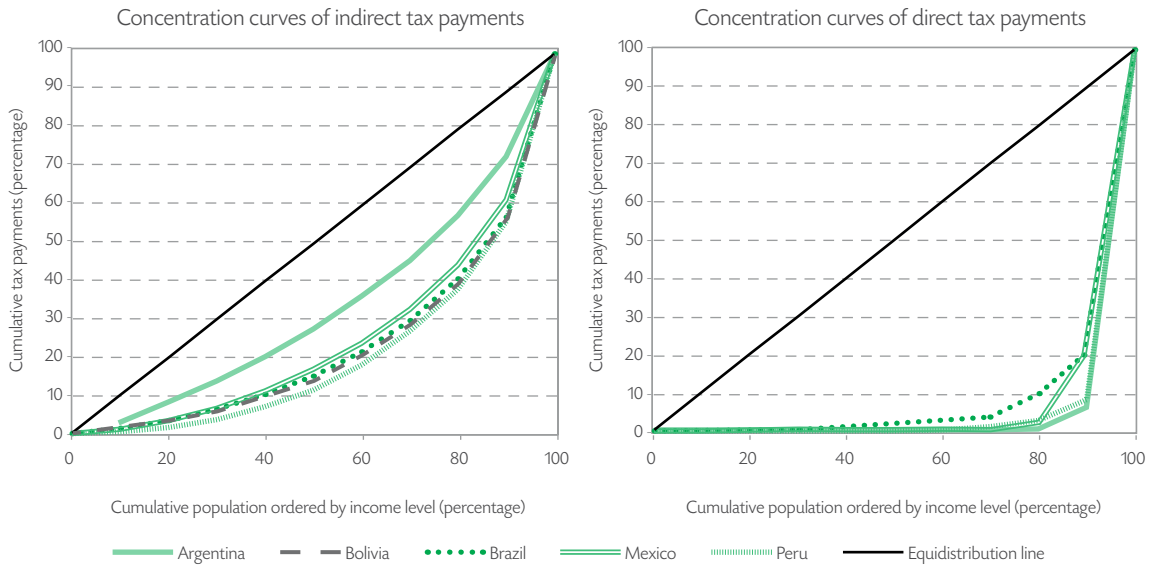
a/ Argentina, 2009; Bolivia, 2007; Brazil, 2009; Mexico, 2008; Peru, 2009.
Source: author's calculation based on Lustig (2012).

Figure 2.10 Tax rates for direct and indirect taxes in OECD countries and in Latin America (2010)[a/]

OCDE ■ Latin America
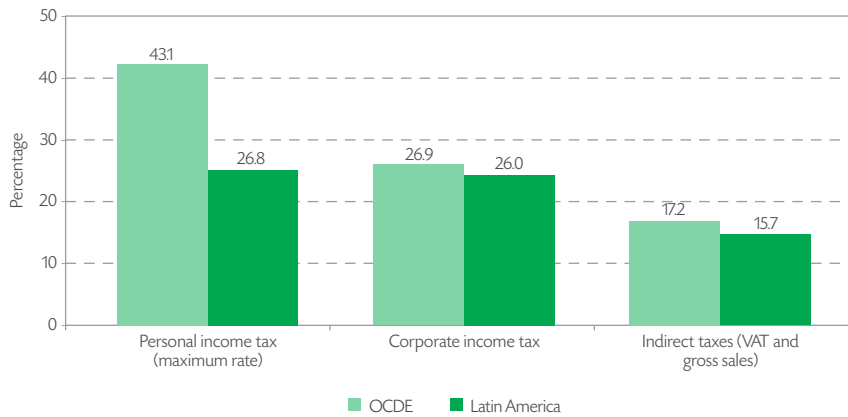
a/ Unweighted averages of all countries in each region.
Source: author's calculation based on KPMG (2011).

the negotiations determining the final tax rates.[18] A relatively higher level of evasion in direct taxation not only affects *a priori* the design of the structure of legal tax rates, but also the incentives policymakers have to rely more heavily on indirect taxes, since the latter are usually easier to monitor and collect.[19]

In short, Latin America has recently experienced a remarkable growth in tax revenues, although the changes in its composition have been less pronounced, thus perpetuating the regressive features of taxation in the region. Nonetheless, the increase in tax revenues has allowed for the expansion of public expenditures aimed at providing increased access to certain public goods and services. This growth of spending and expansion of services is discussed in the next section.

COVERAGE AND QUALITY OF PUBLIC SPENDING: IMPLICATIONS FOR A SUSTAINABLE RE-DISTRIBUTION[20]

Public spending with redistributive impacts can be classified into three subgroups: cash transfers, provision of public goods and services (e.g., education, health, and infrastructure), and subsidies. The rest of this section is therefore divided into three parts, each one examining the coverage and quality of these three types of public provisions. The analysis is often presented along with considerations on the distributional impact of each component; however, the quantification of the overall level of redistribution attributable to these expenditures –as well as that attributable to taxes– is difficult to determine, and often only done by ignoring key factors affecting actual redistribution, such as the intertemporal impacts of each intervention. Box 2.2 summarizes the limitations of the analysis of the redistributive effects of public policies and introduces some useful definitions for the discussion of results in this section and for the analysis of the overall redistributive effect of taxes and public expenditures, elaborated in the fifth section of this chapter.

Social security systems encompass the largest share of public cash transfers, mainly in the form of contributory pensions. The importance of non-contributory cash transfers have increased a lot in Latin America in the last two decades, however, in most of the cases as a result of new strategies aimed at expanding the coverage of social assistance (Lindert *et al.*, 2006). These non-contributory transfers include pensions and conditional cash transfers (CCTs), both of which have dramatically expanded their coverage over the past fifteen years in Latin America. In the first part of this section, contributory pensions and non-contributory transfers (pensions and CCTs) are analyzed separately.

On the other hand, the provision of public goods and services, such as education, health, and infrastructure, can be considered part of an "in-kind" transfer system. Unlike cash transfers, these provisions only improve equity indirectly by fostering greater equality of opportunities to generate higher incomes among the most disadvantaged households. For this reason, both the coverage and the quality of public service provision are

---

18. In the case of tax rates decided through the electoral process, richer groups (potentially more affected by a raise in personal income tax rates) are often more powerful than poorer groups; indeed, it has been established that effective political power increases with income (Bénabou, 2000; Karabarbounis, 2011). In the case of "rent-seeking" (negotiations done outside the political process, which are more common in weak institutional settings), interests of richer groups may prevail as well in the final design of the tax structure (Rodríguez, 2004).

19. See chapter 4 for more details on the implications of evasion/elusion practices on the tax structure.

20. Part of this and the next section are based on the document prepared by Nora Lustig for this report (Lustig, 2012), which is a product of the Commitment to Equity (CEQ) initiative.

crucial to their effectiveness as mechanisms for redistribution. Part of this section analyzes both the coverage and quality of education, health, and infrastructure in the region.[21]

The last form of potentially redistributive public spending analyzed here is perhaps the least orthodox, consisting of subsidies to families and businesses for the consumption and production of certain specific goods and services, such as food, energy and fuel, and transportation.

Box 2.2 Measuring the impact of taxes and public spending on income distribution

State interventions alter the primary distribution of income; however, the original primary distribution is impossible to determine, since all income received by individuals is already "contaminated" by taxes and public expenditures. Put differently, it is not possible to determine the income distribution in the absence of the state (the "counterfactual" distribution) for two reasons. First, it is not easy to determine how much of income is accounted for taxes and/ or expenditures, and second public interventions affect individuals' incentives to generate income by altering labor supply decisions or household consumption or investments patterns (e.g., in human capital), which in turn affects returns to hours worked. For instance, a too generous unemployment insurance scheme will not only redistribute resources from the employed to the unemployed, but may also impact some individuals' labor supply decisions (e.g., to remain unemployed). It is, nonetheless, often necessary and useful to have a sense of partial and static measures of the impact of taxes and expenses, which can be obtained through a 'classic incidence analysis.' Regarding this type of analysis, the following caveats are in order:

- Intertemporal effects: incidence is computed for only one moment in time (usually once a year), which can over- or underestimate redistribution. For instance, not considering intertemporal effects of taxes can lead to overestimating the regressive effects of indirect taxation (see Fullerton and Rogers, 1993).

- General equilibrium: plausible changes in relative prices due to the introduction of taxes or expenditures are not considered, nor are the feedback effects on related markets taken into account.

- Real burden of taxation: extreme assumptions often underlie calculations of the burden of a tax. For instance, it is generally assumed that the impact of indirect taxes falls entirely on consumers and that the burden of personal income taxes falls entirely on the individuals that generate the taxed income.

- Marginal versus average effects: classic incidence analyses only study the average impact of taxes and expenditures, ignoring possible systematic differences between the marginal and average incidences. This is likely to lead to an underestimation of the marginal redistributive impact (Ocampo and Malagón, 2011). For instance, by expanding the coverage of in-kind transfers, "new" beneficiaries may benefit much more than beneficiaries who were already covered.

- Other taxes: only the most traditional taxes are included in this analysis, leaving aside some important taxes, such as international trade or estate taxation, among others.

---

21. Chapter 3 studies some aspects of quality of infrastructure.

- Data limitations: household expenditure surveys are key to incidence analyses; however, in most cases, this data is not available or is out-of-date. To overcome this problem, different sources of data are often mixed in the computations, which may limit the validity of the results.

Despite these limitations, classic incidence analyses provide relevant information about the redistributive effects of state interventions. The results can be especially useful in understanding what type of income is more or less affected by taxes and spending. To construct such partial measures of fiscal impact, it is important to distinguish between several categories of income, which are described next.

Definitions of types of income used in incidence analyses

The following definitions are useful for incidence analyses, given that they account for various forms of public interventions [for more detail, see Lustig (2012)]:

Market income: amounts paid to the owner of factors of production (labor, capital, among others). In the results presented in this report, market income includes contributory pensions. For a further discussion on this broad definition of market income, see Lustig (2012).

Net market income: market income minus direct taxes paid and contributions made to the social security system.

Disposable income: net market income plus direct cash transfers.

Post-fiscal income: disposable income plus indirect subsidies and minus indirect taxes.

Final income: post-fiscal income plus the monetized value of in-kind provisions.

For instance, if the Gini index for market income is greater than for net market income, then the impact of direct taxation and contributions to social security is progressive (reduces inequality).

Some caveats about the computations of the value assigned to in-kind transfers are necessary. Ideally, such calculations would account for the social value of the goods and services that form all the in-kind transfers included in the analysis (e.g., education and health), as well as the value of these transfers within individuals' income. In these calculations, quality would also need to be considered. In practice, incidence analyses overlook most of these issues and instead the calculations simply monetize the average cost of provisions and assign this "transfer" to those who report to be using the provision (for instance, attending a public school). In cross-country comparisons, differences in the quality of provisions obtained with the same amount of money can thus under- or overestimate the redistributive impact of in-kind transfers in a given country.

Regressiveness and progressivity in absolute or relative terms

Indices of concentration of payments are used to measure the progressivity of taxes, and the indices of concentration of benefits do so for public spending. These indices are also known as 'quasi Ginis,' since the calculations follow those for the Gini index.

An index of benefits concentration measures the way in which transfers (monetary or in-kind) are distributed among individuals, ordered by their income levels. Its range of variation is [-1,1], where the value -1 indicates a situation in which the benefits are allocated entirely to the poorest group, and the value 1 indicates total concentration among the richest group. As stated in Lustig (2012), if the concentration index is negative, the transfer is progressive in absolute terms. On the other hand, if the index is positive but smaller in absolute value than the Gini, the transfer is progressive but only in relative terms. Lastly, if the concentration index is positive and greater than the Gini index, the transfer is regressive because it is even more concentrated among the rich than income.

In contrast, the index of concentration of payments (for taxes) usually varies between [0,1], since it would be very rare for the poorest decile to contribute more than 10% of tax revenues (in which case the index could be negative as well). For the quasi-Ginis of taxes, a positive value smaller than the Gini coefficient indicates regressiveness (poor individuals contribute a higher fraction to total revenue than their share of total income), while a positive value that is greater than the Gini coefficient indicates a progressive tax.

As in the case of the Lorenz curve, which illustrates income distribution, there are curves of concentration that are used to depict the concentration of payments and benefits, as shown in Figure 1.

Figure 1 Concentration curves, progressiveness (relative and absolute) and regressiveness

Source: Lustig (2012).
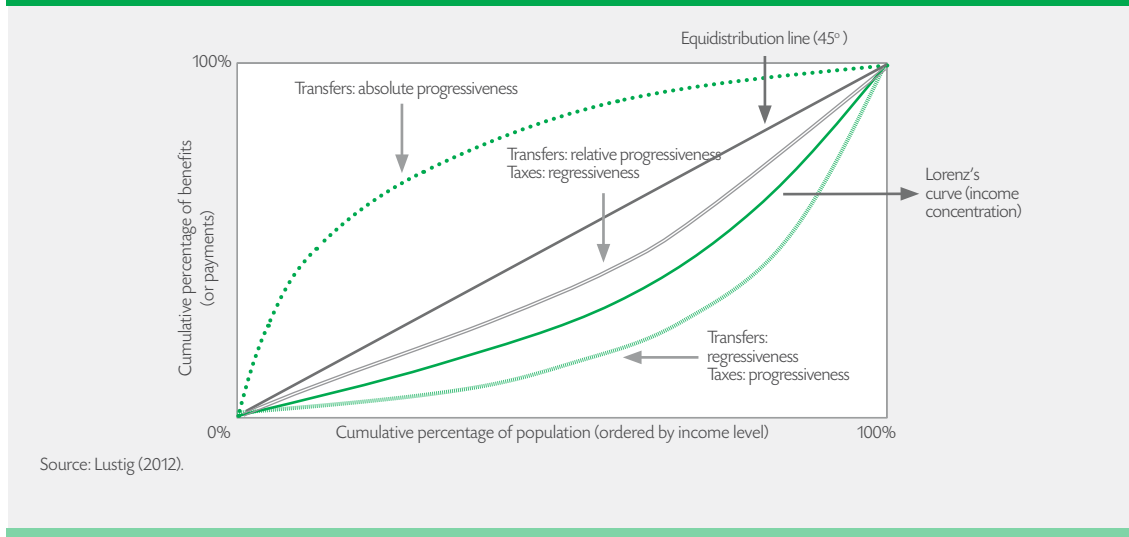
Income transfers: Contributory and non-contributory systems

Contributory social security: pensions, labor informality and equity

The provisions included in the social security packages differ across countries in Latin America, but usually include insurance against 'social risks' (unemployment, disability, longevity) and, in some cases,

health risks as well as financing for housing investments. Across the region, however, pensions, insuring against the 'longevity risk', is the main form of social security coverage. These are effectively a form of forced savings, imposed by the state in order to cover the contingencies of living longer than expected, so as to avoid poverty in old age.

Several reasons justify public pensions as a social security provision. First, a public pension system entails efficiency gains by allowing intergenerational transactions that would not otherwise be possible. Second, public pensions help correct private insurance market failures, particularly underinsurance resulting from information asymmetries. Third, individuals' "myopic" behavior with regard to savings and consumption decisions could be corrected by effectively making retirement savings mandatory. Put differently, the primary reasons for a public social security system are to provide risk-sharing and a level of insurance against social risks, as well as to smooth consumption compared to that in private savings and insurance markets.

Moreover, equity reasons also justify the introduction of pension systems, which are of crucial importance in the context of this chapter. Pension systems can be used to redistribute resources between individuals of different generations (intergenerational redistribution) or between individuals of the same generation (intragenerational redistribution).[22]

In Latin America, the financing of social security systems differs greatly across countries, suggesting that their distributive effects do as well. In some countries, the contributions of formal workers are the primary mechanism financing social security, while in others revenues from general taxation are more important. Since pension systems are based on a strong intergenerational agreement (the contributions of formal workers fund the benefits of current retirees, while future workers will finance the pensions of current workers when the latter retire), there are important intergenerational redistribution impacts that are likely to be different across countries in the region.

In pay-as-you-go pension systems (PAYG) the partial disconnection between the contributions made and the benefits received is often stronger than in funded systems. The extreme example of such a disconnection is the non-contributory pension; however, most pension systems involve some degree of decoupling of contributions from benefits because they usually combine several "pillars": individual savings (mandatory or voluntary) and a "solidarity pillar" which mostly funds noncontributory benefits for those individuals that for some reason could not save enough to overcome the contingencies of unemployment or old age.

As noted before, it is often the case that non-contributory benefits are not funded directly from social security contributions, but rather from general tax revenues. In addition, when contributory pension systems have deficits, the benefits of retirees (i.e., who were working in the formal sector when younger, which is more common for richer individuals, as shown below) are financed with general tax revenues as well. In Latin America, an important share of these general tax revenues come from indirect

---

22. Intergenerational redistribution exists because, especially in PAYG systems, benefits are somehow detached from contributions made in the past. This is due to the fact that retirees receive a pension that is not perfectly related to contributions, but instead to the total mass of contributions made by active workers (which is a function of the amount of individuals' contributions and the number contributors) and to the number of retirees still alive. Intragenerational redistribution is a result of different lengths of retirement across individuals, since those who live longer will receive an implicit transfer from those that live shorter lives. In this way, intergenerational redistribution in PAYG systems can be more important than in capitalization schemes; however, intragenerational redistribution is a feature of both pensions financing systems.

taxes, which are more concentrated among relatively poorer workers (often working in the informal sector), who will not be entitled to receive benefits from the contributory systems that they are helping to finance. From this perspective, the deficits in PAYG systems would imply a regressive impact for pensions.

The history of social security in Latin America shows an uneven development both between and within countries. In the early twentieth century, the first social protection schemes in Latin America (introduced in Argentina, Brazil, Chile and Cuba) involved contributions to social security systems from only some workers in select industries (known as 'pension funds'), with the primary goal of sharing risk and creating mechanisms for savings. These initial schemes did not involve mechanisms of redistribution or "solidarity contributions," which only appeared towards the middle of the twentieth century when governments became involved in social protection systems through the creation of public social security systems. Despite the "Bismarckian" spirit around which these systems were designed, many social security schemes in Latin America faced, almost from their origins, the problem of high informality in labor markets. This remains a major constraint today and limits the coverage and quality of pension systems.

Table 2.1 (see p. 67) shows informality rates (based on a 'legalistic' definition) at three points in time for a set of Latin American countries.[23] The current average informality rate for the region is about 46.8% of total working population. The good news is that this rate has fallen slightly in the last decade, after a sharp increase in the 1990s that produced an average informality rate of 51.3% by the year 2000.[24] There is some degree of heterogeneity in the incidence of informality across countries. While some countries, like Uruguay, have relatively low informality rates (19.5%), in others, like Paraguay, Bolivia, Nicaragua, and Guatemala, about two-thirds of employed individuals are in the informal sector.

On the other hand, there are large regional differences in informality rates among workers belonging to different income groups. A good proxy of income is workers' level of education and, as shown in Table 2.2 (see p. 71), informality among unskilled workers is now more than four times higher than among the highest skilled;[25] moreover, informality among the unskilled is more than six times higher using the 'productive' definition of informality. Not only are the gaps between skill levels high, but the recent gains in formality also do not seem to have benefited unskilled workers.[26] Table 2.2 also shows that there are significant urban-rural differences.

The high incidence of informality in Latin America has led to rethinking the design of social security in order to achieve a more inclusive coverage and to ensure the sustainability of future benefits. Box 2.3 outlines the main features of pension reforms in the region and emphasizes the issues of cover-

---

23. Two alternative definitions of labor informality will be used. The 'legalistic' definition is based on the share of working population that is not covered by the social security system (SEDLAC, 2011). The 'productive' definition considers informal workers to be those employed in productive units of up to five employees, those who are unskilled own-account workers, or zero-income workers (SEDLAC, 2011). Both measures are strongly correlated in the data.

24. Population-weighted average; unweighted average is 45.4% (see Table 2.1).

25. Contributory social security coverage rates are very low for the lowest income Quintilees. Moreover, little change in this pattern has been observed during the 1990s and early 2000s (Rofman *et al.*, 2009).

26. In fact, the ratio of informal and unskilled to informal and skilled workers calculated based on a 'legalistic' definition shows that the situation of the unskilled deteriorates between the year 2000 and the most recent year with comparable data, despite small improvements using a 'productive' definition.

age, quality, and equity that affected –and still do in most cases– contributory pension systems in Latin America.

Table 2.1 Average labor informality ('legalistic' definition) for selected Latin American countries (circa 1990, 2000, and the most recent year with comparable data)[a/]

Country	Circa 1990	Circa 2000	Most recent year
Argentina	31.2	38.5	35.3
Bolivia	n.a.	66.3	68.2
Brazil	37.8	35.9	28.9
Chile	21.4	23.7	22.0
Colombia	n.a.	n.a.	48.0
Costa Rica	31.1	34.1	27.5
Ecuador	n.a.	51.4	60.3
El Salvador	60.2	47.0	48.6
Guatemala	n.a.	65.6	64.9
Mexico	n.a.	54.8	60.5
Nicaragua	62.3	68.0	66.6
Paraguay	n.a.	72.6	68.3
Peru	n.a.	77.1	54.6
Dominican Republic	n.a.	n.a.	28.5
Uruguay	n.a.	n.a.	19.5
Venezuela, BR	n.a.	31.9	n.a.
Unweighted average	**40.7**	**51.3**	**46.8**
Population-weighted average	**36.7**	**45.4**	**43.2**

a/ Circa 1990: most recent year with available information between 1990-1992. Circa 2000: year closest to 2000 with available information 1999-2001. Most recent year: last year with available information in the SEDLAC database (Argentina, 2010; Bolivia, 2007; Brazil; 2009; Chile, 2009; Colombia, 2007; Costa Rica, 2009; Dominican Republic, 2009; Ecuador, 2009; El Salvador, 2007; Guatemala, 2004; Mexico, 2008; Nicaragua, 2005; Paraguay, 2009; Peru, 2009; Uruguay, 2009; Venezuela, BR, 2006).

n.a.: not available.

Source: author's calculation based on SEDLAC (CEDLAS and World Bank, 2011).

Box 2.3 Pension system reforms aimed at improving financial sustainability and coverage

The need to ensure the financial sustainability of pension systems, along with the goal of expanding coverage to avoid lack of social protection among the elderly, led many countries in the region to reform their pension systems in recent decades. These reforms are detailed in Table 1 (see p. 69) and are classified into two categories: structural (reforms in the number and type of pillars of social protection) and parametric (changes in parameters, such as years of contribution and replacement rates). Parametric reforms were introduced in all countries listed in Table 1; while preserving structures, these altered the systems' fundamental parameters so as to strengthen the relationship between benefits and contributions and to generate the desired labor market incentives required to ensure sustainability through a credible commitment of intergenerational transfers.

On the other hand, structural reforms in Latin America took different forms by country. In some cases, there was an attempt to completely replace the PAYG system with a system of individual savings accounts and capitalization. In other cases, parallel systems were created, forcing private savings as an alternative to the PAYG system. A third group of reforms consists of mixed models, where individual capitalization is complementary to the PAYG (mixed reforms). The implementation of a pure individual capitalization model took place in Chile in 1981. In later years, other countries in the region also chose to replace their public PAYG systems with savings schemes funded through individual accounts, with some distinctive characteristics across countries. Bolivia and Mexico did so in 1997, El Salvador in 1998, and full implementation in Dominican Republic took place in 2003.

Parallel reforms preserve the PAYG pillar but at the same time introduce a new system of private savings, which competes to attract contributions from the public system. Workers can migrate from one system to the other, if certain conditions are met. The cases of Peru (1993) and Colombia (1994) are examples of this type of reform.

In mixed schemes, the public system continues to provide basic social protection, while the private system provides complementary benefits. Mixed system reforms were implemented in Uruguay (1996), Ecuador (2001), and Costa Rica (2001), as well as in Argentina, where in 1994 the capitalization scheme started to operate with a combination of a mixed and a parallel system. In 2008, however, Argentina passed Law N°26.425/08 that returned the pension system to a PAYG structure from 2009 onwards. As such, the state has now resumed its responsibilities for current and future retirees who were making contributions in the private system.

After all these reforms, universal coverage has remained an elusive goal for most of the systems in the region. Alarmingly, the average coverage rate has reduced and inequality in coverage has risen across income levels, as can be seen for Argentina in Figure 1. For instance, in this country, 40% of workers in the poorest Quintilee had pension coverage by 1992, but this dropped to close to 5% ten years later.

Not only are coverage rates generally low in most Latin American countries, but the quality of this coverage is also very poor. The quality of pension coverage depends on the amount and frequency of contributions. Contributors who contribute little or intermittently tend to accumulate insufficient amounts to be able to qualify for a minimum pension benefit. A common measure of this quality dimension of pensions is the 'contribution density'; that is, the ratio between the number of contributions made and the number of months that individuals were of working age. Table 2 (see p. 70) shows that the average contribution density is low in Chile, Argentina, and

Table 1 Pension reforms[a/] for selected Latin American countries				
Country	Structural reforms	Parametric reforms	Minimum benefits	Subsidized social contributions
Argentina	1994 (mixed)[b/]	Yes	Yes	No
Bolivia	1997 (replacement)	Yes	Yes	No
Brazil		Yes	Yes	No
English Caribbean		Yes	No	No
Chile	1981 (replacement)	Yes	Yes	No
Colombia	1994 (parallel)	Yes	Yes	Yes
Costa Rica	2001 (mixed)	Yes	Yes	No
Ecuador	2001 (mixed)	Yes	No	No
El Salvador	1998 (replacement)	Yes	Yes	No
Guatemala		Yes	No	No
Honduras		Yes	No	No
Jamaica		Yes	No	No
Mexico	1997 (replacement)	Yes	Yes	Yes
Nicaragua		Yes	Yes	No
Paraguay		Yes	No	No
Peru	1993 (parallel)	Yes	Yes	No
Dominican Republic	2001/2003 (replacement)	Yes	Yes	No
Uruguay	1996 (mixed)	Yes	Yes	No
Venezuela, BR		Yes	No	No

a/ Replacement reforms: individual capitalization for all. Parallel reforms: choice between public system and individual capitalization. Mixed reforms: basic public system and complementary individual capitalization.

b/ Law N° 26,425/08, eliminating the capitalization system has been in place since 2009.

Source: ECLAC (2011).

Uruguay, and also densities vary greatly according income levels in all three countries, indicating high inequality in the quality of pension coverage.

Figure 1 Evolution of average and by income Quintilees' coverage of the pension system in Argentina (1992-2006)
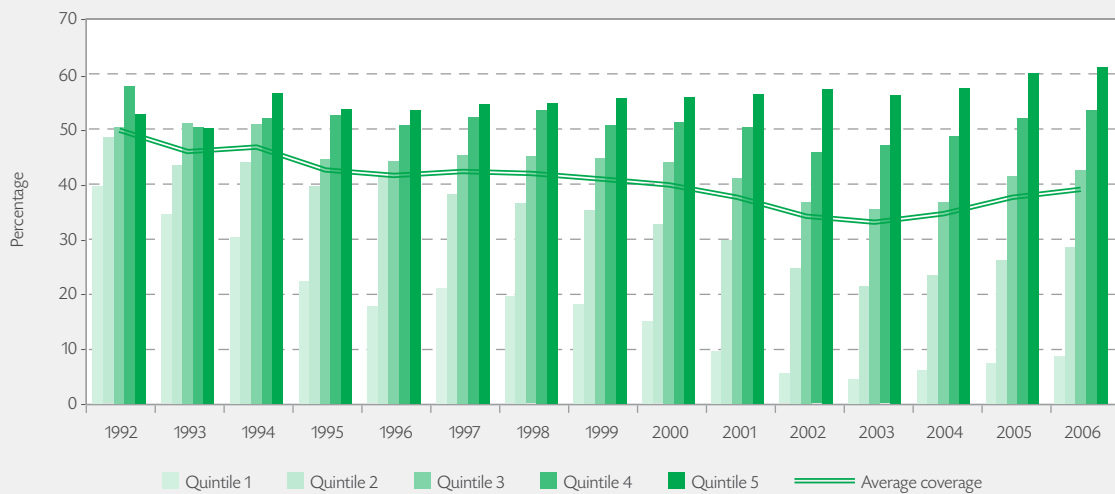
Source: author's calculation based on Rofman et al. (2009).

To overcome problems of low and unequal coverage, some countries have adopted or expanded the non-contributory pillars of their systems, using either universal minimum benefits or subsidies to pension contributions for the poorest (e.g., the Cuota Social in Mexico, or Fondo de Solidaridad Pensional in Colombia). With the introduction of BonoSol in 1997, Bolivia created a large non-contributory program to compensate for the inequalities arising from structural reforms. The country was successful in broadening the base of contributors and beneficiaries, even though its financing scheme (i.e., capitalization of privatized public enterprises) has experienced some problems.

Table 2 Density of social security contributions by income quintiles in selected Latin American countries (several years)

Quintile	Argentina (1994-2001)	Chile (1981-2001)	Uruguay (1996-2004)
1	44	35	44
2	51	46	56
3	55	52	60
4	59	60	64
5	68	65	68
Average	**55**	**51**	**58**

Source: author's calculation based on Forteza et al. (2009).

In addition, structural reforms have often involved significant transitional costs, and in turn none of the desired objectives of these reforms have been achieved. Parametric reforms have seen similar problems. Meanwhile, the demographic transition continues, which will raise the dependency ratio over the next forty years and determine the sustainability of social security systems. If pension deficits begin to grow, PAYG systems will have to be financed with general tax revenues rather than solely through contributions. Given the higher incidence of informality among the poorest, retirement benefits will accrue mostly to higher income individuals (who worked primarily in the formal sector), while funding of these benefits will fall on the poor who pay taxes but who do not have social security coverage, thus worsening the impact of pensions on inequality.

Source: based on CEPAL (2011), Forteza *et al.* (2009), and Calvo *et al.* (2010).

Table 2.2 Average labor informality and gaps by educational level and area of residence (urban/rural) for selected Latin American countries[a/] (circa 1990, 2000 and most recent year)[b/]

Measures	Circa 1990	Circa 2000	Most recent year
'Legalistic' definition of informality			
Informality rate (percentage of workers without the social security coverage)	36.7	45.4	43.2
Informality rate of unskilled workers/informality rate of skilled workers	4.5	3.6	4.1
Rural informality rate/urban informality rate	2.3	1.9	1.8
'Productive' definition of informality			
Informality rate (percentage of non-professionals own account workers, workers in small firms or zero-income workers)	53.0	54.0	51.4
Informality rate of unskilled workers/informality rate of skilled workers	8.9	7.5	6.3
Rural informality rate/urban informality rate	1.8	1.7	1.7

a/ Population-weighted average include: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Mexico, Nicaragua, Paraguay, Peru, Uruguay and Venezuela, BR.

b/ Circa 1990: closest year to 1990 with available information between 1990-1992. Circa 2000: closest year to 2000 with available information between 1999-2001. Most recent year: last year with available information in the SEDLAC base (Argentina, 2010; Bolivia, 2007; Brazil; 2009; Chile, 2009; Colombia, 2007; Costa Rica, 2009; Dominican Republic, 2009; Ecuador, 2009; El Salvador, 2007; Guatemala, 2004; Mexico, 2008; Nicaragua, 2005; Paraguay, 2009; Peru, 2009; Uruguay, 2009; Venezuela, BR, 2006).

Source: author's calculation based on SEDLAC (CEDLAS and World Bank, 2011).

Non-contributory pensions

Recently, to overcome the shortcomings of fragmented social protection coverage, many countries have introduced or expanded protection schemes based on non-contributory benefits (see Box 2.3). Even Chile, which was a pioneer in reforming its pension system when it introduced a purely private system in the

early eighties, began reforms in 2008 aimed at expanding the "solidarity" components of the system to reach populations not previously covered. Table 2.3 shows the list of non-contributory pension programs in the region, along with targeting characteristics and population coverage. The benefits range from $22.70 per month (*Oportunidades Adulto Mayor* in Mexico) to over $470 per month (Senior Citizen Pension, in Trinidad and Tobago), with a regional average monthly benefit of about $ 129. In Argentina, Bolivia, Brazil, Chile, Ecuador and Mexico, contributory pensions cover significant portions of the population. About eight million people receive non-contributory pensions in Latin America, representing about 20% of the population aged 65 years and over. With regard to targeting, Table 2.3 shows that in almost all countries, elderly and low-income individuals are the beneficiaries of non-contributory pensions. A notable exception is Bolivia, where the program *Renta Dignidad* is universal.

Table 2.3 Description of non-contributory pensions for selected Latina American countries

Country	Program	Target population	Transfers (monthly USD, per capita)	Number of beneficiaries (latest available)[a/]	Cost (as percentage of GDP)
Argentina	Moratoria Previsional-Pensiones no contributivas	Over 65 years, poor and without contributory pensions	229	2,400,000	1.8
Bolivia	Renta Dignidad (before Bonosol)	Over 60 years, universal	22-29	782,600	1.2
Brazil	Pensión Rural	Over 65 years, in rural areas	342	800,000	0.2
Chile	Pensión Básica Solidaria	Over 65 years, in the bottom three income quintiles	150	407,000	0.4
Costa Rica	Régimen no Contributivo	Over 65 years, poor	135	53,492	0.2
Ecuador	Pensión Asistencial	Over 65 years, without contributory pensions	35	502,828	0.4
El Salvador	Pensión Básica Universal	Over 70 years, in selected municipalities	50	19,534	0.1
Mexico	70 y más	Over 70 years, in selected municipalities, universal	28.5	2,000,000	0.1
	Oportunidades Adulto Mayor	Over 70 years, in Oportunidades beneficiary households	22.7	80,000	0.002
	Pensión Alimentaria	Over 70 years, in Mexico D.F., universal	63.2	470,000	0.03
Peru	Pensión 65	Over 65 years, in extreme poverty	47	165,000	0.1
Trinidad y Tobago	*Senior Citizen Pension*	Over 65 years, low-income	189-472	73,110	1.4
Uruguay	Beneficio no contributivo	Over 70 years, low-income	240	31,577	0.2

a/ Data are for 2010 and 2011. except for the case of Peru where coverage is estimated for the year 2012.

Source: author's calculation based on Acosta et al. (2011). ANSES (2011) and CEPALSTAT (2011).

According to Lustig (2012), the introduction of non-contributory pensions has had a significant redistributive impact in cases like Argentina (*Moratoria previsional*), Brazil (*Aposentadoria rural/Benefício de Prestação Continuada*) and Bolivia (*Bonosol/Renta Dignidad*). The concentration indices of pensions –reported in Table 2.4 – show lower, in some cases negative, concentration rates for non-contributory than contributory pensions, implying that the benefits of the former are indeed well targeted to the poor. In the case of Bolivia, the index is close to zero due to the universal coverage of *Renta Dignidad*. In Brazil and Argentina, the quasi-Ginis are negative and large in absolute value (i.e., more progressive) due to targeting strategies favoring the elderly poor. On the other hand, Peru has a higher concentration rate for contributory pensions among richer income groups, which is certainly in line with the high informality rate in its labor market.

Even though non-contributory pensions are usually targeted to lower income, elderly individuals, many of the beneficiaries of these programs are not actually poor.[27] According to Table 2.5 (see p. 74), in some countries, the fraction of non-poor beneficiaries is significant, reaching 63% of beneficiaries in Argentina, and 58% in Mexico. In Brazil, the two non-contributory pension programs differ greatly in this aspect, with the non-poor representing 42% in the *Benefício de Prestação Continuada* (BPC) program, but about 71% in the *Pensiones por circunstancias excepcionales* (INSS). These data may indicate two different things: that these programs have not been created to attend exclusively the needs of the poor, or that there is space for reallocation of resources from non-poor beneficiaries toward poor and, in this way, there is potential to increase the impact of these pensions on poverty and equity.

Table 2.4 Concentration indices[a/] of contributory and non-contributory pensions for selected Latin American Countries (several years)[b/]

Pension type	Argentina	Bolivia	Brazil	Mexico	Peru
Non-contributory pensions[c/]	-0.397	-0.041	-0.573	-0.194	n.b.
Contributory pensions[d/]	0.254	n.a.	0.521	0.403	0.625

a/ See Box 2.2 for a detailed explanation of the concentration indices or quasi Ginis. In this case, the indices were calculated using data reported in the table of concentration by decile in Lustig (2012) and using a simple approach. This is to compute the ratio of two areas: the area between the equidistribution line and concentration curve, and the triangle area below the equidistribution line (with area equal to 0.5).

b/ Argentina, 2009; Bolivia, 2007; Brazil, 2009; Mexico, 2008; Peru, 2009.

c/ Argentina: non-contributory pensions. Bolivia: Renta Dignidad (before: Bonosol). Brazil: BPC. Mexico: 70 y más program and Pensión Alimentaria para Adultos Mayores (only in Mexico City).

d/ Corresponds to the concentration indices of contributions (not benefits) to the contributory pension system in each country.

n.a.: not applicable.

n.b.: not available.

Source: author's calculation based on Lustig (2012).

Despite the effectiveness of non-contributory pensions in reaching the elderly poor and in operating as a mechanism for redistribution, it has been argued that they may also have some negative effects, such as labor market informality. According to this argument, the availability of social protection that does not require direct contributions to its funding effectively transform contributions made by formal workers to contributory

27. The provision of social assistance benefits to the non-poor is often referred to as 'errors of inclusion.'

systems into "taxes" on formal work. Thus, social policies based on conditions of labor market participation in targeting may end up undermining the foundations of contributory systems by promoting informality in labor markets. Box 2.4 explains the general debate on the links between non-contributory social protection and participation in the labor market, analyzing both pensions as well as other types of income transfers to adults, health insurance, and conditional cash transfers targeted to children. Other characteristics of the latter are studied in more detail next.

Table 2.5 Composition of non-contributory pension beneficiaries in selected Latin American countries (several years)[a/]

Country	Program	Percentage composition of beneficiaries		
		Indigent (less than 2.5 USD PPP)	Poor (less than 4 USD PPP)	Not poor
Argentina	Pensiones no contributivas	27	37	63
Brazil	*Benefício de Prestação Continuada (BPC)*	38	58	42
	Pensiones por circunstancias excepcionales (INSS)	18	29	71
Mexico	Adultos Mayores (Oportunidades)	27	42	58

a/ Argentina, 2009; Brazil, 2009; Mexico, 2008.

Source: author's calculation based on Lustig (2012).

Box 2.4. Interactions between non-contributory systems of transfers and labor market behaviors

There have been recent concerns regarding the effects of some forms of social protection on incentives to labor market participation, particularly in formal labor markets. It is suggested that when elegibility for social assistance is linked to occupational status (either being unemployed or being an informal worker), contributions that fund traditional social security could be transformed into mere "taxes" on formal work. This could have distortionary effects on the labor market decisions of many individuals. Indeed, there is some evidence that such distortions may be present in some countries in Latin America. For instance, Gasparini et al. (2009) analyze the Plan Jefes y Jefas de Hogar (PJJH) implemented in Argentina in the aftermath of the 2001 crisis. They assess the program's impact on informality and find that the PJJH induced an increase in labor informality where the value of the cash transfer was relatively high compared to wages paid in the formal sector of the economy (that is, when the "tax" to formal work was relatively high). Manacorda (2011) finds negative effects on labor market participation of a similar program implemented in Uruguay between 2005 and 2007 (Plan de Atención Nacional a la Emergencia Social, PANES).

Cash transfers are not the only social protection programs that can have such distortive effects. For instance, there is some evidence showing that non-contributory health insurance has contributed to higher labor informality, as in the case of the Seguro Popular in Mexico (Aterido et al., 2011) as well as in Colombia (Camacho et al., 2009).

However, evidence on such impacts among other forms of non-contributory social protection is less clear, especially in the case of programs with conditionalities targeted to children. For example, Alzúa et al. (2010) evaluate the effects of three conditional cash transfers (CCTs) on work incentives: PROGRESA/Oportunidades in Mexico, Social Protection Network (RPS) in Nicaragua and Family Allowance Programme (PRAF) in Honduras. While these programs are designed to improve the present and future welfare of children, they could also generate certain effects on the behavior of adult household members who indirectly benefit from the program. The results of the study indicate that, while there are some negative effects on adult employment (in the case of Nicaragua, hours worked by adults were reduced), they are generally small and insignificant. These three programs represent important sources of income in rural areas but, overall, have not generated negative incentives to labor market participation, even where the value of the transfer was substantial. On the other hand, another recent study (Ribas and Veras Soares, 2011) finds a reduction in formal labor market participation in urban areas as a result of the Bolsa Família in Brazil; conversely, the effects have been positive –i.e., increasing labor force participation– in rural areas. This could be due to the fact that the implementation of the Bolsa Família was no surprise in urban areas of Brazil and thus individuals may have learned how to manipulate the system, and/or that the household labor market decisions may vary according to the available labor market alternatives in each environment (rural vs. urban). Similarly, González-Pinto Rozada and Llerena (2011) found that mothers of families benefiting from the Human Development Grant in Ecuador saw an increase in the duration of unemployment as well as the probability of becoming unemployed.

Recently some income transfer programs in the region have incorporated explicit measures to avoid negative incentives to labor market participation. For example, Chile Solidario uses an incentive system to facilitate job placement, and PLANSEQ /Próximo Passo in Brazil offers incentives to beneficiaries of the Bolsa Família in the sectors of construction and tourism. The systems of incentives consist of training as well as transportation and food subsidies.

Source: the author.

Conditional cash transfer programs

Income transfers that include co-responsibility requirements in their design are often referred to conditional cash transfers (CCTs). This section describes the key characteristics of CCT programs in the region, some of which are more focused on the very poor, while others are more universal. These programs usually target poor households with children and their objective is two-fold: alleviating poverty in the short-term, as well as breaking the intergenerational transmission of poverty through the promotion of human capital in children of beneficiary families (primarily through investments in health and education). Notably, Latin America pioneered the CCT model (particularly with the implementation of PROGRESA in Mexico), which has subsequently been implemented in many other regions of the world.

Despite some differences in both the design and implementation of CCTs across the region, most of these programs share some key features in Latin America, such as the use of some targeting mechanism, the transfer made in cash (as opposed to in-kind) and, of course, the co-responsibility requirement for beneficiaries. This conditionality usually takes the form of mandatory school attendance for children above six years old and/or attendance at health centers for regular medical check-ups. Nevertheless, Latin American CCTs do differ in other key dimensions, including their strategies for targeting beneficiaries, the depth of the conditionality attached to benefits, and the existing supply of complementary public services. These all impact

effective access to health and education systems, and may be crucial to meeting the programs' intergenerational goals since the transfer can create incentives that alter certain key behaviors within the household, such as parents' labor force participation (see Box 2.4). Therefore, a design that accounts for the possible behavioral changes of adults in beneficiary households when the CCT is implemented, as well as one that ensures the adequate provision of complementary public goods and services (e.g., accessible and properly equipped health centers and schools), will be more effective in achieving program goals.

In the last fifteen years, the use of CCTs has grown steadily in Latin America, with coverage rates rising from around 5% of total population in 2000 to almost one fifth by 2010 (see Figure 2.11). The amount of public resources allocated to finance these programs remains small, however, and has not grown in parallel with coverage. On average, CCTs now account for only about 0.38% of GDP in the region, up from about 0.20% in 2000. Thus, despite some heterogeneity across countries, these programs represent very small parts of broader social protection systems, especially relative to total social public spending in the region (which represents around 18% of GDP).

Figure 2.11 Coverage and public expenditure in CCTs in Latin America (average 2000-2010)
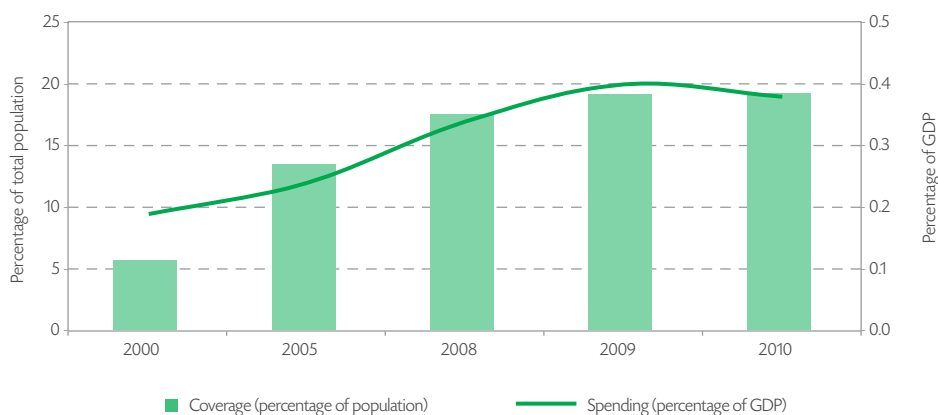
Source: ECLAC (2010) and Databases on non-contributory social protection programmes, Social Development Division, ECLAC (2011).

As with non-contributory pensions, CCTs are generally targeted to poor families; however, as Table 2.6 (see p. 77) shows, some programs show large inclusion errors, with benefits extended to large groups of non-poor individuals. Among the five countries included in the table, Peru's program showed the most effective targeting of poor households (defined as those with a per capita income of less than $PPP 4 a day). On the other hand, the three Argentine programs and the Juancito Pinto program in Bolivia all included a high proportion of non-poor individuals among their beneficiaries. This is not necessarily a design flaw, however, because it may well be the case that the intention was to include vulnerable lower-middle segments of the income distribution (i.e., if their goal was to have a more universal scope).

As a mechanism for redistribution, CCTs are likely limited as a result of the small size of the transfers (Ocampo and Malagón, 2011). For example, in Latin America, the value of the grant averages $ 24 per individual and $ 87 per household, representing only a small portion of income, which is often insufficient to pull poor above the poverty line.[28] In some countries –Uruguay, Brazil, Mexico, Ecuador, Costa Rica, and Chile– resources for CCT programs would be sufficient to meet the cash needs of the extreme poor (i.e., they cover 100% of the income 'gaps'); yet, in others, available resources are insufficient to eliminate extreme poverty, as in the cases of Bolivia, Paraguay, Guatemala, Honduras, and El Salvador (see Figure 2.12, p. 78). Furthermore, as shown in Figure 2.12, none of the countries listed provide adequate resources to meet the needs of the population living in poverty (both the poor and extreme poor). Notably, the largest uncovered income gaps are found in the least developed countries in the region, precisely where the incidence of poverty and indigence is much higher.

Table 2.6 CCT coverage of indigent, poor and non poor in selected Latin American countries[a/ b/]

Country	Conditional Cash Transfer Program	Composition of the beneficiaries (percentage)			Spending as percentage of GDP
		Indigent (less than 2.5 USD PPP)	Poor (less than 4 USD PPP)	Non poor	
Argentina	Jefes y Jefas de Hogar	35	54	46	0.1
	Familias	38	59	41	0.1
	Asignación Universal por Hijo	32	55	45	0.4
Bolivia	Bono Juancito Pinto	34	56	44	0.3
Brazil	*Bolsa Família*	47	70	30	0.4
Mexico	Oportunidades	42	66	34	0.3
Peru	Juntos	58	84	16	0.1

a/ For details on calculation methodology of coverage, see Lustig (2012).
b/ Argentina, 2009; Bolivia, 2007; Brazil, 2009; Mexico, 2008; Peru, 2009.

Source: author's calculation based on Lustig (2012).

On the other hand, even though many CCT programs have been very effective in terms of meeting short-term indicators of human capital investments, such as increasing school enrollment and attendance, the number of visits to health care centers, food expenditures, among others (Fiszbein and Schady, 2009), the medium and longer term impacts are not clear yet given the programs' recent implementation in most countries. For example, little is known about whether more schooling has actually resulted in better skills among beneficiary children, or whether the increased expenditures on children's health have actually led to

28. These numbers were obtained from the database on programs available at http://dds.cepal.org/bdptc/ (Conditional Transfer Programs: The recent experience in Latin America and the Caribbean [ECLAC]).

Figure 2.12 Public spending in CCTs according to resource gaps for indigent and poor populations, for selected Latin American countries (2009)[a/]
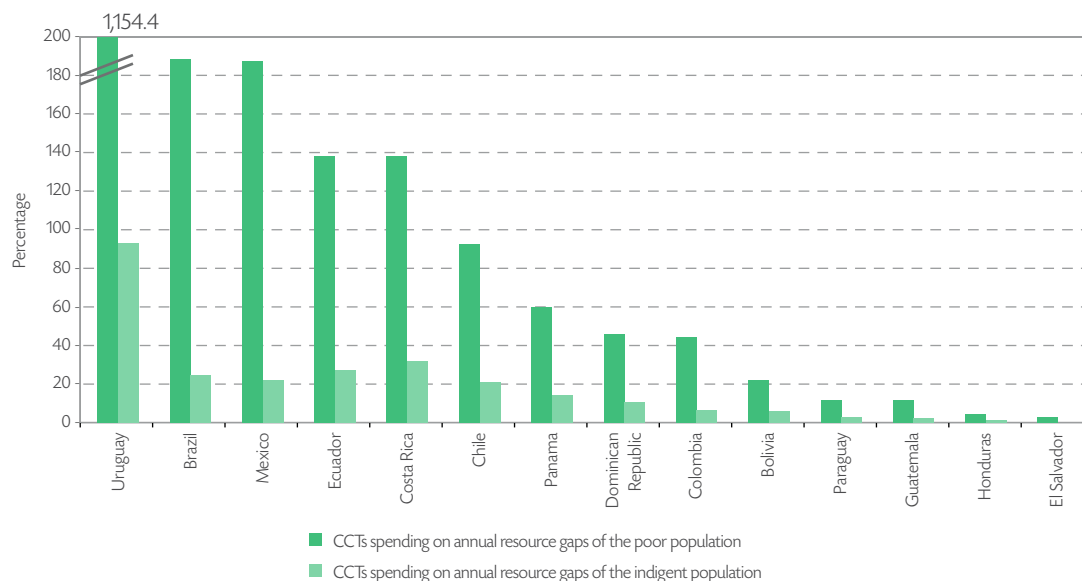
a/ Data is available for 2009, except for: Mexico (2008), Panama (2008), Bolivia (2007) and Honduras (2007).
Source: author's calculation based on Cecchini and Madariaga (2011).

better nutrition and health. Even assuming that human capital formation has increased among beneficiary children, some doubts remains regarding their overall performance, for example in labor outcomes.

Recent studies have shown mixed evidence in this regard. For example, Behrman *et al.* (2011) found positive medium-term impacts of PROGRESA/Oportunidades on schooling, negative impacts on youth employment (due to delays in entering the labor market), and a redirection of labor from agriculture to non-farm jobs. Other authors, such as Oreggia and Freije-Rodriguez (2010), have found that improved human capital formation among beneficiaries has not led to higher wages or in the labor market or reduced the probability of unemployment. Similarly, Todd and McKee (2011) conclude that, while it is possible that CCTs could have a positive effect on the medium- or long-term income of beneficiaries, the impact on inequality and poverty would be small. Behrman (2011) comes to similar conclusions analyzing the effect of interventions aimed at improving investments in human capital in Chile.

Provision of public goods and services for equity

An adequate provision of public goods and services such as education, health, and infrastructure is necessary to generate equality of opportunities and thus to achieve higher levels of equity in the distribution of income. This section reviews the coverage and quality of such provisions in Latin America.

Health care

Being in good health is a key prerequisite to successfully participating in the labor market and therefore to generating sufficient income. For this reason, equal access to health care services is essential to decreasing income inequality. In addition, some studies have highlighted the importance of early investments in health (during childhood) as a very effective tool to break the intergenerational transmission of poverty. For example, good health during childhood is crucial to regular school attendance and therefore to ensuring at least minimal investments in human capital. The connection between health, education, and income is a key mechanism for the perpetuation of inequalities across generations, as children from low-income households are likely to have limited access to health care services –as well as to suffer from other poor environmental conditions–, which affects not only their current and future health status, but also limits their chances to invest in formal education, reducing thus their future income.[29] Thus, health and education are complementary services for fighting inequality and for promoting intergenerational mobility.

Public intervention in health care provisions can be justified by the need to provide a safety net that protects against health shocks that prevent individuals from working (for instance, through preventive health care) or that force high out-of-pocket expenses related to certain treatments (through the provision of insurance that finances the cost of treatments). Providing basic health care coverage to the entire population does not necessarily mean that it must be public; guarantees of access to public services for individuals not able to obtain coverage in private markets may be sufficient. Unfortunately, as described below, in Latin America it tends to be the poorest income groups that, due to their informal status in the labor markets, are neither covered by the public health insurance system, nor able to get insurance in private markets.

Table 2.7 (see p. 80) shows that countries in Latin America spend relatively few resources in health care (public and private) as a share of GDP, averaging 7% and three percentage points below the average for developed economies. Moreover, in Latin America 44% of this spending is private, compared to 26% in high-income countries. Despite this, the share of public health expenditures within total public expenditures is similar between Latin America and high-income countries, as is the share of public health spending allocated to financing contributory social security health provisions. As shown in Table 2.7, Latin American countries spend an average of 34% of public health expenditures on financing healthcare linked to contributory social security systems (the rest, 66%, goes to funding universal health care), compared to 40% and 60%, respectively, in rich countries. At the same time, informality rates are very low in rich countries but very high in Latin America; thus, although the share of public expenditures devoted to financing universal benefits is slightly higher in Latin America, the population not covered by social security systems is also much higher.[30] The greater importance of private sources in health spending as well as of public financing of contributory health insurance systems –from which poorest individuals are excluded– suggests the presence of severe inequalities in access to healthcare services, as detailed below.

Not only do Latin American governments contribute relatively little to financing health systems, but they also do it in a very complex manner, reproducing the inequalities and exclusion that characterizes labor markets in the region. The way in which healthcare services are financed, regulated, and offered, divided be-

29. Currie (2009) emphasizes this mechanism.

30. The share of public spending devoted to financing contributory healthcare services differs across countries, in part due to the type of healthcare system in place in each country, their organizational configurations and the levels of integration between contributory and non-contributory systems (see Table 2.8 for more details).

Table 2.7 Public and private expenditure on health care in Latin American and in rich countries (2009)[a/]		
Measure	**Latin America**	**Rich countries**
Health expenditures (as percentage of GDP)	7	10
Private health expenditure (as percentage of total expenditure on health)	44	26
Public health expenditures[b/] (as percentage of total public expenditure)	13	15
Percentage of public health expenditures allocated to contributory social security	34	40

a/ Unweighted averages. The average for rich countries includes data from: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Iceland, Ireland, Israel, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Singapore, South Korea, Spain, Sweden, Switzerland, United Kingdom and the United States. Latin America figures include all countries of the region in the WHO database.

b/ Data corresponds to the general government.

Source: author's calculation based on the WHO (2011).

tween public, private, and social security components, fails to provide broad coverage and generates unequal access to quality services, which is particularly harmful to the poor. Healthcare systems in Latin America can be broadly classified into two groups: (1) systems based on contributory social security (with varying levels of integration of public contributory and non-contributory systems across countries), referred to as "Type A" in Table 2.8 (see p. 81); and (2) systems of universal public healthcare, referred to as "Type B."

Table 2.8 suggests that there are gaps and inequalities in health insurance coverage, which are detailed in Figure 2.13 (see p. 82). The primary issue with regard to coverage gaps is the level of inequality in coverage offered through contributory systems for high- and low-income groups (see top panel of Figure 2.13), in turn reflecting disparities in formal employment between these groups. That is, when health insurance is linked to the formal labor market status (as it is in the "type A" group of countries in Table 2.8), labor informality limits access to healthcare services. Instead, under purely universal schemes –i.e., eligibility for coverage is not linked to labour market status–, coverage is much more even across income levels, as is the case in Costa Rica (top panel of Figure 2.13). To compensate for these coverage disparities, several countries provide non-contributory health insurance, which, in some cases, do compensate for the coverage inequalities generated by the contributory system (e.g., in Chile, Colombia, Peru, and Uruguay). This is evident when comparing the top panel with the bottom panel in Figure 2.13. The quality provided under the contributory and non-contributory schemes greatly differs, however, with the former generally offering much higher quality services. Moreover, the remaining population not covered by contributory and/or non-contributory systems can usually only access healthcare services in public hospitals, where congestion and low quality are pervasive, implying generally poor access to health services. In the cases of Argentina, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Paraguay, Peru and the Dominican Republic, many households only have access to this type of healthcare (see bottom panel in Figure 2.13).

Sytem types and countries	Funding	Organizational structure	Degree of integration with the contributory social security system
Type A: social security and various forms of integration between contributory and non-contributory system (Argentina, Bolivia, Chile, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru and Uruguay)	General revenues and social security contributions (mandatory for formal sector workers).	The government runs a network of public facilities according to the political-territorial division and complexity of care offered. In addition, a social security healthcare system covers formal workers (see next column) and is divided into subsystems; this system usually offers higher quality services compared to the non-contributory public system. In several countries, the private sector offers insurance and health services to compete with the public system where there is demand (usually from high income groups).	**Type A.1**: In Argentina, Bolivia, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, and Uruguay there is a low level of integration of general revenues with contributions to social security that finance public health. That is, purely public healthcare services are funded with general tax revenues, and the services provided only to workers in the formal sector (contributory system) are financed with their contributions. In practice, this division is fuzzy, since many services in the contributory system are partially financed with general revenues as well. **Type A.2**: Colombia and Mexico integrate general revenues and social security contributions, cross-subsidizing the contributory and non-contributory systems. There are different coverage schemes between the two systems.
Type B: National Health System (Brazil, Costa Rica, Cuba)	General revenues. That is, these countries finance public health in a non-contributory way.	All residents have the same right to services, but due to backlogs in the system, demand cannot always be met. In Cuba, there are three administrative levels on which the system functions, including the family and community medicine model, a network of clinics, dental offices, among others, overseen by the central government. In other countries, the healthcare system functions on a two-tier system where care for certain conditions is commonly sought in the private sector (particularly for high income groups who can afford it).	Public health provision is not a part of the benefits of the contributory social security system, and it is funded entirely with general revenues.

Table 2.8 Public health systems in Latin America[a/]

a/ Countries that are not included in this table are undergoing reform processes that complicate inclusion in the classification (e.g., the case of the Bolivarian Republic of Venezuela).

Source: author's calculation based on Albi Ibáñez et al. (2004), CAF (2008) and ECLAC (2011).

Figure 2.13 Coverage of public health insurance for selected Latin American countries, by income decile[a/]

a/ Argentina, 2006; Chile, 2006; Colombia, 2006; Costa Rica, 2006; Ecuador, 2005-2006; El Salvador, 2005; Guatemala, 2006; Honduras, 2007; Jamaica, 2006; Mexico, 2006; Nicaragua, 2005; Paraguay, 2007; Peru, 2006; Dominican Republic, 2006-2007; Uruguay, 2006.

Source: author's calculation based on Household Survey of World Bank (2010).

Education

Education is at the heart of human capital formation, which is a main determinant of labor income. In addition, there is increasing evidence that it is not only the number of years of schooling (formal education) but also their quality that is crucial in achieving effective and lasting higher returns in the labor market and better pros-

pects for social mobility. Modern states, including those in Latin America, have put a lot of effort into ensuring universal access to basic education. On the other hand, access to higher education varies considerably across countries, especially when comparing less to more developed nations. Table 2.8 shows that in Latin America, enrollment in preschool, as well as primary and secondary school –i.e., basic education– increased significantly between 1970 and 2010. Primary education was already available to a large segment of the population by 1970, and since then has increased to reach almost universal coverage in the region.[31] In general, the main efforts in basic education were focused on early childhood (3-5 years old) and secondary education.

According to Table 2.9, increases in coverage (percentage of the working age population attending each level) at the preschool and secondary levels have been higher in Latin America than in rich countries. Despite this high rate of growth, the region has not been able to close the gap with high-income countries. With regard to enrollment in tertiary education, Table 2.9 shows that rich countries perform notably better than Latin America. In high-income countries the enrollment rate in tertiary education over the last decade averaged above 50% (an increase of 35 percentage points since 70s), compared to just above 30% in Latin America (or, a 20 percentage points increase).

Table 2.9 Gross enrollment rates in preschool, secondary and tertiary education in selected Latin American and in high-income countries[a/] (1970-1979 vs. 2000-2009)

Groups of countries	Decade	Gross enrollment rates		
		Preschool	Secondary	Tertiary
High-income countries	1970-1979	52.1	69.0	16.0
	2000-2009	82.6	100.6	51.5
	Change (percentage points)	30.4	31.6	35.5
Latin America and the Caribbean	1970-1979	24.5	40.9	9.6
	2000-2009	69.4	82.8	30.7
	Change (percentage points)	44.9	41.9	21.1

a/ The values are simple averages of the corresponding values for countries in each group, according to the classification of the World Bank's WDI (2011).

Source: author's calculations based on World Bank's WDI (2011) .

The successful expansion of basic education may be hiding less auspicious advances in other dimensions, particularly the distribution of this expansion of coverage and the quality of education. With regard to the distribution of access, the expansion of enrollment in preschool and secondary education was not enough to eliminate the disadvantage of lower income groups. Table 2.10 (see p. 84) shows that in Latin America, on average, the number of children aged 3-5 years that attend preschool education is 1.6 higher in the fifth income Quintilee than in the first; moreover, this gap is remarkably higher in some countries, such as El Salvador and Bolivia. In some countries, like Paraguay, average coverage rates are extremely low, reaching only about 15% of the preschool-age population, compared to a regional average of 57%. Nonetheless, Table 2.10 also shows that,

---

31. According to SEDLAC (2011), there are only three countries for which the last avaiblable data on net primary school enrollment rate is below 95%: El Salvador (91.4% in 2008), Guatemala (84.5% in 2004) and Honduras (93.9% in 2009).

Table 2.10 Average coverage rates and evolution of coverage ratios by income quintile (top/bottom quintiles) for selected Latin American countries (circa 1990 and most recent year with comparable data)[a/]

Measure	3 to 5 years old			13 to 17 years old			18 to 23 years old		
	Average coverage (percentage)	Coverage ratio of quintile 5 / quintile 1		Average coverage (percentage)	Coverage ratio of quintile 5 / quintile 1		Average coverage (percentage)	Coverage ratio of quintile 5 / quintile 1	
Country	Most recent year	Circa 1990	Most recent year	Most recent year	Circa 1990	Most recent year	Most recent year	Circa 1990	Most recent year
Argentina	73	1.8	1.3	93	1.2	1.1	34	3.4	3.1
Bolivia	49	n.a.	2.5	88	n.a.	1.2	18	n.a.	24.4
Brazil	64	2.1	1.5	91	1.5	1.1	16	30.8	14.8
Chile	66	2.2	1.3	96	1.2	1.0	31	9.2	3.5
Colombia	47	1.7	1.9	84	1.3	1.2	22	8.8	5.3
Costa Rica	37	2.8	1.6	85	1.5	1.2	18	5.2	9.0
Ecuador	89	2.1	1.2	81	1.8	1.2	25	4.4	3.9
El Salvador	32	4.5	2.8	78	1.6	1.4	14	15.9	16.5
Honduras	32	1.8	1.5	68	1.5	1.4	8	n.a.	22.1
Mexico	94	1.9	1.2	76	1.8	1.3	22	8.0	2.8
Nicaragua	34	2.2	1.9	70	1.6	1.5	9	7.2	22.8
Panama	81	2.5	1.3	86	1.8	1.3	17	13.2	9.3
Paraguay	15	2.3	1.9	81	1.6	1.3	19	16.6	8.8
Peru	74	n.a.	1.3	90	n.a.	1.1	29	n.a.	6.6
Uruguay	75	2.9	1.3	84	1.5	1.3	19	5.6	16.1
Venezuela, BR	61	1.7	1.4	84	1.1	1.1	25	2.4	2.7
Simple average	**57**	**2.3**	**1.6**	**83**	**1.5**	**1.2**	**20**	**10.0**	**10.0**

a/ Circa 1990: year 1996 for Colombia, year 1995 for Paraguay and year 1994 for Ecuador. For other countries the figure is the closest available to 1990 in the period 1990-1993. Most recent year: Argentina, 2010; Bolivia, 2005; Brazil, 2009; Chile, 2009; Colombia, 2007; Costa Rica, 2009; Ecuador, 2009; El Salvador, 2008; Honduras, 2009; Mexico, 2008; Nicaragua, 2005; Panama, 2009; Paraguay, 2009; Peru, 2009; Uruguay, 2009; Venezuela, BR, 2006.

n.a.: not available.

Source: author's calculation based on SEDLAC (CEDLAS and World Bank, 2011).

at the preschool level, the distribution of coverage has improved overall since the early 1990s, when enrollement rates among the richest income Quintilee was 2.3 times that of the poorest Quintilee.[32]

The case of secondary education is quite similar. Although the distribution of enrollment across income levels has also improved and the average coverage rate is high at about 83%, in some countries, especially in Central America, the gaps between rich and poor remain large. Thus, in Latin America the expansion in access at the preschool and secondary levels in recent decades, although notable, has not closed the gaps between different income groups. Table 2.10 also shows large differences in access by income level for tertiary education (proxied by the enrollment rates for the population aged 18-23 years), with access rates 10 times higher for the richest Quintilee than for the poorest. These inequalities remain unchanged since the early 1990s.

This inequality in enrollment in each level of education is also highlighted in concentration indices that measure the distributive impact of public spending. Table 2.11 shows these indices –taken from the work of Lustig (2012)– for primary, secondary and tertiary education in Argentina, Bolivia, Brazil, Mexico, and Peru. For Argentina, Brazil, Mexico, and Peru, public expenditures for the two basic educational levels (primary and secondary) are clearly progressive in absolute terms (i.e., their concentration indices are negative). In the case of Bolivia, the quasi-Gini is also negative but with a much smaller absolute value than the coefficients of the other four countries, indicating that spending is less progressive than elsewhere.[33] Furthermore, the concentration index of public expenditures on secondary education is positive in Bolivia, indicating that it is progressive only in relative terms. On the other hand, in all five countries, spending on tertiary education is only relatively progressive (i.e., the benefits are concentrated among the richer less than income is), as the concentration indices are positive but smaller than the Gini indices.[34] Argentina has the most progressive spending at all the three levels of education, while Bolivia has the least progressive spending for primary and secondary education, and Brazil the least progressive spending for tertiary education.

Table 2.11 Concentration coefficients[a/] for education transfers (in kind), by educational level, for selected Latin American countries[b/]

Level of education	Argentina	Bolivia	Brazil	Mexico[c/]	Peru
Primary education	-0.37	-0.15	-0.31	-0.24	-0.35
Secondary education	-0.23	0.06	-0.21	-0.15	-0.20
Tertiary education	0.20	0.42	0.46	0.31	0.31

a/ See Box 2.2 for a detailed explanation of concentration coefficients or quasi Ginis.

b/ Argentina, 2009; Bolivia, 2007; Brazil, 2009; Mexico, 2008; Peru, 2009.

c/ The concentration index for secondary education, corresponds to the first stage of secondary education. For upper secondary education, the ratio is positive and equal to 0.02.

Source: author's calculation based on Lustig (2012).

32. Pre-primary education has increased its importance as a form to potentiate early childhood development in the last decade, due to a number of studies showing their positive effects on the ulterior formation of human capital (e.g., Heckman, 2006).

33. See Box 2.2 for a detailed exposition of the interpretation given to concentration indices of public expenditure, also known as cuasi Ginis.

34. Table 2.14 shows the Gini indices for market income in each country.

Thus, the main problems concerning inequality of access to education are at the tertiary level, though, as will be seen below, there are also serious problems of quality within basic education systems. The effectiveness of education as a tool to create greater equality of opportunity and to reduce poverty depends crucially on its quality. According to the latest results of the international PISA assessment (2009), Latin American countries are not only among the worst performing countries (see Chapter 3), but also the countries with the most unequal distribution in test results among different socioeconomic groups and types of school (public vs. private), as shown in Figure 2.14. Put differently, there is a clear relationship between income inequality and unequal educational results. Within the Latin American sample, Peru shows the highest socioeconomic gaps, followed by Argentina. Panama, Brazil, Peru, Argentina and Uruguay also have large gaps between public and private education in terms of test results.[35]

Figure 2.14 Ratios of results of PISA (reading) by socioeconomic level (ratio quartile 4 / quartile 1)[a/] and by type of school for selected Latin American and other countries (2009)

◆ Other countries   ■ Latin America
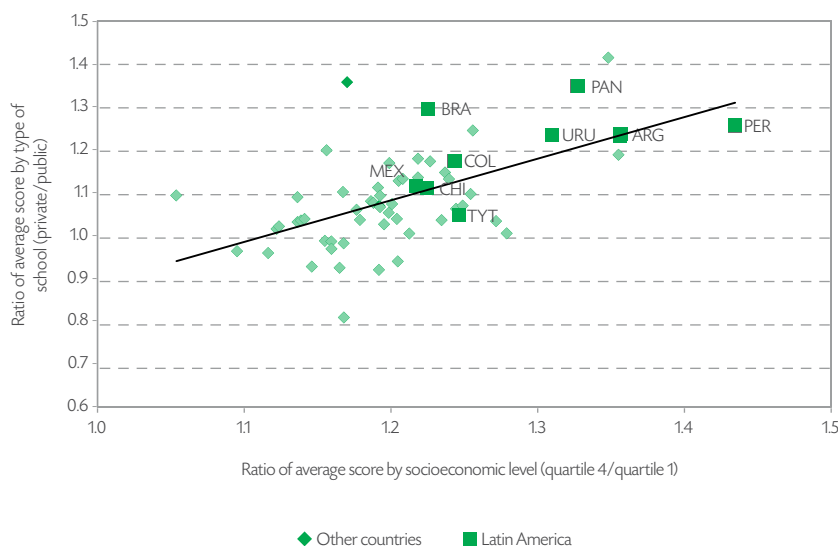
a/ The socioeconomic status of students is measured in PISA standardized tests by an index of social, economic and cultural status (SECS). This index contains a number of aspects of the student's family background that combines information on parental education, their occupations and material possessions in the home. The quartiles are constructed on the basis of the internal distribution of this index in each country.

Source: author's calculation based on PISA (2009).

Thus, despite the increasingly progressive distribution of access to basic education, there may be a regressive distribution of quality of education. This is particularly concerning given the importance of the quality of education in the development of human capital.

35. Clearly, these two dimensions of inequality are positively correlated not only in Latin America, but also in all countries included in the PISA assessment (see Figure 2.14).

Public spending on infrastructure and equity

Infrastructure is important not only for productive economic purposes, but also for its impact on and possibility for improving the living standards of those utilizing such infrastructure. Basic urban services such as roads, sewerage, electricity, telecommunications, ports and airports, urban mass transportation, urban green spaces, and buildings that support the provision of public services (such as healthcare and education) are crucial for development. Infrastructure is an essential element for improving productive efficiency as well as living standards because it is the basic complement to other goods and services that together enhance both private production and social welfare (CAF, 2009).

In terms of the relationship between infrastructure and equity, there is evidence to show that improvements in access to basic urban services and housing have a positive and significant impact on the income and welfare of the poor. For instance, Cattáneo *et al.* (2009) found that a program aimed at improving housing conditions in Mexico (installing better floors for houses) also generated advances in the health status of children (e.g., through a lower incidence of parasites and diarrhea), as well as a higher personal satisfaction and perceived quality of life among beneficiaries. Another study (González-Navarro and Quintana-Domeque, 2010) found that paving streets can have a significant positive effect on several measures of wealth (e.g., value of housing facilities, land etc.), access to credit, consumption of durable goods, and private investment in housing by homeowners located on newly paved roads. All of these are clear examples of the role of infrastructure as an important component of efforts to enhance the welfare of poor households.

Table 2.12 shows average rates of access to select urban services, as well as the evolution of their distribution since the early 1990s. Sewerage remains one of the most critical deficits in infrastructure in Latin America, with low coverage and unequal distribution, since access is mostly concentrated among households in higher income Quintilees. Nonetheless, all three services listed in Table 2.12 (water, sewerage, and electricity) are now more equally distributed than two decades ago.

Table 2.12 Average coverage and ratio of coverage distribution (top/bottom quintiles) for urban infrastructure services, in selected Latin American countries[a/]

Country	City water (tap water)			Sewage			Electricity		
	Coverage (percentage)	Ratio quintile 5 / quintile 1		Coverage (percentage)	Ratio quintile 5 / quintile 1		Coverage (percentage)	Ratio quintile 5 / quintile 1	
	Most recent year	Circa 1990	Most recent year	Most recent year	Circa 1990	Most recent year	Most recent year	Circa 1990	Most recent year
Argentina	100	1.1	1.0	65	n.a.	2.0	100	n.a.	n.a.
Bolivia	80	n.a.	1.7	35	n.a.	11.4	74	n.a.	3.0
Brazil	93	2.0	1.2	59	3.7	2.2	99	1.4	1.0
Chile	97	1.2	1.0	84	1.7	1.2	100	1.1	1.0
Colombia	91	1.5	1.2	75	2.2	1.8	97	1.2	1.1
Costa Rica	99	n.a.	1.0	26	n.a.	1.7	99	n.a.	1.0
Ecuador	91	1.9	1.1	57	3.0	2.2	96	1.4	1.1

Country	City water (tap water)			Sewage			Electricity		
	Coverage (percentage)	Ratio quintile 5 / quintile 1		Coverage (percentage)	Ratio quintile 5 / quintile 1		Coverage (percentage)	Ratio quintile 5 / quintile 1	
	Most recent year	Circa 1990	Most recent year	Most recent year	Circa 1990	Most recent year	Most recent year	Circa 1990	Most recent year
El Salvador	70	3.7	1.8	n.a.	11.3	n.a.	91	2.1	1.3
Mexico	89	n.a.	1.2	59	n.a.	3.0	99	n.a.	1.0
Nicaragua	65	2.4	2.7	21	8.3	11.2	74	2.1	2.3
Paraguay	95	1.3	1.1	10	36.6	12.4	97	2.2	1.1
Peru	69	n.a.	2.2	57	n.a.	5.2	83	n.a.	1.7
Dominican Republic	76	n.a.	1.4	25	n.a.	2.9	98	n.a.	1.0
Uruguay	98	n.a.	1.0	57	n.a.	2.5	99	n.a.	1.0
Venezuela, BR	90	n.a.	1.2	91	n.a.	1.1	99	n.a.	1.0

a/ Circa 1990: year 1996 for Colombia, year 1995 for Paraguay and year 1994 for Ecuador. For other countries, the figure is the closest available to 1990 in the period 1990-1993. Most recent year: Argentina, 2010; Bolivia, 2005; Brazil, 2009; Chile, 2009; Colombia, 2007; Costa Rica, 2009; Ecuador, 2009; Mexico, 2008; Nicaragua, 2005; Paraguay, 2009; Peru, 2009; Dominican Republic, 2009; Uruguay, 2009; Venezuela, BR, 2006.

n.a.: not available.

Source: author's calculation based on SEDLAC (CEDLAS and World Bank, 2011).

Subsidies

Many governments in the region have used subsidies to consumption of certain goods and services to achieve redistributive goals, especially with regard to consumption of electricity, food, and fuel. Currently, about half of countries in the region have food consumption subsidies, while more than two-thirds subsidize electricity and transportation fuels. Only a third of countries subsidize water/sewerage services (World Bank, 2011).

In some countries, subsidies take the form of social tariffs, which are generally quite effective in reaching the poor. Other countries employ more universal subsidies, implying a high fiscal burden and likely distorting relative prices and thus the allocation of resources. Indeed, the main arguments against the use of universal subsidies invoke precisely this kind of allocative-efficiency argument, as well as the fact they may especially benefit richer households. Subsidies with redistributive aims often overlook the fact that redistribution will not take place where the poor do not have access to certain complementary assets that are needed to make use of the benefits (e.g., a car, or connection to the electricity grid). Some of these almost-universal subsidies end up only benefiting middle- and upper-income groups. Thus, universal access policies for basic infrastructure (for example, to electricity grids, water or sewerage services) are a precondition for subsidies to more effectively reach poor households.

Table 2.13 (see p. 89) illustrates, through concentration indices, some evidence of inclusion and exclusion errors in different types of subsidies. Food subsidies benefit poor households the most, and in all cases have negative coefficients. In contrast, subsidies to fuel and electricity consumption are relatively more concen-

Table 2.13 Concentration coefficients[a/] of subsidies and expenditure in subsidies as percentage of GDP in selected Latin American countries[b/]

Country	Food			Fuel / energy			Transport		
	Programs	Concentration coeficient	Size of the subsidy (percentage of GDP)	Programs	Concentration coeficient	Size of the subsidy (percentage of GDP)	Programs	Concentration coeficient	Size of the subsidy (percentage of GDP)
Argentina	Seguridad Alimentaria	-0.47	0.11	Energy subsidies	0.22	1.70	Transport subsidies (not air) and airlines	0.16 (not air), 0.80 (airlines)	Not air: 2.20 Airlines: 0.20
Bolivia	Desayuno Escolar	-0.12	0.01	Subsidies for liquefied gas. diesel and gasoline	0.33	0.48	n.b.	n.b.	n.b.
Brazil	n.a.	n.a.	n.a.	Auxílio-Gas[c/]	-0.20	0.001	n.a.	n.a.	n.a.
Mexico	Programas de Alimentación (DIF)	-0.14	0.03	Subsidies for electricity and fuel (LP gas and gasoline[d/])	0.14 (electricity); 0.28 (LP gas); 0.46 (gasoline)	Electricity: 0.01 Fuel: 0.20 in LP gas and 1.60 in gasoline (IEPS)	n.a.	n.a.	n.a.
Peru	Programa Integral de Nutrición (PIN), Vaso de Leche y Programa de Complementación Alimentaria (PCA)	-0.38	0.24	n.b.	n.b.	n.b.	n.a.	n.a.	n.a.

a/ See Box 2.2 for a detailed explanation of concentration indices or quasi Ginis.

b/ Argentina, 2009; Bolivia, 2007; Brazil, 2009; Mexico, 2008; Peru, 2009.

c/ Although Auxilio-Gas was absorbed into the Bolsa Família program, it still exists as an independent program for a group of households.

d/ The gasoline subsidy is a negative tax (STPS) since 2006.

n.a.: not applicable.

n.b.: not available.

Source: author's calculation based on Lustig (2012).

trated among higher income households. For example, the gasoline subsidy in Mexico has a concentration coefficient of 0.46, just below the Gini coefficient (equal to 0.527, see Table 2.14, p. 93), meaning it is only an effective redistributive mechanism in relative rather than absolute terms. Moreover, the program costs around 1.6% of GDP, equivalent to almost five times the spending on the Oportunidades program at 0.34% of GDP.[36] In a more extreme case of concentration of the benefits of subsidies among the rich, subsidization of airlines in Argentina has a concentration coefficient as high as 0.80, well above that of income (0.48); that

36. These data were obtained from Lustig (2012).

is, it is, even in absolute terms, a regressive subsidy that also requires high fiscal cost.[37] Table 2.13 also shows that in Argentina, while subsidies to energy and ground transportation are relatively progressive (with a concentration coefficient that is positive but lower than the Gini), their associated fiscal cost is also very high. Together, the budget of these two subsidies is equivalent to nine times the budget of the Universal Child Allowance (*Asignación Universal por Hijo*, AUH), nearly double the spending on primary healthcare, or about equivalent to the entire budget for public elementary and secondary education.[38]

GLOBAL ANALYSIS OF THE IMPACT OF SPENDING AND TAXES IN LATIN AMERICA

Previous work exploring the impact of spending and taxes on income distribution in the region is not very auspicious. For example, Goñi *et al.* (2011) and Breceda *et al.* (2008) agree that, unlike in the developed economies in Europe, there is very little actual fiscal redistribution in Latin America. They highlight that this contributes significantly to the much higher inequality in secondary income distribution in Latin America compared to Europe. Goñi *et al.* (2011) also note unlike in Latin America, where in-kind transfers are the predominant mechanism for redistribution, in European countries cash transfers are much more common. These in-kind transfers, while contributing to a reduction in income inequality, do not manage the same redistributive impact as European transfers in cash (see Figure 2.15, p. 91). In contrast, taxes in Latin American fail to redistribute income at all (see left panel of Figure 2.15), whereas in Europe they do contribute to reductions in the Gini index, calculated as a comparison of the pre-tax to post-tax coefficient.

The poor performance of cash transfers as a tool for redistribution in Latin America can be attributed to multiple factors. First, overall public spending is lower in the region relative to OECD countries. Second, the high levels of labor informality, which excludes informal workers from contributory benefit systems, restrict the ability of monetary transfers to reach the poor through formal mechanisms in the labor market. These two factors are closely linked and very much related to the high rates of informality and tax evasion in the region.

On the other hand, the limited redistribution achieved through taxation in Latin America can be explained by a number of reasons. First, the small tax base, especially in the case of direct taxation, due to high rates of tax avoidance and evasion severely limits the potential base for tax collection.[39] Second, personal income tax rates are significantly lower than those in developed countries. Third, the structure of tax systems in Latin America places greater relative importance on indirect taxation, which has a lower capacity for income redistribution.

These findings on the impact of spending and taxes on redistribution in Latin America are corroborated by more recent results, as shown in Lustig (2012).[40] The main results of the study (Lustig 2012) are summarized in Figure 2.16 (see p. 92). The author finds that redistribution is indeed achieved by in-kind transfers (cal-

---

37. The cost of airline subsidies is equal to total expenditures on both the Plan Jefes y Jefas de Hogar and the Plan Familias together, and about half of the budget of the Asignación Universal por Hijo (AUH).

38. Numbers calculated from information available in Lustig (2012) for Argentina in 2009-2010.

39. Also see Chapter 4.

40. The methodology used in Lustig (2012) considers contributory pension benefits as a part of market income; however, qualitative results are robust to including these benefits as a part of public cash transfers. For more details, see Lustig (2012).

Figure 2.15 Impact of transfers and taxes on Gini coefficients in Europe and Latin America[a/]

Impact of taxes and monetary transfers

Impact of taxes, monetary transfers and in-kind transfers
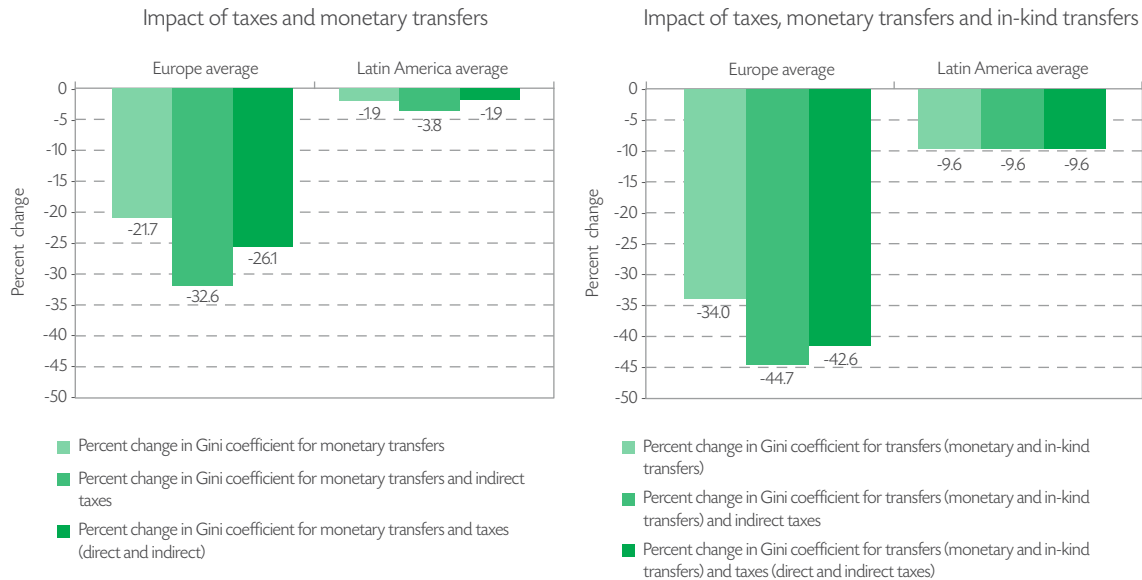
a/ The figures for Latin America are unweighted averages for: Argentina, Brazil, Chile, Colombia, Mexico and Peru. The figures for Europe are unweighted averages for the following countries: Austria, Belgium, Denmark, Spain, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Sweden and United Kingdom. In the case of the inclusion of in-kind transfers, European countries included are Belgium, Germany, Greece, Ireland, Italy, Netherlands and United Kingdom. For more details, see Goñi *et al.* (2011).

Source: author's calculation based on Goñi *et al.*(2011).

culating the difference between disposable or post-fiscal income, and final income), particularly in the cases of Brazil, Mexico and Argentina. In the latter, direct monetary transfers (mainly non-contributory pensions and income transfers for children under the AUH program) are large as well, since the Gini coefficient measuring inequality in net market income and disposable income clearly differ. Lustig (2012) also shows the low redistribution achieved through taxation, both direct (i.e., changes in the Gini coefficient for market income and net market income) and indirect (i.e., reflecting small changes between the Gini coefficient for disposable income to that for post-fiscal income).

Among the five countries for which data is provided in Table 2.14, Peru has been the least successful in redistributing income, with the smallest reduction between the market income Gini and that of final income (-6.2%), followed by Bolivia (-7.0%). As shown in Figure 2.16 (p.92) and Table 2.14 (see p. 93), Argentina (-22.8%) and Brazil (-19.9%) have been most effective in redistributing income, while Mexico falls between these two groups of countries (-15.1%). Table 2.14 also shows the impact of taxes and public spending programs on poverty reduction. The results show similar patterns to that of the Gini coefficients analyzed above. The reductions in poverty rates range from 39.1% in Argentina (poverty fell from 23% to 14%) to only 2.8%

Figure 2.16 Gini coefficients for market income, net market income, disposable income, post-fiscal income, and final income[a/] for selected Latin American countries[b/ c/ d/]
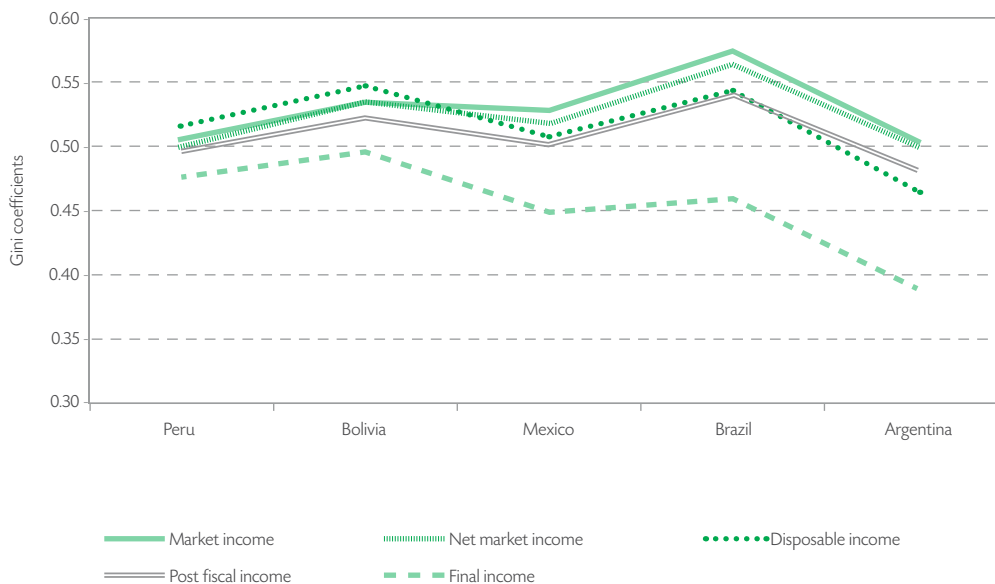
a/ The definitions of the different types of income are in Box 2.2.
b/ The vertical axis does not start at zero to make more visible the index changes.
c/ Countries are ranked in increasing order of their overall redistributive impact (Peru with lowest redistribution and Argentina with the hightest redistribution).
d/ Argentina, 2009; Bolivia, 2007; Brazil; 2009; Mexico, 2008; Peru, 2009.

Source: author's calculation based on Lustig (2012).

in Peru (from 28.6% to 27.8%). The reduction in extreme-poverty rates is more notable in all countries, ranging from a 64% drop in Argentina, to only 6.6% in the case of Bolivia.[41]

This data supports the notion that it is indeed government spending that effects the observed changes, however small, in the distribution of income in the region. On the other hand, not all government spending has an absolute progressive impact on income distribution, since –as noted in the fourth section– there are some public provisions with a concentration coefficient that is lower than that for income, albeit positive, while others show even higher concentration coefficients than Gini coefficients for income. For example, Figure 2.17 (see p. 94) summarizes the range of variation of concentration coefficients (on the vertical axis) for various public programs in Argentina, as well as their sizes, as measured by the share of programs' expenditures in GDP (on the horizontal axis). Several conclusions can be drawn from this graph. First, purely regressive public programs coexist with relatively or absolutely progressive ones.

---

41. Poverty rates were only calculated on the basis of market income and disposable income, except for the case of Argentina where Lustig (2012) only reports poverty and extreme poverty rates from net market income. Reductions in poverty and extreme poverty rates in all five countries were calculated based on these definitions of income.

Table 2.14 Gini coefficients, indigent and poverty rates[a/] for several measures of income[b/], for selected Latin American countries[c/]

Country	Measure	Market income	Net market income	Disposable income	Post-fiscal income	Final income	Total reduction (percentage)[d/]
Argentina	Gini	0.503	0.498	0.465	0.480	0.388	-22.8
	Poverty	n.b.	23.0	14.0	n.a	n.a	-39.1
	Indigence	n.b.	13.9	5.0	n.a	n.a	-64.0
Brazil	Gini	0.573	0.562	0.542	0.539	0.459	-19.9
	Poverty	26.6	26.8	23.6	n.a	n.a	-11.2
	Indigence	15.3	15.4	11.9	n.a	n.a	-22.0
Mexico	Gini	0.527	0.517	0.508	0.500	0.448	-15.1
	Poverty	23.4	23.8	22.5	n.a	n.a	-3.9
	Indigence	12.2	12.4	10.8	n.a	n.a	-11.2
Bolivia	Gini	0.534	0.534	0.525	0.521	0.497	-7.0
	Poverty	37.2	37.2	35.5	n.a	n.a	-4.5
	Indigence	22.2	22.2	20.7	n.a	n.a	-6.6
Peru	Gini	0.504	0.498	0.494	0.489	0.473	-6.2
	Poverty	28.6	28.6	27.8	n.a	n.a	-2.8
	Indigence	15.2	15.2	14.0	n.a	n.a	-7.3

a/ The indigent rate measures the proportion of the population living below the income poverty line of USD $2.50 per day, PPP adjusted. The poverty rate measures the proportion of the population living below the income poverty line of USD $4.00 per day, PPP adjusted.

b/ The definitions of the different types of income are in Box 2.2.

c/ Argentina, 2009; Bolivia, 2007; Brazil, 2009; Mexico, 2008; Peru, 2009.

d/ The total reduction in the Gini coefficient represents the final redistributive effect of the set of taxes and expenditures analyzed. This change is calculated as the percent change between the Gini coefficient of market income and that of final income. Changes in poverty and indigence rates are calculated as the percent change between market income and disposable income, except for in the case of Argentina, where they are calculated as the difference between net market income and disposable income.

n.a.: not applicable.

n.b.: not available.

Source: author's calculation based on Lustig (2012).

Second, more redistributive programs (e.g., targeted cash transfers) represent only a small share of GDP but are quite effective in terms of income redistribution. Third, the programs making the largest contributions to the reduction of the Gini coefficient (i.e., basic education, health, and non-contributory pensions) combine two fundamental characteristics: they have negative concentration coefficients and they have large budgets. Finally, some large programs only reach individuals in the middle and upper income deciles and therefore are only relatively progressive, since in order to benefit from them, one must have access to key private complementarities, such as access to finance (e.g., to be able to invest in tertiary education), access to contributory health insurance (e.g., PAMI-Health), or own and/or regularly make use of transportation and/or appliances that consume large amounts of electricity (i.e., to make use of energy and transport subsidies).

Figure 2.17 Concentration coefficients and size of public expenditure (as percentage of GDP) for selected public programs in Argentina
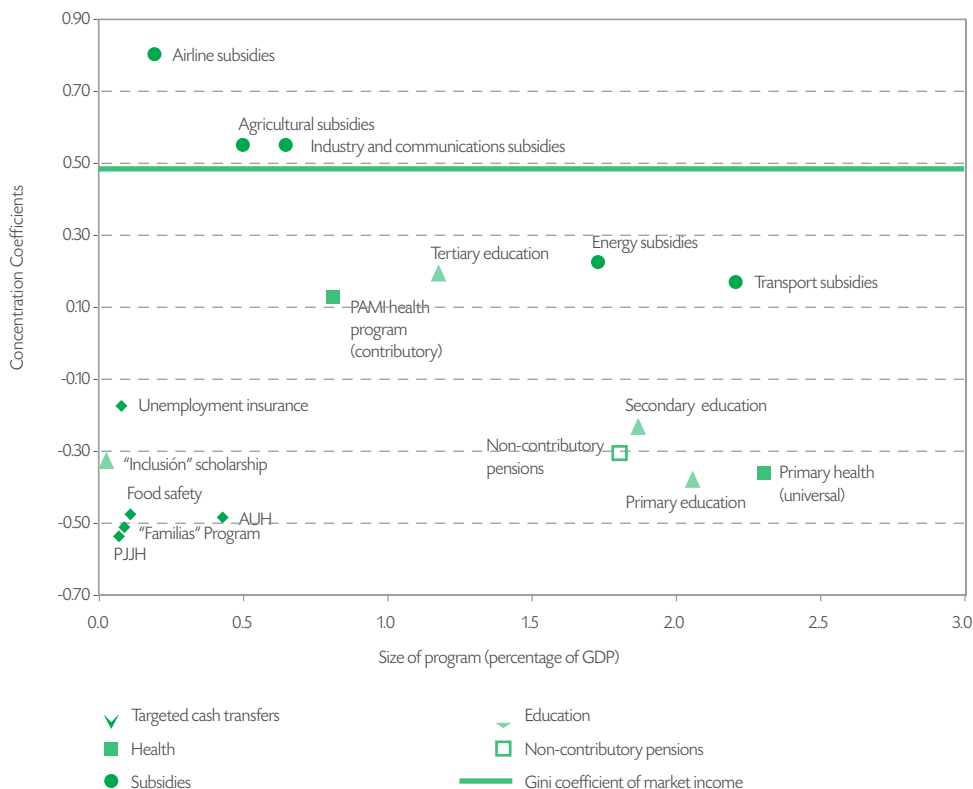
Source: author's calculation based on Lustig (2012).

This mixed picture in terms of redistributive capacity and size of programs is very common in other Latin American countries, suggesting that only a portion of total public spending is purely progressive, while much is either only relatively progressive (i.e., concentrated among the rich, though less than primary income) or regressive. For example, in Argentina, 6.2% of public spending is regressive, compared to 16.4% in Mexico. Only 44.5% of redistributive spending in Argentina and 42.8% in Mexico is purely progressive (i.e., with negative concentration coefficients), with the rest (i.e., 49.3% and 40.8% for Argentina and Mexico, respectively) being only relatively progressive (Lustig, 2012).

CONCLUSIONS

Latin America has very high rates of inequality that have proven remarkably persistent over time. What is the role of the state in the persistence of this inequality? This chapter has aimed to shed light on this question and to explore the redistributive impacts of both taxes and public expenditures in the region.

The evidence reviewed here indicates that the existing tax system is a very weak tool for reducing inequality; however, this does not need to be the case. In more developed economies, taxation –especially direct taxes– plays an important redistributive role. This chapter shows that the design of the tax system as well as the size of the tax revenues limit its capacity for redistribution. The reasons behind this limited redistributive capacity lie in the emphasis on indirect taxes and low personal income taxes, which are closely related and contribute to the low overall rates of tax collection. This in turn hampers the use of the tax system for redistribution since tax revenues remain low, particularly compared to higher income countries.

Low tax revenues also limit the expansion of the coverage and quality of public goods and services that would otherwise further contribute to the redistribution of income. In addition, the low redistributive capacity of cash transfers in Latin America –at least compared to more developed countries– is clearly influenced by the high incidence of labor informality, as labor markets are unable to serve as the channel through which the poor can access many cash transfers from the state.

Despite this limited capacity for income redistribution through taxes and public spending, in recent decades Latin America has implemented some income transfers that do not use the formal labor market to reach beneficiaries (e.g., non-contributory transfers, especially pensions). These transfers may have contributed to a more equal income distribution in the last decade. In addition, many countries in Latin America have also used conditional cash transfers targeting poor households with children. The co-responsibilities, or conditionalities, appear to have successfully promoted human capital acquisition among children in poverty. Nevertheless, while these types of non-contributory transfers seem to improve the current living conditions of beneficiaries, the amount of resources allocated to such programs remains small relative to the large unmet social needs, especially in the poorest countries in the region.

At the same time, there are some worrying caveats regarding this expansion of social protection. First, there is some evidence to show that non-contributory transfers, especially unconditional transfers, may interfere with labor market participation, particularly with regard to formal labor markets. While this may be a minor concern relative to the benefits generated by such programs, it should nonetheless be taken into account in program design so as to minimize the effect (as it indeed is in some countries). Second, the effectiveness of these transfer programs in the longer run remains unknown. So far, the achievements of these programs have been gauged in terms of short-term outcomes, such as school enrollment or attendance, health visits, and food expenses. The long-term impacts –that is, whether children will actually acquire higher human capital stocks in the future and whether this will lead to higher labor market returns in their adult working life– have yet to be assessed. In generating these desired long-term outcomes, in addition to more inclusive and stable labor market conditions, the quality of the health and education services utilized by program beneficiaries is crucial. Given the evidence presented in this chapter, a redirection of efforts towards improving the average quality and distribution of education, health, and labor formality is necessary.

Some good news does emerge from the analysis in this chapter, however, and confirms findings of similar work: income inequality has consistently declined in the last decade across the region. Is this process of greater income equalization sustainable? There is no guarantee that the fall in skill premia, which improved the primary income distribution, as well as the expansion of non-contributory and targeted income transfers, which affected the secondary income distribution, will both continue operating in the future as they have over the last decade. These various factors may weaken or change. In the case of returns to education, regardless of the causes of the decline in skill premia, which are still very much debated (e.g., the expansion

of the relative demand for unskilled labor, the increased relative supply of skilled labor, the decline in the quality of skilled labor, and sectoral changes in demand for labor) may all be time-limited. In the case of non-contributory income transfers, current or expanded funding is dependent on the availability of the necessary fiscal resources, which may not be available in all countries over time. Moreover, the capacity of CCTs to break the intergenerational transmission of poverty may be limited due to the issues of quality of service provision and general labor market conditions.

In sum, this chapter finds that effective and sustainable redistribution requires (1) creating greater equality of opportunities through investments in human capital among children, and (2) building an inclusive state that incorporates all citizens in the citizen-state contract, particularly through formal employment. Barring these conditions, it would seem unlikely that Latin America will break the vicious cycle that has led to the high rates of inequality in the region.

3

Quality in public expenditures:
Measuring and promoting efficiency

Quality in public expenditures: Measuring and promoting efficiency

INTRODUCTION[1]

Spending efficiently is a moral obligation of any government. This principle not only supports the contract between the state and society[2] and legitimizes tax collection, but also may promote a virtuous circle that promotes higher and better taxation, in accordance with the hypothesis of reciprocity (see chapter 5).

Given the importance of efficient spending, a public debate should clearly establish how to define and measure efficiency. This debate frequently focuses on measuring output indicators, and while they certainly provide useful information, they are not a sufficient measurement of the efficiency of spending. The reason is simple: a poor output may reflect a lack of resources and/or a harsh environment and does not necessary reflect an inadequate use of available resources.

Public efficiency can be studied from different perspectives. Here we focus on "productive efficiency," referring to whether a government or decision-making unit (e.g., country, municipality, school, or hospital) achieves the production (or quality) of certain public goods or services in a manner consistent with best practices, under particular conditions, and given available resources; put simply, if the decision-making unit is achieving its potential.

Notice that this perspective on efficiency says nothing about the optimal size or composition of public expenditures. Assessing efficiency at this broad level must incorporate into the public debate the issue of social preferences about public goods and services as well as attempt to understand what market failures lead to a sub-optimal provision of these goods and services. In practice, the decisions around the provision of public goods and services are the result of a complex political process that materializes in national budgets. Understanding this process is itself paramount for public finances, but is beyond the scope of this chapter.

Certainly productive efficiency alone is not enough to claim efficiency in a broader sense. For instance, a local government can be very efficient at producing a good that is not valued for local citizens. However, productive efficiency is a necessary condition for a healthy public administration. In fact, once decisions around how much and in which sectors to spend have been made, it is critical that public inputs are employed in accordance with best practices (that is, towards ensuring productive efficiency). Improving productive efficiency allows a government to increase the quantity and quality of public services and goods, without increasing taxes or, alternatively, reducing the social impact of fiscal adjustments. Hence, productive efficiency is a concept of great relevance to public finance.

---

1. Written by Fernando Álvarez, with the research assistance of Mauricio Stern and Mariana Urbina.

2. In fact, an efficient use of public resources is explicitly included in the constitution of some countries; for instance, in the Bolivarian Republic of Venezuela.

One of the central messages of this chapter is that finding appropriate measures of efficiency is key to achieving it. Measuring efficiency –even with this limited definition of efficiency– is a complex task, but is both important and possible. Essentially, it requires estimating a frontier that reflects the achievable output with the implementation of best practices. A group of methods, referred to as frontier methods, has been developed to that end. These methods are not without their critics but do represent a powerful tool in identifying potential efficiency problems in local and national governments, as well as in public institutions (e.g., school and hospitals, among others).

This chapter is divided into two main parts. The first (sections 2 and 3) introduces and applies frontier methods. In particular, section 2 offers a cross-country analysis evaluating efficiency in the region for the sectors of education, health, and infrastructure; while section 3 takes a closer look at the efficiency of the school system, using information at the individual school level, in Chile and Peru. Although this part focuses on education and health, however, the aim for this chapter is to provide empirical support to the measurement of efficiency of public expenditures in Latin America. The second part of this chapter (section 4) explores the practices, principles, and institutions that promote efficiency in the public sector, and section 5 concludes.

In general, the empirical exercises carried out in this chapter suggest that although the poor performance of the public sector in Latin America can be partially explained by a lack of resources and/or adverse environmental conditions, there remains an important component of inefficiency. For instance, accounting for the resources allocated to education as well as relevant environmental conditions, educational outcomes –both in terms of access and quality — are between 80% and 90% of their potential in the region. Likewise, inefficiencies remain in health systems in spite of progress made in recent decades. The analyses at the school level for Chile and Peru identify problems of inefficiency but also find that some public schools are as efficient as the most efficient private schools.

Given these findings, public policy discussions must address how to increase efficiency, rather than only discuss about the amount of resources available. The list of practices that could be employed to improve efficiency is extensive. Some initiatives include, for instance, introducing performance pay schemes to incentivize public employees, improving the design of public interventions and promoting the use of IT systems. The implementation of these practices is a complex but unavoidable task in order to enhance government efficiency, one of the critical challenges for Latin America public sectors.

ARE PUBLIC EXPENDITURES IN LATIN AMERICA INEFFICIENT? A FRONTIER APPROACH

Are the citizens of Latin America satisfied with the quantity and quality of the public services? Recent survey responses suggest they are not. For instance, the 2010 Latinobarómetro survey found that between 40 to 66% of households were unsatisfied with public services, varying according to the service analyzed. Indeed, this perception may signal failures in the provision of public services; yet, it is not evidence of an inefficient use of public resources. In fact, it is important to differentiate between efficiency and outcomes. The reason is simple: a poor outcome may be associated with lack of resources, or it may be that the decision-making unit is operating under adverse conditions.

The case of the quality of education, typically proxy by standardized test scores, is a prime example. It can be argued that a school's score depends on many factors, some of them not related to the efficiency of the use of resources. On the one hand, if a school has little resources (e.g., a low teacher-student ratio), it is likely to have a low score independently of how efficient those teachers are in training students. Moreover, it is also well known that socioeconomic background and household factors are linked to student performance; that is, students whose parents are more educated or wealthier are more likely to have higher grades, regardless of the specific conditions at the school they attend.

Hence, an assessment of efficiency must systematically incorporate all those factors that affect outcomes but that are also not related to the improper use of inputs. Based on this assessment, a decision-making unit may, in principle, look inefficient as a result of poor performance outcomes, but could actually be quite efficient, given the resources it has available and the conditions under which it operates.

Fortunately, there are methods created to study productive efficiency in such a way, namely "frontier methods." Box 3.1 briefly describes some of them. These methods provide an efficiency score between zero and one for each unit under analysis, indicating how far the corresponding decision-making unit is from its potential. The score could be output-oriented, in which case a value of 0.8 would indicate that current outcomes are 80% of their potential. Conversely, the score could also be input-oriented, in which case a value of 0.8 would indicate that current production can be achieved with 80% of current inputs, if best practices were implemented.

Frontier methods are well suited to evaluating productive efficiency but are also not without limitations. First, the frontier is estimated from a sample of decision-making units (e.g., countries, local governments, school and so on) and thus is relative to this sample. Second, homogeneity is required in the way inputs, outputs, and environmental conditions are measured. This is not always possible, especially in a cross-country analysis. Finally, it is difficult to incorporate all relevant factors affecting outcomes, which may lead to biases in the efficiency scores. Given these limitations, the results of calculations based on frontier methods must be carefully interpreted.

Box 3.1 Productive efficiency: definition and measurement.

Modern measurement of productive efficiency is rooted in the ideas of Farrell (1957) and Debreu (1951). The productive efficiency literature differentiates between technical and allocative efficiency. Technical efficiency refers to the maximization of output given some units of physical inputs (i.e., output-oriented efficiency), or alternatively, the minimization of units of physical inputs to achieve certain level of output (input-oriented efficiency). On the other hand, allocative efficiency is concerned with the proper combination of inputs given current prices (Lovell, 1992). In other words, a decision-making unit can be inefficient from a productive perspective either by inadequately using available resources, or by purchasing a set of inputs that is sub-optimal given their prices.

Unfortunately productive efficiency is limited to a single administrative unit; thus, whether the amount and the composition of government expenditures are efficient from a global perspective is not address in either technical or allocative measures of efficiency. Nevertheless, productive efficiency is a necessary condition to achieve global efficiency in public administration, and is thus still relevant for the design of public policy.

Farrell's definition of efficiency as the distance between actual outcomes and a frontier representing the maximum attainable output for a decision-making unit has motivated the development of particular methods. These are grouped under the label of frontier approaches. They are often differentiated by those that impose a functional form for the frontier (i.e., parametric methods) and those that do not (i.e., non-parametric methods).

The most popular parametric method is probably the Stochastic Frontier method. In this approach, the estimation of the frontier is based on a stochastic production function that connects outputs with inputs, the efficiency term, a stochastic term, and a set of variables for environmental conditions. The seminal work for this method is attributed to Aigner et al (1977). The method assumes distributional functions for the efficiency and the stochastic variables and then estimates the parameters of the model by maximum likelihood. The estimated parameters then allow for inferences to be made regarding the efficiency of each unit under consideration.

Among the non-parametric methods, the most common is probably the Data Envelope Analysis (DEA), introduced by Charness *et al.* (1978). Essentially, this method assumes that any linear combination of actual sets of input-outputs is feasible and hence aims to build an envelope function around these sets.

Each set of method has advantages. Non-parametric methods are more flexible than parametric ones, as they do not impose any arbitrary functional form in establishing the frontier; however, they are very sensitive to the presence of outliers when compared to stochastic frontier methods. The reason is that stochastic methods incorporate a random variable that absorbs extraneous factors and measurement errors when establishing the frontier.

Despite these differences, all these methods seek a function reflecting the potential outcome under best practices, and not a function that represents average outcomes (given input and control variables). This differs from the literature that aims to estimate production functions, which focuses on the estimation of the technical parameters but not on deviation from an ideal output.

Certainly these methods are not without limitations; however, they represent a useful and powerful tool to identify efficiency problems in decision-making units, in this case, among public entities.

Source: Author's elaboration based on Murillo Zamorano (2004) and Green (2005).

Frontier techniques have been commonly used to evaluate public sector efficiency in cross-country comparisons. For instance, Afonso *et al.* (2006) analyze public sector performance and efficiency in 23 industrialized countries. Specifically, the study explores outcomes in seven areas: health, education, administration, public infrastructure, inequality, stability, and economic performance. Combining outcomes from these sectors, they build a composite performance index, which is taken as the output, and the ratio of government expenditures-GDP as the input. The average output-oriented efficiency score is calculated to be 0.85, with the lowest rate found in Italy (0.68). The study also finds that the efficiency index tends to be lower for governments with higher expenditures.

In a subsequent piece of work, these authors explore public sector efficiency for a sample of 24 less developed countries,[3] using the same variables as in the previous study as the input and output (Afonso *et al.* 2010). In this second paper, the authors find efficiency scores to be lower and more dispersed. The average efficiency score is barely 0.67, and in some countries as low as 0.50.[4]

Crounch and Fasih (2004) focus on education, stressing the importance of assessing both the quality and quantity dimensions. The authors build a quality output for 76 countries, using countries with data from various international standardized tests.[5] The authors find that about one-third of developing economies have efficiency scores below 0.80. Finally, Herrera and Pang (2005) analyze the efficiency of education and health sectors, using information for 140 countries for the period 1996-2006.[6] Low efficiency scores are found for Latin America. In addition (as in Afonso *et al.* 2003), the authors find that countries with higher government expenditures (as a percentage of GDP) tend to have lower efficiency scores.

In the rest of this section, we explore efficiency in education, health, and infrastructure. The results for education and health are taken from Álvarez-Para and St. Aubyn (2012), a document prepared specifically for this report. For the infrastructure analysis, we provide results for the efficiency of ports, taken from Herrera and Pang (2006).

Efficiency in the provision of educational services

Education systems are aimed at increasing human capital, both in terms of quantity and quality. Some countries may show adequate outcomes in terms of quality but not in terms of access, or vice versa. In fact, increasing access to education can reduce overall performance on standardized tests; thus, when assessing the efficiency of education systems, it is important to simultaneous focus on both dimensions.

The findings presented are those of Álvarez-Parra and St. Aubyn (2012), prepared for this report. Their work measures quality by average PISA scores.[7] While PISA scores do not necessary reflect the quality of education in a broad sense, or with respect to the objectives of each particular country, they do allow for international comparisons, which is required for this type of exercise. As an indicator of access, net enrollment rate in secondary education are used, for which, in contrast to primary education, there remains room for improvement in the region.

Figures 3.1 and 3.2 (see p. 104) show information for these two indicators. The former shows PISA scores for 2006 compared to scores for 2009 for countries participating in both years. Only Latin American countries are labeled. The latter displays average enrollment rates for the period 2005-2009. The access indicator is shown by region and for selected Latin America countries.

---

3. The sample is composed of the 10 new members of the European Union, 2 candidates (Bulgaria and Romania), 3 old members (Greece, Ireland, Portugal), and 9 other developing countries. From Latin America, only Brazil and Chile are included in the sample.

4. Both studies use a parametric approach, which, as commented in Box 1, is sensitive to the presence of outliers. In fact, dropping Singapore from the sample (a clear outlier) increases the efficiency scores.

5. The most common of these standardized tests is the PISA (Program for International Student Assessment). The TIMSS (Trends in International Mathematics and Science Study) assessment is also commonly used.

6. As with other studies cited here, this work uses a parametric approach to obtain efficiency scores.

7. The Program for International Student Assessment (PISA), "reviews the extent to which students near the end of compulsory education have acquired some of the knowledge and skills that are essential for full participation in modern societies, particularly reading, mathematics and science" (OECD, 2010, p. 17). The test provides scores for three subjects: math, science, and reading. For the purposes of this chapter, we take the average of all three. Results should be robust to individually used scores in particular subjects, as they are highly correlated.

Figure 3.1 PISA comparative scores for selected countries (2006 *vs.* 2009)
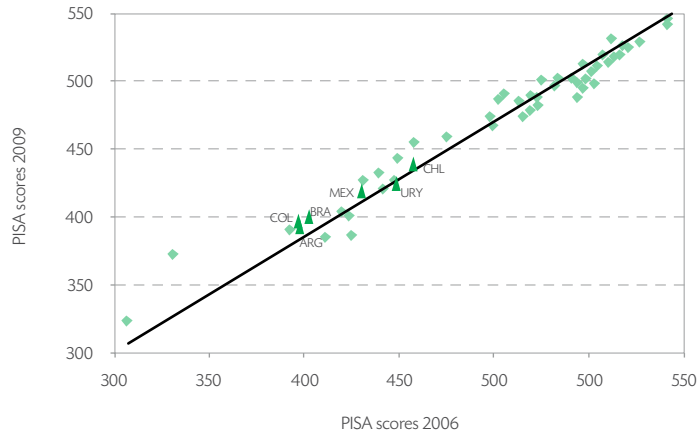
Source: author's calculation based on World Bank's WDI (2011).

Figure 3.2 Net enrollment rate in secondary education by region and for selected Latin American countries (average 2005-2009)
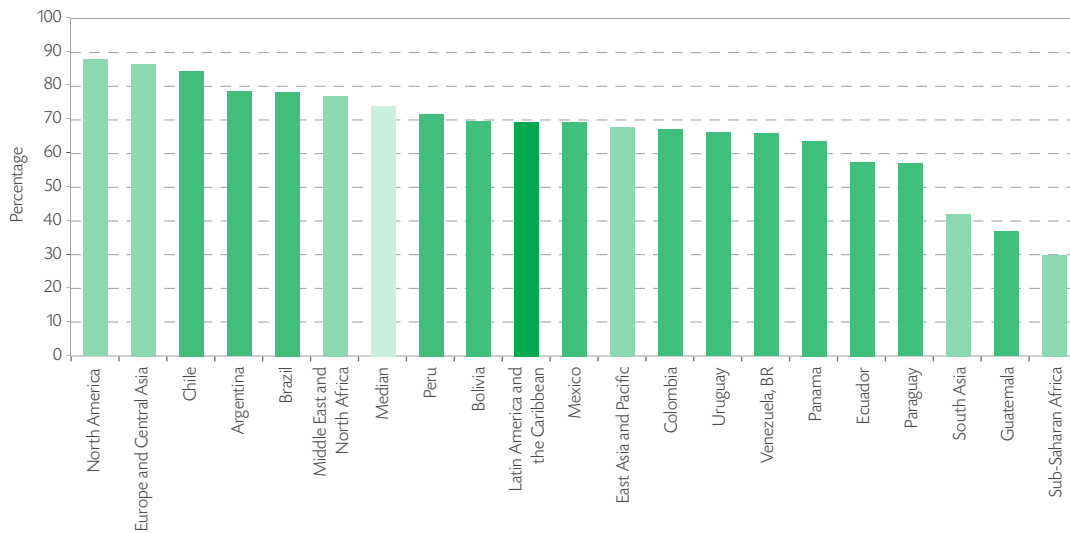
Source: author's calculation based on World Bank's WDI (2011).

In terms of quality, Latin American countries show poor outcomes in both years; indeed, only Qatar and Kyrgyzstan have worse indicators. Moreover, Panama and Peru, not in the graph as they do not have scores for 2006, have even lower scores than Qatar for 2009.

Figure 3.2 shows that access to education in Latin American countries also lags behind relative to developed countries. On average, enrollment rates are close to 20% lower than in North America. Only Argentina, Brazil, and especially Chile, have rates above the median, equal to 75%. At the bottom end of the spectrum, Guatemala has enrollment rates nearly on par with sub-Saharan Africa, below 40%.

Table 3.1 shows education inputs, specifically, government expenditures on education as a share of GDP, government expenditures per student in secondary education, and the teacher-student ratio at the secondary level. The figures are averages for the period 2005-2009.

The table shows that public expenditures in education are approximately 4% of GDP for the selected Latin American countries. These figures are comparable to other regions, but are slightly lower than that found

Table 3.1 Education inputs by region and for selected Latin American countries (average 2005-2009)

Region / country	Public expenditures on education as percentage of GDP	Per student expenditures, secondary education (as a percentage of per capita GDP)	Teacher-student ratio (secondary education)
Sub-Saharan Africa	4.68	29.03	0.04
North America	4.23	18.67	0.10
East Asia and Pacific	4.01	17.40	0.06
Europe and Central Asia	4.94	24.78	0.10
Middle East and North Africa	4.68	18.68	0.07
South Asia	4.30	18.85	0.04
Argentina	4.72	20.62	0.08
Bolivia	6.31	14.49	0.06
Brazil	4.90	15.80	0.06
Chile	3.33	13.02	0.04
Colombia	3.98	12.55	0.04
Guatemala	3.08	5.33	0.06
Mexico	4.89	14.03	0.06
Panama	3.82	12.63	0.06
Peru	2.62	9.77	0.06
Uruguay	2.77	10.13	0.07
Venezuela, BR	3.66	8.18	0.10
Latin America average	**4.01**	**12.41**	**0.06**

Source: author's calculation based on World Bank's WDI (2011).

in Europe and Central Asia. Bolivia has the highest expenditures at 6% of GDP, while Peru and Guatemala spend less than 3%. In contrast, Latin America appears to be lagging behind other regions with regard to per student expenditures and teacher-student ratios in secondary education.

In assessing efficiency in education, Álvarez-Parra and St. Aubyn (2012) use the teacher-student ratio, per capita public expenditures on education, and per student expenditures (in secondary education) as the inputs. Expenditure variables are in real terms and adjusted for purchasing power parity. In this section, we focus only on results for per capita public expenditures as the input.[8] In their efficiency analysis, the authors also include select variables for environmental conditions, according to their statistical significance and the availability of data.[9]

Table 3.2 shows output-oriented efficiency scores for the quality of education.[10] We show two scenarios, one in which only inputs are considered and another in which environmental variables are also included. The first column in the table shows PISA scores as a share of the highest score in the sample. In estimating the frontier, the input variable (per capita public expenditures on education) was significant and, as expected, positive. Finally, the significant and positive coefficient for the "year of schooling for adults" variable supports the notion that parents' educational levels affect children's performance in school.

Table 3.2 PISA results and efficiency scores, by region and for selected Latin American countries (average 2006 and 2009)[a/]

Region / country	PISA results (relative to maximum)	Efficiency scores (only inputs)	Efficiency scores (inputs and environmental variables)
North America	98.30	93.60	93.81
Latin America and the Caribbean	76.02	87.24	87.63
East Asia and Pacific	94.20	96.49	96.87
Europe and Central Asia	89.94	91.53	92.38
Middle East and North Africa	74.99	74.62	77.62
Argentina	70.34	81.01	81.22
Brazil	71.02	83.53	86.29
Chile	78.67	91.72	90.05
Colombia	70.52	85.71	87.77
Mexico	74.93	83.36	85.44
Uruguay	76.79	95.47	93.35

a/ Output variable: average PISA scores 2006 and 2009. Input variable: real per capita public expenditures on education (adjusted for PPP). Environmental variables: real per capita GDP (adjusted for PPP) and years of schooling for adults. Output-oriented efficiency scores. Stochastic frontier method.

Source: author's calculation based on Álvarez-Parra and St. Aubyn (2012).

8. When using teacher-student ratios as the input (and the PISA scores as the output), the variable is not statistically significant. This does not indicate that class size is irrelevant for the quality of education, but rather could reflect a lack of homogeneity in the way in which this variable is measured. The results with both expenditures variables are very similar (see Álvarez-Parra and St. Aubyn, 2012).

9. The environmental variables included in the estimation of the frontier are (1) per capita GDP in real terms and adjusted to PPP, and (2) the educational attainment of adults. Inequality variables (measured as the Gini coefficient) were not included because it would have considerably reduced the number of observations (for details see Álvarez-Parra and St. Aubyn, 2012).

10. The scores presented here were obtained by using the stochastic frontier method. In the background paper referenced in this section, Álvarez-Parra and St. Aubyn (2012) also show the scores using the DEA method. The conclusions with the two methods are similar. The estimation of the frontier is based on a two-period panel. The output variable for the first period is the 2006 PISA scores, while the output variable for the second period is the 2009 PISA scores. Inputs and environmental variables were averaged across the five years previous to the corresponding year of the score.

This table clearly shows that Latin America underperforms on PISA exams. Accounting for inputs (per capita public expenditures on education) and socioeconomics variables (per capita GDP and years of schooling for adults), the region's outcomes improve in terms of efficiency (i.e., they are closer to the frontier). This would indicate that these variables in part explain the relatively low PISA scores. At the same time, even incorporating these variables, Latin American students' PISA scores are, on average, only 88% of the frontier. In other words, while insufficient inputs and an adverse environment partly explain low PISA scores, there is also a significant degree of inefficiency in the use of educational inputs.

Within Latin America, Uruguay has the highest efficiency score in education quality but shows relatively low scores in access (discussed further below). Chile also performs relatively well in terms of efficiency of educational quality; in contrast, however, Argentina and Mexico have among the lowest efficiency scores.[11]

Álvarez-Parra and St. Aubyn also provide individual estimations for 2006 and 2009, allowing for Panama and Peru to be incorporated since they did not participate in the PISA assessment in 2006. Results are shown in Figure 3.3. Comparing the two periods, all Latin American countries show a small increase in efficiency scores. In fact, excluding Panama and Peru, the average scores increase from 85% to 88%. Panama and Peru have efficiency scores below the regional average.

Figure 3.3 Efficiency scores in education for selected Latin American countries (2006 *vs.* 2009) (inputs and environmental conditions)[a/]

a/ Output variable: average PISA scores for 2006 and 2009. Input variable: real per capita public expenditures on education (adjusted for PPP). Environmental variables: real per capita GDP (adjusted for PPP) and years of schooling for adults. Output-oriented efficiency scores. Stochastic frontier method.

Source: author's calculation based on Álvarez-Parra and St. Aubyn (2012).

11. It can be argued that low test scores can result from an increase in education enrollment (i.e., increased access), as it typically implies the incorporation of students from poorer socioeconomic backgrounds. To counter this effect, in one specification, we add the average enrollment rate in secondary education into the estimation of the frontier. Since it is the case that the countries shaping the frontier are those that have managed to simultaneously achieve relatively higher test scores as well as high enrollment rates, the coefficient for enrollment rates has a positive, but not significant, sign. Moreover, in the whole sample, PISA scores and enrollment rates are positively correlated, with a correlation coefficient of 0.61.

Table 3.3 Efficiency scores for educational access by region and for selected Latin American countries (2000-2004 *vs.* 2005-2009)[a/]

Region / country	2000-2004			2005-2009		
	Net secondary enrollment rate (percentage)	Efficiency index (only inputs)	Efficiency index (inputs and environmental variables)	Net secondary enrollment rate (percentage)	Efficiency index (only inputs)	Effiency index (inputs and environment)
Sub-Saharan Africa	28.63	0.34	0.50	33.91	0.39	0.55
North America	86.67	0.83	n.a.	88.29	0.84	n.a.
Latin America and the Caribbean	67.28	0.70	0.70	70.80	0.76	0.78
East Asia and Pacific	61.71	0.72	0.65	64.95	0.73	0.73
Europe and Central Asia	85.32	0.90	0.88	87.41	0.91	0.92
Middle East and North Africa	64.09	0.65	0.75	70.69	0.73	0.83
South Asia	33.27	0.39	0.77	41.39	0.52	0.73
Argentina	80.07	0.85	0.83	79.33	0.83	0.83
Bolivia	71.28	0.79	0.93	70.41	0.79	0.83
Brazil	73.49	0.80	0.85	79.07	0.85	0.90
Chile	n.a.	n.a.	n.a.	85.26	0.92	0.91
Colombia	57.54	0.63	0.65	68.12	0.75	0.78
Ecuador	49.90	0.59	0.54	58.34	n.a.	n.a.
Guatemala	30.70	n.a.	n.a.	37.82	0.44	0.55
Jamaica	77.34	n.a.	n.a.	77.80	0.84	0.93
Mexico	61.74	0.64	0.67	70.00	0.73	0.76
Panama	62.56	0.67	0.70	64.51	0.69	0.72
Peru	67.44	0.76	0.80	72.64	0.82	0.89
Paraguay	n.a.	n.a.	n.a.	57.82	0.66	0.68
Uruguay	n.a.	n.a.	n.a.	67.06	0.74	0.74
Venezuela, BR	56.28	n.a.	n.a.	66.81	0.72	0.73
Selected countries average	**62.58**	**0.72**	**0.75**	**68.21**	**0.75**	**0.79**

a/ Output variable: net secondary enrollment rate. Input variable: real per capita public expenditures on education (adjusted for PPP).
Environmental variables: real per capita GDP (adjusted for PPP) and adult literacy rate.
Output-oriented efficiency scores. Stochastic frontier method.

n.a.: not available.

Source: author's calculation based on Álvarez-Parra and St. Aubyn (2012).

As previously mentioned, it is important to complement an analysis of quality with an efficiency analysis of access. Here, the net enrollment rate in secondary education is used as the access outcome. Table 3.3 shows output-oriented efficiency indexes for access. The input variable, real per capita public expenditures on education, is significant and positively signed.[12]

Table 3.3 shows efficiency scores for two periods, 2000-2004 and 2005-2009. The first column of each period indicates the output variable for access (i.e., net enrollment rate for secondary education). These variables saw an improvement across periods of about 6 percentage points for the selected countries. In terms of efficiency scores, there is also an improvement between the two periods, in this case of about 4 percentage points. Unfortunately, the average efficiency index suggests a significant degree of inefficiency. Specifically, the access indicator is less than 80% of the region's potential, if best practices were implemented.[13] Chile is the region's most efficient country, at only about 90% of the frontier. At the other end of the spectrum, Guatemala's efficiency score is only 55%, while Mexico, Panama and Venezuela also show relatively low efficiency scores.

Together, the results suggest that there is a significant degree of inefficiency in the use of educational resources in Latin America. In fact, after controlling for the level of inputs and some environmental variables, the frontier analysis suggests that the provision of educational services (in terms of quality and quantity) is between 80 and 90% of the potential.

Efficiency in the provision of health services

The provision of health services can be conceived as a multi-level process. At the first level, inputs are used to provide some basic services, such as vaccination, therapies, and so on. At this level it is possible to carry out an assessment of efficiency. The number of patients or cases treated can been seen as intermediate outputs, for which a measure of efficiency can be estimated. Ultimately, however, the final goal of any health system is to improve the health condition of the population.[14] It is this broader view that is taken in the paper that informs this section; hence the choice of life expectancy at birth and survival rates for children under 5 years as output indicators (see Álvarez-Parra and St. Aubyn, 2012). These are common indicators when studying health systems across countries. Figure 3.4 (see p. 100) shows the evolution of these variables by region since 1960.

A systematic improvement in these indicators is clear in Figure 3.4. This is true for all regions, with a process of convergence taking place since the 1960s. North America and Europe and Central Asia are the regions with the highest indicators across all years. By the 2000s, indicators for Latin America are comparable to those for Middle East and North Africa and East Asia and the Pacific. South Asia and especially Sub-Saharan Africa still show an important lag in these two health indicators.

Figures 3.5 and 3.6 (see p. 110 and 111) show information regarding expenditure levels. The first figure shows expenditures as a share of GDP, by region and for the periods 2000-2004 and 2005-2009. The second figure shows information for some Latin American countries for the period 2005-2009.

---

12. These results are based on the stochastic frontier method. Results from DEA methods imply similar conclusions (see Álvarez-Parra and St. Aubyn).

13. Herrera and Pang (2008) find an average efficiency score of about 70% using the DEA method, and in which only inputs are considered in the initial stage. This finding is close to our average score for the first time period, when environmental variables are not included.

14. This requires not only eliminating an individual's health condition, but also reducing the possibility that this or another problem may emerge in the future; that is, prevention is an important component of health activity.

Figure 3.4 Evolution of life expectancy at birth and survival rate for children under 5 years old by region (1960-2010)

Life expectancy at birth

Infant survival rate for every 1,000 children

•••••• Sub-Saharan Africa

———— South Asia

|||||||||| Middle East and North Africa

———— Latin America and the Caribbean

═══════ North America

– – – Europe and Central Asia

◇◇◇◇◇◇◇◇◇ East Asia and Pacific
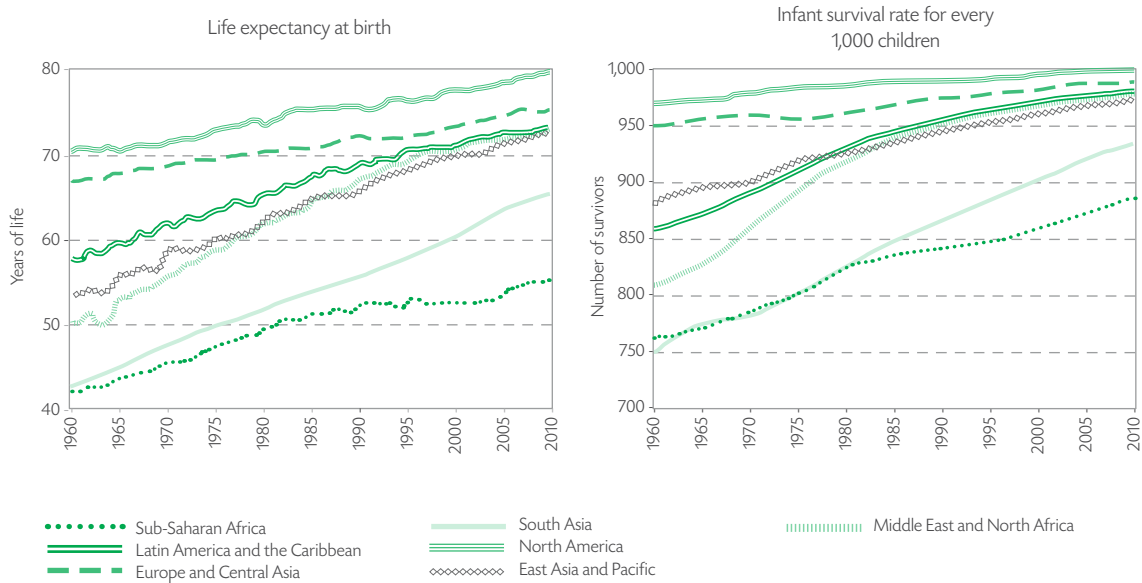
Source: author's calculation based on World Bank's WDI (2011).

Figure 3.5 Expenditures on health as a percentage of GDP, by region (2000-2004 *vs.* 2005-2009)

Public expenditures on health
(as percentage of GDP)

Total expenditures on health
(as percentage of GDP)

Percentage of GDP

Percentage of GDP

■ 2000-2004   ■ 2005-2009
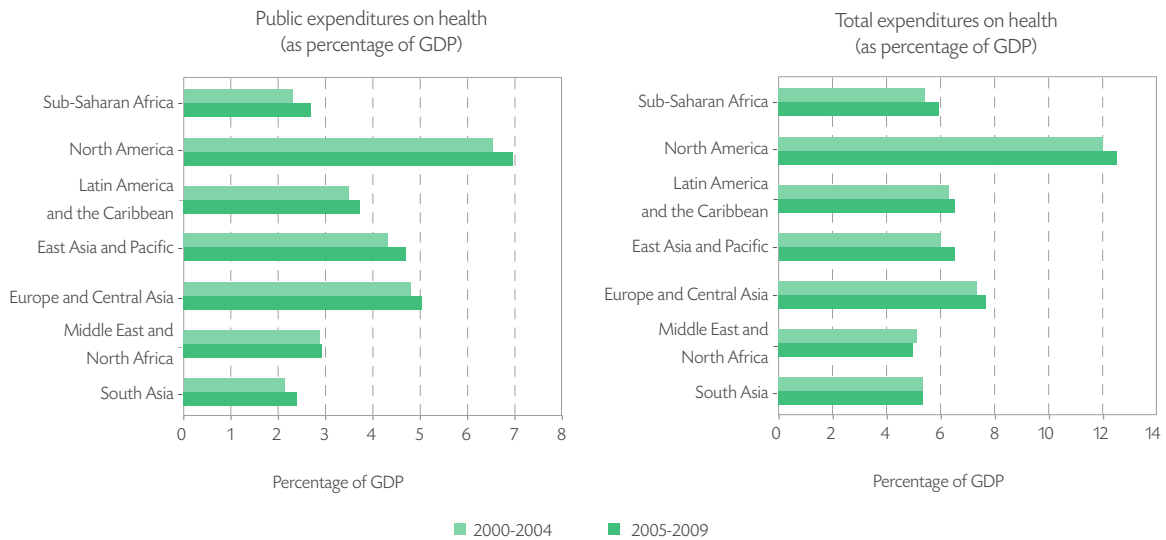
Source: author's calculation based on World Bank's WDI (2011).

There is a small increase in public expenditures (as a share of GDP) for all the regions between the two time periods. The figure also suggests that public expenditures in Latin America are lower than in more developed regions and than in East Asia and the Pacific. Finally, we can observe an important component of private expenditures, evidenced by the fact that while public expenditures are below 4% of GDP in Latin America, total expenditures are above 6%.

Figure 3.6 Public and private expenditures on health as a percentage of GDP for selected Latin American countries (average 2005-2009)
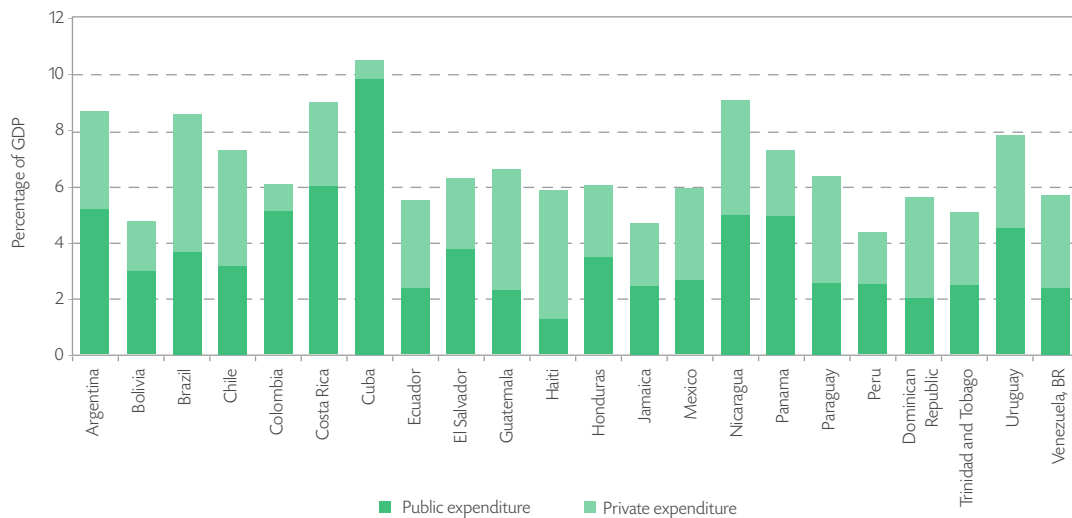
Source: author's calculation based on World Bank's WDI (2011).

Figure 3.6 shows some heterogeneity in the size of total expenditures across the region. Cuba, Nicaragua, Costa Rica, Brazil, and Argentina show higher expenditures relative to other selected countries. In contrast, Peru, Jamaica, and Bolivia have among the lowest expenditures on health. Private expenditures also vary across countries, being significant in Brazil and less so in Colombia.

Table 3.4 (see p. 112) shows output-oriented efficiency scores for the two health indicators considered here. In both cases, the estimation takes public expenditures (as a share of GDP) as the input variable, and private expenditures together with real per capita GDP and adult literacy rates as environmental variables. In addition, the table shows the average of these indicators for the period 2000-2009 and the potential gains in terms of the output variable if best practices were implemented.

Efficiency scores appear, in principle, to be relatively high. The lowest scores are found in Trinidad and Tobago and Bolivia, with efficiency scores around 95% for life expectancy and 90% for survival rates. In spite

Table 3.4 Efficiency scores on health for selected Latin American countries (average 2000-2009)[a/]

Country	Survival rate (per 1,000)	Efficiency score for survival	Life expectancy (years)	Efficiency score for life expectancy	"Gain" in survival (per 1,000)	"Gain" in life expectancy (years)
Argentina	982	0.99	75	0.95	15	4
Bolivia	928	0.95	65	0.89	48	8
Brazil	971	0.98	71	0.93	15	6
Chile	990	0.99	78	0.99	9	1
Colombia	977	0.99	72	0.97	12	2
Dominican Republic	964	0.98	72	0.95	18	4
Mexico	978	0.99	75	0.95	15	4
Panama	975	0.98	75	0.98	16	2
Paraguay	973	0.99	71	0.98	8	2
Peru	968	0.99	72	0.97	14	2
Trinidad and Tobago	965	0.96	69	0.86	38	12
Uruguay	984	0.99	75	0.98	9	1
Venezuela, BR	979	0.99	73	0.94	13	4

a/Outcome variable: life expectancy or survival. Input variable: real per capita public expenditures on health (adjusted for PPP). Environmental variables: real per capita private spending on health, real per capita GDP (both adjusted for PPP) and literacy rate. Output-oriented efficiency scores. Stochastic frontier method.

Source: author's calculation based on Álvarez-Parra and St. Aubyn (2012).

of these seemingly high scores, there exist significant gains to be made in approaching frontier values. On average, the region would reduce infant mortality rate by 13 children per 1,000, and increase expectancy by almost 4 years, if best practices were applied.

To complement this analysis, Table 3.5 provides input-oriented efficiency scores, which indicates the potential savings in inputs while maintaining current outputs, if best practices were implemented.[15]

The input-oriented efficiency scores indeed indicate that inputs are not used following best practices in the health system. Of course, this does not suggest that we can reduce expenditures and keep the current levels of health indicators, unless efficiency is improved, which is, by itself, a difficult task. This exercise, suggests that the potential savings in inputs would be around 20%, if best practices were implemented. Notice the co-incidence of relatively high output-oriented scores with relatively low input-oriented scores; this illustrates

---

15. An input-oriented analysis is useful when the question at hand is precisely how much we can save or when the outcome variable is similar for most of the countries.

Table 3.5 Efficiency scores on health for selected Latin American countries (average 2000-2009)[a]

Country	Survival rate (per 1,000)	Life expectancy (years)
Argentina	83	78
Bolivia	60	56
Brazil	80	68
Chile	91	100
Colombia	83	86
Dominican Republic	71	75
Mexico	84	82
Panama	76	85
Paraguay	82	73
Peru	81	82
Trinidad and Tobago	62	54
Uruguay	85	82
Venezuela, RB	81	73
Average	**78**	**77**

a/ Output variable: Life expectancy or survival. Input variable: real per capita public expenditures on health (adjusted for PPP). Environmental variables: real per capita private expenditures on health, real per capita GDP (both adjusted for PPP) and literacy rate. Input-oriented efficiency scores. DEA method.

Source: author's calculation based on World Bank's WDI (2011).

the convenience of combining these two approaches.[16] The dispersion of scores within the region is notable, with Chile having the highest scores (i.e., closest to the frontier) and Bolivia the lowest. Argentina is close to the average score for the region.[17]

Efficiency in infrastructure

Public capital and infrastructure are crucial not only for aggregate productivity and economic growth, but also for households' welfare, as they are the main consumers of sidewalks, public parks, public hospitals, roads, and so on. In other words, a strong connection exists between infrastructure and development. National and sub-national governments in the region still play a key role in the provision of infrastructure, despite the growing role of the private sector.[18]

16. Herrera and Pang (2005) also find high output-oriented scores (around 0.9 for the region), with low input-oriented scores (about 0.6) when assessing efficiency in health systems. Our scores are higher, probably because we incorporate environmental variables in the analysis.

17. A recent report by FIEL (2011) finds an input-oriented score of 0.76 for Argentina's health system.

18. During the crisis of the 80s, Latin America experienced a significant reduction in public expenditures on infrastructure. In fact, for the period 1981-1986, public expenditures on infrastructure represented 3% of GDP, while private expenditures represented 0.6%. For the period 2001-2006 the corresponding figures were 0.9% and 1%, respectively (Calderón and Servén, 2010).

When assessing the provision of infrastructure it is again important to explore both aspects of quality and quantity. A recent World Bank document provides a useful analysis in this regard (Calderón and Servén, 2010). The authors built quality and quantity indexes in three infrastructure sectors: telecommunications, electricity, and roads.[19] The quantity index for telecommunications reflects the number of telephone lines per 1,000 workers, and the quantity index in electricity measures the electricity generated (in megawatts) per 1,000 workers. Finally, the quantity index for roads indicates the length of the road system relative to the area of the country. In terms of quality, the telecommunications index reflects the waiting times for connecting a phone line.[20] In the electricity sector quality is measured by the transmission and distribution losses as a share of GDP,[21] while for roads it is measured by the distance of paved roads. All the indexes are constructed such that a higher value reflects higher quantities and quality.

Figure 3.7 summarizes these indexes for 3 five-year periods: 1981-1985, 1991-1995, and 2001-2005. Left panel shows quantity indicators while right panel shows quality indicators. In all cases, Latin America is compared with other groups of countries.

Figure 3.7 Quantity and quality of infrastructure: telecommunications, electricity and roads (1981-2005) [a/ b/]
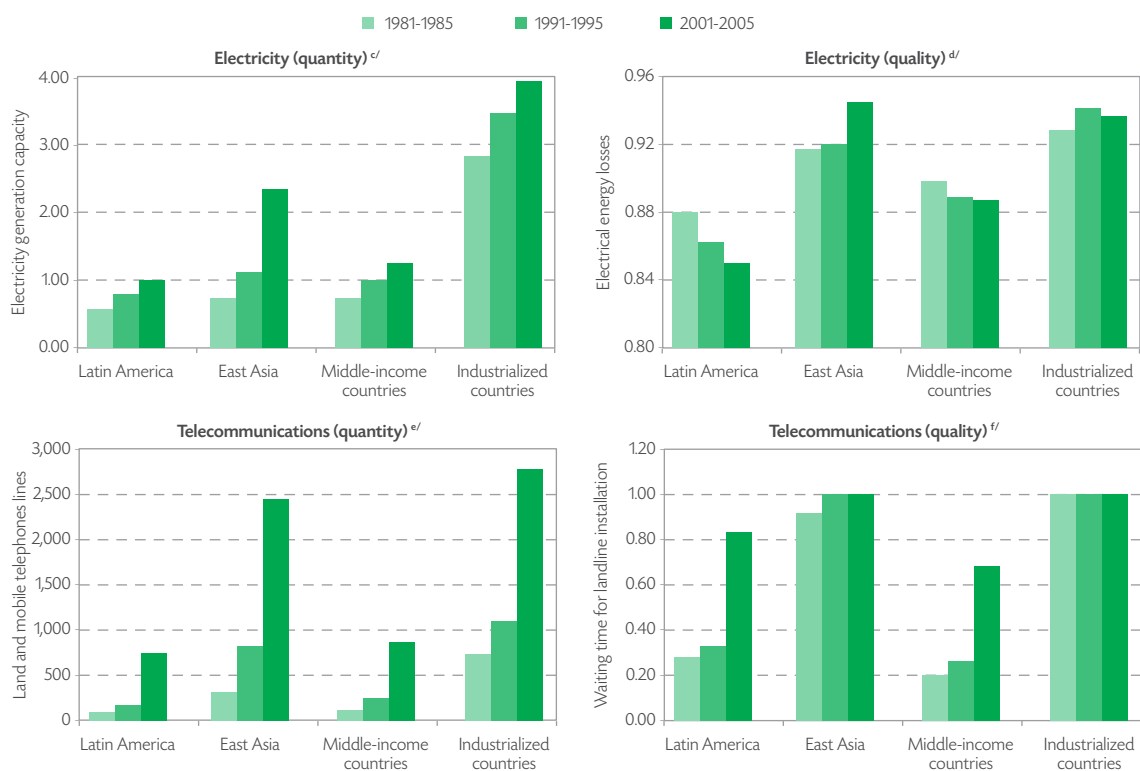
19. Previous studies found a strong correlation between quantity and quality indicators in these sectors (Calderón and Servén, 2004).

20. According to the authors, alternative measures –such as failures in the system or undelivered calls– suggest similar results. They rely on waiting time due to data availability for a larger number of countries.

21. These losses reflect problems in the system but also electricity theft.

Roads (quantity) g/

Roads (quality) h/
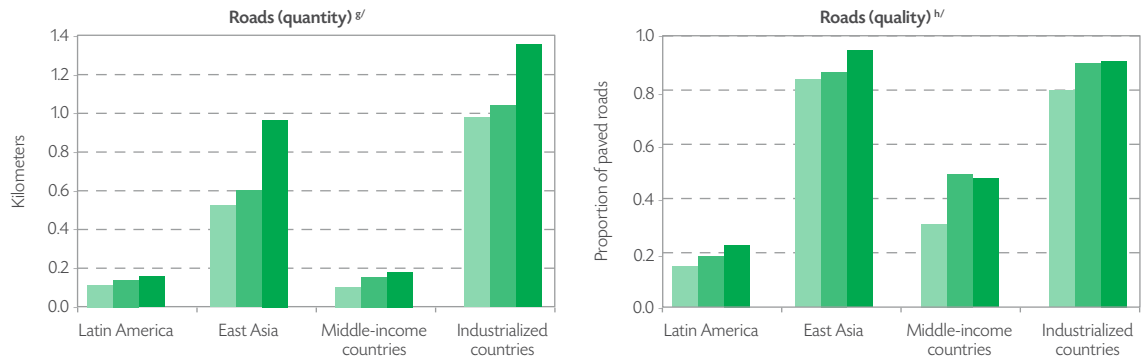
a/ All variables are in logs.
b/ Quality indicators are normalized so that a higher value indicates greater quality.
c/ Electricity generation capacity is calculated in megawatt per 1,000 workers.
d/ The quality of electrical energy is measured as the inverse arithmetic of the share of transmission and distribution losses in the production of electricity.
e/ Landlines and cellular lines are calculated per 1,000 workers.
f/ The quality of telecommunications is measured as the inverse of the waiting time for installation of a landline telephone.
g/ The distance of roads is calculated in kilometers per square kilometer of land area.
h/ The quality of roads is measured as the ratio of paved to total roads.

Source: Calderón and Servén (2010).

In general, Figure 3.7 shows an improvement over time in the indicators for most of Latin America, with the exception of the quality of electricity services. It is also clear from the graph that Latin America lags behind East Asia and other middle-income countries. From these sectoral indicators, the authors built a synthetic index for quantity and another for quality. Figure 3.8 presents these indexes for some Latin American countries.

Figure 3.8 Synthetic index of quantity and quality of infrastructure for selected Latin American countries (average 2001-2005)

Synthetic index for infrastructure quantity

Synthetic index for infrastructure quality
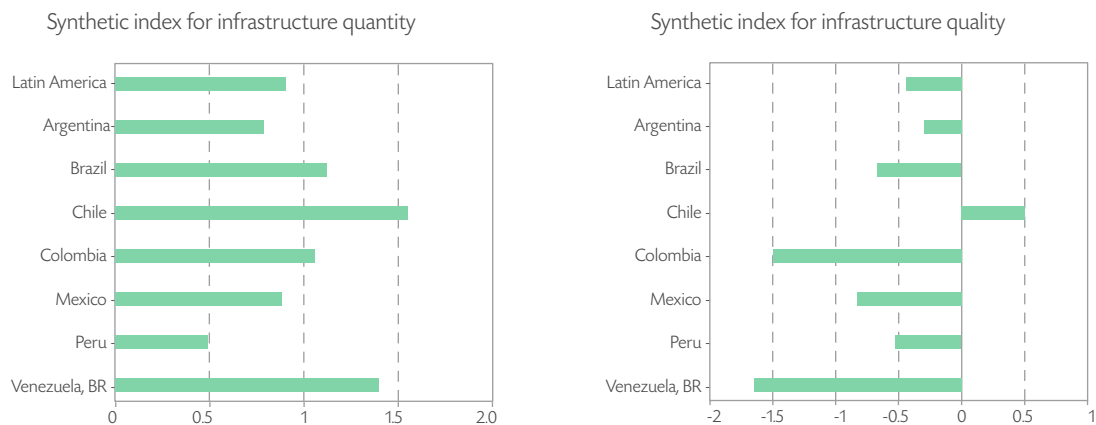
Source: Calderón and Servén (2010).

Chile and Venezuela show the best indicators in terms of quantity, but the indicator of quality of infrastructure for Venezuela is relatively low. Colombia scores low for quality of infrastructure and Peru for quantity.

All together, the information suggests that there seems to be an improvement in the provision of infrastructure (and its quality) in the region, but there is nonetheless still a lag relative to countries of similar income levels. The question, then, is whether this lag is connected to inefficiencies in public expenditures?

A lack of information makes it difficult to carry out a frontier analysis to assess the level of inefficiency in infrastructure. Despite this, Clements *et al.* (2007) explore efficiency for a sample of 7 Latin American countries. The authors estimate efficiency scores for some sectors (roads, telecommunications, electricity, and water supply) and then aggregate these into a unique infrastructure efficiency score for each country. They classify countries by efficiency scores into three groups: high scores (Mexico and Chile), medium (Argentina, Peru and Brazil) and low scores (Bolivia and Colombia).[22]

Among infrastructure services, ports are particularly vital given their connections with trade. Logistics costs in Latin America are a significant barrier to trade, as shown in Figure 3.9. These high logistics costs are, in part, the result of the poor quality of services provided by local ports.[23]

Figure 3.9 Logistics costs as a percentage of GDP in selected countries (2004)
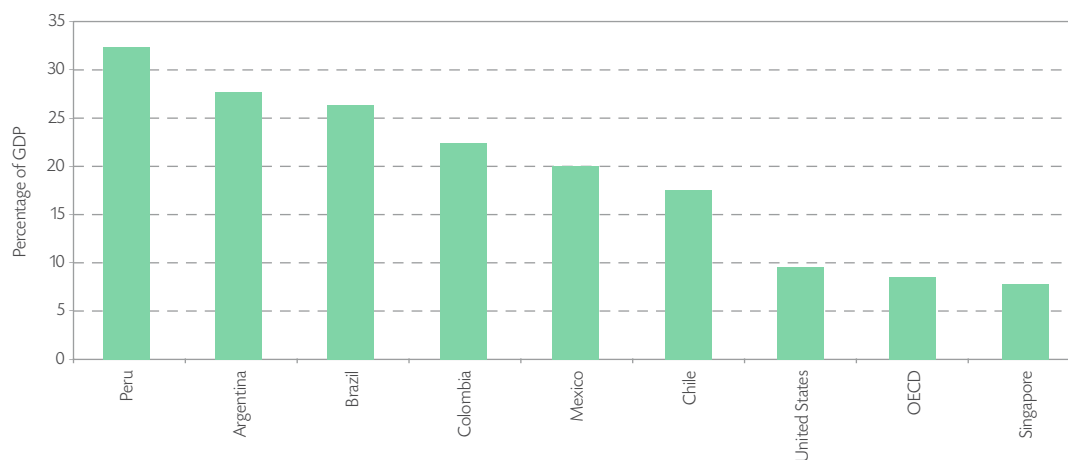
Source: Guasch and Kogan (2006).

---

22. The authors suggest caution in the interpretation of Colombia's results, since it is likely that public investments are overestimated for the 1990s. In fact, a downward correction was made from 2003 onwards, associated with investments in local governments.

23. Logistics costs usually include transportation, customs, storage, and insurance among others.

Herrera and Pang (2005) study the efficiency of port infrastructure using frontiers methods. They use the volume of cargo shipped as the output variable, measured by the number of twenty-foot equivalent unit. As inputs, they use the terminal area, and three types of equipment: the number of ship-to-shore gantries the number of quay, yard, and mobile gantries and the number of tractors and trailers.[24] The authors show input-oriented efficiency scores for each separate input, as well as for the terminal area and the ship-to-shore gantries together. Table 3.6 shows results for ports in the region.[25]

Table 3.6 Efficiency scores for ports, based on cargo shipped, for selected Latin American countries (2000)[a/]

Port/country	One input				Two inputs
	Ship-to-shore gantries	Mobile gantries	Terminal area	Tractors and trailers	Ship-to-shore gantries and terminal area
Buenos Aires/ Argentina	59.0	41.0	79.5	52.7	79.5
Río Grande/ Brazil	72.0	62.4	92.3	48.3	92.3
Salvador/ Brazil	100.0	48.0	100.0	72.1	100.0
Santos/Brazil	68.5	57.0	87.3	58.3	87.3
Cartagena/ Colombia	81.1	47.4	82.9	46.0	85.7
Guayaquil/ Ecuador	96.4	51.9	85.8	54.1	96.4
Altamira/ Mexico	83.5	49.3	89.3	77.4	89.5
Manzanillo/ Mexico	80.9	55.0	89.8	57.3	91.2
Balboa/ Panama	71.0	29.6	87.5	54.4	87.5
Montevideo/ Uruguay	96.4	59.5	92.1	43.0	96.4
Puerto España/ Trinidad y Tobago	81.1	42.6	90.7	45.4	91.0
Average	**80.9**	**49.4**	**88.8**	**55.4**	**90.6**

a/ Input-oriented efficiency measures.

Source: Herrera and Pang (2006).

24. Number of workers are not included due to data availability. The authors claim it is not a serious omission as it seems to be a stable relation between the number of workers and the number of equipments.

25. The study includes ports such as Hong Kong, New York and Southampton among others.

The score in the two-input case suggests that ports in the region could obtain the same output with 90% of the resources currently used, if their inputs were used efficiently. Buenos Aires looks like the least efficiency port, while Salvador (Brazil), Montevideo (Uruguay) and Guayaquil (Ecuador) are among the most efficient ports in the region. Thus, it seems that there is room for improvement in port services (with current inputs), which should reduce transportation costs and increase trade (see Herrera and Pang, 2005 for more detail).

INEFFICIENCY IN THE PROVISION OF QUALITY EDUCATION: AN ANALYSIS BASED ON SUBNATIONAL DATA

The previous analysis is useful in assessing how efficiently Latin American countries perform in terms of public investments from an international perspective. Nonetheless, the analysis is based on some assumptions that do not always hold; for example, the assumption of homogeneity in the way the variables are measured. An efficiency analysis based on sub-national data has as the advantage that the variables should be measured more homogenously. In addition, an analysis using sub-national data would be less sensitive to country specific factors that are unrelated to efficiency and that cannot be fully represented by the environmental variables used. Finally, using more disaggregated data allows for more detailed observations and answers to specific questions that cannot be addressed using information at the country level.

This section details the main results of a paper prepared for this report (Álvarez-Parra, 2012). The paper focuses on efficiency at the school level for Chile and Peru. The paper uses stochastic frontier methods and focuses on the quality dimension of education. Each data set employed allows to compute average efficiency scores by region and type of school (public vs. private).[26]

It appears to be a stylized fact that students in private schools perform better than students in public schools on standardized tests, as demonstrated by the PISA 2009 scores reported in Figure 3.10 (see p. 119) by school type.

For all countries, students from public schools underperform relative to those from private schools. The highest gaps are found in Panama and Brazil (with disparities of around 30%). The smallest gap is found in Chile (10%). Notice that while public schools also perform worse than private school in OECD countries, the gap is only 7%.

This "quality gap" may suggest that public schools face efficiency problems. On the other hand, there are alternative explanations; for instance, scarcity of inputs and differences in the socioeconomic background. Henceforth, it is crucial to implement a method that integrates inputs, outputs, and environmental variables to assess efficiency in schools.

As mentioned, Álvarez-Parra (2012) uses the stochastic frontier method to estimate efficiency scores at school level. The paper explores two useful datasets for this purpose: the System for Quality Education

---

26. Other papers also adopt this method of using disaggregated data for analyzing education systems. For example, Vera (2011) and Iregui *et al.* (2006) explore efficiency at the school level for Argentina and Colombia, respectively, but the two papers differ with regard to their findings. In Argentina, differences in efficiency scores between public and private schools remain after controlling for inputs and students' characteristics; in contrast, in Colombia, efficiency scores are not significantly different between public and private school after controlling for environmental conditions.

Figure 3.10 PISA scores and the quality gap between public schools and private schools for selected countries (2009)a/
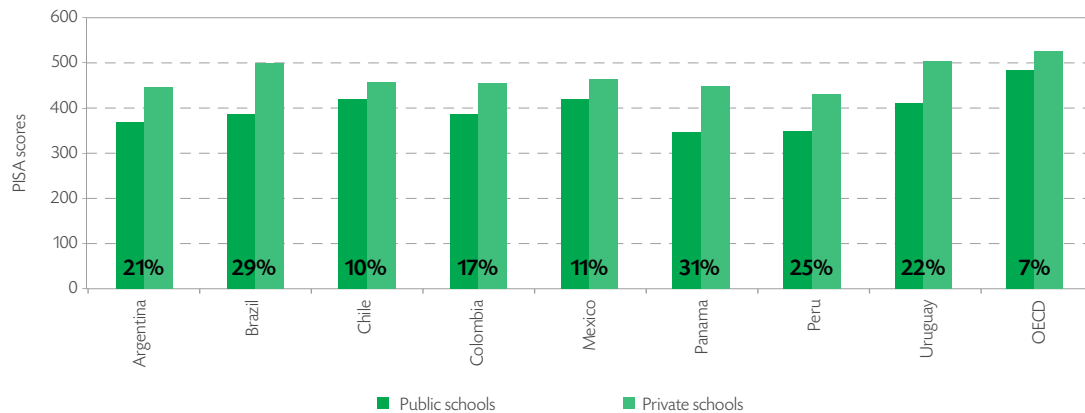
a/ The maximum score for 2009 is associated with the region of Shanghai, China, where public schools obtain, on average, a score of 574 and private schools obtain a score of 601, which means a gap of less than 5%.

Source: author's calculation based on PISA (2009).

Assessment (SIMCE) in Chile, and the Students Evaluation Census (ECE) in Peru. The design and maintenance of these types of datasets should be encouraged in the region at all government levels and sectors, as they are crucial for measuring efficiency.

Before discussing the findings of the study by Álvarez-Parra (2012), some limitations of the analysis should be noted. First, efficiency scores are relative to the set of units under evaluation. Thus, in the case of sub-national analysis, the fact that a school is at the frontier does not necessarily mean that it is adopting the best universal practices, but rather that, relative to other local schools, it is making the most of its inputs. In addition, and similarly to the previous cross-country analysis, it is difficult to incorporate all the relevant variables in efficiency estimations. In this particular case, the methods cannot fully account for students' and teachers' ability, which may not be randomly distributed across schools.[27] Therefore, schools attracting the most talented students and teachers would artificially appear more efficient.

The case of Chile

For the case of Chile, we combine information from SIMCE with data from the Ministry of Education. SIMCE implements a test that aims to assess school quality in terms of the current curricula in different

---

27. The impact of an unequal distribution of student talent in school performance on standardized tests, can be amplified in the presence of peer effects. Some authors suggest that a segmented equilibrium could emerge, with private schools taking the most talented students (Macleod and Urquiola, 2009). If so, we could speculate that the differences in efficiency scores between public and private schools presented here represent an upper bound.

subjects. The measure is applied at the national level, on a yearly basis, for students of certain grades.[28] In addition to information about school performance on the test, SIMCE provides information regarding to the type of school (municipal public, private, or subsidized private), the geographical location (urban or rural, state, municipality), and the socioeconomic level of the typical enrolled student (low, medium-low, medium, medium-high, high). Information is available on a yearly basis, beginning in 1988.

Information on school enrollment (by gender), the number of teachers, as well as number of teaching hours is available from the Ministry of Education, on a yearly basis from 2004. Thus, the estimation of the efficiency frontier corresponds to the period 2004-2010.

The variable that measures school quality (SIMCE score) is created by averaging grades in math and reading across grades for each school. Then we have a single indicator by school for each year.[29]

Table 3.7 shows descriptive statistics for the main variables under analysis. Information is classified by geographical location (rural vs. urban) and by type of institution. Specifically, it shows the output variable (SIMCE score), the teacher-student ratio, the number of teaching hours per student, and the number of regular teachers.[30]

Table 3.7 Descriptive statistics of education in Chile (average 2004-2010)						
Type of institution	SIMCE score			Teacher-student ratio	Hours per student	Percentage of classroom teachers
	Average	Maximum	Minimum			
By rurality status						
Rural schools	236.27	328.78	109.50	0.10	3.41	73.59
Urban schools	254.83	352.00	93.75	0.06	1.93	86.98
By type of institution						
Municipal schools	236.99	344.00	93.75	0.08	2.80	79.16
Private subsidized schools	255.78	330.25	98.50	0.06	1.96	84.03
Private schools	296.60	352.00	100.00	0.12	3.62	88.06
All sample	**250.66**	**352**	**93.75**	**0.08**	**2.54**	**81.49**

Source: Álvarez-Parra (2012).

28. Since 2006, students in fourth grade (primary) are tested every year, while students in the eighth grade (primary) and second grade (secondary) are evaluated every other year.

29. In some cases there is also information for Social Sciences, Natural Sciences and English. Using these subjects to compute our performance indicator would have reduced our sample size.

30. By "regular teacher" we refer to a teacher who focuses on teaching, and hence, is not involved in administrative, planning, or supervisory activities.

Urban schools perform better despite having fewer teachers (and hours) per student. Public (municipal) schools perform worse than private; however, since these schools have fewer resources, we cannot conclude that poor performance reflects inefficiency. To assess efficiency we provide results based on the frontier method (taken form Álvarez-Parra, 2012). In the estimation, the SIMCE score is taken as the output variable, while teaching hours per student is used as the input.[31] We also add the share of regular teachers to reflect some characteristic of the input. As environmental variables, we use the percentage of female pupils, the average socioeconomic status of students, and a dummy variable to account for the geographical location of the school.

The frontier estimation finds that both higher portions of regular teachers and of female students are associated with higher SIMCE scores. The rural dummy was significant and negative. This suggests that the frontier shifts downward for rural schools. All the variables for socioeconomic status were statistically significant, with the expected sign. For instance, the frontier for schools with the highest socioeconomic status is 20% higher than the frontier for schools with the lowest.

The table 3.8 shows average efficiency scores by type of institution. The first column shows the average SIMCE score, relative to the highest score, for each type of school. The second column shows the output-oriented efficiency scores when only the input is used in the frontier estimation. Finally, the last column shows the scores for the full frontier that also incorporates environmental variables.

Table 3.8 SIMCE and efficiency scores, by type of institution in Chile (average 2004-2010)[a/]

Type of institution	Relative score	Efficiency score (only inputs)	Efficiency score (inputs and external conditions)
Municipal schools	0.67	0.81	0.90
Subsidized private schools	0.73	0.83	0.91
Private schools	0.84	0.91	0.92

a/Outcome variable: SIMCE score. Input variable: hours of instruction. Environmental variables: geographical location, proportion of female students, and socioeconomic status. Output-oriented efficiency measures. Stochastic frontier method.

Source: Álvarez-Parra (2012).

As observed, private schools have higher scores and appear more efficient, but only when exclusively taking into account the input. Once we control for environmental conditions (in particular for the average socioeconomic level of pupils), the efficiency gap is notably reduced.[32] On average, SIMCE scores for students from public schools are about 90% of the potential. Slightly lower levels of inefficiency are found in private schools. The results also suggest that part of the poor performance among public schools is linked to a lack of inputs.

31. We could have used teachers per student as the input instead. Results are similar, but the frontier with the variable "hours per student" has a better fit.

32. The difference is small but statistically significant. When we add a dummy to control for a public school in the estimation of the frontier, its coefficient is 3% and statistically significant at 1%.

Figure 3.11 compares the distribution of the SIMCE-score variable (left panel) with the distribution of the efficiency score (right panel) for public and private schools.

Figure 3.11 Distribution of SIMCE and efficiency scores, by type of institution (average 2004-2010)
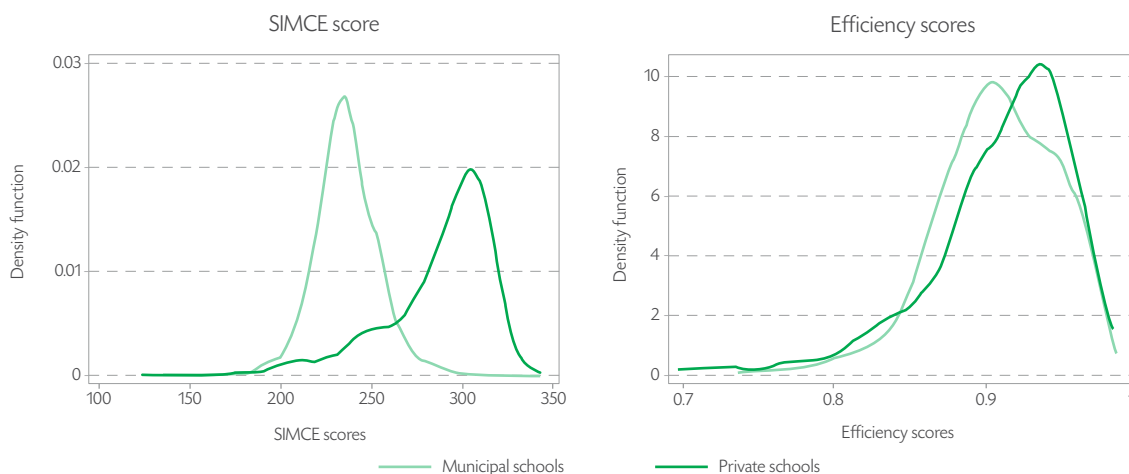
Source: Álvarez-Parra (2012).

Note that the large differences in SIMCE scores between public and private schools do not appear in the efficiency scores. Still, the efficiency scores distribution for private schools is slightly shifted to the right (relative to the one for public schools), which suggests that private schools are slightly more efficient. On average, the efficiency score for private schools is 2 percentage points higher than for public schools. The difference is uniform across the country; in fact, the highest spread is around 4 percentage points, which is found in the regions of La Araucania and Los Ríos (see Álvarez-Parra, 2012). Similar results are found for Colombia (Iregui *et al.*, 2006) and for 13 out of 16 OECD countries, where the gap between private and public schools is notably reduced once control variables (such as socioeconomic background and schools' inputs) are taken into account (OECD, 2011b).

In sum, the results from Chile suggest a relatively optimistic view: public schools can be efficient. At the same time, the findings confirm that quality gaps do exist, in part due to a lack of inputs.

The case of Peru

For the case of Peru, data on school performance and socioeconomic variables for school districts is taken from the Students Evaluation Census (ECE). This information is combined with data on teacher-student ratios at school level, available from the Ministry of Education. The ECE provides test scores for students in

the second grade of primary education and, in the case of intercultural bilingual schools, for students in the fourth grade of primary education. We focus on second grade results for 2010.

ECE presents results at the school level for reading and mathematics. Instead of indicating the average score for each school, it shows the proportion of students placed at levels 1 and 2, based on their test scores.[33] We have information for 13,175 schools, 69% of which are located in urban areas, 67% of which are public schools (under public administration), 1% are public schools under NGO administration,[34] and 32% are private schools. In rural areas, public schools are much more common.

Figure 3.12 shows that, as in Chile, private schools outperform public schools. In fact, while 58% of students in public schools score below level 1 in math, only 40% of students from private schools do. Likewise, only 19% of students in public schools achieve level 2 in reading, compared to 46% of students in private schools. Meanwhile, the performance of public schools administered by NGOs is remarkably high.

Figure 3.12 ECE scores by type of institution (2010)
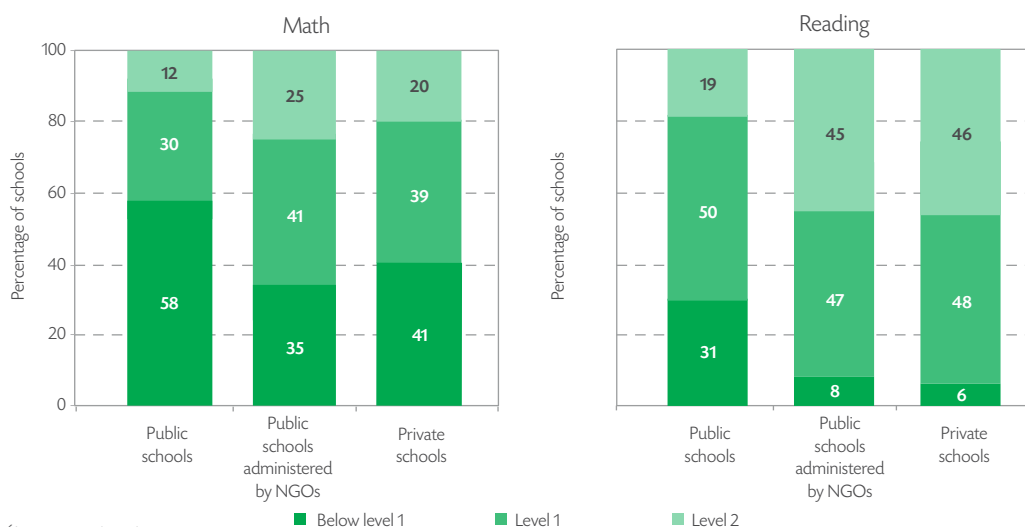
Source: Álvarez-Parra (2012).

As shown in Figure 3.13 (see p. 124), there are remarkable differences between rural and urban schools. In fact, 17% (35%) of students in schools located in urban areas attain level 2 in Reading (Math), compared to merely 9% (11%) in rural schools.

---

33. Level 2 represents better performance than level 1.

34. These sorts of institution were created under national law number 009-2005-ED.

Figure 3.13 ECE scores by rurality status of schools (2010)

Math

Reading

■ Below level 1   ■ Level 1   ■ Level 2
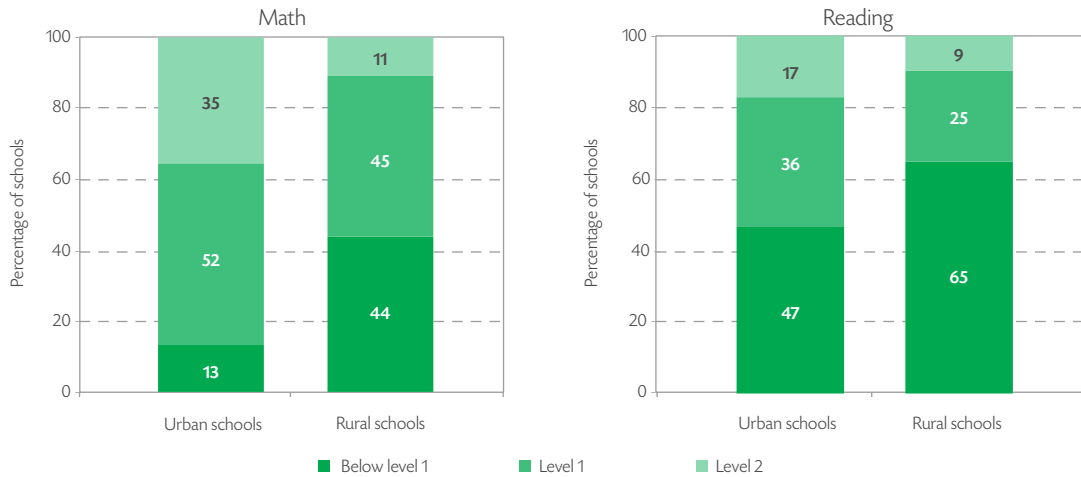
Source: Álvarez-Parra (2012).

As mentioned, the ECE also provides information regarding the average socioeconomic level of school districts. For instance, there is data available on average household income, the Human Development Index, the percentage of households without electricity and/or proper water and sanitation services, and the share of

Figure 3.14 ECE scores by income distribution of school districts (2010)

Math

Reading

■ Below level 1   ■ Level 1   ■ Level 2
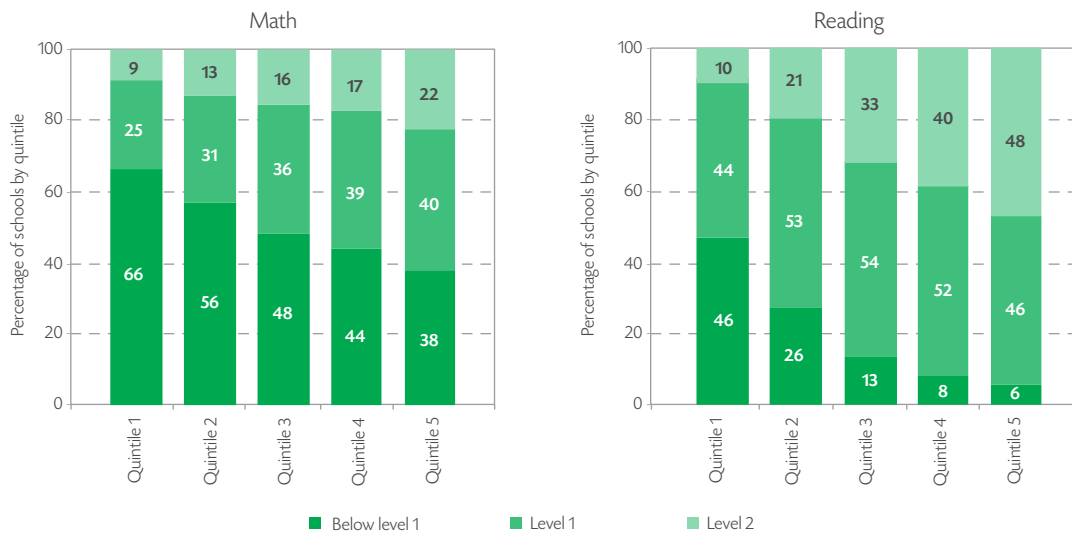
Source: Álvarez-Parra (2012).

children (between 6 and 9 years old) with nutritional deficiencies. As expected, schools located in wealthier districts score higher in both math and reading (see Figure 3.14).

Table 3.9 and Figure 3.15 detail the socioeconomic background of students attending each type of school. It is clear that public schools are often located in districts with higher proportions of households lacking access to proper electricity and water and sanitation systems, and in districts with higher incidences of nutritional deficiencies among children. Table 3.9 also shows that, as in Chile, public schools in Peru have a lower teacher-student ratio.

Table 3.9 Average socioeconomic background in school districts in Peru (2010)

Socioeconomic characteristics	Public schools	Public schools administered by NGOs	Private schools
Population without electricity (percentage)	27.47	11.72	6.79
Population without access to water and sanitation systems (percentage)	39.95	17.27	8.85
Children with nutritional deficiencies (percentage)	29.07	14.50	10.13
Human Development Index	0.57	0.63	0.67
Student-teacher ratio	0.05	0.04	0.06

Source: Álvarez-Parra (2012).

Figure 3.15 Socioeconomic status of schools by type of institution (2010)
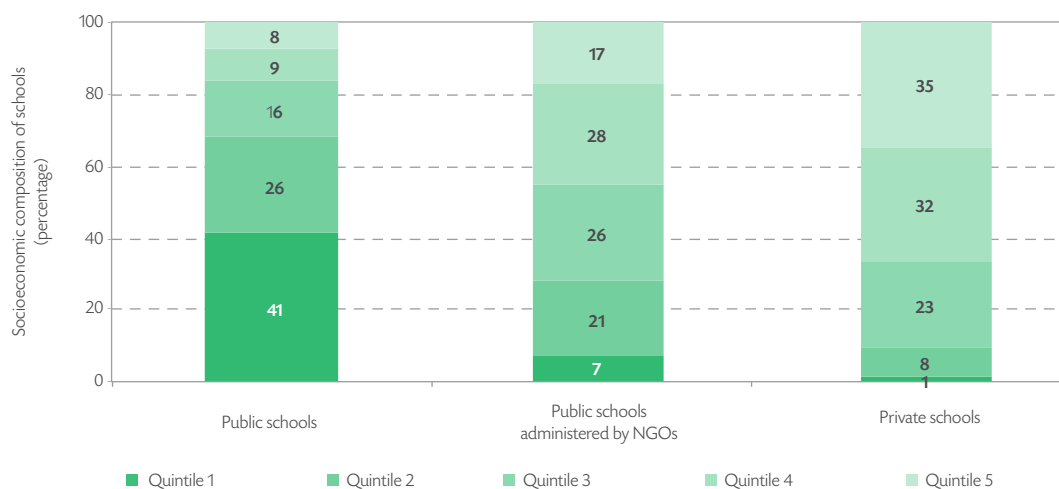
Source: Álvarez-Parra (2012).

Figure 3.15 shows that public schools are more prevalent in low-income districts. In fact, while 41% of public schools (under public administration) are located in districts in the lowest income quintile, only 1% of private schools are located in such districts. On the other hand, 35% of private schools are located in districts in wealthiest income quintile, while only 8% of public schools are found in such districts.

The descriptive statistics analyzed so far certainly indicate that public schools underperform in terms of the ECE test, but they also indicate that public schools have fewer resources and serve students coming from poorer socioeconomic backgrounds. Thus, we cannot necessarily conclude that poor performance on the ECE test among public schools is due to an inefficient use of resources. To analyze efficiency we show the scores calculated by Álvarez-Parra (2012). The estimated frontier takes the proportion of students that reach level 2 on the ECE test as the output variable, and the teacher-student ratio as the input. The estimation also considers environmental variables, using a set of indicators reflecting the socioeconomic background and geographical location of each school.[35] Table 3.10 and Figure 3.16 show output-oriented efficiency scores.

Efficiency scores are relatively low for all types of institutions, but particularly for public schools (under public administration). The analysis indicates that in public schools the proportion of students reaching level 2 on ECE tests is barely 45% of the frontier. The scores for public schools are between 5 and 15 percentage points lower than those of private schools. Note, however, the relatively high efficiency scores for public schools under the control of an NGO. Finally, Figure 3.16 suggests that a few public schools do approach the frontier.

In sum, it is true that a lack of resources and environmental factors explain at least part of the poor performance of public schools in Peru; however, it is also true that a sizable component of these poor outcomes are a result of inefficiencies. These findings stand in contrast to those for Chile. Moreover, in Peru, regional

Table 3.10 ECE efficiency scores and output variables by type of institution (2010)[a/]

Management type	Math		Reading	
	Percentage of students at level 2	Efficiency scores	Percentage of students at level 2	Efficiency scores
Public schools (1)	11.97	46.06	18.75	44.76
Public schools administered by NGOs (2)	24.79	56.65	44.75	61.75
Private schools (3)	19.59	51.63	45.74	59.64
Difference (2)-(1)	12.82	10.59	26.00	16.99
Difference (3)-(1)	7.62	5.58	26.99	14.88

a/ Input variable: teacher-student ratio. Environmental variables: socioeconomic level of school district to which the school belongs. For more details see Álvarez-Parra (2012).

Source: Álvarez-Parra (2012).

35. Some of these variables are a dummy for the geographical location, the Human Development Index, the share of children with nutritional deficiencies, and the income quintile associated to the school.

Figure 3.16 Efficiency scores distribution of ECE reading test (2010)
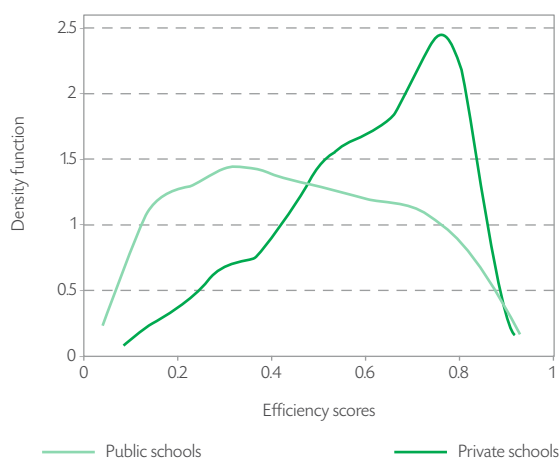
Source: Álvarez-Parra (2012).

disparities in efficiency between the public and private education systems are much more pronounced than in Chile, with gaps in scores between private and public schools ranging from 7 points (in Mosquegua) to as much as 36 points (in Ucayali).

GOOD PRACTICES FOR AN EFFICIENT PUBLIC ADMINISTRATION

The preceding analysis is based on methods that allow the assessment of the efficiency with which public resources are used from a productive point of view; that is, if, given inputs and environmental conditions, a decision-making unit is achieving the outcomes attainable with the implementation of best practices. The analysis suggests that indeed, important levels of inefficiency are found in crucial sectors, such as education, health, and infrastructure. This evidence put at the center of public debate the institutions, principles, and practices that make the most of public resources. In this section, we briefly introduce some useful elements for this discussion.

A general principle of best practices is transparency and mechanisms against corruption. In a study of Uganda, Ablo and Reinikka (2000) find considerable differences in the amount of resources allocated to education and health facilities and the actual amount of money these facilities received. These disparities are mainly attributed to problems with accountability. Internal and external auditing, and easily accessible information that is made available to the public regarding the allocation of public resources are important mechanisms to avoid such problems. Increased flexibility and streamlining of cumbersome bureaucratic procedures are also needed to achieve greater efficiency. In fact, recent studies find evidence of high administrative costs related to the implementation of conditional cash transfer (CCT) programs. For example, the World Bank reports that, between 2000-2004, for each USD $100 spent in the Colombian program *Familias*

en Acción, more than USD $10 represents administrative costs. Even higher administrative costs were found for health programs (see Lindert *et al.*, 2006).

Another best practice is the design and implementation of information systems that allow for uniform assessment based on appropriate metrics of the performance of public decision-making units (e.g., schools, hospitals, local governments, and so on). This would allow for the identification of inefficient units and the subsequent introduction of reforms to address inefficiencies. Unfortunately, these information systems are not common in Latin America and thus should be encouraged.

In the remainder of this section, we briefly present some principles that, in spite of been presented in specific contexts, provide useful lessons for many areas of public administration. Specifically, we discuss incentives and monitoring systems, the design of social programs, the use of IT systems, and the implementation of planning systems for public investments.

Rewards, punishment, and monitoring: Aligning incentives for public workers

Reaching higher levels of efficiency requires highly motivated workers; unfortunately, public sector employees are not always highly motivated. An excellent worker may become unmotivated if unproductive co-workers receive similar recognition (either monetary or not). Typically, problems of lack of motivation emerge when employees' efforts are non-observable and remuneration is independent of results, generating the well-known problem of moral hazard.

One method to counter this problem is with the implementation of monitoring systems and performance-pay schemes. The economics literature supports the efficacy of performance-pay schemes; for example, Lazear (2000) finds a considerable increase in productivity with the adoption of such a scheme in the manufacturing sector.[36] In Latin America, there has been some experimentation with this type of system in the public sector, in particular, in education (see box 3.2).

Box 3.2 Performance-pay in Latin American Education Systems

There are different tools to improve the quality of education. Training programs for teachers and attractive remuneration packages are among the most commonly mentioned strategies. Performance-pay schemes are also a potentially useful mechanism with particular relevance for this section of the chapter.

If teachers' effort is not observable and linked to student performance, then basing remuneration on student performance encourages teachers to dedicate more effort to the job. Obviously, poorly designed schemes may lead to unintended consequences, such as non-collaborative behavior among teachers, or the exclusion of less talented students. Some countries of the region have already incorporated these sorts of mechanisms into teachers' pay schemes, including Mexico (*Carrera Magisterial*) and Chile (*Sistema Nacional de Evaluación de desempeño de los Establecimientos educativos,* or SNED).

---

36. The gains are partially linked to the selection of better workers.

Carrera Magisterial started in 1993 as a program that allowed teachers to move up the wage scale on the basis of an annual multidimensional evaluation. This annual evaluation has a total score of 100 points, of which 20 were connected to student performance. Teachers' remuneration was based on their overall score on their annual evaluation, with the scoring scale varying across different regions in the country. The program's performance incentives were not structured equally across all teachers. For example, teachers with better credentials linked to the remaining 80 points (apart from the 20 linked to student performance) were placed closer to the threshold for receiving higher remuneration and thus had more incentives to work harder. Similarly, incentives were also designed to be greater for teachers working in regions with lower performing schools.

SNED was launched in 1996 and offered bonuses for schools with outstanding student performance. Schools were classified into homogeneous groups in order to compare schools with students of similar socioeconomic backgrounds. The bonuses were awarded to the schools with the best performance, up to 25% of national enrollment. 90% of the money was divided among teachers, while the remaining 10% was used for other priorities within the school, as determined by the principal.

There are important differences between each program. While the Mexican program rewarded teachers individually, the Chilean program did so to a group of teacher by assigning the bonus to a school as a whole. The Mexican program involved permanent changes in wages, while the Chilean program involved a one-time bonus. Chile's program grouped schools according to students' socioeconomic characteristics, a feature missing in the Mexican program. Finally, the size of the award was larger in the Mexican program, representing an increase of up to 4 times the average base wage, the monetary incentives offered in the Chilean program were at most 7% of average annual wages.

The evaluations of these programs are not entirely conclusive. In *Carrera Magisterial,* teachers for whom the program was supposed to carry the strongest incentives did not tend to see improvements in student performance. On the other hand, the Chilean program seems more promising. Preliminary evidence in this case suggests an improvement in student performance. In any case, a lack of impact does not invalidate the potential of these kinds of interventions; in contrast, the lack of impact may be a result of poor design of the program. The importance of the design of these and other public programs is of special interest, and thus is discussed in further detail below.

Source: author's elaboration based on Vegas and Umansky (2005).

Absenteeism is another form of low effort, and there is indeed evidence of high rates of absenteeism for public workers in Latin America. For instance, Chaudhury *et al.* (2006) find an 11% teacher absenteeism rate in Peru, and a 25% absenteeism rate for healthcare employees. Similarly, in Ecuador, the absenteeism rate for teachers is about 14%.[37] These rates are significantly higher than those in developed countries and those in the private sector in emerging economies.[38]

---

37. To construct these measures, 100 education facilities and 100 health facilities were visited twice in each country. A worker was reported as missing if during the visit, she was not in the center, regardless of the reason. The measure is restricted to full-time workers.

38. The authors also report an absenteeism rate of 5% in New York schools for the 1980s. They acknowledge, however, that the results are not necessarily comparable.

Monitoring mechanisms, along with monetary incentives, appear to be potential solutions for these problems.[39] Duflo and Hanna (2005) conduct an evaluation of such mechanisms for schools in rural Udaipur, India. The evaluation was experimental, with the treatment consisting of giving a camera to each teacher so that he/she must take a picture (of himself and of the students) twice a day, at the beginning and at the end of the school day. Monetary incentives were then based on days worked per month, with payments ranging from 500 to 1300 rupees. In contrast, payments in the control group schools were fixed at 1000 rupees and the camera was not used. Results were encouraging, with absenteeism rates reduced by half (from 36% to 18%) and evidence of improvements in student performance. Moreover, the average payment in both the control and the treatment groups was similar. Thus, the monitoring mechanism was cost-effective and could be implemented in other facilities.

The previous example indicates that these schemes may be very effective as long as their rules are clear and transparent. For example, in a similar program in Kenya, monitoring was performed by school principals, with a reward offered to teachers with good attendance. The evaluation of the program shows that in the treatment group schools, the principal altered absenteeism records so that their teachers would receive the bonus. Ultimately, teacher attendance rates were similar in both treatment and control group schools.

The design matters

In recent years, the region has seen an increase in the use of conditional cash transfers (CCTs) and of social insurance systems, such as unemployment insurance (see chapter 2). For these programs to be efficient in a technical sense –that is, to produce more/better outcomes, within the current budget– they must be properly designed.[40]

The proper design of social programs –that is, the optimal selection of program parameters– is a difficult but necessary task for improving efficiency. In general, the public decision-making unit implementing the program must account for problems of asymmetric information as well as incentive problems. Overlooking these problems may lead to unintended negative outcomes.[41] In the case of CCT programs, program design includes the selection of the beneficiaries (i.e., targeting), as well as the size of the transfer, which may depend on recipients' characteristics.

Consider the case of PROGRESA, a CCT program implemented in 1997 that aims to improve human capital formation in children located in rural areas in Mexico. The education component of the program includes scholarships, conditional on a minimum school attendance rate, for children under 18 years old attending public school, from the third grade of primary schooling to the third grade of secondary schooling.[42] The program seeks to create incentives among rural families to encourage children's enrollment in school where dropout rates to take up employment and productive activities are high.

39. Some studies have found that monitoring with fixed payments is insufficient in addressing absenteeism (see Banerjee *et al.* 2004).

40. Inequality arguments are usually cited in support of the use of such programs; however, they may also improve efficiency in the social allocation of resources. This typically happen when efficiency requires to modify the decisions of the household/beneficiary, and when the income effects associated with the transfer are sufficiently strong to shape the behavior of beneficiaries (Das *et al.*, 2005; de Janvry and Sadoulet, 2006).

41. Khandker *et al.* (2003) provide an example of these unintended outcomes. In particular, they evaluate a transfer program targeted exclusively at girls in Bangladesh, which negatively affects male enrollment rates.

42. The transfer requires a minimum attendance rate of 85%. By 1998, the maximum total benefit to which eligible households were entitled was about USD $50. On average, this transfer constitutes a 22% increase in the income of beneficiary households (for more details, see de Janvry and Sadoulet, 2006; and, Scott, 1999).

To evaluate the impact of PROGRESA, a sample of 506 communities (with around 17,000 eligible children) was taken, from which 320 were randomly selected as treatment communities that would receive the transfer for the first 2 years, while the remaining communities (i.e., the control group) would receive the transfer 2 years later. Base on this dataset, we illustrate the importance of careful program design for the success of such programs. Figure 3.17 taken from de Janvry and Sadoulet (2006), illustrates this point.

Figure 3.17 Continuation rate by educational level for PROGRESA (1994-2002)
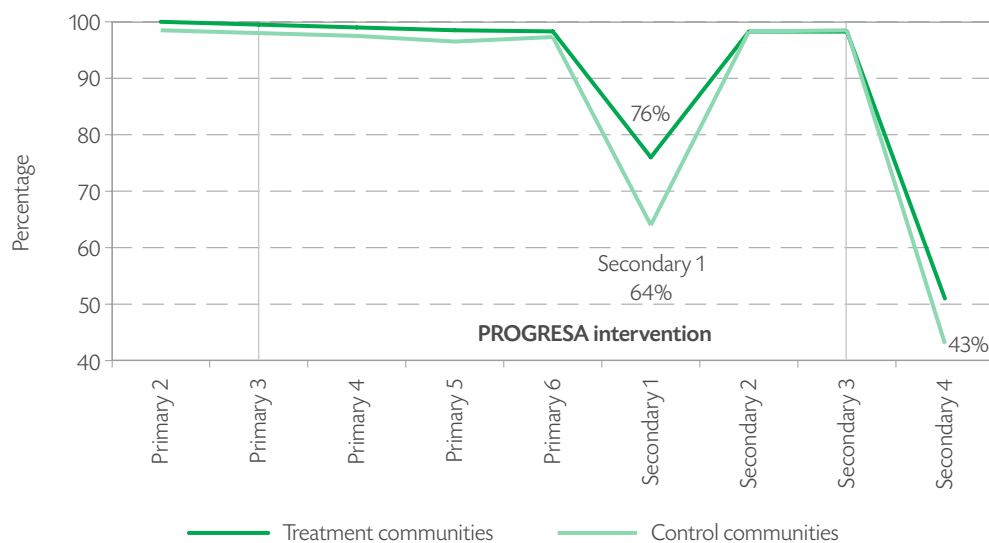
Source: de Janvry and Sadoulet (2006).

The horizontal axis represents the level of schooling, while the vertical axis shows the continuation rate, measured by (one hundred minus) the dropout rate for each particular grade. The lighter line represents control communities, while the darker line represents the treatment communities. Note that, for primary education, the program does not have a significant impact; in fact, continuation rates are quite high for both types of communities. Note also, however, that it is in the first grade of secondary school where the impact of the program (i.e., differences between treatment and control communities) is most dramatic. Indeed, the transfer is able to reduce the dropout rate by 12%. Despite this, the continuation rate for treated communities is only 76%, even with the PROGRESA benefit.

The drop in the enrollment rate for first year of secondary education may be associated with the perceived returns to education relative to those to productive activities at that age. The decision to leave school is usually made by the parents, who may not consider the labour returns to their children's education over the

long-term.[43] By creating incentives for school attendance, conditional cash transfers discourage parents from taking their children out of school. The transfer has led to a 12% increase in school enrollment. Nonetheless, the transfer appears to be insufficient to prevent a significant number of students from dropping out.

These results raise questions regarding the program's design. Several questions arise, notably, should the transfer be offered to students in primary education? Would some of the students that remained enrolled in school as a result of the transfer have done so with a lower value transfer? Would part of the 24% of students that leave school in the first year of secondary education have remained enrolled in the presence of a slightly higher value transfer? In other words, what is the optimal targeting strategy and size of the transfer to maximize enrollment/attendance rates, given the program's budget? De Janvry and Sadoulet (2006) simulate answers to these questions and find significant gains in attendance could be achieved with the current budget by changing the size of the transfer and the eligibility criteria. Essentially, the study suggests increasing the value of the transfer for students in secondary schooling.

The design of public programs must also take into account problems of information asymmetries, the structure of the labor market, and, especially in Latin America, the high levels of labor informality. Unemployment benefit schemes are particularly sensitive to these issues. First, labor informality allows the worker to obtain unemployment benefits and simultaneously work in this hidden labor market, since informal employment is not observable by the unemployment insurance provider. In addition, employment in the informal sector produces an externality in the form of a disincentive to searching for a formal job.

What are the implications of a large informal sector in the design of unemployment insurance schemes? How does it affect the efficiency of the provision of unemployment insurance? Álvarez-Parra and Sanchez (2009) address precisely these questions, arguing that an inefficient design of such program may actually lead to a large informal sector and a higher than necessary budget. The implications of an informal sector for the efficient payment structures of unemployment insurance schemes are twofold. First, a flattening in payments in the early stages of unemployment prevents workers from transitioning into the informal sector and instead encourages the search for formal employment. Second, a subsequent dramatic reduction in payments, followed by the elimination of payments for sufficiently large unemployment spells. The flattening prevents the worker for jumping into the informal sector which makes easer to encourage searching for a formal job. The eventual elimination of payments makes lengthy unemployment spells a very unpleasant situation, encouraging searching during the early phase of unemployment. In short, the authors find that a large an informal sector requires increasing the value of unemployment benefits but reducing their duration.

---

43. Low attendance can also be linked to supply factors. For instance, it is unlikely that a transfer would encourage school attendance if the school is located far from the student's home and if there is not suitable transportation between the home and school. In such cases, supply side interventions are also needed.

ICTs: Innovation for efficient administration

Information and communication technologies (ICTs) have changed the way people interact with each other and with institutions and will certainly impact resource allocation, and countries' economic efficiency and productivity.

The role of ICTs as a tool to fight poverty and as a mechanism for financial inclusion has been recognized in the literature (BID, 2011). Clearly, the way governments interact with their citizens does not escape this revolution. In fact, efficiency in public administration can be fostered by ICTs.

The applications of ICTs tools to public administration are extensive. One example is the notion of e-Government, defined as the use of ICTs in government internal administrative processes as well as in the provision of services to citizens. Tax payments can easily be made through an electronic bank transfer, reducing transaction costs. Similarly, the process for requesting and submitting identification documents (e.g., passports) can also be dramatically simplified by using ICTs. In short, ICTs can streamline bureaucratic processes and reduce transaction costs, leading to greater efficiency in public adminstration.

The use of ICTs could also improve transparency and auditability by easing access to information. Indeed, local and national governments increasingly use online interfaces. Studies suggest that this practice can improve accountability, but does not necessarily reduce cross-country disparities, as some existing inefficient practices may simply be transferred to the online platform (Wong and Welch, 2004).

Security and fighting crime is another area in which ICTs can play a role in improving efficiency. A good example is the use of video cameras for to deter and prosecute crimes. These cameras, located in strategic places and linked to monitoring centers, can allow for quick and effective responses by police. These systems have been implemented in some cities in Latin America; for example, they have been installed in Lima, Peru, particularly in the San Isidrio area.

While these systems seem to generate a greater sense of security, very little is known about their actual impact on crime. A recent study of Baltimore, Chicago, and Washington D.C. shows promising results, finding that where there are a sufficient number of cameras that are monitored by adequately trained personnel, there was a sizable reduction in crime, and without crime displacement (i.e., a higher incidence of crime in surrounding areas) (La Vinge *et al.*, 2011).

Similarly, several municipalities in Colombia and Brazil, as well as the city of Caracas, have implemented GPS in police patrol units. Theoretically, they should be helpful in reducing crime, since they monitor the patrol unit itself, reducing information asymmetries between the patrolling police officer and the police department. In addition, they provide information on the best route to reach the crime scene.

Health is another area that can benefit from the use of ICTs. "According to the Pan American Health Organization, in March 2011, at least 135 million people did not have access to basic health services in Latin America, either for economic or geographical reasons" (Fernández, 2011, p. 2, translation of original by author). E-health –that is, the use of IT to provide health services– can help address these gaps in service. Recently, there has been some modest progress in the use of e-health across the region (Fernández and Oviedo, 2010); however, developments in e-health are still very much in the initial stages.

There are many different innovations in the use of ICTs in health, the most common of which is telemedicine, which aims to address gaps in services due to geographical distance between the patient and health professionals. Several types of health services can be provided with this approach, with the patient-doctor interaction occurring either in real-time or with a time delay. In this way, telemedicine provides a means to reach people located in areas lacking standard health facilities.

Another important e-health tool is electronic medical histories. This tool improves the quality of medical services in at least three ways: (1) it allows for diagnoses of patients based on comprehensive information of their medical history, (2) it enables medical alerts, and (3) it facilitates the creation of an up-to-date and geo-referenced database to monitor epidemiological threats (Fernández and Oviedo, 2010).[44]

An example of the use of e-health technologies in Latin America is the integrated health system in Sao Pablo, SIGA *Saude*. The system comprises four components: electronic records, patient monitoring, health unit management, and interconnections between systems. The results seem to be exceptional, with more than 14 million people registered in the system. Moreover, "waiting times for medical appointments and specialized procedures have been reduced by about 30%, and the availability of medications is monitored based on links with local drugstores" (Katz, 2009 p. 22; translation of original by author).

Finally, education systems may also benefit from the implementation of ICTs. Distance education and the use of laptops and computers for teaching are obvious examples. Indeed, some authors find that distance education can be an effective channel for knowledge transmission (Huson, 1990; Withespoon *et al.*, 1993). Similarly, there are considerable advantages in using of laptops as tools for teaching and learning, by complementing teacher instruction and making the learning process more dynamic and effective. The novelty of the tool for children and the engaging way in which academic subjects can be taught may increase students' enthusiasm and dedication to their studies, and therefore improve their results. Moreover, this tool can help to homogenize the quality of education by making up for some deficiencies among less qualified teachers.[45] These initiatives can be promoted by national governments (e.g., the *Proyecto Canaima* in the Bolivarian Republic of Venezuela), as well as by local governments (e.g., the *Proyecto Más Tecnología* in Guayaquil).

At the same time, the empirical evidence on the impact of computers on student learning is not conclusive. Some studies find a positive impact (Barrow *et al.*, 2009; Banerjee *et al.*, 2005), while others do not find a significant impact on student outcomes (Leuven *et al.*; Rouse and Kruger, 2004). The absence of a clear effect should not, however, be lead to the conclusion that the use of computers is not useful for education. Rather, the success of programs using such technology in education relies on many factors, such as adequate training for teachers, appropriately designed software in terms of content and a user-friendly interface, and involvement of parents. As such, studies on the impact of such programs should focus on understanding the circumstances in which the use of computers can be an effective tool for teaching and learning.

Evaluations of these sorts of programs across Latin America are scarce. In one of the few such evaluations, Carrillo *et al.* (2010) examine the *Mas Tecnología* program in the municipality of Guayaquil. Based on an ex-

44. Other advantages of electronic medical histories over traditional ones include remote access to medical information, as well as the uniformity and consistency of the information in an easy to read format.

45. It can be argued that the effectiveness in the use of the computers in teaching actually depends on teachers' skill level, which would reduce the potential for computers to function as a homogenizing force.

perimental strategy to identify the casual effect of computers, they find a positive and statistically significant effect on student math performance. In addition, they find a stronger impact for students who were already at the top of the grade distribution.[46]

In sum, ICT innovations hold the potential to promote greater efficiency in public administration. On the other hand, the use of such technologies is not a panacea, and it is important to understand which tools and strategies will be most effective under which conditions, based on studies of cost-effectiveness.

Planning and evaluating public investments: The case of infrastructure

Infrastructure investments usually involve huge amount of resources to be paid out over long periods of time (typically, multiple fiscal periods), making expenditures subject to uncertainty and cyclical fluctuations and demands for proper planning.

There are reasons to suggest that infrastructure expenditures are particularly sensitive to the political cycle. Pre-electoral government expenditures may function as signal about the preferences and capabilities of the current government regarding to the provision of public goods and services (Rogoff, 1990). At the same time, expenditures on infrastructure are highly visible for voters and are complex in their execution, signaling the competency of the current government. A study of municipalities in Colombia supports this hypothesis, finding evidence that the electoral cycle affects the level of public expenditures on infrastructure more than on any other sector (Drazen and Eslava, 2005). In terms of the economic cycle, infrastructure expenditures also appear to be much more pro-cyclical than the others components of public expenditures, particularly in Latin America and the Caribbean (Akitoby *et al.*, 2006).[47]

The fluctuations in infrastructure investments may have significant effects on efficiency of expenditures. In fact, the high volatility and pro-cyclical nature of public investments may lead to delays in the completion or abandonment of projects, as well as poor maintenance of existing infrastructure, in turn increasing the costs and reducing efficiency (Fay and Morrison, 2005).

Several factors would help solve these problems. The fiscal sustainability of each project is crucial for avoiding delays that lead to inefficiencies and increased costs. The use of multi-year budgets and appropriate planning are also useful in this regard. The 2009 Annual CAF report of clearly illustrates the use of these tools in Brazil and Peru. In many cases, the volatility and cyclicality of public expenditures on infrastructure is linked to the rigidity of certain fiscal rules (e.g., limits on public borrowing or on deficits). In these cases, it may be useful to exclude public infrastructure investments from such rules. An example is the "golden rule," which requires the government to balance its current account but also to borrow to finance public investments.

The development of national systems for the evaluation of public investments are important to ensure the quality and efficiency of spending. Moreover, the development of a 'culture of ex-ante evaluation' that determines the impact and the appropriate technical specifications for each project can be helpful in improving the efficiency of public investments. Such institutions also improve transparency and accountability by

---

46. The impact on reading scores was not significantly different from zero, from a statistical point of view.

47. Akitoby *et al.* (2006) use a sample of 51 countries, 16 of which are from Latin America and the Caribbean.

enhancing public access to information about investments and projects. The experiences of Chile and Peru with national evaluations of public investments appear to be good examples (CAF, 2009).

Public-private partnerships, although not without complications, have become increasingly common and hold the potential to increase efficiency. To some degree, the presence of a private sector partner imposes a certain level of market discipline, which may lead to a more rational allocation of resources and may reduce the existence of projects that are only viable with government subsidies. The promotion of public-private partnerships requires an appropriate institutional framework that ensures the commitment of both parties. Similarly, supranational projects (e.g., the Central American Electric Interconnection System) can also offer important efficiency gains, particularly for small countries, as a result of economies of scale in infrastructure investments, which can in turn reduce the cost of service provision.

Finally, the right maintenance of existing infrastructure is crucial. In Latin America, the maintenance of existing infrastructure has often been neglected (CAF, 2009), with the emphasis in infrastructure expenditures on new infrastructure (Fay and Morrison, 2009). This bias seems inappropriate in light of the findings of several studies that find large potential returns as a result of shifting resources towards infrastructure maintenance in the region (Rioja, 2003).

Latin America is full of examples in which a lack of transparency and planning and/or changes in the parties involved in a project has led to excessively costly, unfinished or behind schedule, and low quality public investments. Improving the quality and quantity of public infrastructure requires an integrated view that considers both the importance of maintenance of existing infrastructure as well as new projects. In addition, this integrated perspective should seek to establish a culture of technical and environmental evaluation of infrastructure projects. Improving the efficiency of investments also requires long-term planning to avoid subjecting investments to the volatility of the political and economic cycles that lead to costly delays and cancellations of projects. Finally, efficiency can also be enhanced through well-designed public-private and supranational partnerships.

CONCLUSIONS

In this chapter, we have argued that efficiency is a key principle of public finance; however, in order to achieve efficiency, it is necessary the creation and maintenance of information systems that allow a systematic evaluation of decision-making units. In the words of William Thompson Kelvin, "if you cannot measure it, you cannot improve it".

This type of analysis and evaluation of efficiency must transcend the simple comparisons of performance indicators, and instead must systematically incorporate the inputs used to calculate these indicators as well as the conditions under which they are calculated. Otherwise, the efficiency assessments may be misleading. Frontiers methods, despite their limitations, seem to be useful tools for evaluations of efficiency since they not only allow for the systematic incorporation of inputs and environmental conditions, but also for distinguishing between the actual output and the potential output with the implementation of best practices.

While productive efficiency is of critical importance to the design of public policies, it does not guarantee efficient public administration in a broad sense. That is, productive efficiency does not ensure that the composition and magnitude of public expenditures of different levels of government is appropriate. Once the size and composition of expenditures have been determined in national and local budgets, however, productive efficiency is necessary for good public administration.

This chapter provides evidence that public expenditures in Latin America are inefficient –that is, the outputs of public spending are below the potential– even considering low inputs and harsh environmental conditions. For instance, in education, the frontier analysis suggests that the indicators of education quality (PISA scores) and access (net enrollment rates in secondary school) are between 80 and 90% of the region's potential.

School level data provides additional useful results. First, the score gap between public and private schools in standardized tests is at least partly explained by differences in students' socioeconomic background as well as a lack of resources. In addition, our findings show that some public schools are as efficient as the most efficient private schools, and that some private schools are actually very inefficient. Unfortunately, for some countries in the region, like Peru, the average efficiency score for public schools is significantly lower than that for private schools.

Given these findings, the discussion regarding the practices and institutions that best promote greater efficiency in public administration deserves special attention. The list of such practices, principles, and institutions is quite extensive. We have briefly discussed some of the most relevant ones here. The implementation of these practices is far from easy. In general, it requires the careful design of institutions and practices, and will often face resistance from a variety of actors. Thus, the challenges associated with promoting efficiency in the public sector are considerable but unavoidable in the path toward development and greater social inclusion.

4

Improving tax revenues:
Tax structure and enforcement

Improving tax revenues:
Tax structure and enforcement[1]

INTRODUCTION

Latin American countries face the challenge of providing both the economic infrastructure and the social services required to foster inclusive economic growth. As mentioned in chapter 1, countries need to not only enhance the efficiency of the use of public resources, but also increase the overall amount of revenues collected. Evidence of the level of expenditures and total public sector resources shows that, although the level of public revenues collected have increased over recent years, the region lags behind relative to other developed and developing countries, especially considering the revenues obtained through regular taxes.

This chapter studies in detail the recent evolution of the tax structure in Latin America and analyzes the major challenges to increasing tax collection. One of the central arguments of the chapter is that the total level of tax revenues depends in part on the tax structure. In particular, an appropriate combination of direct and indirect taxes must be established, with the aim of expanding the use of taxes that have lower efficiency costs but that also have a positive impact on income distribution; for example, a generalized VAT (perhaps with lower aliquots for basic consumption goods), progressive personal income and wealth taxes, and taxes on businesses' profits at relatively uniform rates.

However, the implementation of such tax structure in Latin America faces important constraints related to the high level of income inequality, high rates of labor informality, low institutional capacity for tax collection, political costs and pressures from different economic sectors, and public perceptions about the low quality of public services which in turn undermine citizens' willingness to comply with their tax obligations. All of these factors encourage tax evasion, leading to low tax morale.

The present chapter documents in detail the weaknesses of tax institutions in Latin America. In particular, despite the increase in tax collection observed in the region over the last decade, the tax effort remains below what would be expected, given the region's characteristics and its level of development. This can be explained, at least in part, by a deficient tax structure, in which income and wealth taxes on businesses and individuals (especially the latter) account for a relatively small portion (around 28%) of total taxes collected. Evidence suggests, again, that the problem is not necessarily justified by per capita GDP and or the economic structure of the region. Tax reforms that significantly increased income taxes as a portion of total revenues (equal or above 50%) have been implemented in many other developing countries –for example in East Asia– and historically in today's developed economies when they had similar income levels similar to Latin America. These reforms have allowed these economies to strengthen tax collection while maintaining a balance between efficiency and equity objectives.

The high level of tax evasion is also another factor that explains the low tax effort in Latin America. Unfortunately, reliable statistics that measure the magnitude of the problem –calculated periodically based on random samples of taxpayers– do not exist. Indirect estimations using data from national accounts and household surveys, however, suggest that the average evasion rate is around 27% for general consumption taxes (i.e., VAT) and close to 50% for income and wealth taxes. Aside from the negative impact on tax revenues, tax evasion also has a significant effect on the overall tax structure. For instance, given the higher probability of evasion of income taxes, authorities would tend to reduce these taxes (especially the highest marginal aliquots) and replace them with other indirect taxes that are easier to regulate and more difficult to evade (e.g., specific taxes on consumption or on financial transactions). At the same time, however, this makes the tax system less equitable.

An effective plan to improve the fulfillment of tax obligations should combine several elements. On one hand, the creation of incentives in the tax system to report sales and revenues, as in the case of the VAT in the context of the relationship between a firm and its suppliers, is a key factor in reducing tax evasion. On the other hand, it is also important that the financial system and other institutions (e.g., large companies, and customs, among others) function as both third-party sources of information about revenues and retention agents. In addition to these measures to improve incentives and information flows, where tax payments depend on self-reported income (either among firms or individuals) and where there are significant incentives to misreport income, a credible threat of a higher probability of inspection and audit is an important element of the tax system.

In addition to considerations of efficiency and equity that might justify a more relevant role of incomes taxes and a more effective regulation of tax evasion, a key argument of this report is that such policies play an important role in developing government capabilities and democratic institutions (Bird, 2008; Bird *et al.*, 2004; Lledo *et al.*, 2004). In other words, the ability to collect direct taxes from a wide spectrum of the population and companies can encourage political and civic participation as means to hold governments accountable. This could in turn improve public administration and potentially have a positive influence on taxpayers' willingness to comply with their fiscal obligations.

The rest of the chapter is organized as follows: the next section develops a conceptual framework that helps to understand the efficiency and equity arguments for choosing a specific tax structure. This section also addresses how the economic structure, the costs of and capacity for tax enforcement, the underlying political/electoral institutions, and the efficiency of the provision of public goods might all affect the combination of taxes that are applied in practice. Using this framework, the third and fourth sections respectively describe recent trends in the tax structure in Latin America, and its limitations in improving tax collection, including the problem of compliance. The fifth section concludes with some suggestions about interventions that may allow a shift to a more balanced tax structure and a reduction in tax evasion.

CONCEPTUAL FRAMEWORK: THE OPTIMAL COMBINATION OF DIRECT AND INDIRECT TAXES

As previously mentioned, the tax structure can play a fundamental role in securing higher levels of tax collection while at the same time meeting efficiency and equity objectives. In this context, before analyzing the recent trends in the evolution of the tax structure in Latin America in detail and identifying its possible

limitations, it is useful to review the conceptual arguments that have been developed to recommend a particular combination of direct (i.e., income and wealth) and indirect (i.e., consumption) taxes.[2] We start describing the main predictions of normative theory of public finances, which emphasize efficiency costs and the implications for equity of the tax structure. Next, in order to derive hypotheses that help to understand the experience of Latin American countries, we explain how factors related to economic structure, low tax enforcement, political economy considerations, and social benefits obtained from public goods also affect the tax structure.

Hypotheses arising from the theory of the optimal tax structure: Efficiency versus equity

The conventional intuition about the benefits and costs of emphasizing direct versus indirect taxes is that the former (i.e., progressive personal income taxes) have efficiency costs (namely, negative effects in decisions of labor supply and of saving/investment) while the latter either have minor or no efficiency costs. Nonetheless, from a redistributive point of view, direct are clearly superior to indirect taxes since it is difficult to achieve redistributive objectives with taxes on the consumption of goods and services that do not vary as a function of the purchaser's income level.

The negative effects of direct income taxes on efficiency are produced through multiple channels. First, depending on the elasticity of labor supply to wages, a direct tax on income may have a negative impact on labor supply since it taxes labor earnings. This effect would tend to be larger if the structure of tax rates is progressive, with increasing marginal aliquots as income rises.[3]

A second possible channel of inefficiencies in income taxes is that they not only tax wages but also total household income. From an intertemporal perspective, this type of tax makes future consumption relatively more expensive compared to current consumption, thus discouraging wealth accumulation. This does not happen with consumption taxes if they are kept constant over time. It is clear that through their effects on savings, income taxes indirectly affect the level of investment in the economy by reducing the supply of capital available to firms. In addition, to the extent that income taxes are also charged on business profits, they directly affect decisions around production and capital goods purchases. In this way, income taxes also indirectly affect household savings decisions, as they discourage households from investing savings in company stocks and thus inhibit the development of capital markets. These potential inefficiencies of income taxes have traditionally proved problematic for Latin America, which has led to the establishment of tax incentives for companies' investments (Tanzi and Zee, 2000).

---

2. The definitions of direct and indirect taxes have been the subject of some controversy. One popular definition among public finance specialists maintains that direct taxes are those that directly affect the income of taxpayers (i.e., families or companies), while indirect taxes are those that can effectively be transferred to other people or companies than those who are formally required to pay them (Buchanan, 1970; Due and Friedlaender, 1973). An alternative definition, that better fits the purpose of the current chapter, is proposed by Atkinson (1977). He argues that direct taxes are those that may be adjusted according to individual characteristics of the taxpayer (either a company or an individual), while indirect taxes are charged to transactions, independently of the characteristics of the agents involved.

3. The seminal work by Atkinson and Stiglitz (1976) on the optimal combination of direct and indirect taxes demonstrates that, in the context of a static model (households do not have savings and all income is consumed) where the elasticity of labor supply follows certain conditions (the elasticity does not depend of the consumption of goods), the elimination of consumption taxes generates gains in efficiency because the benefits of lower prices are only partially compensated by the costs of distortions in labor supply decisions. These authors showed, then, that income taxes are superior not only in terms of redistribution but also efficiency. In this context, there is no role for indirect taxes in the optimal tax structure. As is described in the main text, the conclusion of Atkinson and Stiglitz (1976) about the higher efficiency of income taxes in comparison to differentiated consumption taxes is fundamentally modified when household and business decisions about savings and investments are taken into account.

An additional channel through which income taxes might negatively impact efficiency relates to decisions around human capital accumulation. Here, the theoretical predictions are much more ambiguous. As suggested by Heckman *et al.* (1998), progressive income taxes might discourage investments in higher education, since what is saved in taxes during college is compensated for on a larger scale (in present value) by higher income tax rates paid as a result of the additional income generated by higher levels of human capital. In other words, progressive income taxes reduce the expected returns of education. On the other hand, if the public funds that are obtained from taxes are used to fund additional expenses in education (e.g., increasing the returns to education relative to a no-tax scenario), then the effect is undetermined (Bénabou, 2002).

In addition to the impacts on efficiency, in particular on decisions of physical and human capital accumulation, the choice of tax structure has an impact on income distribution. This is because, for a given spending structure, the decision of which taxes are used to finance these expenditures will determine the characteristics, especially in terms of income, of the taxpayers. The income distribution (after taxes) will be more equitable if there is a positive correlation between tax obligations and level of income, and conversely will be more unequal if the correlation is negative.

The well-known argument that the use of consumption taxes rather than progressive income taxes may have costs in terms of greater inequality is based on the fact that these taxes are not graduated with individuals' incomes. As consumption spending as a portion of total income rises in lower income households, the incidence of the tax burden will affect them relatively more than the wealthiest households;[4] thus, income distribution after taxes may be more unequal.[5] Personal income taxes with progressive aliquots might clearly reverse this unequal pattern of tax obligations because its incidence (i.e., tax burden as a proportion of income) would rise more than proportionally to the level of household income.

To what extent should redistributive objectives influence the choice of tax structure? Similarly, how important are issues of economic efficiency in this choice? These questions are hard to answer since they imply choices around the social welfare function that the government should play and the types of policies it should pursue. This social welfare function aggregates the consumption level of all individuals in the economy and, depending on the parameters, gives more or less importance to the existence of unequal level of income distribution.[6] Once this function is defined, the "optimal" tax structure can be determined so that it maximizes aggregate welfare. This optimal tax structure must consider not only to what extent the efficiency costs affect incentives to accumulate human and physical capital and their consequences on long-term levels of income, but also to what extent the selection of such taxes serves to improve equity in income distribution.

The literature on public finance has provided analytical exercises using models representing a stylized version of actual economies; these allow for both a qualitative and a quantitative evaluation of the possible trade-offs between efficiency gains and equity costs that a given tax structure would have, depending on the chosen mix of direct income taxes and indirect consumption taxes. These exercises show that the optimal

4. The incidence of consumption taxes on the poorest households may be reduced if differentials tax rates are applied, as in the case of the VAT, that establishes lower aliquots on some of the products that these homes consume in a greater proportion. However, extensive use of this type of mechanism might be difficult to implement.

5. In general this argument has been defended in the context of static analyses. When considering more dynamic contexts, such as life cycle models, where current savings become future consumption, it is less clear that the proportion of consumption spending on income varies much with the distribution of income (Metcalf, 1994; Tanzi and Zee, 2000)

6. A reduction in inequality increases aggregate welfare the most when a change in the consumption of low-income households is given more weight relative to the same change in consumption of richer households.

tax structure always includes a significant component of income taxes with marginal rates that approach those observed in some developed countries (Fellman *et al.*, 1999; Widmalm, 2001; Bénabou, 2002).[7] In addition, income taxes include not only those charged on wage incomes but also those applied to capital or savings/investment accumulation (Erosa and Gervais, 2002; Conesa *et al.*, 2009).[8]

Why do the tax structures of developing countries differ from that suggested by theory?

In general, public finance models take a normative approach to the problem of determining the tax structure, which, despite accounting for some market failures (i.e., credit restrictions), do not take into account issues related to tax enforcement and other costs of administration of the tax system. Additionally, the models fail to incorporate political economy elements, such as the electoral consequences (i.e., the probability of being re-elected for a new term) of tax decisions.

It is clear that these other elements are also relevant in positive analyses that try to explain the tax structures that countries adopt in practice at a given time, or better still, that are observed along the path to development. In this sense, this approach could explain why, despite the normative theory predictions about the "correct" tax structure, there are still significant differences in the levels and tax structures applied in developed countries compared to developing nations or even between developing economies.

In an interesting piece of work taking such approach, Roger and Li (2009) argue that, beyond the precepts of normative theory, a clear difference in the functioning of developing economies compared to more advanced economies is the issue of regulation and administration of tax obligations where a large part of the economy is informal; that is, where transactions are made outside the established legal and financial records. An obvious illustration of this phenomenon is the fact that economic activities in the informal sector are paid only in cash because the use of the financial system would allow transactions to be traced by the tax authority, which could then enforce tax obligations.

In this context the authorities should choose a tax structure that accounts for the incentives it creates for firms to operate in the formal versus the informal sector, and how this affects tax collection. The threat of firms transitioning to the informal sector to avoid the use of the financial system to perform operations could justify the relatively low income tax rates for firms or different tax rates among economic sectors.[9] For example, taxes could be higher for capital-intensive industries that need to use financial services for their transactions, and much lower for the retail sector, especially for small businesses, where the benefits of access to financial services are, in principle, lower (or access costs are much higher). The problem of informality may also explain the low share of personal income taxes as a portion of total tax collection in many developing countries, especially in Latin America. Given that a large fraction of the collection of these taxes

---

7. For example, Bénabou (2002) develops a model where income taxes generate costs in terms of savings decisions and labor supply. The transfers that are funded with these taxes benefit low-income households that, given problems of access to credit, cannot obtain insurance against idiosyncratic income shocks or obtain credit to invest in human capital. In this context, the average marginal tax rate on income that maximizes aggregate welfare is 48%, with a level of redistributive spending of approximately 14% of GDP.

8. Conesa *et al.* (2009) develop a model where tax policy allows the government to set differential tax rates on labor and capital income. Assuming the existence of credit restrictions and idiosyncratic income shocks, the authors find that the rate of income taxes on capital income that maximizes aggregate welfare (which weighs the costs of the distortions on the labor supply and savings, versus the benefits of redistribution) is 36%. At the same time, the optimal marginal rate applied to the wage income is smaller (23%).

9. A cause of informality could be high taxes or other regulations (e.g., employment) that raise the costs of firms. It should be noted, however, there may also be other structural reasons that underlie this problem related to the productivity of enterprises, which affect earnings before and after taxes (Pages, 2010).

depends on what is charged on wages, the collection of income taxes requires that a sizable portion of the population be employed in formal, medium to large firms, so that the tax authorities can benefit from the latter enforcing the tax obligations of their employees. As it is well known, this is not the case in many developing nations where an important part of total employment is concentrated in small and micro enterprises.

This theory also predicts that facilitating access to the financial system through lower fees will ease the regulation and monitoring costs of the tax system. This, in turn, will facilitate the implementation of changes to the tax structure that could gradually converge towards that observed in most developed countries.[10]

The approach elaborated above considers the informal economy to be a determinant of the ability to manage and enforce tax obligations in developing countries, and thus a determinant of the choice of tax structure. This approach can be extended by incorporating elements of political economy and can also explicitly account for the benefits (including the electoral consequences) that generate the public goods financed by the tax revenues collected.[11] Kenny and Winner (2006) present such an analysis. They postulate the case of a government that must choose the tax structure that will maintain a high level of electoral support, with the intention of being reelected. The political (electoral) support of the government increases with the (efficient) provision of public goods and decreases with the need to collect taxes on individuals and firms.[12] To simplify, it can be assumed that the government has to decide between two types of taxes, namely, a general consumption tax (e.g., VAT) and a personal income tax. The political cost (lower electoral support) of an increase in the tax burden is explained by the lower disposable income that these taxes generate and by the costs that the voters are likely to assume in order to comply with their tax obligations (among others, the time and resources used to pay taxes, as well as efforts to avoid them). Obviously, these political costs may vary depending on the type of tax; for example, the electoral cost could be higher for the income tax –because it is more visible and has a higher direct impact on disposable income– than for consumption taxes.

Similarly, it is assumed that the collection of taxes, net the administration and regulation costs, is subject to an inverted U curve (or, Laffer curve). In other words, tax revenues are a positive function of the applied rate within a certain range, but above a certain level, further increases produce a reduction in collected revenues. This is a consequence of the more than proportional decrease in the tax base when the aliquot increases (e.g., the profits of the business are reduced because they invest much less when tax rates are extremely high), or of the greater incentives for tax evasion when rates are high and the fact that control costs can exceed the potential revenues. This Laffer curve type-behavior could take different forms for different taxes (e.g., it could be flatter for personal income taxes, reflecting the higher costs of administration).

This simple conceptual framework can be used to study the impact of diverse policies or events on the tax structures and the level of total revenues. In particular, it might be interesting to consider three types of situations: i) changes in the economic structure of countries that favor the growth of the formal sector of the economy (e.g., development of the manufacturing sector); (ii) improvements in the administration ca-

---

10. This analysis provides another channel through which the development of the financial system can positively influence economic growth, both by strengthening tax collection and facilitating the provision of public goods (e.g., infrastructure). The link between financial development and growth is explained in Levine (2005). See also CAF (2011a).

11. This is connected with the reciprocity hypothesis that will be investigated extensively in Chapter 5. According to this hypothesis, in many developing countries, and particularly in Latin America, individuals do not comply with their tax obligations since they perceive the services offered by the state and financed with taxes to be inefficient, of a low quality, or worse, entirely absent due to the diversion of funds or corruption.

12. Even though societies do not vote, it can be assumed that they can be organized for lobbying activities that affect the government's electoral opportunities. More directly, companies can make contributions to the campaigns of candidates (of the governing party or the opposition), thus influencing the probability of re-election.

pacities that imply both a reduction in the costs to citizens or firms of complying with their tax obligations as well as a decrease in monitoring costs for the tax agency (e.g., with the use of the Internet to send VAT declarations); and finally (iii) greater efficiency in the provision of public goods.

All three of these scenarios entail a higher level of tax revenues and expenditures. In addition, the relative growth of the formal sector of the economy generates an increase in the tax base for personal income taxes (i.e., more workers are salaried formal employees). This expansion not only increases the portion of total public sector revenues generated from personal income taxes, but also shifts the revenues curve upward. The same applies to the VAT when a technological improvement reduces the administrative costs associated with the tax. In this case, not only does the net revenue curve move upwards, but the political costs are also reduced (for minor distortions in the case of compliance). Both factors lead to an increase in the portion of overall public tax revenues generated by the VAT.

Finally, the increase in the efficiency of public goods provision will affect the tax structure according to the relative political cost of each tax and its ability to generate more resources as a function of the size of its tax base and its administrative costs (both represented by the shape of the net revenue curve). For example, if the political cost of collecting taxes is lower for the VAT than for the personal income tax, and the costs of collection are also lower, an increase in the efficiency in the provision of public goods will entail an increase in the proportion of the VAT within the overall tax structure.

To what extent do the tax structures observed in recent years in Latin American economies correspond to the predictions of a normative approach to the optimal tax structure? What are the most significant deviations, and to what extent can they be explained by some of the above-mentioned factors, such as economic structure, problems of public administration and management, and political or electoral costs? Are the existing tax structures and current levels of tax collection in Latin America below what would be expected, given the region's level of development? The following two sections try to answer these questions.

RECENT TRENDS IN TAX REVENUES AND TAX STRUCTURES IN LATIN AMERICA[13]

Over the past 20 years, tax receipts in Latin America have increased as a result of economic growth, the consolidation of macroeconomic stability, the rise in commodity prices, and fiscal reforms that took place at beginning of the 1990s. Table 4.1 describes the evolution of total tax revenues (as a percentage of GDP) for the period of 1990-2009 for a sample of 17 countries in Latin America. The information on taxes corresponds to the general level of government (including central and subnational levels) for Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, and Mexico, and for the rest, to the central government.[14] Tax revenues include those obtained from income taxes on individuals and businesses, general consumption taxes (VAT), specific taxes on consumption, taxes on international trade, property taxes, and other minor taxes (e.g., on financial transactions). In addition, contributions to public social security systems are also included. Finally, the fiscal revenue from the exploitation of non-renewable natural resources (NR) is only considered when

---

13. This section and the following use material obtained from Gómez-Sabaíni and Jiménez (2011), a paper that was commissioned especially for this report.

14. It could be argued that this fact clearly affects comparisons among countries by underestimating the amount of total taxes for those who only report variables at the central government level. In countries where information is only available for the central public administration, however are generally nations with unitary constitutions and with low levels of fiscal decentralization, making the omission of subnational information a minor issue.

it is obtained through tax instruments (e.g., taxes on profits charged to oil companies, including those that are specific to the NR sector).[15]

Table 4.1 (see p. 149) shows that on average, the level of tax collection in the region increased by approximately 5 percentage points of GDP between the beginning of the 1990s and 2008/2009 (reflecting a 34% increase on average). The table also shows, however, a high degree of heterogeneity among countries in the region in terms of the level and the dynamics of their tax revenues. Thus, while some countries, such as Brazil and Argentina, currently show tax burdens exceeding 30% of GDP, others, such as Mexico, Guatemala and Paraguay, do not reach even 14%. Differences in the levels of the tax burden at the end of the first decade of this century reflect disparities in growth rates. On one hand, Argentina and Bolivia have seen a huge increase in their tax burden, with growth rates of twice or more than the average. On the other hand, the tax burden in Mexico and the Bolivarian Republic of Venezuela has declined to that seen in the 1990s.[16]

It is interesting to note that these differences in the levels and the dynamics of tax revenues are not necessarily linked to countries' per capita income (that is, that poor countries collect little, while rich countries collect more). As shown above, some Latin American countries have significantly increased their tax revenues, placing them above the regional average, despite having a relatively low GDP per capita (e.g., Bolivia). On the other hand, there are some surprising cases –like Mexico– of relatively rich countries that have maintained a relatively constant and low tax burden in recent years. As we will see later, this unequal level of tax collection is associated, in part, with the capacity to secure other sources of public revenues, including fiscal revenues from the extraction of natural resources (e.g., in Chile, Mexico, and the Bolivarian Republic of Venezuela) or the use of the Panama Canal in the case of Panama.[17]

The evolution of the tax structure in Latin America: Direct and indirect taxes

One of the most significant phenomena that reflect the evolution of the tax structure in Latin American countries over the last two decades has been the increase in the share of general taxes on goods and services (VAT or similar) within total tax revenues. Figure 4.1 (see p. 150) shows an 11.5% growth of the relative weight of such taxes in the average tax structure in the region, increasing from 24.2% of total revenues in 1990-1992 to 35.7% in 2008-2009. Most of the increase in the share of this revenue source occurred during the 1990s as a result of reforms that expanded the tax base and increased the legal aliquots.

The greater share of the VAT in total tax collection in Latin America has occurred within the context of a global trend towards a significant expansion in the use of this type of tax, from 47 countries in 1990 to 140 today (Bird and Gendron, 2007; Keen and Lockwood, 2010). The growing use of this type of tax is primarily related to its greater efficiency–in that it avoids a blanket imposition of simple taxes on sales–and to the relatively ease in implementation and administration, since companies have incentives to declare and docu-

---

15. Revenues obtained from royalties (exploitation rights applied to the value of the production of mines and hydrocarbons) and earnings from shares in public or private companies that exploit non-renewable resources are excluded because they are not considered taxable income. The next section and chapter 6 of this report present a more detailed analysis of the different sources of fiscal revenues from natural resource intensive activities.

16. As indicated in the footnote to Table 4.1, the source of data used is CEPALSTAT (2011). Previous conclusions are not substantially modified when using data provided by the OECD on tax revenues in Latin America (see OECD, 2011a), although the latter covers a smaller number of countries in the region.

17. Even considering these other sources of public revenues, the case of Mexico still stands out. When oil royalties are included, fiscal revenues rise, on average, to almost 17 percent of GDP in 2008-2009; this increases to up to 20% of GDP if the profits that PEMEX pays to the government are included.

Table 4.1 Tax burden in selected Latin American countries (1990-2009), three-year average values as a percentage of GDP[a]

Country	1990-1992	1993-1995	1996-1998	1999-2001	2002-2004	2005-2007	2008-2009	Percent change 1990-2009	Change (as a percentage of GDP) 1990-2009
Argentina	18.50	21.10	20.50	21.20	23.20	27.80	31.20	68.65	12.70
Bolivia	10.40	13.60	17.40	17.80	17.80	20.10	22.20	113.46	11.80
Brazil	23.70	25.90	27.10	30.20	31.80	33.60	34.40	45.15	10.70
Chile	17.00	18.20	18.90	18.90	18.70	20.00	19.10	12.35	2.10
Colombia	10.90	13.20	15.20	15.50	16.80	18.20	17.80	63.30	6.90
Costa Rica	17.20	17.90	18.60	19.00	20.10	21.40	22.40	30.23	5.20
Dominican Republic	8.60	10.60	11.20	12.20	12.60	15.20	14.10	63.95	5.50
Ecuador	10.10	9.50	9.60	11.50	13.30	13.80	16.90	67.33	6.80
El Salvador	10.80	12.40	12.20	12.30	13.20	14.60	14.30	32.41	3.50
Guatemala	8.80	8.60	10.10	10.90	12.00	12.00	11.10	26.14	2.30
Honduras	13.30	13.70	12.90	15.40	15.50	16.50	16.00	20.30	2.70
Mexico	12.70	12.80	11.30	12.40	12.40	11.10	11.15	-12.20	-1.55
Panama	15.00	16.20	16.00	15.90	14.60	15.40	16.70	11.33	1.70
Paraguay	9.80	11.90	12.70	11.90	11.80	12.90	13.70	39.80	3.90
Peru	13.10	14.90	15.90	14.30	14.30	16.30	16.20	23.66	3.10
Uruguay	22.50	22.50	22.70	23.00	21.90	23.30	24.60	9.33	2.10
Venezuela, BR	17.30	14.10	14.90	13.20	12.10	16.50	14.40	-16.76	-2.90
Simple average	**14.00**	**15.00**	**15.70**	**16.20**	**16.70**	**18.30**	**18.80**	**34.29**	**4.80**
Weighted average	**18.50**	**19.40**	**20.20**	**19.70**	**19.60**	**22.00**	**23.30**	**29.44**	**5.30**

a/ Total tax collection includes revenues from the following taxes: personal income and wealth taxes, and taxes on businesses' profits, property taxes, general (VAT) and specific consumption taxes, taxes on international trade and other minor taxes (e.g. financial transactions). It also includes contributions to public social security systems.

Source: Gómez-Sabaíni and Jiménez (2011) and CEPALSTAT (2011).

ment transactions performed with other businesses. In other words, the incentives to self-report built into the design of the VAT are a key element that improves its administration and reduces the level of evasion.[18]

---

18. Pomeranz (2010) quantitatively evaluates the impact of these characteristics. Specifically, the paper analyzes how spillover effects among firms that are linked by customer-supplier relations in Chile have helped to reduce evasion. In the fourth section of this chapter, these results will be commented in detail.

A second factor explaining the increase of the regional tax burden over the last two decades are taxes on income and capital gains. These taxes rose 6.7% as a share of total tax revenues, from an average of 21.3% between 1990 and 1992 to an average of 28% between 2008 and 2009. In this case, most of the increase occurred in the past ten years and, as will be seen later, was in large part a result of the good performance of taxes on corporate profits, driven by strong growth in natural resource extraction-related activities. Nonetheless, despite this increase, the share of these income and wealth taxes as a portion of total revenues continues to be below the standards of OECD countries and other developing East Asian countries. We will return to this point below.

Figure 4.1 Evolution of the tax structure in Latin America[a/] (percentage of total tax revenues)
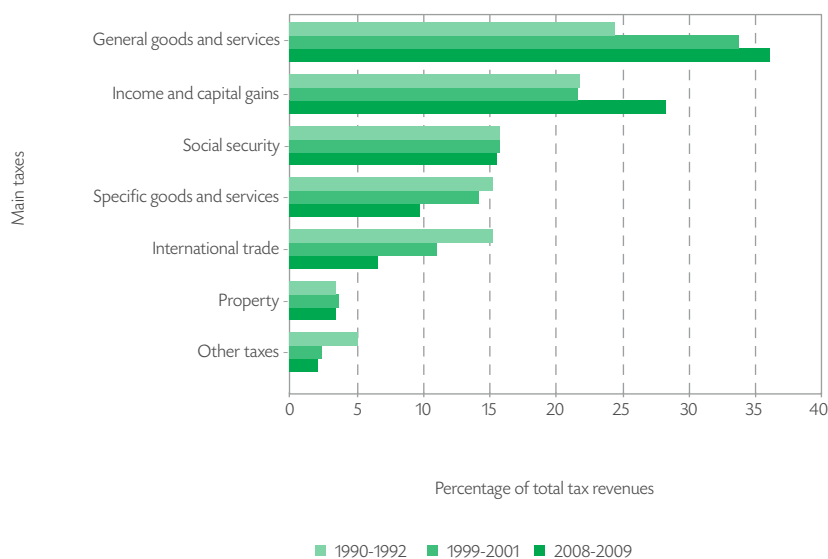
a/ The sample of countries matches the information presented in Table 4.1 (see p. 139). The share of each tax in total tax revenues is calculated as a simple average.
Source: Gómez-Sabaíni and Jiménez (2011).

In spite of the fact that strengthening of these two taxes (general consumption/VAT and income taxes) has been a common feature of the tax structures of all Latin American countries, this phenomenon has been more significant where the growth in tax collection has been more dramatic. As shown in Table 4.2 (see p. 151), in Brazil and Argentina, where tax collection increased by more than 10% of GDP, these two taxes now account for almost 60% of total tax revenues. Similarly, these two taxes also account for a large share of total public revenues in Chile (over 70%), although the increase in tax collection was not particularly significant over the last two decade (2% of GDP). Among smaller economies with a significant rise in total tax collection based on general consumption and income taxes, Bolivia stands out, with a 12% increase in tax collection between 1990-1992 and 2007-2009 (although largely based on taxes on income and profits).

Another important phenomenon in changes to the tax structure in the region is the reduction of taxes on international trade. As a result of the trade liberalization policies, taxes on external trade have dropped by 55% as a share of total tax revenues, from an average of 13.6% in 1990-1992 to 6.1% in the period of 2008-2009, with the majority of the decline occurring in the 1990s (see Figure 4.1, p. 140). Notwithstanding this general trend, it is worth noting that some countries (e.g., Argentina) have recently reinstalled these taxes, especially those on exports, with the aim of taxing natural resource-intensive activities.

Sale or production taxes on specific goods and services (i.e., selective consumption taxes) also saw relative declines within the average general tax structure, from 14.5% of total tax collection during 1990-1992 to 9.1% in 2008-2009. Most of this decline occurred in the last decade as a consequence of the trend toward the consolidation of general consumption taxes.

Finally, social security contributions also represent a significant share of tax revenues within the regional average. Moreover, their share has remained fairly stable within the Latin America tax structure at around 17% of total tax revenues, which was equivalent to an increase from 2.5% of GDP to 3.1% since 1990. As shown in Table 4.2, this type of tax has a greater relative importance in countries characterized by a relatively high tax burden (i.e., Argentina, Brazil, Costa Rica, and Uruguay), which collect up to three or four times more as a percentage of GDP compared to countries with lower tax burdens (Guatemala, Honduras, and Paraguay). It is clear that trend is also positively correlated with the level of formality of economic activity, and in particular of employment, in these different economies.[19]

Table 4.2 Dynamics of the tax structure for selected Latin American countries[a/] (1990-2009)

Country	Tax type	Tax revenue by tax type				
		Share in total tax collection (percent)		Share in GDP (percent)		Change (percent of GDP)
		1990-1992	2008-2009	1990-1992	2008-2009	1990-2009
Argentina	Income and capital gains	6.6	16.5	1.2	5.1	3.9
	General on goods and services	30.3	34.9	5.7	10.9	5.1
	Other taxes	37.6	29.7	6.8	9.3	2.5
	Social security	25.5	18.9	4.7	5.9	1.2
Bolivia	Income and capital gains	8.7	23.0	0.9	5.1	4.2
	General on goods and services	50.3	43.1	5.3	9.5	4.3
	Other taxes	28.8	25.6	3.0	5.7	2.7
	Social security	12.2	8.2	1.3	1.8	0.6

19. In addition, cross-country differences in the collection of social security contributions are also explained by the adoption of private capitalization schemes. For example, in Chile, the significant downturn in the contributions to the social security observed between 1990-1992 and 2008-2009 is associated with the expansion of private pension funds as the main retirement system.

Country	Tax type	Tax revenue by tax type				
		Share in total tax collection (percent)		Share in GDP (percent)		Change (percent of GDP)
		1990-1992	2008-2009	1990-1992	2008-2009	1990-2009
Brazil	Income and capital gains	17.1	22.5	4.1	7.7	3.7
	General on goods and services	37.5	37.3	8.9	12.8	3.9
	Other taxes	19.6	14.6	4.6	5.0	0.4
	Social security	25.8	25.6	6.1	8.8	2.7
Chile	Income and capital gains	18.9	31.9	3.3	6.1	2.9
	General on goods and services	40.8	43.7	6.9	8.3	1.4
	Other taxes	31.6	16.5	5.3	3.1	-2.2
	Social security	8.7	7.9	1.5	1.5	0.0
Colombia	Income and capital gains	32.0	35.1	3.5	5.3	1.8
	General on goods and services	29.5	35.5	2.8	5.4	2.5
	Other taxes	30.1	14.4	3.2	2.2	-1.1
	Social security	12.0	13.4	1.3	2.0	0.7
Costa Rica	Income and capital gains	9.9	19.0	1.7	4.3	2.6
	General on goods and services	25.9	26.5	3.7	5.9	2.2
	Other taxes	35.2	23.2	6.0	5.2	-0.9
	Social security	33.4	31.6	5.7	7.0	1.3
Dominican Republic	Income and capital gains	25.3	24.6	2.1	3.5	1.3
	General on goods and services	16.3	31.5	1.4	4.4	3.0
	Other taxes	58.4	43.6	5.1	6.1	1.0
	Social security	1.2	0.6	0.1	0.1	0.0
Ecuador	Income and capital gains	13.7	27.0	1.4	4.6	3.2
	General on goods and services	29.2	32.5	2.9	5.5	2.6
	Other taxes	31.4	17.4	3.2	3.0	-0.2
	Social security	25.7	23.1	2.6	3.9	1.3
El Salvador	Income and capital gains	19.6	31.4	2.1	4.5	2.4
	General on goods and services	30.0	43.7	3.3	6.3	3.0
	Other taxes	37.5	13.4	4.1	1.9	-2.1
	Social security	12.9	11.5	1.4	1.6	0.2
Guatemala	Income and capital gains	26.6	29.0	2.4	3.2	0.9
	General on goods and services	30.3	46.6	2.6	5.2	2.6
	Other taxes	43.2	21.6	3.8	2.4	-1.4
	Social security	0.0	2.7	0.0	0.3	0.3
Honduras	Income and capital gains	24.9	30.1	3.3	4.8	1.5
	General on goods and services	18.1	36.2	2.4	5.8	3.4
	Other taxes	52.6	26.3	7.0	4.2	-2.8
	Social security	4.4	7.4	0.6	1.2	0.6

Country	Tax type	Tax revenue by tax type				
		Share in total tax collection (percent)		Share in GDP (percent)		Change (percent of GDP)
		1990-1992	2008-2009	1990-1992	2008-2009	1990-2009
Mexico	Income and capital gains	35.1	48.5	4.4	5.2	0.8
	General on goods and services	23.6	33.5	3.0	3.6	0.7
	Other taxes	23.9	3.0	3.0	0.4	-2.7
	Social security	17.5	15.0	2.2	1.6	-0.6
Panama	Income and capital gains	27.3	30.0	4.1	5.0	0.9
	General on goods and services	9.6	13.7	1.4	2.3	0.8
	Other taxes	34.4	22.2	5.2	3.7	-1.5
	Social security	28.8	34.2	4.3	5.7	1.4
Paraguay	Income and capital gains	13.2	19.0	1.3	2.6	1.3
	General on goods and services	4.8	45.4	0.5	6.2	5.7
	Other taxes	75.6	26.0	7.4	3.6	-3.9
	Social security	6.4	9.7	0.6	1.3	0.7
Peru	Income and capital gains	8.2	38.4	1.1	6.2	5.1
	General on goods and services	19.0	37.4	2.5	6.1	3.5
	Other taxes	60.3	13.0	7.8	2.1	-5.7
	Social security	12.5	11.3	1.7	1.8	0.1
Uruguay	Income and capital gains	5.4	19.7	1.2	4.8	3.6
	General on goods and services	27.8	34.7	6.3	8.5	2.3
	Other taxes	29.8	18.3	6.7	4.5	-2.2
	Social security	37.0	27.4	8.3	6.7	-1.6
Venezuela, BR	Income and capital gains	78.0	39.9	13.7	5.8	-7.9
	General on goods and services	0.0	36.9	0.0	5.3	5.3
	Other taxes	16.8	17.2	2.8	2.5	-0.3
	Social security	5.2	6.0	0.9	0.9	0.0

a/ The data corresponds to a general average of government in Argentina, Bolivia, Brazil, Chile, Colombia and Mexico and to the central government in the other countries. The classification of other taxes includes property taxes, specific taxes on goods and services, taxes on international trade and financial transactions.

Source: Gómez-Sabaíni and Jiménez (2011) and CEPALSTAT (2011).

Taxes on financial transactions and on natural resource extraction

Beyond the trends in the main tax categories described above, a defining feature of tax policy in Latin America has been the compensation of deficiencies in the overall level of the tax burden through the creation of taxes that increase revenues in the short-term with low political costs, and that are relatively simple to manage and administer. These include taxes on financial transactions and on the exploitation of natural resources.

Taxes on financial transactions

Taxes on financial transactions have grown significantly over the past decade, particularly in Argentina, Brazil, Colombia, and the Bolivarian Republic of Venezuela.[20] The use of these taxes as an easy source of public revenues is based on several factors, notably that (i) they can be put into effect in a relatively short period of time and with low administrative costs, given that financial institutions can act as effective withholding agencies, thus requiring little preparation and no cooperation from the taxpayers; (ii) a low tax rate can raise a significant amount of revenues, since debits and credits within the financial system is usually a multiple of the GDP, especially if the rate is low and the tax is not permanent; and (iii) this tax may have low political costs as an indirect tax that does not directly impact household's disposable income.

Currently this type of tax is applied in seven countries in the region, and, according to the taxable items, it can be classified into two groups (González *et al.*, 2009): i) taxes on financial transactions debits (e.g., in Colombia, the Dominican Republic, and the Bolivarian Republic of Venezuela); and (ii) taxes on checking account debits and credits and other operations in the financial system (e.g., in Argentina, Bolivia, Brazil, and Peru). In addition, in order to avoid evasion, in Argentina, Brazil, Peru, and the Bolivarian Republic of Venezuela, the movement of funds through organized systems of payment is also taxed.

The revenue raised from these taxes on financial transactions has made a considerable contribution to raising tax revenues in some countries. Table 4.3 shows their share within total tax revenues, which rose to more than 7% in Argentina and exceeded 5% in Brazil, Colombia, and the Bolivarian Republic of Venezuela.

Table 4.3 Revenues from financial transactions taxes in selected Latin American countries (2008)

Country	Tax revenue	
	Percentage of GDP	Percentage of total
Argentina[a/]	1.89	7.15
Bolivia	0.28	1.20
Brazil[a/ b/ c/]	1.40	5.75
Colombia[d/]	0.67	5.01
Peru	0.31	1.95
Venezuela, BR	0.91	6.74

a/ Central government only.
b/ The Provisional Financial Transaccion Contribution (PFTC) came back into force in 2011, after having been repealed on January 1st 2008.
c/ Data corresponds to 2007.
d/ Recently, the rate of the tax on financial transactions has been progressively reduced with the aim of eliminating entirely.

Source: Gómez-Sabaíni and Jiménez (2011) based on Coelho (2009).

---

20. Coelho (2009) shows that the use of these taxes has also spread to Asia and the Pacific.

Despite its advantages in terms of revenue generation and the low cost of collection, this type of tax may negatively impact economic efficiency through various channels: i) in terms of production, it encourages vertical integration (transactions within the company for tax evasion); (ii) in terms of consumption, it increases the relative price of goods with multiple productive stages, namely, goods that are intensive in intermediate goods or that require a greater rotation of financial resources; (iii) the most negative consequences could appear in the long-term, since, if sustained over a long period of time, the tax would tend to encourage financial disintermediation. This, in turn, would generate productive and welfare costs throughout the economy as a whole (for firms and households), and could also complicate the management of and compliance with other taxes since the use of the financial system and the information it provides is crucial to monitoring and facilitating the payment of taxes.[21]

The question then arises as to why, despite these disadvantages, some countries have implemented this type of tax. The answer lies in the fact that the most important costs occur over the long-term, while the benefits of the increased revenues are enjoyed in the short-term. In this context, the losses in terms of efficiency costs naturally tend to be underestimated in times of public financial crises.

The role of fiscal revenues obtained from natural resource-based activities

Several countries have followed a second path to improving the level of public revenues, based on both tax and non-tax revenues from the production and export of natural resources, particularly non-renewable resources (such as hydrocarbons). As previously mentioned, the sharp increase in the collection of taxes on company income and profits is in part due to the expansion of production and export of these natural resources over the last decade.

As it will be seen, given the extraordinary rents generated by these sectors (with revenues far exceeding extraction costs, including the opportunity cost of capital), the direct efficiency costs associated with these taxes would not be significant. At the same time, the existence of these fiscal resources could involve more general efficiency costs by encouraging "fiscal laziness" (i.e., deterring the improvement of the tax structure and administration) and may likely also affect the quality of spending and governance, as will be discussed in detail in chapter 6 (see also chapter 5). In the case of the latter, the presence of alternative sources of revenues may weaken the relationship between the demand for public goods and the need to collect taxes to finance them, weakening the incentives of citizen-taxpayers to monitor the authorities' spending decisions.

In countries with extensive non-renewable resources (e.g., gas, oil, minerals), the most direct way in which governments can appropriate fiscal resources has been through intervention in the process of extraction, either through public enterprises or shareholding. Alternatively, governments could employ other mechanisms to extract income from these activities, such as through royalties (usually a tax applied to the value of production). In many cases, a traditional tax on firm profits is also employed, establishing special rates for firms operating in these industries.

Table 4.4 (see p. 156) shows that the fiscal revenues from the exploitation of primary products (renewable and non-renewable) have increased in terms of GDP in all countries relative to those in 1990-1992, and es-

---

21. In a quantitative analysis, Erosa (2001) shows that a tax on financial transactions generates more significant distortions than a tax on capital, since the former affects individual occupational decisions, as people prefer to invest their savings in a business rather than in the acquisition of financial assets (i.e., deposits).

pecially relative to the early 2000s, when revenues were minimal as a result of very low international prices.[22] The table also shows interesting variations among countries, depending on whether revenues come from taxes (corporate or export taxes) or non-tax resources (e.g., royalties, distributed profits of public companies exploiting natural resources, or shares in private companies). For example, Argentina, Bolivia, and Peru use primarily tax instruments; however, the Bolivarian Republic of Venezuela, Mexico, Ecuador, and Chile have, in general, traditionally employed various non-tax instruments to raise revenues, through dividends and other transfers from public enterprises responsible for natural resource extraction. In the case of the Bolivarian Republic of Venezuela, a strong shift in the composition of these revenues can be seen between 1990-1992 and 2007-2009, with significant growth in non-tax revenues. Currently, Venezuela has the highest public revenues in Latin America (17% of GDP) thanks to these non-tax instruments.

Table 4.4 Fiscal revenues from commodity taxation as a proportion of GDP in selected Latin American countries (1990-2009)

Country	Income	1990-1992	1999-2001	2007-2009
Argentina	Tax	0.5	0.0	2.9
	Others	0.0	0.0	0.0
	Total	0.5	0.0	2.9
Bolivia	Tax	1.1	2.8	7.5
	Others	6.8	2.3	3.1
	Total	7.9	5.1	10.6
Chile	Tax	0.0	0.0	0.0
	Others	2.8	0.6	3.4
	Total	2.8	0.6	3.4
Colombia	Tax	0.2	0.1	1.2
	Others	0.7	1.0	1.4
	Total	0.9	1.2	2.6
Ecuador	Tax	0.0	0.0	0.0
	Others	9.8	7.2	11.1
	Total	9.8	7.2	11.1
Mexico	Tax	0.6	1.4	0.0
	Others	5.7	4.7	8.0
	Total	6.3	6.1	8.0
Peru	Tax	0.0	0.2	1.9
	Others	0.0	0.0	0.0
	Total	0.0	0.2	1.9
Venezuela, BR	Tax	12.7	3.0	2.9
	Others	4.5	5.7	13.3
	Total	17.2	8.7	16.2

Source: Gómez-Sabaíni and Jiménez (2011).

22. The estimations presented in Table 4.4 also include taxes on production or on agricultural products (especially for Argentina). Nonetheless, the differences between these estimations and those presented in Chapter 6 (where only non-renewable resources are taken into account) can be explained by the fact that, in this chapter, revenues are calculated for the central government (ECLAC, 2011), while in chapter 6 the estimations are calculated for the non-financial public sector, consolidating public enterprises into the state apparatus. (Villafuerte *et al.*, 2010; Perry *et al.*, 2011).

The observed rise in revenues was motivated, in part, by measures to strengthen taxation in this industry due to the accelerated growth of international commodity prices over the past decade. For example, Bolivia, Chile, and the Bolivarian Republic of Venezuela created new taxes on the commercialization of these products. Argentina, taking advantage of the greater relative profitability obtained from the devaluation after the convertibility regime, decided to tax primary commodities exports, including oil and agricultural exports.

It is generally thought that the impact of these taxes on economic efficiency is relatively low. Given that these taxes are charged on the production of goods that intensively use non-renewable resources (that is, with little value added), high rates do not generate significant distortions, given the low production elasticity.[23] In this case, taxes permit the state to appropriate a significant part of the rents associated with the exploitation of this non-renewable resource (of course, this occurs automatically when the state directly manages production).

Apart from considerations of productive efficiency, there are two important factors that must be taken into account when evaluating these kinds of fiscal revenues. First, it is important to consider what to do when these resources are exhausted because the lack of revenues from the exploitation of these resources will require a strong adjustment in the level of spending or an increase in other tax revenues. Second, it is also important to decide how to manage the volatility of public revenues stemming from the cycle of commodity prices.

The first factor involves the problem of intergenerational equity because the decline in revenues will affect future generations through lower levels of spending or higher taxes. The second factor is the problem of price fluctuation, which will significantly affect tax revenues and thus requires appropriate anti-cyclical management of public finances. The public policy challenges associated with natural resources will be treated in greater detail in chapter 6.

IS THE TAX EFFORT IN LATIN AMERICA LOW? PROBLEMS WITH THE TAX STRUCTURE AND COMPLIANCE

Tax systems in the region have had trouble providing sufficient resources to the state, while at the same time not compromising objectives of efficiency and equity. Below, we review the evidence on the problem of the low tax effort in Latin America and then explore links to two closely related issues: (i) that tax structures that are too biased towards indirect taxes; and (ii) high levels of tax evasion.

Weak tax effort

The tax effort in Latin America is below what is expected given the region's level of economic development. This conclusion is clear from the evidence presented in Figure 4.2, which shows the relationship between total tax burden (as a percentage of GDP) and per capita income for a sample of 96 countries, including both developed (OECD) and developing economies.[24] As can be seen, this relationship is positive, suggesting

---

23. As indicated, in the short-term the low elasticity of supply (for a given level of existing reserves) implies low efficiency costs with such taxes (production is not significantly altered). Nevertheless, in a more dynamic context, where reserves are not fixed but rather depend on exploration and technological development, supply becomes more elastic to the level of taxes. If taxes are very high, they could discourage these activities, affecting the possibilities for future expansion of production.

24. For those countries where the information is available, the tax collection corresponds to the general government (central administration and subnational levels).

that the proper functioning of tax institutions and the capacity of the state to collect revenues increases with countries' wealth. One way to interpret this correlation is that higher levels of per capita income (generated by factors such as technological development and increases in investment and savings) are associated with greater demand for public goods and higher state capacity to collect taxes to meet these demands. In turn, the higher level of taxes and public spending reinforces higher per capita GDP, as public goods may positively affect the level of productivity (e.g., through more infrastructure). This positive effect outweighs the negative impact that taxes may have on efficiency and, consequently, on long-term income.

However, the relationship between per capita GDP and the tax burden is positive but non-linear (concave), suggesting that there is a limit to the growth of share of the tax revenues within the economy. This limit could be related to a less elastic growth of the demand for public goods in high-income countries, or to the growing distortions (efficiency costs) when tax collection increases beyond a certain threshold (e.g., exceeding 35% of GDP).

Figure 4.2 shows that most Latin American economies are below the mean line, indicating that for their level of development, their tax burden is lower than expected. As can be seen, Brazil is the only country in Latin America located significantly above the average.

Figure 4.2 Tax burden[a/] and GDP per capita for selected countries (several years)
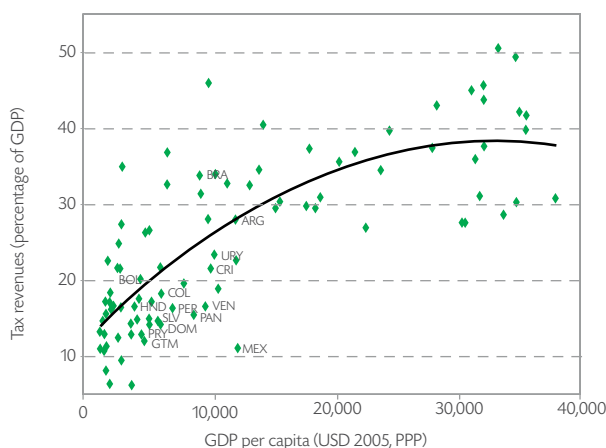
a/ Tax revenues include social security contributions to public institutions.
Source: own calculations based on Pessino and Fenochietto (2010).

The previous conclusion is maintained when tax collection is related to other structural features of the economy that might also determine the potential level of tax revenues, such as openness to trade, the level of

urbanization, and the share of agriculture in total employment.[25] Figure 4.3 shows the relationship between the actual tax collection and that predicted by a regression that includes all the determinants discussed above (i.e., "potential" tax revenues). As it can be seen most of the Latin American countries, except Brazil, are located below the 45-degree line, indicating that the tax collection is also lower than what is expected when accounting for the above-mentioned variables.

Figure 4.3 Current and potential tax burden[a/] for selected countries (several years)
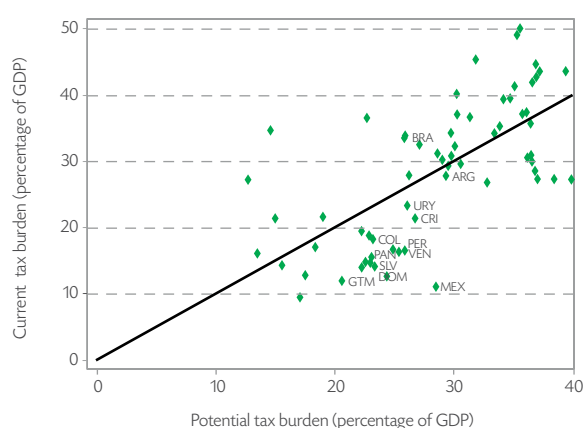
a / The current tax burden is expressed as a percentage of GDP; the potential tax burden is the predicted value obtained from the following linear regression: tax revenue = constant + a log (GDP) + b (urban) + c (agriculture) + d (trade openness). Log (GDP) is the log of the PPP adjusted GDP per capita , urban is the index of urbanization, agriculture is the share of agricultural employment in total employment and trade openness is international trade as a percentage of GDP.

Source: own calculations based on World Bank WDI (2011) and Pessino and Fenochietto (2010).

Rather than comparing the collection of each country with the average of those with similar income levels (or other variables), an alternative methodology, known as the frontier approach, consists of making comparisons with those cases (nations) using current best practices in terms of the variables of interest. This methodology was already used in chapter 3 to assess the efficiency of public spending on health and education. Here we use it to assess the level of tax collection.

---

25. The inclusion of these other variables is meant to increase the accuracy of the econometric model that attempts to measure the capacity to collect taxes as a function of the structural characteristics of economies. For example, both the degree of urbanization and the size of the agricultural sector are two ways to control for the costs of monitoring and enforcing compliance with tax obligations. Collection is less expensive when the population is concentrated in urban economic activities compared to rural ones, which also have a higher likelihood of being informal (outside public registers and the financial system). Furthermore, when a large fraction of production is oriented towards external markets, authorities will most likely have records (through customs) of commercial operations, facilitating taxation. Finally, a structural aspect that has not been analyzed here, but that will be discussed in Table 4.5, is income inequality. The relation between this determinant and the tax effort is complex. We can only anticipate that a highly concentrated income distribution may give high-income individuals and enterprises more opportunities to organize themselves in order to avoid being taxed.

Table 4.5 shows the estimations of the tax effort following the frontier methodology for a sample of Latin American countries, on the basis of the estimations presented in Pessino and Fenochietto (2010). These authors include within the determinants of potential tax revenue collection, not only per capita income, but also the level of the openness to trade, the value-added of the agricultural sector, the average level of education, and the distribution of income.[26] The previous conclusion that Latin American countries collect fewer taxes than expected is indeed reinforced by the evidence presented in Table 4.5. On one hand, Brazil shows a level of tax effort that is very close to its theoretical value (this is also true to a lesser extent in the case of Uruguay); on the other hand, countries such as Guatemala or the Dominican Republic have levels of tax collection that are half or less of what corresponds to the 'best practice' cases, given their level of development and their economic structure.

Table 4.5 Tax effort for selected Latin American countries (several years)

Country	Year	Tax burden (percentage of GDP)	Estimated tax effort (actual revenues as % of the potential level)
Argentina	2006	27.4	63.9
Brazil	2006	34.2	98.4
Bolivia	2006	26.6	67.8
Colombia	2003	19.6	73.6
Costa Rica	2006	22.2	67.9
Dominican Republic	2005	14.2	48.5
El Salvador	2006	15.3	54.3
Guatemala	2005	10.7	38.7
Panama	2001	14.3	46.8
Paraguay	2006	15.3	63.7
Peru	2005	15.3	56.9
Uruguay	2006	25.0	89.0
Median of low-income countries		13.9	77.6
Median of lower middle-income countries		16.5	63.2
Median of upper middle-income countries		26.8	77.2
Median of high-income countries		36.0	78.4

Source: Pessino and Fenochietto (2010).

26. The determinants of the potential level of tax revenues are very similar to those mentioned in the regression model presented in Figure 4.3. In this case, the Gini index and the level of education are also included. The results obtained in the estimations using this methodology suggest a negative relation between the level of inequality and the tax effort.

Bias towards indirect taxation: The low use of direct taxes on income and wealth

The weak tax effort in the region is partly due to a tax structure that does not take full advantage of income and wealth taxes on companies and household, and instead depends in greater measure on indirect taxes on the consumption of goods and services.[27] Certainly, as it was shown in chapter 2, this also means that tax systems in Latin America do not fulfill an important role in terms of their ability to redistribute income.

The greater share of indirect taxes within total tax revenues is partially explained by the expansion of the VAT tax base and aliquots, making this tax the main source of revenues for most countries in the region. Figure 4.4 shows how the VAT has increased from an average of 10.9% in the mid-1980s to 14.7% in 2009.

Figure 4.4 Evolution of the income and VAT tax rates in Latin America (from 1980s to 2009)

Source: Gómez-Sabaíni and Jiménez (2011).

Beyond the changes to the VAT, the bias towards indirect taxation is also associated with changes in the rate structure and with other features of the regulations around income taxes. In this sense and in line with the global trend towards liberalization of capital movements, Latin America reduced the aliquots of income taxes, both on individuals and enterprises. As shown in Figure 4.4, between the mid-1980s and 2009, marginal maximum rates were almost halved, from 49.6% (for companies) and 43.3% (for individual persons) to around 27% in both cases.

As shown in Table 4.6 (see p. 162), the reduction of the maximum rates for personal income tax in Latin American countries has been much greater than the average reduction in OECD countries, which have maintained the maximum personal income tax rates at levels exceeding 40%.

27. The lower use of direct taxes is justified not only by lower efforts in charging taxes on income and profits, but also by the under-utilization of taxes on wealth; for example, the very low revenues generated by taxes on real estate property, a tax that in many countries of the region falls under the responsibility of subnational governments.

Table 4.6 Average legal income tax rate in Latin America and OECD (2007)

Tax type	Average legal rates (percentage)	
	Latin America	**OECD**
Individuals	28.2	40.6
Corporations	28.4	27.7

Source: Gómez-Sabaíni and Jiménez (2011).

In practice, the revenues collected through income and wealth taxes in the region are below what would be expected given the level of development and economic structures of Latin American countries. Figure 4.5 illustrates an exercise similar to that for the total level of tax collection (Figure 4.3), but, in this case, is restricted to income tax. As shown, most of Latin American economies are below the 45-degree line, indicating that the revenues collected (as a percentage of GDP) are less than the potential, as determined by per capita GDP, urbanization, openness to trade, and the share of total employment in agriculture. This evidence once again suggests a low effort to employ this type of tax as a source of fiscal revenue in Latin America.

Figure 4.5 Revenues from income taxes on individuals and businesses, current and potential values[a/] for selected countries (2005-2007)
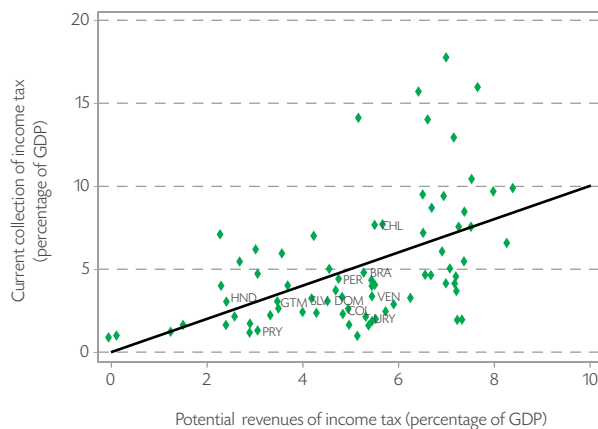
a / Current tax revenues correspond to taxes on income and profits as a percentage of GDP in 2006; potential collection is the value predicted by the following linear regression: tax revenues = constant + a log (GDP) + b (urban) + c (agriculture) + d (trade liberalization), where log (GDP) is the log of the PPP adjusted GDP per capita, urban is the index of urbanization, agriculture is the share of agricultural employment in total employment and trade openness is international trade as a percentage of GDP.

Source: own calculations based on World Bank WDI (2011).

Some countries, like Chile, seem to stand out in terms of the efforts made to collect these taxes; nevertheless, as Table 4.7 shows the largest portion of income tax comes from taxes on company profits. Indeed, companies contribute an average of 3.6% of GDP, representing more than 70% of total revenues generated by this tax in Latin America and more than double the revenues collected from personal income taxes (1.4% of GDP). In contrast, in OECD countries, the revenues obtained from personal income taxes represent 70% of total revenues (9% of GDP), while taxes on company profits account for the remaining 30% (3.9% of GDP). This characteristic of the structure of income taxes in Latin America clearly eliminates the potential redistributive role of the tax system, since firms' final tax contributions are uncertain and depend on market circumstances.

In addition to personal income tax rates, there are several other reasons associated with a narrow tax base that explain the poor functioning of this type of tax in Latin America. Among these, a highly concentrated income distribution, high levels of poverty and of informality are all important constraints to the tax base. Indeed, the narrow tax base results in part from a relatively small proportion of formal sector workers and thus a relatively low level of salaries within the total value-added for Latin American countries. In addition, high rates of poverty mean that a large proportion of employed people receive incomes that are below the threshold at which income taxes are charged. Further, the maximum aliquots reach only a small number of taxpayers. As can be seen in Table 4.7, the minimum income falling into the maximum rate is equivalent to 10 times the per capita income of most countries in the region, whereas this level is only three times the per capita GDP in OECD countries.

Table 4.7 The structure of income tax in selected Latin American countries and the OECD (several years)

| Country | Year | Companies | | Individuals | | | Total (percentage of GDP) | Companies/ individuals |
		Maximum rate	Revenue (percent of GDP)	Maximum rate	Revenue (percent of GDP)	Minimum income required for maximum tax rate (in terms of GDP per capita)		
Argentina	2007	35.0	3.6	35.0	1.6	3.3	5.4	2.3
Bolivia	2007	25.0	3.0	n.a.	0.2	n.a.	3.3	15.0
Brazil	2007	34.0	5.1	27.5	2.6	2.4	7.7	2.0
Chile	2007	17.0	7.3	40.0	1.2	11.0	8.4	6.1
Dominican Republic	2007	25.0	2.9	n.a.	1.1	n.a.	4.0	2.6
Ecuador	2006	25.0	2.3	25	0.8	n.a.	3.1	2.9
El Salvador	2007	n.a.	2.7	n.a.	1.9	n.a.	4.6	1.4

Country	Year	Companies		Individuals			Total (percentage of GDP)	Companies/ individuals
		Maximum rate	Revenue (percent of GDP)	Maximum rate	Revenue (percent of GDP)	Minimum income required for maximum tax rate (in terms of GDP per capita)		
Guatemala	2007	31.0	2.9	31.0	0.3	13.1	3.4	9.7
Honduras	2004	n.a.	3.7	n.a.	1.6	n.a.	5.3	2.3
Mexico	2005	30.0	2.4	30.0	2.2	3.4	4.6	1.1
Panama	2006	30.0	2.9	27.0	2.0	4.0	5.0	1.5
Peru	2007	30.0	5.9	30.0	1.4	13.1	7.2	4.2
Uruguay	2007	n.a.	2.6	25.0	1.0	10.0	3.5	2.6
Latin America[a/]		**28.2**	**3.6**	**30.1**	**1.4**	**7.1**	**5.0**	**2.6**
OECD	**2006**	**28.1**	**3.9**	**42.6**	**9.2**	**3.3**	**13.1**	**0.4**

a / Simple average.
n.a.: not available.

Source: Gómez-Sabaíni and Jiménez (2011) and KPMG (2011).

The previous argument must also consider the high levels of non-compliance and tax evasion from independent or autonomous workers (see next section), who are much more difficult to monitor for the tax authorities.

In addition to the problems that affect the collection of taxes applied to wage incomes, generous preferential treatment for capital income must also be considered. These rents are either totally tax-free or are subject to extremely low effective rates, explaining the almost non-existent taxing of these non-wage sources of household income.

The evolution of income taxation from a historical perspective

The limitations on the effective collection of income taxes (especially charged to individuals) imposed by both the structure and degree of development have led many to question the wisdom of centering efforts of tax collection on improving this tax. The evidence presented in Figure 4.5 suggests that Latin American countries are making less effort to do so than other developing nations with similar levels of income and a similar economic structure. This is also true when comparing the region with currently developed countries when they had levels of per capita income similar to current levels in Latin America.

In other words, the low tax burden –particularly in terms of income taxes and especially personal income taxes– has characterized the region for decades. The rapid growth and higher levels of development reached in recent times by Latin American countries have not substantially changed this situation, resulting in an important deficit in terms of the evolution of tax institutions and public policies.

To understand and document this phenomenon, it is helpful to review long-term data on the evolution of the tax structures of Latin American countries and compare with that of developed economies. Using historical information ranging from 1925 to 2008, the left panel of Figure 4.6 shows the average (together with the maximum and minimum) share of income taxes for individuals and companies in the total tax burden for selected Latin American countries (Argentina, Brazil, Chile, Colombia, and Peru). The information is plotted for different ranges of per capita income (from $1,000 to 13,000 USD per capita, PPP adjusted and using 1990 prices). The right panel shows the same information for the United States and Canada.[28]

The long-term perspective allows comparisons of the evolution of the tax structure for both groups of countries along the development path. The chosen income brackets allow for comparisons of similar levels of income, though in most of cases, the time period when each group of countries reaches a given level of per capita GDP does not coincide. For example, Canada and the United States had per capita incomes between $4,000 and 5,000 USD between 1925-1935; in Latin America, in the same period, only Chile and Argentina had similar incomes (between $3,000 and 4,000 USD), while Brazil, Colombia, and Peru only reached a comparable level of income forty years later (1976-1985).

Figure 4.6 Average share of personal and corporate income taxes in total tax revenues in Latin America, the U.S. and Canada by per capita income[a/]
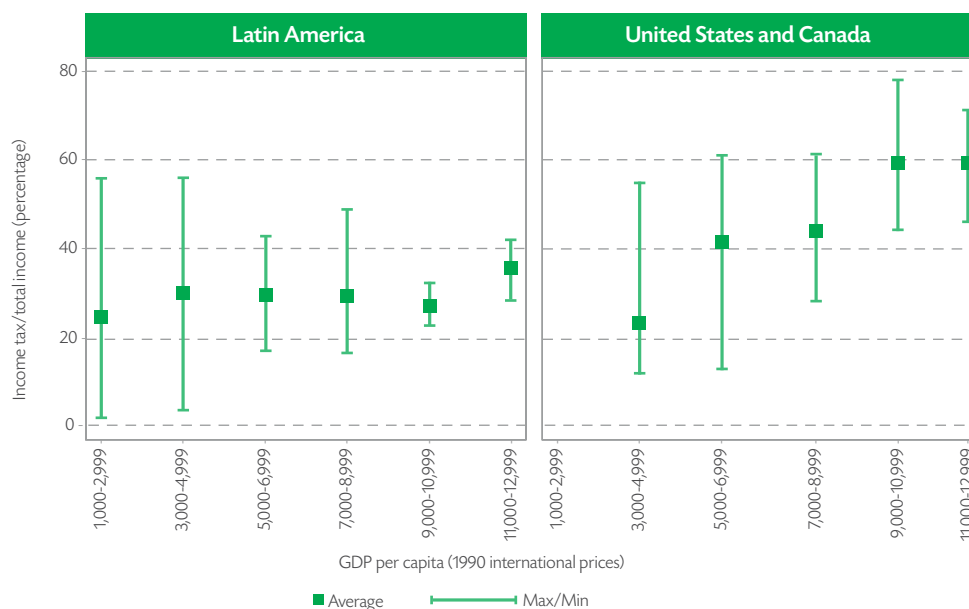
a / The Latin American countries in the sample are Argentina, Brazil, Chile, Colombia and Peru. Using data for the period between 1925 and 2009. The average is calculated using observations country / year for each income range.

Source: Mitchell (1992), International Monetary Fund (2011), Gomez-Sabaíni and Jiménez (2011) and CEPALSTAT (2011).

28. The comparisons are not substantially modified when Spain is included in the group of developed countries.

The analysis of the evolution of tax structures for different ranges of per capita income shows important contrasts. In Latin America, the share of income and wealth taxes on total tax revenues remains stable, with only very modest growth (the average increases from 24% for income levels of $1,000 to 3,000 USD to 35% for incomes between $3,000 and 5,000 USD). In the United States and Canada income taxes represent around 30% of total tax collection for incomes between $3,000 and 5,000 USD (very similar to Latin America). Nonetheless, a sharp increase of this share is observed as these economies develop, reaching 60% for the highest income range (almost doubling the proportion observed in Latin America for the same level of income).[29]

What explains this relative underdevelopment of the income taxes in Latin America relative to North America? Sokoloff and Zolt (2007) analyze this question through an exhaustive historical analysis that covers one hundred years, between 1850 and 1950. The authors show that between 1870 and 1880, in terms of per capita income, Canada and the United States were not much more developed economies than their Southern neighbors, although their income distributions were much less concentrated than those in Latin America. At the same time, that concentration of wealth was determined by the nature of the economic activities that dominated Latin America at the time. Specifically, plantation-based production, characterized by economies of scale with the use of semi-slave labor (e.g., sugarcane production in Central America and Brazil), the use of licenses and a labor regime for the extraction of mineral resources (e.g., silver in Bolivia and Peru), and unequal access to land for agricultural production since colonial times in Southern cone countries (e.g., Argentina). In contrast, in the north of the United States and Canada, the abundance of land and the use of technologies for agricultural production that required little capital (i.e., requiring low economies of scale) permitted the proliferation of independent producers and limited the concentration of wealth and income.[30]

According to the authors, these characteristics negatively affected the development of a host of institutions in Latin America that are crucial for economic growth and political development. For example, it delayed the extension of voting rights and access to public education, as well as the implementation of income taxes that could generate sufficient resources to finance higher demand for public goods and services (Engerman *et al.*, 2002; Engerman and Sokoloff, 2005).[31]

The connection between inequality in the distribution of income and wealth and the failure to establish a progressive tax system was already developed in chapter 1. The basic argument states that in presence of a weak democratic and institutional framework, income levels effectively determine access to political rights. In these circumstances, high-income and privileged groups have disproportionate political power, which they use to impose conditions that benefit themselves. These mechanisms lead to a regressive design of the tax structure.

Evasion

An additional and complementary factor behind the low tax effort in Latin America is the pervasive problem of tax evasion. Non-compliance with tax obligations not only affects the overall level of tax revenues,

---

29. The historical evidence of the low share of income tax in tax revenues coincides with a much smaller level of total tax revenues and public expenditures in Latin America, relative to US and Canada. Thus, it follows that this failure in the development of tax institutions in part explains the lower tax effort in the region.

30. Undoubtedly, in the south of the United States, local economies also functioned based on natural resource extraction (e.g., tobacco and rice), with high demands for employment that were mostly satisfied by slave work. In fact, the hypothesis that there is a negative correlation between income and wealth inequality and the use of direct taxes (e.g. taxes on property) is also verified for the United States (Sokoloff and Zolt, 2007).

31. Note that this conclusion comes from a historical analysis, which is consistent with the econometric evidence obtained for a wide sample of countries in recent years, where high levels of inequality in income distribution are associated with a low tax effort (see Pessino and Fenochietto, 2010).

but also changes the distributive impact of the tax system, affecting both horizontal equity (equal treatment of those in equal circumstances) and vertical equity (unequal treatment of those in different circumstances). With respect to horizontal equity, evasion may allow individuals with the same payment capacity to face different tax burdens. Vertical fairness can also be affected since the people with a greater contributive capacity may have more opportunities to hire professional consultants and use other mechanisms to avoid complying with their tax obligations.

In addition, high levels of tax evasion not only alters these principles of fairness but could also threaten social cohesion by reducing confidence in the state and diminishing tax morale, which in turn reinforces non-compliance and evasion.

Most countries in Latin America do not measure tax evasion on a consistent and regular basis. This, of course, hinders the possibility of using this type of information to fix goals for reducing tax evasion and for monitoring the effectiveness tax administration. In addition, in the limited cases where an effort is made to periodically measure this phenomenon, the estimations generally refer to the VAT. This is the case for Chile, for example, where the tax administration provides annual estimates of tax evasion rates for the VAT, and the government subsequently sets ambitious goals to reduce non-compliance. Mexico also stands out because regular publication of estimates of tax evasion has been required by law since 2003.

Box 4.1 briefly describes different methodologies that have been developed for estimating tax evasion. Among them, indirect calculations using, for example, national accounts to estimate the potential collection of the VAT and of corporate taxes. In the case of personal income taxes, household surveys are typical used to develop estimates of potential collection. The evasion estimates that will be shown below, in Figure 4.8, use these methodologies. A second, more direct and rigorous method to measure tax evasion is based on the results of audits and inspections among a sample of companies and individual taxpayers. This methodology allows for precise estimations of taxes that are due, and can then be used to infer aggregate levels of tax evasion by extrapolating these estimations to the rest of the economy. The disadvantages of this methodology are that it is much more costly to implement and that it must be carefully designed (e.g., the sample of the contributors that is audited must be randomly chosen) so that the inferences to the aggregate are reliable.

Box 4.1. Existing methods used to measure evasion

Jorrat and Podestá (2010) classify the different existing methods into two general categories. On one hand, global macro-measurements, or indirect approaches, are based on economic aggregates (national accounts) and information from household surveys. On the other hand, direct measures of tax evasion refer to special auditing or monitoring programs that measure tax evasion for a representative sample of taxpayers.

Among the most common methods, the estimation of potential revenues from national accounts must be highlighted. This method consists of estimating the potential collection of a tax, based on national accounts. The estimated level of potential tax revenues are then compared with real revenues, with the calculated gap attributed

to tax evasion. This methodology is useful to quantify evasion of flat rate taxes and taxes with a base related to macroeconomic aggregates. For this reason, it is the method that is most used to estimate evasion of the VAT and corporate income taxes. Some of its advantages include the ease of calculations, low costs, and the ability to measure evasion using annual data, thus allowing the analysis of its evolution over a specific period of time.

For personal income taxes, the most common methodology used to measure tax evasion is based on household surveys. Due to the progressive nature of these taxes, the use of household surveys allows for different rates to be applied to different groups of individuals. The method consists of calculating the tax that each survey respondent would have to pay, based on declared annual income and the corresponding progressive tax rate scale set out in legislation. Next, these calculated tax revenues are grouped by income percentile and compared with real revenues collected by the tax administration for each income percentile. The main advantages of this method are its simplicity and low costs, whereas the most frequently cited limitations include the omissions and underreporting of income by survey respondents, particularly among high-income households.

Other more direct methods of estimating tax evasion are those based on audits of a sample of taxpayers. In doing so, the tax administration obtains precise information about the amount that individuals and firms evade. Its effectiveness will depend, among other factors, on the experience level of the auditors. In addition, the extrapolation of their findings to the rest of the population can be problematic, not least because of the potential bias produced by the fact that the tax authorities usually audit those with a greater probability of non-compliance. Evidently, this would not happen if audits were conducted for a random sample of taxpayers.

Source: Gómez Sabaíni and Jiménez (2011).

Estimations of tax evasion in Latin America

Table 4.8 presents data regarding evasion of income taxes, obtained from a comparative study promoted by ECLAC. This estimation is carried out for seven countries in Latin America, using a common methodology based on data from national accounts and household surveys. The table also displays tax evasion rates for the VAT, obtained from Gómez-Sabaíni and Jiménez (2011).

The data shows that tax evasion is significantly more relevant in the case of income tax, both personal and corporate, than the VAT. While VAT evasion rates are between 11% (Chile) and 38.1% (Nicaragua), with an average of 27%, rates of non-compliance for income tax range from 41.6% (Mexico) to 63.8% (Ecuador), and average 51.4%. In addition, for most countries, income tax evasion is higher for corporations than for individuals.

The following conclusions can be drawn from the analysis of evasion rates: tax evasion is a pervasive phenomenon in Latin America, for both income and VAT taxes; and, with the exception of the VAT in Chile, evasion rates are well above 20% of the potential tax collection. This suggests that, in principle, combatting evasion through improvements in tax administration could yield significant increases in state resources.[32]

---

32. These estimations should be considered an upper limit on the increase in revenues since greater control could affect production and earnings of a number of firms and economic activities that survive today thanks to tax evasion. Surprisingly, despite the importance of evaluating the impact of enforcing tax laws, there are no reliable estimations that can shed light on this issue.

Table 4.8 Comparison of tax evasion rates for the VAT and income taxes, for selected Latin American countries (several years)

Country	Value added tax		Income tax			
				Estimated evasion rate (percent)		
	Year	Estimated evasion rate (percent)	Year	Total	Individuals	Corporations
Argentina	2006	21.2	2005	49.7	n.a.	n.a.
Bolivia	2004	29.0	n.a.	n.a.	n.a.	n.a.
Chile	2005	11.0	2003	47.4	46.0	48.4
Costa Rica	2002	28.7	n.a.	n.a.	n.a.	n.a.
Colombia	2006	23.5	n.a.	n.a.	n.a.	n.a.
Dominican Republic	2006	31.2	n.a.	n.a.	n.a.	n.a.
Ecuador	2001	21.2	2005	63.8	58.1	65.3
El Salvador	2006	27.8	2005	45.3	36.3	51.0
Guatemala	2006	37.5	2006	63.7	69.9	62.8
Mexico	2006	20.0	2004	41.6	38.0	46.2
Nicaragua	2006	38.1	n.a.	n.a.	n.a.	n.a.
Panama	2006	33.8	n.a.	n.a.	n.a.	n.a.
Peru	2006	37.7	2006	48.5	32.6	51.3
Uruguay	2006	26.3	n.a.	n.a.	n.a.	n.a.

n.a.: not available.

Source: Gómez-Sabaini and Jiménez (2011).

Second, according to the previously mentioned data, income tax evasion is more prevalent than evasion of the VAT. This confirms the assumption that the VAT generates incentives for companies to document and declare input purchases with suppliers (thus paying less taxes on their own sales) as well as to facilitate the reporting of that information to the authorities (third-party reporting). These advantages facilitate the enforcement of tax obligations, reducing the overall cost of enforcement policies.

Pomeranz (2010) recently studied the impact of these characteristics of the VAT in Chile. The study indicates that, in a random sample of 2,800 companies, the announcement of tax audits increased VAT payments not only for the companies that received the warning but also for their suppliers.[33] The author did not find any significant changes in the behavior of the clients of the affected companies, however, demonstrating the asymmetric incentives that are generated between clients and supplier companies.[34] Similarly, the study shows that these incentives to declare purchases from suppliers affects all stages in the productive chain but are weaker

---

33. De Paula and Scheinkman (2010) also present evidence of the externalities (spillover effects) of tax control within the design of the VAT in Brazil.

34. Companies that sell to clients do not have incentives to document the operations that determine their VAT payments; however, they do have incentives to record every input purchased because the cost of the VAT can be deducted from their VAT payments.

at the last stage of selling to the final consumer. In this sense, the higher probability of being audited (through an announcement sent to 100,000 randomly selected companies) had a strong impact on VAT payments for companies selling directly to the final consumer, but a very small effect on companies located further up the productive chain. This implies that for companies with strong supplier-client links, the incentives to reveal information and report the value of sales correctly act as a substitute for audits and inspections.

Tax evasion in the United States

With the objective of comparing tax evasion in Latin America and that in developed countries, we examine data on evasion in the United States. This data is notable in that it is gathered using one of the most reliable methodologies, which consists of random audits for a sample of taxpayers to check whether taxpayers are meeting their legal tax obligations. The Internal Revenue Service (IRS) conducts such audits every three years.

Diagram 4.1 Components of gross tax gap in the United States (2006)

(billions of USD)

| Gross tax gap: 345 |
| Evasion rate: ER = 16.3% |

| Non-reporting 27 | Under-reporting 285 | Partial Payments 27 |

| Individual income tax 197 | Employment tax 154 | Corporate tax 30 | Estate and excise taxes 4 |

Non-business income 56	Unemployment taxes 15	Large corporations 25
Business income 109	Self-employment tax 39	Small corporations 5
Deductions, exemptions 32		

Source: Besfamille (2011).

In the 2006 report (IRS, 2006), the IRS calculates that the rate of tax evasion for federal taxes in United States in the year 2001 was approximately 16% of potential revenues. This is equivalent to USD $345 billion. Diagram 4.1 shows the different components of the gap between the amount collected and legal tax obligations. As shown, 80% of the total gap stems is a result of under-declaration of income, both by companies and individuals, although this problem is much more significant for the latter.

Table 4.9 further illustrates the sources of under-declaration of the two most important components of personal income taxes: incomes that are not associated with businesses, and incomes that are associated with these activities. The analysis of this data leads to some interesting conclusions. First, the fact that the employers deduct income taxes from wages substantially reduces the potential for evasion reduced. The tax evasion rate reaches barely 1% for these revenues. Second, the importance of third-party reporting of incomes or operations is reflected in the low level of evasion for interest payments, capital gains, pensions, and dividends, all of which are paid through the financial system. In this case, misreporting results in a loss of tax revenues of about 4%. Finally, incomes obtained from activities associated with businesses are subject to the highest level of evasion; among these, agricultural activities have the highest rates (72% of real incomes are not reported), followed by incomes obtained from non-agricultural properties or from autonomous workers (57%).

Table 4.9 Evasion rates for personal income tax in the United States (2001)

Income type	Tax gap (billions of USD)	Tax gap (percent of total tax evaded)	Evasion rate (percent)
Under-reported income	166.00	100.00	11.00
Non-business income	56.00	33.73	4.00
Wages, salaries, tips	10.00	6.02	1.00
Income from interest	2.00	1.20	4.00
Income from dividends	1.00	0.60	4.00
Refunds of overpaid taxes to the states	1.00	0.60	12.00
Income from pension to former spouse	n.a.	n.a.	7.00
Pensions and annuities	4.00	2.41	4.00
Unemployment compensation	n.a.	n.a.	11.00
Social security benefits	1.00	0.60	6.00
Capital gains	11.00	6.63	12.00
Other income	26.00	15.66	64.00
Business income	109.00	65.66	43.00
Non-agricultural property income	68.00	40.96	57.00

Income type	Tax gap (billions of USD)	Tax gap (percent of total tax evaded)	Evasion rate (percent)
Agricultural income	6.00	3.61	72.00
Rents and royalties	13.00	7.83	51.00
Associations	22.00	13.25	18.00

n.a.: not available.

Source: Besfamille (2011).

It is interesting that, even in the case of developed countries, where the technical capacity of the tax administration is stronger compared to developing economies, control and oversight of the more informal and smaller sectors of the economy remain problematic. In these sectors, the ability to detect non-compliance is reduced due to the lack of both tax-withholding agents and third-party sources of information on transactions. These findings are confirmed in an experimental study carried out in the state of Minnesota in 1995 (Slemrod *et al.*, 2001), in which 1,724 taxpayers (of state income tax) were randomly selected to receive a letter indicating that their tax files were to be audited. The study showed that, in comparison to the control group that did not receive the letter, taxpayers who were contacted by the tax administration increased their tax payments relative to previous years. The effect was significant, especially for middle-low income earners, as well as the self-employed and those working in the agricultural sector.

Similarly, in a recent study in Denmark, Kleven *et al.* (2010) developed an experimental exercise in which a random sample of 20,000 individuals that have filed income tax forms was selected for an audit. On one hand, the authors found that the evasion rate was very small (0.3%) for individuals subject to third-party reporting or tax-withholding (e.g. wage-earning workers). On the other hand, the evasion rate was higher (37%) for those with self-declared incomes. For these individuals, the potential audits significantly increased reported income and tax payments in later years, suggesting that the credible threat of controls and oversight have an impact on the fulfillment of fiscal obligations.[35]

The threat of audits and tax compliance: Experimental evidence from the municipality of Sucre, Caracas

With the purpose of examining the impact of a greater threat of audit in the context of a developing country, and as a part of the background research for this report, we conducted an experiment with businesses located in the municipality of Sucre, which is part of the Metropolitan Area of Caracas. This municipality is the second largest in the capital, with a population of approximately 1,000,000 inhabitants and covering 164 km^2. In coordination with the Department of Municipal Revenues and the Office of the Mayor, 6,300 companies were selected to participate in the study (approximately 87.5% of businesses in the municipality). The experiment consisted of delivering a series of letters (five in total), among which one contained information

35. Fellner *et al.* (2011) also found that an increase in the perception of the likelihood of being audited raises compliance in the case of cable TV licenses in Austria.

on the various actions that the local tax administration was taking to improve tax compliance.[36] A total of 2,255 letters were delivered throughout the municipality, with the exception of the most peripheral zones.[37]

The official registries of the Department of Municipal Revenues allowed the biweekly monitoring of the payment of taxes for each company, from May 15, 2011 through the end of September of the same year (10 payment periods altogether). The results show that, after receiving the letter that increased the perception of the probability of being audited, companies reduced their tax debt to the municipality to a significant extent relative to those that did not receive the letter. This is true across economic sectors and geographic locations; however, the impact was especially notable for smaller companies. Figure 4.7 shows (see p. 174) the estimated effect for each two-week period, since May 15, 2011. The left panel illustrates the effect for all companies, while the right is limited to small companies (with sales of less than $4,700 USD per month). In both panels, the tax obligations that are due are expressed as a percentage of total sales.

The letters were distributed between the June 7 and 25, 2011, so the end of the month is considered the first cutoff after the intervention (letters received). A small but statistically significant effect was already found on June 30, 2011. The accumulated effect until August 15 constituted a reduction in the tax debt equivalent to 2% of annual sales. In the case of small companies, the impact was around 4% of sales. These effects are quantitatively relevant when taking into account the fact that the average debt accumulated prior to August 15 was equivalent to 3.1% of estimated sales for all companies, and 4.1% for small companies. Furthermore, as can be observed in the figure, the effect of the greater threat of audit on the companies' behavior is temporary. As time since receiving a letter passed, the behavior of the treatment companies became no different from that of the control companies.[38]

Implications for combatting evasion and the design of the tax system

The evidence on tax compliance in Latin America suggests that there could be significant gains in resources collected if tax evasion could be reduced. From the various studies reviewed here, we conclude that an effective plan to combat this phenomenon must combine several elements. On one hand, the design of the tax system should create incentives to self-report sales and incomes, as is the case with the VAT. Such incentives could reduce the need to audit companies and suggest appropriate features of inspections that account for externalities. That is, auditing certain companies (with a broad network of suppliers) could increase tax collection from other companies without the need to exercise direct controls over them.

On the other hand, the evidence also suggests that promoting the ability of the financial system and other institutions (e.g., large companies, customs, among others) to act as both third-party sources of information and withholding agencies could have a significant impact on tax collection.

---

36. Specifically, the letter informed companies about the modernization of the Department of Municipal Revenues through the hiring of new inspectors, new IT systems that permit better identification of taxpayers, and the renewal of the vehicles used for inspections. The other letters concerned: i) the importance (from the moral point of view) of paying taxes when they are due (moral argument for taxes); ii) social programs implemented by the municipality to reduce poverty and improve health and educational services; iii) improvements to economic infrastructure (e.g., security, public lighting, waste disposal, and transportation). The last letter (the placebo) informed taxpayers of the new office address of the Department of Municipal Revenues.

37. The random assignment among the six possible groups –no letter or one of the five types of letters– was made based on the size and location of companies within the municipality. Thus, the groups that received each type of letter (and the control group that did not receive a letter) were statistically comparable. Any difference between them after the experiment can be attributed to the receipt of the letter sent by the municipality.

38. This "temporariness" of the estimated effects is also found in the case of the experiment in Minnesota, USA (Slemrod *et al.*, 2001).

Figure 4.7 Company tax payments in the Municipality of Sucre (Miranda state, Venezuela). Impact of an increase in the probability of audit . (Percentage of company sales)

Reduction of tax liabilities as a percentage of company sales (all companies)

Reduction of tax liabilities as percentage of company sales (companies with sales under USD $4,700)

Debit balance — — — Confidence intervals at 95%
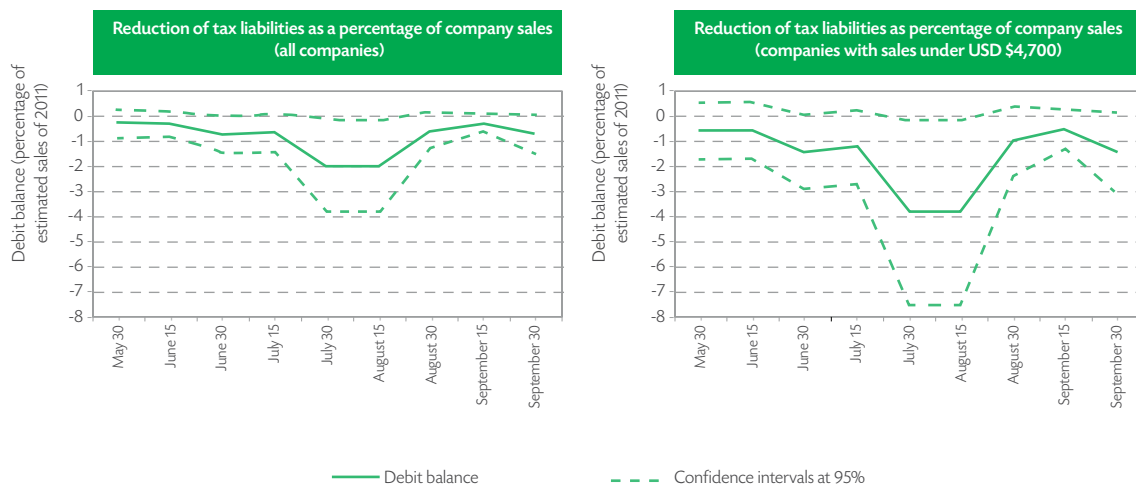
Source: own calculations (2011).

Beyond these factors that could improve incentives and the flow of information, various studies show that the credible threat of a higher probability of inspection and audit is a key element in the tax system. This is particularly relevant where the payment of taxes depends on the self-reporting of incomes and sales.

Another issue that must be noted is that tax evasion and the challenges in alleviating have implications for the design of tax system. Specifically, high evasion rates combined with the significant costs of controlling it may lead to a more regressive tax system (Besfamille, 2011). Given a high probability that individuals may under report their income, tax authorities may find it desirable to reduce tax rates (especially the higher marginal rates) to avoid evasion. The previously mentioned paper by Kleven *et al.* (2011) offers some indirect evidence regarding this hypothesis by showing that income tax evasion rates in Denmark increase when the marginal rate is higher.

The evidence reviewed on the reduction of marginal personal and corporate income tax rates in Latin America in recent years could be interpreted in a similar manner. These reductions could reflect –at least in part– the growing difficulties associated with managing a tax system with a significant progressive component, which, although positive from an equity standpoint, may not be fulfilled in the context of high levels of evasion. The inverse situation could also be true; that is, improvements in tax administration and progress in deterring evasion could result not only in higher levels of tax collection, but also in a more progressive tax system.

Finally, some authors (Mikesell and Birskyte, 2007) have emphasized that even though the establishment of audits and sanctions for tax evasion are key elements to improving tax compliance, these factors alone cannot explain the high levels of tax payment observed in several countries, particularly more developed countries.

Thus, tax compliance is influenced by multiple factors, including subjective issues, and specifically what is known as tax morale (Bird *et al.*, 2004). Tax morale is defined as the degree to which individuals perceive paying taxes as the correct behavior for a good citizen, beyond the economic environment and the government.

The following chapter will study in further detail the importance of this issue in Latin America. Here we want to stress that tax morale is also susceptible the influence of public policy and tax administration. In this sense, tax administration agencies could assume a leading role in raising awareness among citizens about the social responsibility of fulfilling one's tax obligations as defined by the state. In addition, as will be seen in chapter 5, tax morale also depends on the population's perception that revenues collected are allocated expenditures that generate tangible benefits for the general population.

CONCLUSIONS

The analysis of the evidence on tax levels in Latin America shows that, despite the increase in tax collection over the past decade, the tax effort remains below what would be expected, given the region's level of economic development. This is partly explained by a deficient tax structure, where income and wealth taxes on corporations and individuals represent a relatively low share of total revenues (slightly over 28%). The comparison of Latin America with other countries reveals, once more, that this problem is not necessarily justified given the region's per capita GDP and its economic structure. Other developing nations –such as those of East Asia or now developed countries when they had a per capita GDP comparable to Latin American nations today– have implemented tax reforms that increased income tax as a share of total tax collection (reaching more than 50% of revenues). This allowed them to boost tax revenues, while maintaining a balance between efficiency and redistributive objectives.

The high level of tax evasion is another important factor in explaining the low tax effort in Latin America. There is a lack of reliable statistics –drawn periodically using methodologies based on auditing a random sample of taxpayers– measuring the magnitude of this problem; however, indirect estimations using national accounting and household surveys suggest average evasion rates of 27% of excise taxes (VAT) and of around 50% of wealth and income taxes. In addition to impacting the value of tax revenues collected, high levels of tax evasion also substantially affect the tax structure. For example, given high rates of evasion of income taxes, tax authorities may choose to reduce the rates of these taxes (especially the higher marginal rates) and replace them with other indirect taxes that are easier to oversee and more difficult to evade (e.g., specific taxes on consumption or financial transactions). This makes the system less equitable in terms of income distribution.

An effective plan to improve tax compliance must combine several elements. On one hand, the tax design should generate incentives to report income and sales transactions that, as with the VAT, constitute a very relevant factor in reducing evasion. On the other hand, it is also important for the financial system and other institutions (e.g., large companies, and customs, among others) to act as third-party sources of information and as tax-withholding agents. Moreover, where tax payments depend on self-reported income, a credible threat of inspection and audit is also a key element to deterring tax evasion.

Finally, along with considerations of efficiency and income distribution, which may justify a larger role for income taxes and more effective control of evasion, these policies are equally fundamental to promoting state capacity and democratic institutions. This will be discussed in the following chapter.

5

Taxes and the Quality of Government

Taxes and the Quality of Government[1]

INTRODUCTION

Since the formation of modern states, the financing of the state's activities and institutions has been closely linked with its relationship to its citizens. If the state obtains its resources through strictly coercive means, using its monopoly over the use of force, or from rents from the exploitation of natural resources, the value that citizens place on the services provided by the state is irrelevant to its ability to obtain funds. More commonly, however, the state must seek financial support from enterprises and ordinary citizens through tax contributions. In this case, it is natural that they would demand some form of participation in the decision-making process determining the use of such resources; for example, through the formation of a parliament or congress, where limits on the government's actions are set and where its spending and investment priorities are negotiated.

Latin America's history offers several examples on how taxes are linked to demands made by taxpayers. During colonial times, in the Viceroyship of Nueva Granada (present-day Colombia and Venezuela), the Spanish crown upheld a 'colonial pact' with the local elite (known as the "*blancos criollos*") whereby all tax-related decisions would be made in consultation with the locals, who would also occupy positions of authority within the colonial bureaucracy. Towards the end of the 18th century, however, the crown unilaterally increased taxes on non-gold related economic activities, which was interpreted as a breach of the colonial pact. This contributed to growing anti-imperialist sentiment and mobilization, which, along with other factors, led to the declaration of independence (Kalmanovitz, 2008). A similar process occurred in the United States, where the independence movement was accelerated after a conflict with the British crown around decisions taken on taxation that ignored the colony's representation in the English Parliament. The well known saying "no taxation without representation" was popularized during this historic confrontation (Moore, 2007).

Thus, this old line of reasoning can be reinterpreted in light of more recent empirical evidence, with the purpose of contributing to a new debate on development in Latin America and the potential for generating a positive symbiosis between the quality of government and its available resources. This is an attempt to further the discussion thus far – where the public sector's inefficiencies (chapter 3) as well as the need to increase revenues for redistributive purposes (chapter 2) have been underscored – by highlighting the importance of promoting a virtuous circle between good governance and tax collection.

The relationship between good governance and taxes has several facets, which will be classified into two groups in this chapter: first, the argument that individuals will be more willing to pay taxes if they perceive the government to be of better quality; and second, the notion that when people pay taxes, they are more motivated to hold the authorities accountable, resulting in better government. These two mechanisms may reinforce each other, forming a virtuous circle (as is shown in Diagram 5.1, see p. 170) where the economy ultimately reaches an adequate level of financing for the state's activities and where the citizenry exerts sufficient

---

1. This chapter was responsability of Daniel Ortega, with research assistance from Mauricio Stern and Mariana Urbina

control over the government, ensuring that these activities are carried out efficiently and with appropriate attention to popular needs and demands.

Diagram 5.1 Virtuous circle between tax collection and public efficiency

Source: own elaboration.

Another important factor is the perceptions and expectations that people may have about the contributions of their fellow citizens. If an individual not only has a positive perception of the quality of government, but also feels that the rest of the population is contributing their fair share through taxes, they will be more inclined to make a contribution themselves, and possibly even to support policies that may imply higher tax rates. The analysis in chapter 4 suggests this channel may be of particular interest, as there is space not only for policies for reducing evasion, but also for tax reforms that increase rates applied to individuals. In this context, public perceptions about the quality of government, in addition to these "social norms" components, could be the difference between the viability and failure of tax reform initiatives in the region.

This chapter also draws on some elements of the literature on tax morale that are relevant to the relationship between taxes and the quality of government, but re-establishes the concept of reciprocity as an essential aspect of this relationship. The idea that paying taxes is "good" is inextricably linked to the notion that whatever the state provides is valuable for the population. In a tyrannical system, the concept of tax morale would make no sense, since the functions that the state (and therefore the government) performs are not geared towards increasing general welfare, so a feeling of obligation among its citizens to further state goals seems unlikely.

In addition, individuals typically perceive their own contributions to make very little difference in the overall budget; thus, the motivation to pay one's taxes in full and on time reflects reciprocity toward the government or the state (conditional altruism). This differs from the typical relationship, which is mediated by individual economic rationality. This argument is developed further in this chapter, and its empirical merits are examined both in light of existing evidence on tax morale, and of new experimental household survey evidence, collected for this report. On the other hand, the idea that individuals also respond to the behavior of their fellow citizens suggests that certain social norms may influence individual decision-making.

The link between tax collection and the quality of public administration has historical roots that make it more familiar, and this chapter describes two related interpretations. The first interpretation argues that higher taxes create incentives for the government to negotiate tax increases with those who will be subject to them. The second interpretation argues that when the government increases taxes, people are more inclined to monitor its activities and use of resources. This second interpretation is more appealing for potential policy lessons, particularly in modern democracies, where direct citizen participation is increasingly important and where the prevalence and ease of electronic communication plays a key role. The evidence presented here is consistent with this last interpretation, although the descriptive evidence obtained from this year's CAF survey suggests that the mechanisms through which citizen participation, and thus government accountability, could be enhanced are insufficient. Indeed, the population generally still perceives voting as their primary means of participating in the decision-making process and remains somewhat skeptical about direct participation mechanisms.

Most of the debate surrounding these issues does not clearly distinguish between perceptions of the quality of government, which temporarily administers public resources, and that of the state, which comprises all norms and institutions that in one way or another regulate social life. It is entirely possible that some empirical exercises confuse these two concepts; however, for the purposes of this chapter, the distinction is not problematic, as we are interested both in reciprocity towards the government and the state, as well as the public's perception of their quality and their willingness to exert control over the administration of public resources. Methodologically, however, this confusion may limit our ability to discern a reciprocal relationship between individuals and the government or the state more generally.

This chapter does not attempt to provide a definitive conclusion on the role of different mechanisms for reciprocity or citizen oversight; it does, however, offer some new evidence on their relevance, and in turn makes a modest contribution to a debate of increasing significance, as Latin America is faced by a pressing need to strengthen its public finances and governance. The next section discusses the issue of reciprocity towards the government, and the third section explores the relationship between tax collection and accountability. A fourth section offers concluding remarks.

MOTIVATIONS TO PAY TAXES AND THE ROLE OF GOOD GOVERNANCE

The previous chapter offers a careful revision of tax systems and the role played by tax administrations in achieving higher levels of public revenues. The underlying principle, of course, is that people would prefer not to pay taxes and therefore the state must establish mechanisms to impose taxes on citizens and enterprises. As the previous chapter makes clear, it is important that the design of the system minimizes incentives for evasion and that the system has the necessary legal, material, and human resources to carry out its task.

Both in academic and policy circles, it has been suggested that, despite the importance of coercive instruments available to the government for tax collection purposes, there are other factors that may play a role in increasing public revenues. For example, individuals may feel that paying taxes is to some extent a moral responsibility (Alm *et al.*, 1992), or they may be willing to pay more taxes or to decrease evasion when they perceive their fellow citizens to be contributing more (Frey and Torgler, 2007; Frey and Meier, 2004). One of the arguments in favor of these ideas is the classic public finance model, which rests solely upon coercive aspects of tax collection and predicts much higher levels of tax evasion than are observed in reality (Andreoni *et al.*, 1998). Thus, it is assumed that there must be non-economic factors that explain a significant part of tax compliance and evasion. This section develops a conceptual framework for thinking about the tax morale hypothesis; it then describes the empirical evidence on it, and on the notion of social norms and expectations determining individuals' behavior.

The term 'Tax Morale' is usually used to refer to the degree to which the population perceives the payment of taxes to be a civic duty with which they should comply; it is often measured through surveys about the degree to which the population feels tax evasion is unacceptable. It is important to reflect on the origin of this sense of civic responsibility and the way it relates to individual incentives to improve one's own welfare, as this may help better interpret the evidence in favor of, or against, this type of behavior. The idea that citizens should contribute part of their earned income to the state is necessarily linked to the notion (albeit a vague one) that the state has social value; if the state and all of its formal structures were openly harmful to people, the idea of tax morale would lose its ethical and political meaning. The value placed on the payment of tax in itself is tied to society's perception about whether the state serves a positive role or not, and like all perceptions, may vary significantly across countries, cities, and even people, and can be specific to both time and a given historical moment. Once tax morale is viewed in this light, it is much closer conceptually to the idea of reciprocity, in this case towards the state or its representation in government.

A behavior is considered reciprocal when it originates from an individual perception of a positive or beneficial act, without the expectation of compensation (Cox *et al.*, 2008); technically, it is a type of altruism, but that is conditional on the receipt of a positive deed. An example would be someone who helps another person, who offered help at some point in the past; the first person helps the second only as a response to that past act, rather than as a means to increase his or her own future welfare. In the case of taxation, the individual is willing to pay more taxes as long as he/she perceives the resources as being put to good use and thereby benefiting him. The individual does so, even though he knows that his own contribution is very small relative to the state's total budget and that his contribution is probably not making a difference. That is, since his tax payments are not increasing his welfare, paying them is largely an expression of reciprocity towards the government, beyond any calculation of individual economic benefit. Note that this concept is closely linked to the notion of altruism, but in this case it is conditional on having benefited from a previous positive act (good services) on the part of the government; it is different from paying with the purpose of receiving a benefit in the future, as the individual realizes his contribution to the overall public budget is minimal.

The disapproval of tax evasion (a typical measure of tax morale) is a reflection of the individual's willingness to pay taxes, and, insofar as it depends on the quality of public administration, there is reciprocity towards the government. The state and government are not the same, however, and thus it is possible that an individual may be reluctant to pay taxes to a particular government, even though he/she places high value on state institutions, which would otherwise lead to a high willingness to pay. Although this distinction will not be made in the rest of the section, it is possible that a distinction between reciprocity towards the state, and reciprocity towards the government could help refine the definition of tax morale.

This issue requires further research in developing countries not so much as an attempt to explain the overestimation of tax evasion generated by classic models of public finance, but rather to explore the quantitative relevance of tax policies designed on the basis of this kind of individual behavior and that could complement more traditional initiatives. Reciprocity, as previously defined, may contribute to political support for tax reforms geared towards increasing revenues through the reduction of evasion and the increase in tax rates. This kind of intervention could be most relevant for countries where public sector institutions are weak, where enforcement of tax law is more difficult, and where the coercive capacity of the state is limited.

The idea of reciprocity towards the state or the government could be a key element of the virtuous circle – described in the introduction– that begins with the idea that tax collection increases thanks to better public administration, beyond its capacity to simply better manage tax collection itself. This represents a natural mechanism to funnel resources towards higher quality governments. In a context where subnational governments are increasingly important, could lead to an improvement in the supply of public services that are crucial for the process of development. Box 5.1 describes the case of the city of Bogota, where a Mayor with a very good public image was able to elicit voluntary contributions from voters for the city's treasury.

Box 5.1. "Contributing for progress" in Bogota

In 2001, Antanas Mockus was reelected as Mayor of Bogota, running under the slogan "To all live on the same side," an inclusive ideal based on principles of solidarity, respect, and an efficient and transparent public administration. Committed to the responsible handling of public finances (according to the municipal Treasury, Bogota had a deficit of 0.3% and 0.2% of GDP in 2000 and 2001, respectively) and with an approval rate of 51% in 2001 (IPSOS-Napoleon Franco, 2011), the Mockus administration created a new revenue collection mechanism dubbed "contributing for progress", which consisted of voluntary contributions by taxpayers of 10% on top of housing taxes and taxes on industry, commerce and advertisements, under the guarantee that such funds would be used exclusively for investment in social projects.

According to the local Treasury, these voluntary contributions resulted in additional annual income of approximately $5.6 billion pesos in 2002 and 2003, representing approximately 0.51% and 0.38% of total property and industry tax revenues, for each year respectively. Although these figures are not particularly large, they are significant in demonstrating the willingness to contribute to a public administration that people perceive as making proper use of resources. This voluntary tax has persisted over time, but it has consistently generated less revenue than in 2002.

Source: own elaboration based on IPSOS-Napoleón Franco (2011)

Evidence on tax morale and reciprocity in Latin America

The indicator commonly used to measure tax morale is the extent to which the population thinks that tax evasion is justifiable. This measure has been used in several international surveys such as the World Values Survey, the European Values Survey and *Latinobarómetro*, and has allowed for comparative analyses across countries and correlated with national and individual level characteristics (e.g. see Torgler, 2005; Frey and Torgler, 2007; Azar *et al.*, 2008). Using several rounds of the *Latinobarómetro* and World Values Surveys, Table 5.1 (see p. 184) shows the share of the population that considers tax evasion to be totally unjustifiable,

the share that approves of the President's performance, and the share that trusts the government. The *Latinobarómetro* data covers the period 1998-2010 and the World Values Survey, 1998-2008.[1]

Table 5.1 Share of the population that considers tax evasion totally unjustifiable, the share that approves of the President, and the share that trusts the government, by region and selected Latin American countries (several years)[a/]

Country / region	Tax morale		Government approval	
	Latinobarómetro	World Values Survey	Presidential approval (*Latinobarómetro*)	Trust in the government (World Values Survey)
Africa	n.a.	65.18	n.a.	25.19
Western Europe	n.a.	58.22	n.a.	5.13
Eastern Europe	n.a.	51.85	n.a.	5.68
Central Asia	n.a.	75.37	n.a.	25.46
East Asia	n.a.	67.15	n.a.	18.81
North America[b/]	n.a.	62.99	n.a.	6.34
Oceania	n.a.	61.50	n.a.	4.48
Argentina	59.29	80.65	53.86	3.79
Bolivia	35.45	n.a.	51.71	n.a.
Brazil	52.96	38.87	75.40	9.62
Chile	50.39	66.74	69.05	11.88
Colombia	48.55	71.94	76.40	14.74
Costa Rica	50.56	n.a.	52.47	n.a.
Dominican Republic	28.99	n.a.	52.82	n.a.
Ecuador	43.50	n.a.	50.11	n.a.
El Salvador	49.83	81.07	66.19	17.50
Guatemala	43.39	54.25	43.85	6.43
Honduras	51.30	n.a.	46.17	n.a.
Mexico	45.67	64.38	53.31	10.85
Nicaragua	51.86	n.a.	42.30	n.a.
Panama	45.59	n.a.	50.25	n.a.
Paraguay	57.42	n.a.	53.46	n.a.
Peru	40.72	64.22	20.16	4.82
Uruguay	51.31	68.62	64.45	20.53
Venezuela, BR	58.88	70.10	52.03	20.74
Latin America average	**48.09**	**66.08**	**54.11**	**12.09**

a/ Tax morale: 1998, 2003, 2005 and 2008 (*Latinobarómetro*); 1998, 1999, 2000, 2001, 2005 y 2006 (World Values Survey). Government approval: 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009 and 2010 (*Latinobarómetro*); 1999, 2000, 2001, 2005 and 2006 (World Values Survey).

b/ Except Mexico.

n.a.: not available.

Source: *Latinobarómetro* (2011) and World Values Survey (2011).

1. For the Dominican Republic, the average is for 2005.

Although these averages obscure important variations from year to year in many countries, the above table illustrates the level of tax morale in the region and some of the notable differences between countries within the region, as well as relative to other parts of the world. The *Latinobarómetro* data shows that, on average, less than half of the population believes that evading taxes is never justified. Although in some countries, like Argentina, Paraguay and the Bolivarian Republic of Venezuela, this share is closer to 60%, in others, like the Dominican Republic, it is below 30% and in Peru just over 40%. The hypothesis that differences between countries are linked to the value that the population places on the services provided by the state is not easy to measure with a single question, but it is often approximated by some measure of approval of the President's performance. Table 5.1 shows that the approval rates of Latin American presidents has been very high in the last decade (54% on average between 1998 and 2010), although according to the World Values Survey, trust in the government has been much lower. This period coincided more generally with strong economic growth rates, which tend to increase the popularity of leaders in power. As mentioned, tax morale is necessarily associated with the notion that the state, or government, performs well, so it is expected that as the perception of the quality of the government improves, the acceptance of tax evasion declines.

To compare tax morale and government support figures with other regions of the world, we also report the World Values Survey's measure of trust in the government, which covers all continents for several years.[2] Despite the differences in levels relative to the *Latinobarómetro* for the countries where both measures are available, the table is useful in showing that the level of tax morale in Latin America is not particularly low relative to other regions of the world. The most important element for the purposes of this report is that both datasets suggest a positive relationship between the willingness to pay taxes and perceived government quality; in fact, the correlation between tax morale and government approval rates is 0.28 using the *Latinobarómetro* data, and 0.29 using the World Values Survey. Both sources generate the same prediction about public perceptions of the government and the rejection of tax evasion.

In general, the goal of studies on tax morale is to quantify the weight that different factors –such as trust in institutions, the probability of detection of tax evasion, the severity of punishment, and the quality of government– have on the social acceptance of tax evasion. More rejection of tax evasion should mean a higher willingness to pay taxes and higher levels of tax collection, regardless of the tax system and its administration; so, if authorities could influence tax morale, they should be able to increase fiscal revenues. As an illustration of the kind of empirical exercise often carried out in the literature, Table 5.2 (see p. 186) shows the conditional correlation of tax morale (as measured by the share of the population that considers tax evasion to be completely unacceptable) with the public's perception of the President's performance, which is a measure of the perception of the quality of services for which taxpayers' resources are being used. In each year for which the *Latinobarómetro* survey asks about tax morale (1998, 2003, 2005, 2008, 2009 and 2010), these estimations were calculated for every country in the sample. This is a significant extension of Torgler (2005), who only uses data for 1998. The difference in each column is the additional dimensions taken into account when estimating the correlation: the first column shows the simple correlation pooling all countries and years jointly; the second column takes into account country and time effects as well as individual-level differences in age, gender, socioeconomic status, education, occupation, and marital status; finally, the third column adds controls for the effect of ideology (left/right), a measure of trust in institutions, and a measure

2. Averages over 1998-2008 are reported. It should be noted that the countries included in the World Values Survey are not necessarily the same every year and, in many cases, appear only once over the entire period. Thus, the average tax morale and government approval rates, in many cases, are just datapoints for a specific year, and therefore, the levels of these variables are not directly comparable to the *Latinobarómetro*.

of national pride or patriotism. Note that the correlation drops by half when including the first set of controls (column 2 versus 1) and then by another 25% when considering the effect of ideology, institutions, and national pride (column 3 versus 2), which indicates that these variables have a strong relationship to both the approval of the government and tax morale.

Table 5.2 Correlation between presidential approval ratings and tax morale in selected Latin American countries[a/] (several years)[b/]

	(1)	(2)	(3)
Presidential approval rating	0.025***	0.012***	0.009***
Number of observations	159,889	159,874	74,890
R^2	0.001	0.342	0.471

a/ Argentina, Bolivia, Brazil, Colombia, Costa Rica, Chile, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela, BR.
b/ 2003, 2005, 2008, 2009 and 2010.
*** $p < 1\%$.

Source: author's calculations based on Latinobarómetro (2011).

The key conclusion from this analysis is that tax morale is strongly correlated with perceptions of the quality of government, regardless of the individual's age, gender, education, wealth and other characteristics, such as nationality or time period under consideration. This is equally true of previous findings, not only for Latin America but also for other regions of the world. The following section revisits this analysis using this year's edition of the CAF survey in Latin American cities.

Evidence from the 2011 CAF survey

Tax morale measures analyzed so far approximate the individual's willingness to pay more taxes based on perceptions of tax evasion. This year's CAF survey, which covers 17 major cities in 9 countries in Latin America,[3] includes a series of questions measuring real tax payments by households, their perceptions of the quality of government, and their willingness to pay slightly more taxes of various types. Given the local nature of the survey, an effort is made to distinguish perceptions of the quality of local versus national governments for each city.

The survey also includes hypothetical questions, such as "If the government were to reduce corruption, would you be willing to pay more taxes?", with the goal of examining which aspects of government performance have the most significant impact on individuals' willingness to pay taxes. Table 5.3 shows the share of the population that reports being willing to pay more taxes, minus the share that reports wanting to pay less taxes, under various hypothetical scenarios for each city.

3. Buenos Aires, Cordoba, La Paz, Santa Cruz, São Pablo, Rio de Janeiro, Bogota, Medellin, Quito, Guayaquil, Panama City, Lima, Arequipa, Montevideo, Salto, Caracas and Maracaibo.

Table 5.3 Willingness to pay more taxes under certain hypothetical situations related to the government's performance in selected Latin American cities[a/] (2011)

City	Eliminates corruption	Improves transparency	Eliminates tax evasion	Spends more on the poor	Better health and education	More security	Average
Buenos Aires	5.27	7.73	-0.96	6.57	18.34	13.18	**8.36**
Cordoba	-3.12	-2.52	-8.15	-1.35	26.84	16.38	**4.68**
La Paz	14.07	15.54	8.51	20.57	30.55	29.26	**19.75**
Santa Cruz	-4.86	6.94	2.81	15.13	32.17	28.68	**13.48**
São Paulo	18.63	13.55	17.77	-6.78	-14.38	-10.57	**3.04**
Rio de Janeiro	23.93	29.96	32.16	18.31	10.29	20.08	**22.46**
Bogota	13.15	12.17	7.91	37.30	43.66	33.44	**24.61**
Medellin	-11.49	-12.97	-13.51	-8.00	-0.10	-7.47	**-8.92**
Quito	-2.98	-8.28	-6.15	8.46	18.26	15.12	**4.07**
Guayaquil	-16.75	-21.84	-20.70	-16.41	-18.15	-16.04	**-18.32**
Panama City	-10.02	-16.42	-18.22	-8.88	-12.93	-7.55	**-12.34**
Lima	10.85	12.08	3.38	19.98	33.73	29.44	**18.24**
Arequipa	9.58	5.95	-3.22	5.63	21.60	10.67	**8.37**
Montevideo	3.02	2.40	-8.60	8.59	25.30	21.12	**8.64**
Salto	1.24	-0.37	1.60	16.80	43.54	30.27	**15.51**
Caracas	0.75	0.93	-3.04	16.52	18.72	19.31	**8.87**
Maracaibo	-11.56	-3.87	-13.47	-6.39	-3.64	-1.94	**-6.81**
Total[b/]	**11.56**	**11.52**	**9.98**	**9.23**	**11.37**	**11.44**	**10.85**

a/ Share of the population that reports "yes, I would pay more" minus the share that responds "no, I would pay less".

b/ Weighted-averages of the cities.

Source: author's calculations based on CAF (2011b).

Generally, households report being willing to increase their tax payments if expenditures on health and education were more efficient, if the government ensured greater personal security, if public support for the poor was increased, and if the management of public funds was more efficient (less corruption, more transparency, less evasion). The exceptions appear to be Maracaibo, Guayaquil, Panama City, and Medellin, where there seems to be a widespread perception that the tax burden is already high; therefore, in nearly every scenario, people report wanting to pay less taxes more often than they report being willing to pay more. In Brazil, there is a high value placed on strengthening institutions and people seem to be willing to pay more taxes to this end. 'Eliminating evasion' is interpreted differently in each place and is associated with different reactions across the region. Table 5.3 gives a simple description of stated preferences, but there may be specific circumstances in Brazil, Ecuador or Venezuela, for example, or issues affecting particular age or education groups that may explain the differences observed across cities. For this reason, an additional step

would be to try to establish the correlation between the willingness to pay more taxes and measures of the quality of the government, but making an effort not to confuse the particular circumstances of a country, city, or age group with the relationship of interest, as has been illustrated using the *Latinobarómetro* data in the previous section.

Before showing this correlation analysis using the CAF survey, it is worth describing respondents' reported tax payments and their perception on whether they think these tax payments are too high or not. Table 5.4 describes the share of households that report paying some local and national taxes and their general perceptions about their level of tax payments.

Table 5.4 Share of the population that reports paying each type of tax and their perception of their level of payment, for selected Latin America cities (2011)

City	Pays income tax	Pays vehicle tax	Pays property tax	"I pay too much tax"	Have evaded VAT
Buenos Aires	5.66	12.20	50.05	74.14	38.35
Cordoba	3.60	24.07	56.29	84.63	15.38
La Paz	4.32	18.63	73.41	62.70	59.05
Santa Cruz	2.92	23.08	43.71	63.94	45.38
São Paulo	19.33	40.95	43.26	93.12	27.55
Rio de Janeiro	14.98	23.55	31.62	83.20	43.78
Bogota	9.75	26.70	61.15	73.10	15.84
Medellin	6.73	8.30	61.10	80.47	12.19
Quito	10.17	8.17	35.88	73.28	24.77
Guayaquil	2.45	3.98	42.76	79.27	38.21
Panama City	17.25	7.53	2.82	68.42	22.93
Lima	15.58	7.99	50.10	70.03	20.54
Arequipa	15.99	5.58	50.30	67.92	20.75
Montevideo	46.88	28.10	71.97	72.62	17.49
Salto	27.48	30.89	63.81	75.68	17.71
Caracas	4.67	7.07	9.02	52.15	21.73
Maracaibo	3.23	5.81	19.97	55.69	2.56
Total[a]	**13.51**	**23.59**	**44.40**	**78.98**	**28.63**

a/ Weighted-averages of the cities.

Source: author's calculation based on CAF (2011b).

The sample interviewed generally thinks they pay too much in taxes; indeed, almost 80% of respondents in the cities included in the study thought so, with the possible exception of Caracas and Maracaibo. At the same time, less than 14% of households report having paid income taxes, and in half the cities this share is less than 7%. In

addition, less than 24% report having paid a vehicle tax. The most common tax appears to be the property tax, although in cities like Caracas, Maracaibo, and Panama City, compliance seems to be very low, possibly because, in some places, this tax is only charged when the property is sold. Also, more than a quarter of the population reports having evaded the Value Added Tax (VAT), agreeing to make a purchase without a receipt in exchange for a price reduction equivalent to the tax rate. In some cities the self-reported evasion rates are as high as 59% (e.g., La Paz). The lesson from Table 5.4 is that the population generally pays few taxes, but thinks it pays a lot.

Given this comparative perspective, the question then arises as to how much households are willing to increase their tax payments in response to an improvement in the quality of public administration. Table 5.5 shows the correlation between the willingness to pay more taxes of various types (property, vehicles, income, etc.) and individuals' perceptions of the extent of the government's aims to improve the population's welfare, controlling for factors such as age, city of residence, gender, and political ideology. Each row in the table identifies the variable for the correlation and shows that, in general, people who perceive the government to be trying to improve their welfare are less likely to report they pay "too much tax". This is true both for national and local taxes, as these people also report being willing to pay more national and local taxes. So, once observable individual characteristics are controlled for, the positive correlation between the willingness to pay taxes and the perception of the quality of the government is shown both consistent and statistically strong. This result is similar to those reported in previous studies on tax morale.

Table 5.5 Conditional correlations between the perception of the quality of government (local or national) and the willingness to pay more taxes[a/] in selected cities in Latin America[b/] (2011)

Willingness and declared tax payments	Conditional correlation with "the government seeks to improve people's welfare" (local or national, depending on tax)
Pay too much local taxes	-0.013**
I am willing to pay more property taxes	0.006***
I am willing to pay more vehicle taxes	0.003
Pay too much national taxes	-0.051***
I am willing to pay more income taxes	0.004**
I am willing to pay more wealth taxes	0.012***
I am willing to pay more consumption taxes	0.007***

a/ The correlations are conditional on the city of residence, the level of wealth, gender, education, age and political ideology of each person. We used 10,200 individual observations.

b/ Buenos Aires, Cordoba, La Paz, Santa Cruz, São Paulo, Rio de Janeiro, Bogota, Medellin, Quito, Guayaquil, Panama City, Lima, Arequipa, Montevideo, Salto, Caracas and Maracaibo.

*** p ‹ 1%; ** p ‹ 5%.

Source: author's calculation based on CAF (2011b).

In addition, it is useful to determine whether this willingness to pay more taxes is related to taxes that households report already paying. As mentioned before, there appears to be a significant measurement error in reported tax payments by households; however, the same conditional correlation reported in the

previous table can be calculated for reported tax contributions (described in Table 5.4), and this is shown in Table 5.6. There is a stark contrast between these and the correlations reported in Table 5.5, since, in general, the estimated correlations are statistically indistinguishable from zero.

Table 5.6 Conditional correlations between the perception of the quality of government (local or national) and declared tax payments[a/] in selected cities in Latin America[b/] (2011)

Declared tax payments	Conditional correlation with "the government seeks to improve people's welfare" (local or national, depending on tax)
Income taxes	0.002
Vehicle taxes	-0.005
Property taxes	0.004
Has accepted to not receive a receipt in order to not pay the VAT	0.005

a/ The correlations are conditional on the city of residence, the level of wealth, gender, education, age and political ideology of each person. We used 10,200 individual observations.

b/ Buenos Aires, Cordoba, La Paz, Santa Cruz, São Paulo, Rio de Janeiro, Bogota, Medellin, Quito, Guayaquil, Panama City, Lima, Arequipa, Montevideo, Salto, Caracas and Maracaibo.

Source: author's calculation based on CAF (2011b).

The difference between the results using real tax payments and the willingness to pay suggests that the reciprocity hypothesis requires careful analysis, at least for two reasons. First, the willingness to pay is not a tangible economic decision by individuals; it is only a declaration of intent, which may be stated with little attention to the real costs involved. Secondly, the conditional correlation may be capturing different factors altogether; for example, an individual who is a persistent tax evader may feel that the only way to justify his actions is to state that the quality of government is poor, even if he doesn't actually think so. In this case, one would obtain a positive relationship between willingness to pay taxes and perceived quality of the government, but for reasons that have nothing to do with reciprocity between the individual and public administrators. Like this example, there are others[4] that illustrate the fact that the correlations described so far, and extensively used in the literature on tax morale, do not make a convincing case that what drives people to respond that they are willing to contribute more taxes is indeed their positive evaluation of the government.

An experimental investigation among households

As was suggested before, the central question arising from the debate on tax morale and reciprocity is whether a causal relationship exists between the perception of the quality of the government or state and individuals' willingness to pay taxes or his real tax payments. At a basic level, the existing empirical

4. Other reasons to expect such a positive correlation could be related to preferences over certain public services; for example, the value an individual place on street lighting or citizen security could lead him/her to increase his willingness to pay for them and at the same time induce a more positive view of the quality of the government. Another possibility is changing income; it is possible that people who have done well recently have a more favorable view of the current administration and are also more likely to have more disposable income and thus possibly more willing to pay taxes. Bagüés and Esteve-Bolart (2011) suggest that an increase in income may increase support for the government without necessarily improving perceptions of its quality.

evidence is based on questions like "would you pay more taxes if the government did a better job?" At a more complex level, there are the aforementioned correlations, which may be simple or conditional on economy wide effects, time effects, and individual characteristics. Finally, it is important to provide estimations that rule out factors that may potentially confuse the relationship; this is the goal of experimental studies that seek to credibly establish the causal link between perceptions and the willingness to pay taxes.

A change in an individual's perception of the quality of the government (local or national) should affect his or her willingness to pay taxes. With the aim of examining this hypothesis, an experimental component was incorporated into CAF's 2011 survey whereby individuals were asked to choose one of four envelopes that looked exactly the same from the outside. The first envelope contained a short note with a real news story that reflected positively on the national government; the second, a similar note reflecting positively on the local government; the third contained a news story that reflected negatively on the quality of the local administration; and the last envelope was blank and thus gave no additional information.[5] Approximately 21% of the interviewees chose the first envelope, 28% the second, 29% the third and the remaining 22%, the fourth. After reading the news story, or opening the empty envelope, the person was asked a number of additional questions about her perception of the national and local governments and about her willingness to pay a small increase in taxes (local and national). Since receiving positive or negative information on the authorities was entirely random in this case, any change in people's opinions about the quality of the local and national government can be said to be the result of this exogenous shock. The experiment therefore will be able to credibly attribute any change in people's willingness to pay taxes to the exogenous change in their perceptions about the local or national government, provided of course the information shock in fact does change people's perceptions.

As is documented in more detail in Ortega *et al.* (2011), the first result is that the information shock was able to change people's perception of the quality of the local government, albeit only to a limited extent. To illustrate the effect of the news shocks on individual perceptions, Table 5.7 (see p. 192) shows the relationship between having received positive or negative news on the local government, and people's response to the following question: "On a scale of 1 to 10, where 1 is 'Totally Disagree' and 10 is 'Totally Agree', how much do you agree with the statement 'The taxes that the city collects are used to finance public services with the goal of improving the population's welfare.'" The table shows the relationship for each city separately and for all of them jointly. The result is that, on average, receiving a positive (negative) news note on the local government improves (worsens) individuals' perceptions by 0.22 points. Relative to the average, which is 5.5, this represents a small (but statistically significant) impact. When disaggregated city by city, the effect is generally in the expected direction, although the magnitude changes across cities. For example in Cordoba, Rio de Janeiro, Bogota and Salto, the news shock induced a significant improvement in perceived quality, whereas in other cities, like Buenos Aires, Panama City or Maracaibo, the effect is essentially zero.

---

5. Cruces *et al.* (2011) include a randomly assigned experiment in a household survey on preferences for redistribution. Examples of other recent experiments, where the intervention is the provision of some kind of information, are Duflo and Sáez (2003) and Chetty and Sáez (2009).

Table 5.7 Effect of receiving positive or negative information about the local government[a/] on individuals' perceptions of government, for selected Latin American cities (2011)

City	Envelope with positive news minus envelope with negative news
Buenos Aires	0.06
Cordoba	0.49***
La Paz	0.26
Santa Cruz	0.24
São Paulo	0.04
Rio de Janeiro	0.68***
Bogota	0.45**
Medellin	-0.21
Quito	0.08
Panama City	-0.12
Lima	0.12
Arequipa	0.10
Montevideo	-0.13
Salto	0.39**
Caracas	-0.20
Maracaibo	-0.05
Entire sample	**0.22***

a/ The effects are conditional in the city of residence, the level of wealth, gender, education, age, political ideology, employment status, nationality, perception of their fellow citizens' payments and individuals' tax morale. Guayaquil was not included in this experiment. We used 9,600 individual observations.
*** p ‹ 1%; **p ‹ 5%.

Source: author's calculation based on CAF (2011b)

Once it is established that the information affects individual perceptions about the government, the goal is to learn whether this change also causes a change in the willingness to pay taxes. Households were asked whether they would be willing to accept a small increase in property and vehicle taxes, as well as if they thought they paid "too much tax," and if they would be willing to accept a small discount in exchange for not getting a receipt for a purchase (to evade the VAT).

Table 5.8 reproduces the results of this analysis for Rio de Janeiro (where the relationship reported in Table 5.7 was the strongest), where an improvement in individuals' perceptions of the quality of government in general resulted in an increase in willingness to pay taxes, most notably vehicle taxes and consumption tax (less evasion), but property taxes as well, albeit to a lesser extent. People are also less likely to declare that they pay too much tax, although the effect of this variable is not statistically significant. Note that these coefficient estimates were generated using only the change in perception caused by the randomly allocated news

notes, and are therefore not affected by the problems of identification mentioned before and as such are much more credible estimates of reciprocal behavior between taxpayers and the local government.

This evidence favors the idea that the population behaves reciprocally towards the government regarding tax payments. The coefficients for Brazil generally have the expected signs, but are statistically significant only in the case of vehicle taxes and VAT evasion.

Table 5.8 Correlations between public perceptions of the local government and the willingness to pay taxes, measured by an experiment[a/] in Rio de Janeiro (2011)

Effects of individuals' perceptions of the local government on the willingness to pay taxes	
Effect on willingness to pay more property taxes	-0.017 (0.188)
Effect on willingness to pay more vehicle taxes	0.273** (0.137)
"Local taxes are too high"	-0.043 (0.076)
Effect on willingness to evade the VAT	-0.101** (0.048)

a/ The effects are conditional on the city of residence, the level of wealth, gender, education, age, political ideology, employment status, nationality, the perception of their fellow citizens' payments and individuals' tax morale. Guayaquil was not included in this experiment. We used 600 individual observations.

** $p < 5\%$.

Source: author's calculation based on CAF (2011b).

Considering this experiment used a news note with potentially little capacity to significantly alter people's perceptions (as shown in Table 5.7), but even so had an impact on people's willingness to pay taxes, it could be expected that a more significant change in public perceptions about the quality of public administration would generate a much more important response in terms of tax payments.

Another finding of this experimental investigation is that it is worth continuing research on this relationship, as the conditional correlations that do not attempt to credibly establish the causal link between perceptions about the government and the willingness to pay taxes or tax morale may lead to imprecise or even incorrect conclusions. It is also important to underscore the findings do not suggest that the authorities should center their efforts on publicity campaigns to improve their public image; rather, they suggest that as the population's views of the government improves, their tax contributions may rise, although the size of this effect will depend on the particular context.

Other evidence

In a paper prepared for this report, Timmons (2011) makes use of a municipality audit system put in place by the federal government of Brazil to ask whether receiving information on corruption – or lack thereof – has any impact on tax collection by the local governments. The monitoring system consists of a random

selection of between 20 and 40 municipalities each month (between 2003 when it started and 2008, 24 municipalities were selected on average each month) to be audited by the technical staff of the Comptroller General (*Contraloria General da União*, CGU). The results of these audits are publicly available and generally receive significant local media coverage, which should, in principle, have an effect on the public's perception of the elected authorities and possibly on their willingness to pay taxes. Timmons (2011) shows that municipalities receiving either a negative audit report or one that reveals corruption subsequently collect less property taxes, while those receiving a favorable report are able to increase their tax collection. The magnitude of the estimated effect is only significant for municipalities with low initial tax collection. Indeed, for each incidence of corruption identified in the audit report (the average is 3), subsequent tax collection dropped by about 0.33 reais per capita, which represents over 10% of the per capita tax revenues of half the municipalities studied. For rich municipalities, these magnitudes are negligible; for example, the top 25% of municipalities collect more than 7.9 reais per capita from this tax, which is only reduced by 5% in response to corruption. Considering that property taxes account for approximately 1% of total municipal revenues, this suggests that an act of corruption reduces municipal revenues by approximately 0.05%.

A key question in this case is whether the drop in tax collection that comes about as a consequence of the negative audit report is due to reciprocal behavior on the part of citizens, or to strategic behavior on the part of the policymaker, who may reduce the enforcement of tax laws (or even rates) in order to regain the popularity lost as a result of the revelation of corruption. While it is difficult to separate out these two factors, there is reason to suggest that at least part of the effect is due to the response of taxpayers, since when the audit reports are positive, tax collection increases, which would not be expected from a politician seeking to garner support. With both explanations, however, the findings are consistent with the reciprocity hypothesis.

People may decide to pay less tax if the government is corrupt or inefficient, but they may also punish politicians through other mechanisms. For example, when these audit reports in Brazil reveal high levels of corruption, mayors have a lower probability of being reelected (Ferraz and Finan, 2008). In addition, the probability of adopting a participatory budget scheme within three years of the audit report is much higher where the report revealed corruption compared to those where the report was positive, which represents, not punishment of the politician, but rather an increase in the demand by voters for increased accountability and control over public resources.

Social norms, reciprocity and tax reform

In addition to the effect of the quality of public administration on people's willingness to pay taxes, the perception of the behavior of others may also have an impact. This may be due to a natural tendency to conform to social norms that make certain kinds of behavior more or less acceptable. These kinds of motivations can be especially important in the debate about taxes, based on the willingness of individuals not only to increase their tax contributions but also to support tax reforms that would increase tax rates more generally. Using data from the 2011 CAF survey, Figure 5.1 shows that the willingness to pay taxes is higher in households that believe that a larger share of the population meets its tax obligations. This relationship does not, however, distinguish between the effect of a higher belief in the population meeting its tax obligations and the fact that the people who are most willing to pay their taxes are possibly more likely to perceive others as also paying their taxes. It does show, however, that these two factors tend to go hand in hand, which is consistent with experimental evidence showing that when people are informed of the high levels of compliance

of other citizens (in tax payments or other issues such as energy consumption), they tend to increase their own level of compliance (see Wenzel, 2001; or, Alcott, 2009).

A highly credible public administration with broad public support may not only increase tax compliance but also garner enough political support for tax reforms that increase tax rates. This suggests that reciprocity and social norms can complement each other in a way that the overall impact of good governance on tax collection could be more significant in terms of increases in tax rates or the creation of new taxes than through increased compliance.

Figure 5.1 Social norms: willingness to pay own taxes and perceptions of tax compliance among others, average for selected Latin American cities[a/] (2011)
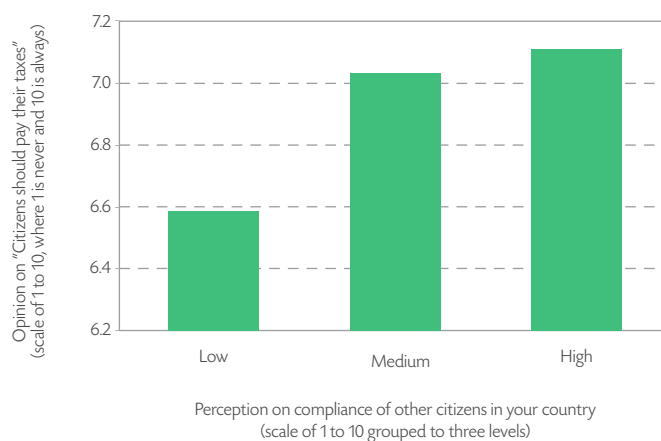
a/ Buenos Aires, Cordoba, La Paz, Santa Cruz, São Paulo, Rio de Janeiro, Bogota, Medellin, Quito, Guayaquil, Panama City, Lima, Arequipa, Montevideo, Salto, Caracas and Maracaibo.
Source: author's calculation based on CAF (2011b).

The importance of social norms and their interaction with reciprocity towards the government or the state requires further research, particularly in light of evidence of reciprocal behavior by individuals, not only through taxes but also through other mechanisms. Although the issue of interest in this report is taxes, there may be other dimensions where reciprocity and social norms or group behavior complement each other.

The evidence suggests that individuals respond to the quality of the government mainly through institutional mechanisms, such as voting, demanding tighter controls over politicians, or seeking to participate more directly in the decision-making process. Nevertheless, there are strong indications that people also respond by altering their tax compliance behavior, paying less when they perceive the government to be corrupt and inefficient and more when they perceive their tax money to be used well. This

last effect could be scaled even further, due to the effect of social norms or what could also be viewed as reciprocity towards the fellow citizen. In some cases, the magnitude of these responses doesn't seem to be large, but in others they can be sizable. More research is clearly needed to better gauge the quantitative importance of these effects.

In sum, efficiency and transparency by the authorities are key aspects of public administration more generally, and probably also specifically for tax collection. The channels through which efficiency can increase tax collection could have a lot to do with people's willingness to pay taxes, but also with the effectiveness of the tax enforcement apparatus directly, as was argued in chapter 4. These aspects also have a close relationship with public demands for more and better control and accountability mechanisms over the fiscal authorities, as expanded upon in the next section.

TAX PAYMENT AS A MECHANISM FOR EMPOWERMENT

The idea that there is a relationship between the quality of public administration and the way it is financed is not new. Authorities receive a mandate to carry out certain tasks for which they require resources, and in general, whoever provides these resources will have influence over how they are spent. Historically, as nation-states gradually ceased to use force as their main source of finance, it was necessary to develop mechanisms through which those who paid taxes expressed their approval, or not, of the way those resources were being used. In modern democracies, this process occurs through delegation; that is, taxpayers delegate to parliament all negotiations with the executive branch regarding taxes and the budget. A notable historical reference is the British Parliament's takeover of public finances in the 17th century when the government's (including the military and the bureaucracy) sources of revenues had to be approved; the authorities were compelled to negotiate taxes and spending priorities with the groups represented therein. By the end of the 18th century, this had become established tradition, so the attempt at levying taxes on the British colonies was viewed as a serious breach of good governance and ultimately, after the colonies' refusal to pay taxes without appropriate representation in parliament ("No taxation without representation"), contributed to the American Revolution for independence (Moore, 2007).

As discussed in chapters 2 and 4, there exist several sources of financing for the state: monopoly control over services, such as energy and ports; the extraction of rents or direct control of economic activities linked to the exploitation of natural resources; international aid; public enterprises; and, taxes on households and private companies. The aim here is to understand the way in which the structure of such financing relates to the efficiency with which the state carries out its activities. The emphasis is on the relationship between tax collection and the quality of public administration, although it is necessary to bear in mind that there are other determinants of good governance, and that taxes may interact with other sources of public finance with varying implications for the quality of the administration.

Why would we expect an effect of tax collection, in and of itself, on government efficiency? As Figure 5.1 illustrates, the argument is that the payment of taxes promotes public demand for accountability on behalf of public officials. As such, it serves as a mechanism for empowerment, and this in turn improves the quality of spending and administration in general. A stylized and simplistic version

of this logic would be that, in most circumstances, the individual does not clearly observe the entire budget available to the government. Rather, he/she is more aware of the part that he has contributed directly, but has only a vague idea of the importance of other sources of revenues, like transfers, natural resource rents etc. Thus, the larger the share of total revenues constituted by direct contributions from citizens, the better their information about the government's budget will be. In turn, they will have more accurate expectations of the services they should receive from the authorities and a better knowledge to hold them accountable, which should increase the incentives for the government to perform well. The opposite happens when the budget comes mainly from transfers that individuals do not directly observe; a more opaque budget gives discretion to the policymaker on the use of resources, and thus, fewer incentives to provide services in the most efficient way possible. As will be expanded upon, higher public demand for accountability is not sufficient for good governance; rather, these demands must also be expressed in a way that they in fact become binding constraints for policymakers. The most obvious of these is voting, but other direct participation mechanisms are increasingly available in modern democracies.

The notion that taxes serve as a mechanism for revealing information is complemented well with the slightly different interpretation that taxes may mobilize citizens politically. Taxes mobilize some citizens against them, which in itself sparks a greater debate around and awareness of the use of public resources. In some ways, these are similar ideas, and their defining characteristic is that taxes generate higher accountability among government, arising in part from the empowerment of taxpayers. Beyond theory and anecdotes, the key question is whether there exists quality empirical evidence to support this link. The next sections discuss some findings from the 2011 CAF survey and examine the possibility of a causal relationship, using more rigorous methods.

An overview of the 2011 CAF survey

The perceptions of the population of their role in monitoring policy-making, of their political and electoral participation, and of the extent to which meeting their tax obligations entitles them to hold the government accountable are all key elements to the empowerment function of taxes. This year's survey includes several questions on these topics and this section reports the most relevant of these, with the aim of situating the potential merits of the empowerment mechanism in a regional perspective. The first element of this hypothesis is voting behavior. Table 5.9 (see p. 198) shows the share of the population that reports having voted in the previous presidential election and the degree to which people report making an effort to learn about the candidates' electoral proposals. In almost every city, a significant share of the population reports having voted in the previous election (almost 90% of respondents on average), which, despite being slightly higher than official voting rates (nationwide rates are reported in Table 5.10, see p. 198), suggests that significant value is placed on presidential elections in the region. Further, when people are asked about the effort they make to get information on candidates' proposals, a considerable portion (almost half on average, and much more than that in some cities) report making extensive efforts to obtain this information. Even though it is likely that the level of political mobilization is overstated by this measure, the figures suggest that the population in these cities place significant value on voting as a means of expressing their opinions about politicians' decisions.

Table 5.9 Share of the population that reports having voted in the last presidential election and that has made efforts to inform themselves about candidates' electoral platforms (share of interviewees) in selected Latin American cities (2011)

City	Voted in previous election	"When you vote, do you make an effort to learn about the platforms?"		
		A lot	A little	Nothing
Buenos Aires	89.83	40.52	47.31	12.17
Cordoba	89.31	20.80	42.21	36.98
La Paz	96.00	44.87	44.18	10.94
Santa Cruz	90.56	46.71	37.69	15.60
São Paulo	90.29	44.76	40.26	14.98
Rio de Janeiro	91.62	41.89	38.51	19.60
Bogota	73.19	66.46	19.92	13.62
Medellin	58.81	40.56	40.33	19.11
Quito	92.18	45.25	42.69	12.05
Guayaquil	90.30	38.52	44.71	16.77
Panama City	83.03	59.08	31.45	9.48
Lima	94.44	55.91	35.06	9.03
Arequipa	94.12	51.06	39.01	9.93
Montevideo	95.23	54.84	32.39	12.78
Salto	97.13	53.18	34.37	12.45
Caracas	84.29	49.31	33.91	16.78
Maracaibo	91.33	77.37	15.93	6.70
Total[a/]	**88.29**	**47.94**	**36.82**	**15.24**

a/ Weighted-averages of the cities.

Source: author's calculation based on CAF (2011b).

Table 5.10 Electoral participation in most recent presidential elections in selected countries in Latin America (several years)

Country	Year	Participation rate (%)
Argentina	2011	78.89
Bolivia	2005	84.51
Brazil	2010	82.19
Chile	2010	86.94
Colombia	2010	49.27
Ecuador	2009	75.30
Mexico	2006	58.55
Paraguay	2008	65.48
Peru	2011	83.71
Uruguay	2009	89.88
Venezuela, BR	2006	74.69

Source: Dirección Nacional Electoral of Argentina (2011); Political Database of the Americas, Georgetown University (2011); Tribunal Superior Eleitoral of Brazil (2011); Tribunal Calificador de Elecciones of Chile (2011); Consejo Nacional Electoral of Colombia (2010); Registraduría Nacional del Estado Civil of Colombia (2010); Consejo Nacional Electoral of Ecuador (2011); Instituto Federal Electoral of Mexico (2011); Tribunal Superior de Justicia Electoral of Paraguay (2011); Oficina Nacional de Procesos Electorales of Peru (2011); Corte Electoral of Uruguay (2011) and Consejo Nacional Electoral of Bolivarian Republic of Venezuela (2011).

Another way of measuring political mobilization in participation is public protests. Table 5.11 shows the share of respondents who indicate having participated in some sort of public gathering or protest to demand better use of public resources. Clearly, most of the population considers voting as a superior protest tool, as more than 85% of the population reports not having participated in protests in the last 5 years. A little over 8% participated once, and less than 5% participated twice or more. Even in the city with the highest participation rate according to this measure, Caracas, less than 17% participated once and close to 7% twice or more.

Table 5.11 Participation in a gathering, protest, or march over the last 5 years to demand better use of public funds from the government (share of interviewees) in selected Latin American cities (2011)

City	Never	Once	Between 2 and 5 times	6 or more times
Buenos Aires	85.53	8.25	4.39	1.83
Cordoba	93.36	3.39	2.62	0.63
La Paz	80.14	14.08	4.57	1.21
Santa Cruz	79.76	15.17	4.36	0.70
São Paulo	92.41	3.79	2.45	1.34
Rio de Janeiro	80.12	14.33	5.20	0.34
Bogota	86.95	6.08	5.03	1.94
Medellin	85.48	11.16	3.10	0.26
Quito	84.88	10.98	3.37	0.76
Guayaquil	90.11	9.22	0.68	0.00
Panama City	83.37	12.82	2.28	1.53
Lima	90.63	4.95	2.76	1.67
Arequipa	78.11	14.79	6.00	1.10
Montevideo	88.37	6.74	3.92	0.97
Salto	89.44	5.83	3.85	0.88
Caracas	76.73	16.74	3.60	2.94
Maracaibo	87.83	8.97	2.26	0.95
Total[a/]	**86.86**	**8.36**	**3.57**	**1.21**

a/ Weighted-averages of the cities.

Source: author's calculation based on CAF (2011b).

It is possible that, for some people, protests or marches represent risky or costly means of pressuring the authorities to meet their needs and demands, and they therefore opt to use more institutionalized channels to political expression, where there is more clarity on the role each individual plays and its consequences. An example of one such mechanism is participatory budgeting, whereby individuals have the authority to make binding decisions on some share of the overall budget. This kind of mechanism seeks to better tailor some expenditure decisions to the needs of the community, and in some cases extends as far as to give them direct

control over the execution of local projects. Table 5.12 shows the portion of respondents in each city that reports understanding the participatory budgeting scheme and the share that reports having been involved in one at some point. In some cities, such as Medellin, Arequipa, Montevideo, Salto, Caracas and Maracaibo, knowledge of the mechanism is high. Indeed, between one fourth and half of the population responded that they know about it, and participation is notable in Montevideo, Arequipa and Medellin (around 10%). On average, however, only about 13% of the population in the 17 cities sampled know about such mechanisms and less than 5% have participated in them.

City	Know participatory budget schemes	Have ever participated in a PB scheme
Buenos Aires	10.63	2.85
Cordoba	3.64	0.71
La Paz	15.70	6.22
Santa Cruz	8.06	2.30
São Paulo	9.33	3.10
Rio de Janeiro	9.91	3.32
Bogota	12.74	6.42
Medellin	26.28	9.49
Quito	4.29	2.57
Guayaquil	8.94	1.93
Panama City	6.28	1.31
Lima	18.06	7.22
Arequipa	23.77	13.18
Montevideo	45.69	10.64
Salto	24.20	5.96
Caracas	33.44	6.67
Maracaibo	23.42	1.87
Total[a/]	**13.57**	**4.58**

Table 5.12 Knowledge of and participation in participatory budgeting schemes (percentage of interviewees) in selected Latin American cities (2011)

a/ Weighted-averages of the cities.

Source: author's calculation based on CAF (2011b).

Despite the fact that most people were not familiar with participatory budgeting schemes in their city, a brief explanation of the concept was given to each at the time of the survey with the aim of eliciting respondents' views on the topic. Households were asked whether they would be willing to pay more or less taxes if more decisions were made through participatory budgets. For those who responded to this question, results are shown in Table 5.13. The most notable result is that the majority (about 68%) reported that they would pay

the same amount they are currently paying. This could indicate that the population does not understand the scheme and would not increase their tax payments were it to become more important because they do not know the value they should place on it. On the other hand, a group of approximately 20% of the population responded that they would be inclined to pay less taxes, which suggests a very negative evaluation of participatory budgeting, and only 12% responded they would be willing to pay more. With some significant differences across cities, the picture that emerges from this table is one of very little knowledge of participatory budget schemes, and a fairly negative evaluation from those who have a formed opinion on them, whether from their own experiences or information received from other sources.

Table 5.13 Willingness to pay more or less taxes than currently, if the government were to allocate a larger share of resources through participatory budgeting schemes in selected Latin American cities (2011)

City	Much more	A little more	The same as now	A little less	A lot less
Buenos Aires	6.82	12.82	72.18	7.02	1.16
Cordoba	0.71	6.64	74.95	17.70	0.00
La Paz	1.28	11.80	71.49	15.05	0.38
Santa Cruz	2.45	17.33	69.04	10.15	1.03
São Paulo	0.67	8.41	65.67	14.14	11.10
Rio de Janeiro	0.85	6.31	57.49	29.07	6.28
Bogota	1.85	6.31	85.04	6.67	0.13
Medellin	8.85	9.23	76.58	5.23	0.11
Quito	4.27	12.31	77.93	5.24	0.25
Guayaquil	10.57	19.90	64.25	5.28	0.00
Panama City	11.16	31.59	50.66	6.19	0.40
Lima	0.80	12.50	72.33	14.37	0.00
Arequipa	2.86	10.71	74.96	10.53	0.94
Montevideo	0.97	7.57	83.30	7.14	1.02
Salto	2.09	9.07	79.31	9.17	0.34
Caracas	4.63	15.98	65.86	13.46	0.08
Maracaibo	3.84	24.67	60.82	10.07	0.60
Total[a/]	**2.04**	**9.95**	**68.33**	**14.93**	**4.74**

a/ Weighted-averages of the cities..

Source: author's calculation based on CAF (2011b).

Another critical component of the empowerment hypothesis is whether people view paying taxes as entitling taxpayers to certain rights. Table 5.14 (see p, 202) shows the share of the population in each city who believe that paying taxes gives taxpayers higher moral authority to demand results from the government. Almost three-quarters of households believe that paying taxes gives people "the right" to demand better

administration of public resources; similarly, many people also believe that not paying taxes inhibits public mobilization to demand transparent and efficient government. The very low levels of tax payment reported (described in Table 5.1) could thus also partly explain why there is also relatively little direct mobilization demanding better performance from the authorities (Table 5.11), although this could also be related to the region's very positive economic performance over the last several years. Even in cities where the perception of tax payment is low (Caracas, Panama City, Cordoba and Buenos Aires), more than 55% of households see the payment of tax as an element that affirms citizens' rights before decision-makers.

Table 5.14 Perceptions of the following statement: "A citizen who pays taxes according to the law has more right to make demands of the government than someone who does not" (share of interviewees) in selected Latin American cities (2011)

City	Yes	No
Buenos Aires	61.66	38.34
Cordoba	59.92	40.08
La Paz	91.81	8.19
Santa Cruz	85.77	14.23
São Paulo	63.86	36.14
Rio de Janeiro	76.05	23.95
Bogota	81.34	18.66
Medellin	78.68	21.32
Quito	74.88	25.12
Guayaquil	68.13	31.87
Panama City	55.18	44.82
Lima	80.34	19.66
Arequipa	78.84	21.16
Montevideo	85.45	14.55
Salto	83.56	16.44
Caracas	60.20	39.80
Maracaibo	69.34	30.66
Total[a/]	**72.57**	**27.43**

a/ Weighted-averages of the cities.

Source: author's calculation based on CAF (2011b).

Another important element of political activism is the extent to which voters scrutinize candidates during elections, and if such scrutiny bears any relationship to compliance with tax obligations. Table 5.15 shows the share of people who believe that paying taxes encourages people to better inform themselves during elections. Even though the question is formulated as a general opinion, it reflects the respondent's introspective opinion. Despite the fact that a significant portion of the population reported making significant efforts to

inform themselves during elections (Table 5.9), less than a quarter of respondents think that paying taxes leads to a deeper involvement in the electoral processes, with some exceptions, including Salto and Rio de Janeiro, where over 40% do believe taxes mobilize people during elections.

City	Incorrect	Neither	Correct
Table 5.15 Perceptions of the statement "Paying taxes leads people to better inform themselves during elections" (percentage of interviewees) in selected Latin American cities (2011)			
Buenos Aires	57.69	18.68	23.61
Cordoba	73.09	11.14	15.76
La Paz	46.04	26.88	27.08
Santa Cruz	44.26	21.88	33.87
São Paulo	72.41	14.03	13.56
Rio de Janeiro	37.24	19.65	43.12
Bogota	68.61	10.86	20.52
Medellin	64.64	21.67	13.70
Quito	50.36	23.00	26.64
Guayaquil	36.92	40.69	22.38
Panama City	61.88	25.31	12.80
Lima	60.88	15.94	23.19
Arequipa	68.86	12.61	18.54
Montevideo	59.76	12.00	28.24
Salto	43.07	14.19	42.75
Caracas	51.59	23.17	25.25
Maracaibo	61.00	24.52	14.47
Total[a/]	**59.01**	**17.44**	**23.55**

a/ Weighted-averages of the cities.

Source: author's calculation based on CAF (2011b).

More specifically, the 2011 CAF survey also asks if households believe that paying taxes leads to a higher level of participation in and control over the government by voters. Table 5.16 (see p. 204) shows the responses to this question. Consistent with the data on voters informing themselves during elections, most commonly, respondents did not see taxpaying as necessarily motivating people to involve themselves in oversight of the government. The share of respondents who do believe this is the case (almost 30%) is sizeable, however, and the contrasts between cities can also be stark; for example, the case of Cordoba, where 83% of the population thinks that taxes do not mobilize voters, and Guayaquil, where opinions appear to be equally divided between those who think taxes do have this effect, and those who think they do not.

Table 5.16 Perceptions of the statement "Paying taxes motivates people to get involved in activities directed at overseeing government spending" (share of interviewees) in selected Latin American cities (2011)

City	Incorrect	Neither	Correct
Buenos Aires	49.96	21.56	28.48
Cordoba	82.34	12.14	5.51
La Paz	35.60	32.04	32.35
Santa Cruz	39.41	22.90	37.69
São Paulo	69.28	14.20	16.53
Rio de Janeiro	35.44	23.79	40.77
Bogota	42.53	13.52	43.95
Medellin	55.72	22.24	22.03
Quito	40.32	26.08	33.61
Guayaquil	29.38	42.36	28.25
Panama City	51.23	29.11	19.67
Lima	42.23	23.76	34.01
Arequipa	43.42	23.41	33.17
Montevideo	54.04	11.32	34.63
Salto	38.09	15.62	46.28
Caracas	47.42	31.07	21.50
Maracaibo	56.46	21.82	21.72
Total[a/]	**50.83**	**20.36**	**28.81**

a/ Weighted-averages of the cities.

Source: author's calculation based on CAF (2011b).

This descriptive evidence is consistent with a relationship between tax collection, the degree of empowerment of the population, and good government. Individuals place significant value on voting as the essential participation mechanism in a democracy, and in general expresses a significant appreciation of candidates' proposals during elections. Generally, people do not report feeling knowledgeable about other mechanisms for participation and monitoring, but when they understand them, they see value in them. On the other hand, people tend to mobilize very little (e.g., in marches and protests) for better services. Even though people believe paying taxes gives individuals the right to make demands of the government, they do not see a concrete expression of this right in the form of different behaviors between individuals who pay taxes and those who do not. This may be related to distrust in some of the newer participatory mechanisms other that voting, which underscores the latter's importance as the essential mechanism for control and oversight of the government in the region's democracies.

Even though these figures suggest that higher tax pressure in Latin America could lead to increased demands for accountability from governments at different levels, it is not clear that more taxes would au-

tomatically lead to more efficient governments. Rather, it is necessary to establish a causal relationship between the weight of direct taxation relative to transfers, or other sources of public finance, and government transparency, or some other measure of its efficiency. The next section reviews the evidence seeking to establish this relationship.

Evidence from other studies

As in the case of reciprocity, identifying the causal relationship between the payment of taxes and government efficiency is complex. Even if a positive correlation between tax collection and measures of good governance were established, it would not necessarily follow that taxation increases efficiency, as there may be several factors that could explain such a relationship; for example, the fact that countries or cities with better institutions will probably also have less corruption and higher tax rates, but with no causal link between them. Another example could be linked to human capital: if an economy has higher rates of human capital accumulation and thus collects more taxes (because workers are more productive), it could also see an increase in public administration efficiency either due to increased capacity in the public sector in line with the rest of the economy, or due to greater demands on the government from a more educated constituency. Further, even after establishing a causal relationship between taxes and government efficiency, the specific channel through which such a relationship operates is not always evident.

This debate is closely related to the literature on the effects of resource booms on development, and specifically, on transparency and rent-seeking in the public sector, since fiscal revenues from natural resource royalties or rents often displace direct tax collection as a source of public finance. Several recent studies using state and municipality level data for Brazil offer evidence consistent with the hypothesis that the share of tax revenues in public budgets has positive consequences on the quality of public administration in that country. For example, the oil boom that began in the early 2000s has led to an unprecedented increase in non-tax incomes among Brazilian municipalities; indeed, between 2000 and 2010, total oil production in Brazil increased 66% thanks in part to extraction activities off the Atlantic coast (ANP, 2011). This increase was not evenly distributed across municipalities, since according to the oil royalty distribution rules, municipalities' share depends on their production or their location relative to the oil rigs placed off the coast. These changes have generated important variations in oil incomes for some municipalities. For example, in 1997, municipal royalties were approximately $167 million reais, compared to $4.7 billion reais in 2008 (Ferraz and Monteiro, 2010). Since these abrupt changes can be attributed to fluctuations in the price of oil, combined with geographical factors that determined the location of the oil deposits, it is reasonable to assume that they were exogenous to the previous political and economic conditions in municipalities.

In this context, it has been shown that in municipalities where there were larger increases in oil revenues, and therefore larger reductions in the share of tax revenues in municipal budgets, there was also a higher incidence of corruption (Caselli and Michaels, 2011). A particularly relevant finding for the relationship between tax collection and government efficiency is that, despite the fact that the higher revenues increased the probability of re-election, once voters realized that additional resources was not being translated into better quality public services, voters punished mayors by voting them out of office in the following election (Ferraz and Monteiro, 2010). This shows that voters do indeed punish policymakers when there is adequate information on the resources available to them and where there is evidence of inefficient use, which is precisely one of the mechanisms through which the population holds governments accountable in modern democracies.

This reasoning not only finds support in the literature on extraordinary fiscal revenues stemming from natural resources (analyzed in greater detail in chapter 6), it also appears to be valid in contexts where, for some reason, the composition of fiscal revenues shifts, altering the weight of tax revenues relative to central government transfers. For example, the P*rograma de Modernizaçao de Administraçao Tributária* (PMAT) in Brazil, a federal government program to support municipalities in modernizing their tax administration systems, improved tax collection capacity among local governments and as a result increased the public's information on the budget. This, in turn, mobilized mechanisms of social control over the authorities and reduced the number of reported corruption cases (Gadenne, 2011). On the other hand, there is also evidence in Brazil that when local budgets have a larger share of transfers from the central government, reports of corruption increase (Brollo *et al.*, 2010).

Although most recent studies on this topic have focused on Brazil, this hypothesis is also consistent with findings in other countries. A recent study using data from Venezuela examines the relationship between an index of municipal budget transparency (calculated and monitored by the NGO *Transparencia Venezuela*, the local chapter of Transparency International) and the share of central government transfers in municipal revenues. The research not only analyzes the effect of transfers on the index in 82 of the 336 municipalities in the country, but also the option that the municipalities have to not participate in the study, which is carried out every year.

The analysis gives two basic results: first, an increase in municipal revenues from transfers derived from oil price increases produces a decrease in the measure of budget transparency, even when accounting for the potential problems of endogeneity of transfers. The second key result is that political participation, measured through the share of the population that is registered to vote in each municipality, increases the probability that a municipality participates in the study calculating the transparency index. These results are consistent with the hypothesis that the weight of tax revenues, or of other revenues easily exposed to the scrutiny of the public, improves the transparency with which the resources are administered. In addition, it also suggests that political mobilization can be the channel through which this relationship operates (Catanho, 2011).

In Argentina and Peru, there is also evidence that increases in subnational governments' own tax collection improves their performance indicators. In these countries, royalties for the exploitation of non-renewable natural resources has recently generated effects that are similar to those described for Brazil (these cases are described in more detail in chapter 6).

CONCLUSIONS

An inherent fact of the evolution of organized society is the tension between the need to provide certain goods and services that no one finds in their personal interest, and the need to finance them. The provision of road infrastructure, national defense, street lighting, and more recently (from the late 19th century) public schooling and health services, as well as maintaining the institutions necessary for social life (laws, justice system, etc.), are all activities delegated by the population onto different parts of the state. No private agent would find reason to provide these goods and services without being able to exclude those who do not adequately compensate him. The financing of these activities naturally comes from the (mostly non-voluntary) contribution in the form of taxes that is required by citizenship. But in democratic regimes, citizenship also

gives the right to decide to whom these responsibilities are delegated and under what conditions. The survival of the state depends in good part on its capacity to respond to citizen demands, expressed via voice and vote, and ultimately also through migration (Hirschman, 1978). From the individual's point of view, paying taxes gives the moral right to demand adequate services from the authorities. Taxes are the concrete expression of the delegation of the administration of public funds by citizens to the state, and in this sense, citizens are better placed to demand their rights, which are the obligation of the state.

This chapter has shown conceptual elements and empirical evidence in support of the notion that the way the state is financed is important for the process of development. To the extent that public finances rest on visible taxes, mechanisms of citizen control and monitoring of public administration are activated. On the other hand, as the authorities improve their performance, citizens will be less reluctant to pay taxes, closing a virtuous circle between public sector efficiency and tax collection.

Even though the reciprocity effects identified in the survey experiment in cities were relatively small, the very fact that an effect was identified at all in such a low-power statistical exercise suggests that the real effects could be significant, if perceptions about the quality of the government and the goods and services it provides improve significantly. Even though no evidence is presented on reciprocity with national governments, it is reasonable to expect that the same type of relationships uncovered for local governments exist. In addition, the recent evidence consistently shows that the importance of direct taxes in the local budget increases citizen participation and demands for government accountability, which is the natural mechanism through which higher quality public administration is achieved, in turn ensuring a more significant contribution from the public sectors to the region's development.

Despite these findings, taxes can also be linked to bad governance, in particular in the absence of democratic participatory institutions. Paying taxes does not guarantee that citizens will be able to exert their right to hold the authorities accountable for their performance; rather, this requires that channels for these demands exist and can reach the appropriate authorities. In societies without participatory mechanisms, direct or indirect, the basic pillar of an accountable relationship does not exist, so the form of public finance may be de-linked from the quality of public resource use. It is important, therefore, to emphasize the mechanisms for political participation available to the population, as well as the ways in which these may not only be broadly trusted and adopted but also be effective in holding governments accountable. Taxes may increase demands for participation, and it is important that there be mechanisms for participation.

The next chapter deals with the discussion between the sources of finance, transparency, and government efficiency for the specific case of revenues from non-renewable natural resource rents.

6

Natural resources and the link
between citizens and the state

Natural resources and the link between citizens and the state[1]

INTRODUCTION

Non-renewable natural resources rents –that is, the surplus return above production costs, including the opportunity cost of capital– can be quite substantial in resource-abundant regions. This is the case in Latin America. Partial or total appropriation of these rents allows governments to fund a sizeable part of their budgets. Following the steep rise in the prices of metals and hydrocarbons in the last decade, the share of resource rents in total fiscal revenues has increased, on average, from 18% to 35%, for the main commodity producer-countries in Latin America. Even with lower commodity valuations, natural resources rents remain critical for public budget financing in the region. Recent changes to tax regimes intended to insure a more progressive participation of the state in resource profits demonstrated the interest of governments in preserving this source of revenue.

Natural resources rents should serve to improve welfare. Resource windfalls can relax the government's budget constraint, increasing the fiscal space for improving the provision of public goods that underpin development and reduce inequality. Nonetheless, as discussed in chapter 5, the link between citizens and the state based on reciprocity and empowerment weakens when the state is able to obtain revenues from sources other than taxes on a broad base of individuals and companies. In other words, taxpayers may lose incentives to scrutinize (directly or indirectly) government policies and administration of fiscal resources when a substantial part of the budget funding does not come out of their own pockets. This, in turn, reduces the incentives for the government to improve the quality of public goods provision. Taxpayers, on the other hand, lose the incentives to pay taxes when they perceive public goods provision to be of low quality. This generates a vicious cycle of low taxes, scant citizen participation and oversight of the budget process, and low quality public policies.

These problems can be exacerbated in the case of non-renewable natural resources. First, the nature of mine and hydrocarbons exploitation is such that a substantial amount of profits are concentrated in a small number of companies, which breaks the link between budget funding and the majority of taxpayers. Second, cumbersome or unstable fiscal regimes for natural resources can impede adequate access to information about resource revenues, hindering citizen and institutional surveillance of the budget process. Third, the high volatility inherent to commodity prices translates directly onto fiscal revenues, complicating budget planning. This may generate potential inefficiencies in resource allocation, particularly in terms of intertemporal allocation. Finally, under weak institutions, resource windfalls can unleash rent-seeking by interest groups and exacerbate political clientelism. Governance and institutions can further deteriorate in this context, with deleterious effects on the quality of public policies.

The fact that resource abundance does not always lead to development has been extensively studied in the literature. Among the hypotheses suggested to explain this apparently counterintuitive fact, perhaps the

---

1. This chapter was responsability of Adriana Arreaza, with research assistance from Carlos Catanho, Alexandra Reuter and Mariana Urbina

most widely known refers to the effect of commodity price fluctuations on the real exchange rate, and thus on resource allocation in the economy. Other hypotheses focus on the conditioning role of institutions in the good or bad use of natural resource rents. In this chapter, we study a channel that has been so far less studied, which concentrates on the effect of natural resources on the development of state capacity through the financing structure for public expenditures. As we mentioned before, lower incentives to control government activities among citizens, a lack of timely and reliable information on resource revenues, high revenue volatility, and the possibility of rent appropriation by interest groups or distributional conflicts, can all mean that resource abundance may not translate into more public investment, better public provision of goods and services and, ultimately, enhanced welfare.

The evidence we show in this chapter indeed suggests that the presence of resource revenues does not necessarily translate to better fiscal performance. On the one hand, the larger the share of the budget that is financed with resource rents, the lower the revenues and overall budget transparency. On the other hand, even if resource-abundant countries invest more in physical and human capital than non-abundant countries, this was not reflected in more efficient health or education spending, or in better quality of life indicators. Other studies suggest that these findings replicate at the subnational level; in particular, the evidence for Brazil and Peru indicates that municipalities that benefit from oil and mining rents spend more and invest more with respect to non-recipient municipalities, yet that has not resulted in a significant improvement on quality of life indicators, such as housing conditions, public infrastructure, schooling and health conditions.

The key question is what resource-abundant countries can do in order to guarantee an efficient and social welfare-enhancing fiscal performance. Several resource-abundant countries have resorted to budget rules, stabilization funds, or sovereign wealth funds for an orderly and efficient administration of resource windfalls. Nonetheless, the international experience indicates that successful fiscal arrangements for resource revenue management are transparent and provide for incentives that are compatible for the key actors in the budget process. Accountability is also critical for well-functioning arrangements, in order to keep actors' incentives in line with good governance.

This chapter is organized in seven sections, including this introduction. The next section introduces the theoretical framework to characterize natural resource rents and the possible mechanisms through which they may affect fiscal performance. The third section presents empirical exercises at the international level to evaluate the impact of resource rents on revenue structure, on spending allocation, and on the quality of fiscal policy management. The fourth section presents a similar analysis, but with regional level data for some Latin American countries. In the fifth section, we revisit the importance of natural resource revenues in Latin America and examine the fiscal regimes for resource rent extraction. Section six analyses some country experiences with budget rules and sovereign funds to manage resource revenues. The last section concludes.

NATURAL RESOURCES, BUDGET FINANCING STRUCTURE, AND THE QUALITY OF PUBLIC POLICIES: A CONCEPTUAL FRAMEWORK

The literature has identified several channels through which natural resources may affect development. The seminal finding by Sachs and Warner (1997, 2001) that, on average, resource-abundant countries grow less than non-resource abundant ones has inspired an extensive literature that attempts to explain this appar-

ently counterintuitive fact, dubbed as the 'resource curse.' Initially, explanations centered on the idea of Dutch Disease; essentially, a resource windfall causes an appreciation of the exchange rate that reduces the competitiveness of the tradable sector and hinders domestic production.[1] Later research did not find robust evidence to support a negative correlation between resource abundance and growth, suggesting that other variables may condition this relationship.[2] An increasing number of studies elaborate the idea that institutions condition the interplay between resource abundance and development.[3]

One argument within this line of research is that if the institutional framework inhibits citizen participation and control over governance, a resource windfall can lead to inadequate management of public policies.[4] This is based on the assumption that when fiscal revenues depend more on direct taxation of individuals and companies, they form a better idea of the cost of public goods provision in terms of the taxes they pay to fund these. This should stimulate taxpayers to monitor public governance more closely, in order to guarantee a good use of their taxes. Taxpayers can do this directly or indirectly through their representatives (e.g. in parliament, local assemblies, etc.). Therefore, taxpayers become important players in public governance and budget processes, which should improve fiscal policy management and in turn create incentives for contributors to keep paying (or pay more) taxes. This is a virtuous circle between taxes, citizen participation on budget decisions, governance and the quality of public policies.

Alternatively, if the public sector has funding sources other than taxes levied on a broad base of citizens and firms, taxpayers may be less motivated to exert control on public budget processes, since budget decisions have less direct and visible consequences on their net income. Consequently, there will be fewer incentives for the government to improve the quality of public policies, with potentially negative implications for growth.

The disconnect between budget decisions and revenue sources can be significant in resource-abundant countries or regions, especially in those endowed with non-renewable resources, such as mining and hydrocarbons. First, the exploitation of non-renewable natural resources is associated with large profit margins, particularly when commodity prices are high. This marks a considerable difference between tax revenues from other economic activities and resource-related fiscal revenues, such as taxes, fees, royalties, windfall taxes, dividends, among others (Dalgaard and Olsson, 2006). Apart from the size of resource-related rents, the production of natural resources is characterized by large economies of scale, so that taxation of these sectors is usually concentrated in a small number of firms enjoying large profits. This high concentration of profits and taxation among a few large companies may distance citizens from the taxation process, since a large share of government revenues do not come directly from taxpayers' pockets. This may lead to weak incentives for citizen participation, low quality governance, poor public policies, and less willingness to pay taxes.

---

1. An additional assumption in this hypothesis is that the tradable sector has a larger impact on development (e.g. through spillover effects), so that its contraction will have further deleterious effects on growth. See Forsyth and Kay (1980, 1981) and Corden and Neary (1982).

2. More recent findings –for example, Lederman and Maloney (2007)– contradicting Sachs and Warner's results cast doubt on the empirical validity of the notion of the resource curse. See also Manzano and Rigobón (2001); Lederman and Maloney (2007); Brunnschweiler and Bulte (2008); and van der Ploeg and Poelhekke (2009)

3. This literature highlights that natural resources can be a blessing in strong institutional settings. On the other hand, institutional settings with scant checks and balances that allow for ample discretion may lead to sub-optimal use of natural resources revenues. For instance, in less democratic regimes with weak institutions, a resource windfall can elicit rent-seeking, increase corruption, and further deteriorate institutions and governance. On the other hand, underdeveloped domestic financial markets and limited access to international markets may hinder the ability of countries to smooth out volatile resource rents. See van der Ploeg (2011) for a detailed analysis of these and other hypotheses.

4. See, for instance, Sala-i-Martin and Subramanian (2003); Mehlum *et al.* (2006); Robinson *et al.* (2006); Arezki and van der Ploeg (2007); and van der Ploeg and Venables (2010).

Second, even though a relatively smaller tax burden may diminish the incentives for citizen participation, it could be argued that taxpayers should still be interested in knowing how the government handles resource-related revenues. On the other hand, there may be some transparency issues regarding natural resources revenues that make this difficult. This would be the case if, for example, publicly disclosed information about resource-related revenues is not timely or available, or if revenues are directly disbursed to funds not linked to the budget, with obscure management criteria. In other words, resource revenues can be allocated directly through non-transparent or extra-budgetary mechanisms that impede access to information (Farejohn, 1986). This would hinder control and oversight by independent auditing bodies for the regular budgetary process. Lack of transparency, then, can be an additional element that conditions the quality of governance and public policies.

Third, if a lack of transparency obstructs the proper surveillance of the budgetary process and the incumbent is believed to be inefficient or corrupt, it would be rational for voters to favor government spending that directly increases household income (e.g. transfers), as opposed to public investment. The incumbent would then have further incentives to redirect spending to present consumption, in order to sway voter opinion and remain in power. This would prevent not only an efficient inter-temporal allocation of resources, but also an efficient allocation across activities, since public investment may have larger returns than current spending for present consumption.[5]

Fourth, a resource windfall can unleash rent-seeking among interest groups. This can potentially induce distributional conflict, weaken the rule of law and property rights, and elevate confiscation risks, with negative implications for governance and the quality of public policies (Cárdenas *et al.*, 2011). In extreme cases, the fight for rent appropriation can lead to armed conflict (Collier and Hoffler, 2004). For example, if property rights are weak, the exploitation of resources that are easy to carry and smuggle —such as diamonds or precious metals— can increase corruption to a larger extent than agricultural production (Boschini *et al.*, 2007).

Finally, volatility is a trademark of resource-related income, due to commodity price fluctuations. On the other hand, the progressive exhaustion of non-renewable resources limits the duration of their rents. Thus, considering that a part of the windfall is temporary, governments should aim to reinvest part of the rent in financial assets and physical capital or human capital, so that their stream of returns compensate for the decline of rents as the resource depletes, or provide a buffer against price shocks. This facilitates consumption smoothing. In short, fluctuations in resource-related revenues should not be transferred to government spending. Nonetheless, if there are problems of political competition and the institutional backdrop is weak, the government may be tempted to allocate resources to current spending to increase present consumption, rather than investing them,[6] contrary to an efficient temporal and sectoral allocation of resources. This, of course, entails efficiency and welfare losses.

The magnitude, temporariness and volatility of natural resources rents all create a dilemma for societies in terms of what to do with natural resources and how to guarantee their efficient use by the state. Even if the optimal criteria for the use of natural resources are not a core topic in this chapter, it is still relevant to present them here because a number of the budget rules to improve the fiscal management of resource revenues analyzed in the last section of the chapter are grounded in such criteria. In Box 6.1 we briefly summarize some of them.

---

5. Alesina *et al.* (2008) argue that fiscal policy becomes pro-cyclical if there are asymmetries of information and corrupt governance. Ardanaz (2011) explores the sources of information problems that exacerbate pro-cyclicality. This logic can be extended to resource allocation across activities as well.

6. Lane and Tornell (1996); van der Ploeg (2011).

Box 6.1. What can countries do with non-renewable natural resources revenues?

In principle, non-renewable natural resources revenues should ease an economy's budget constraints, increasing consumption. The dilemma is how much of the windfall should be consumed in the present, and how much should be saved for future generations' consumption. This is particularly relevant when the expected revenue flow is limited by resource depletion.

At a simple theoretical level, optimal criteria to manage natural resources involve saving a portion of the rents for reinvestment in assets whose returns guarantee a future revenue stream, compensating for the progressive reduction in revenues due to resource depletion and sustaining future consumption. Resource allocation should be bound by society's preference for present versus future consumption, and by the equalization of the rates of return across investment alternatives (e.g., financial assets, human or physical capital).

The idea of transforming natural resource windfalls into other forms of capital is a pragmatic rule for achieving sustained development (Hartwick, 1977; Hamilton and Hartwick, 2005). Potential output and social welfare should increase as societies save part of the windfalls to accumulate physical or human capital (van der Ploeg, 2011). How much to invest and on what should depend on the returns of investment alternatives, which naturally vary from country to country.

Investment strategies should then vary according to development levels. For example, economies with low levels of human and physical capital accumulation should have a wider range of investment projects with high returns, compared to more developed and capital-abundant economies. Consequently, resource-abundant less developed economies should allocate a larger portion of the windfalls to investments in domestic assets (e.g., infrastructure, human capital) than resource-abundant developed economies (Collier et al., 2010). Following this logic, we should expect developed economies to assign a large portion of the windfalls to savings in, for example, intergenerational pension funds with foreign asset portfolios. Instead, for a less developed economy, it makes more sense to use more of the windfall to accumulate domestic capital, since the returns to investing in education or in infrastructure would be higher, as long as the capacity for domestic absorption is not exceeded.

Source: own elaboration.

The previous debate suggests that resource windfalls may have a negative impact on public policy management for various reasons. We emphasized that resource-related revenues may lead to a disconnect between spending decisions and taxes on companies and individuals, and that, in turn, this may weaken taxpayers' incentives to obtain information to oversee the budgetary process. Information problems and lack of transparency in resource revenue management can also interfere with proper accountability and supervision of fiscal policy, which may reduce the government's incentives to provide high-quality public goods. In addition, the concentration of resources among fewer visible producers may trigger distributional conflicts, which could undermine political stability and have negative repercussions on development. Finally the high volatility of resource-related revenues makes budget planning more difficult, and, in the presence of weak institutions, could lead to pro-cyclical and inefficient fiscal policy.

Is there evidence that countries that finance a large share of spending with resource-related revenues demonstrate worse public policy management? In the next section we examine country-level international evidence to shed some light on this question, while in the fourth section we look at sub-national level findings for some Latin American economies.

THE EFFECT OF FINANCING THE BUDGET WITH NATURAL RESOURCE-RELATED REVENUES ON PUBLIC POLICY MANAGEMENT: EMPIRICAL EVIDENCE FROM THE INTERNATIONAL CONTEXT

In this section, we present evidence from cross-country studies to assess whether the quality of public policies may be affected by natural resource-related revenues. We investigate the effect of resource windfalls on revenue and spending decisions, on budget transparency, and on the efficiency of public goods provision.

One of the main findings of the data is that natural resource-abundant countries tend to be fiscally dependent on resource-related revenues. Figure 6.1 (see p. 217) depicts the relationship between a measure of non-renewable natural resource abundance (per capita mineral and hydrocarbon exports) and natural resource-related tax revenues as a percentage of GDP (left panel), and as a percentage of total fiscal revenues (right panel).[7] The figure reveals that the fiscal importance of natural resource rents with respect to the size of the economy and as a share of total revenues grows with per capita natural resource exports.

Economic and institutional development may, nonetheless, condition this interaction. For example, the importance of oil rents in Norway (around 25% of the budget) is significantly below the average value that would be expected given the value of its oil exports; in contrast, Libya and Nigeria, where oil revenues finance almost 90% of the budget, exhibit a larger fiscal dependence on resource-related revenues than would be expected considering the size of their exports. It is also worth noting that Norway already had a broad base of taxpayers and solid budgetary institutions and that did not decay upon the discovery of oil. This is not always the case in less developed economies.

In a recent study commissioned for this report, Perry *et al.* (2011) analyze these relationships using panel data. Their results suggest a positive and significant correlation between fiscal dependency and natural resource abundance, controlling for per capita income and alternative measures of institutional quality.[8]

The international evidence also suggests that fiscal performance in countries that finance the budget primarily with resource-related revenues differs from countries where this is not the case. Compared with countries with a broad and diversified tax base, governments that are more fiscally dependent on natural resource revenues tend to spend slightly less on average, relative to the size of their economies, in spite of higher total revenues. Nonetheless, countries that finance a large part of the budget with natural resource-related revenues exhibit, on average, weaker indicators of fiscal management effectiveness compared to other countries (see Table 6.1, p. 217). This evidence indicates that state actions in resource-abundant and fiscally dependent countries do not necessarily lead to social welfare gains.

7. The sample includes countries where at least 25% of exports are concentrated in natural resources.

8. Institutional quality is measured by the Government Effectiveness Index (GEI) of the World Bank's governance indicators and the International Country Risk Guide's (ICRG) government quality index. The GEI captures citizens' perceptions of the quality of public services, the quality of bureaucracy and its independence from political pressure, the quality of the policy formulation and implementation processes, and government credibility and commitment to policy implementation.

Figure 6.1 Natural resource abundance, magnitude of revenues and financing of the fiscal budget for selected countries (average 2004-2008)

Fiscal revenues from natural resources as percentage of GDP

Fiscal revenues from natural resources as a share of total revenues
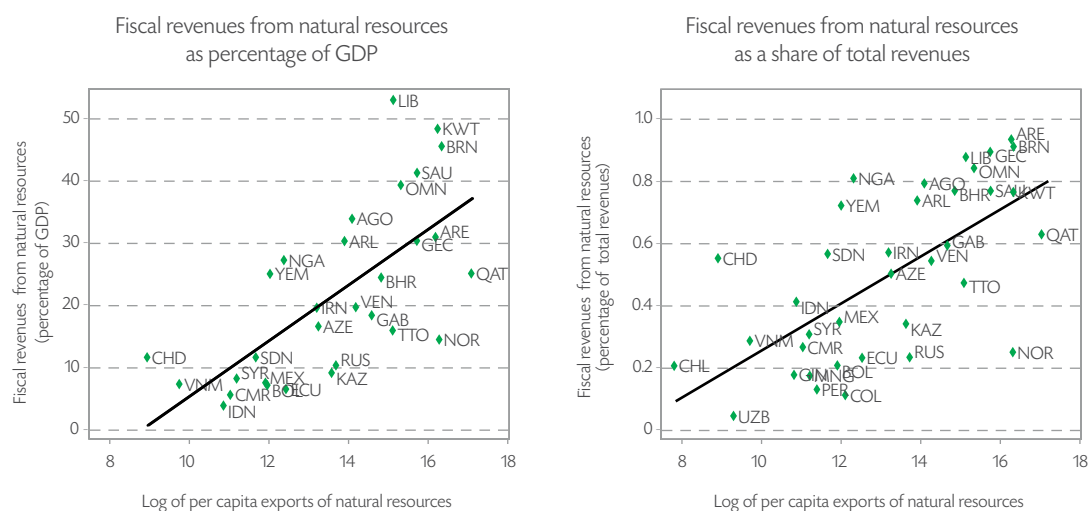
Source: author's calculation based on Perry *et al.* (2011).

Table 6.1 Do countries with high non-renewable natural resource revenues behave differently? [a/] [b/] (average 2000-2003)

Description	Countries not fiscally dependent on natural resources		Countries fiscally dependent on natural resources	
	Average	**Standard deviation**	**Average**	**Standard deviation**
Fiscal revenues from natural resources (percentage of GDP)	0.01	0.30	10.61	12.86
Total revenues (percentage of GDP)	30.21	20.15	31.55	12.75
Fiscal expenditures (percentage of GDP)	31.97	14.10	30.81	12.75
Central government debt (percent of GDP)	54.61	32.95	54.03	48.41
Net asset accumulation (percentage of GDP)	13.69	13.69	18.10	15.93
Government Effectiveness Index (ICRG)	0.10	1.04	-0.41	0.78

a/ A country is considered dependent on natural resources if an average of 25% of revenues are derived from non-renewable natural resources, between 2000 and 2003. From a total sample of 184 nations, we identified 41 countries that depend on natural resource revenues.

b/ The sample countries that depend on natural resource revenues are: Algeria, Angola, Azerbaijan, Bahrain, Bolivarian Republic of Venezuela, Bolivia, Botswana, Brunei, Cameroon, Chad, Chile, Colombia, Ecuador, Equatorial Guinea, Gabon, Guinea, Indonesia, Iran, Kazakhstan, Kuwait, Libya, Mexico, Mongolia, Namibia, Nigeria, Norway, Oman, Papua New Guinea, Peru, Russia, Qatar, Saudi Arabia, Sierra Leone, Syria, Sudan, Trinidad and Tobago, United Arab Emirates, Uzbekistan, Yemen and Zambia.

Source: author's calculation based on Perry *et al.* (2011).

On the other hand, resource-abundant countries tend to save more, as they exhibit a larger net total asset accumulation (both public and private). Beyond net asset accumulation, however, the sustainability of the investment and spending strategies of non-renewable natural resource-abundant countries merits an evaluation. To this end, we use the definition of adjusted net savings (Pearce and Atkinson, 1993; Hamilton, 1994), which refers to gross public and private savings minus fixed capital depreciation, plus spending on education (investment in human capital), minus estimates of the value of the depletion of natural resource (the decline in mining, oil, gas and forestry reserves and its asset value). Figure 6.2 reveals a negative correlation between adjusted net savings rates and natural resources rents as a percentage of GDP. This indicates that resource-abundant countries actually save less, accounting for both resource depletion and capital depreciation.

Figure 6.2 Adjusted net savings and natural resource rents for selected countries (average 2003-2008)
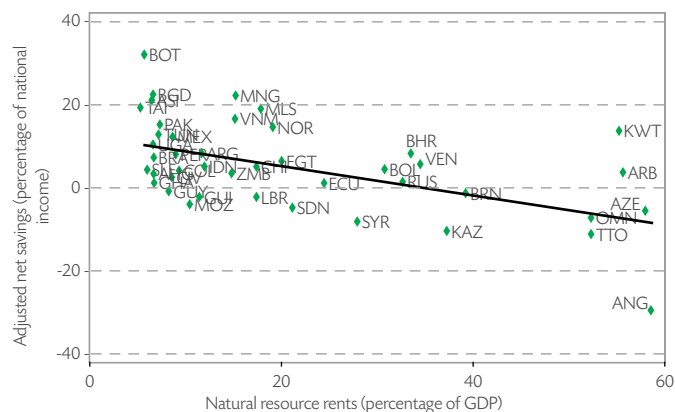
Source: author's calculation based on World Bank's WDI (2011).

These countries are then less capable of transforming natural resource rents into other assets that guarantee an alternative future revenue stream. At the same time, the definition does not account for the fact that the returns of investing in education vary across countries, nor the differences in effectiveness and efficiency of education spending. This may alter the actual sustainability of strategies with similar levels of net adjusted savings. In spite of this, the results of the broader concept of savings are still illustrative.

Another distinguishing feature of natural resource-abundant countries is a seemingly lower transparency in fiscal management. First, the methods of rent appropriation matter, not only in terms of the size and importance of those revenues in the budget, but also in terms of the transparency of resource revenue management. Figure 6.3 (see p. 219) depicts a negative correlation between the transparency index for the management of mining and hydrocarbon revenues[9] and the amount of royalties charged to these activities. As we will see in section five, royalties are extensively used by Latin American governments to collect revenues from extractive industries.

9. The index evaluates and rates the availability of information on the following dimensions: access to resources (contracts and licensing terms); generation of revenues (production and payments); institutional setting (rules, roles and responsibilities of the main players involved); functioning of state-owned companies (corporate governance and reporting practices); natural resource funds (operating rules); sub-national transfers and whether countries abide by the transparency criteria of the Extractive Industry Transparency Initiative.

Figure 6.3 Transparency in non-renewable natural resource mananagement and royalties for selected Latin American countries (2010)
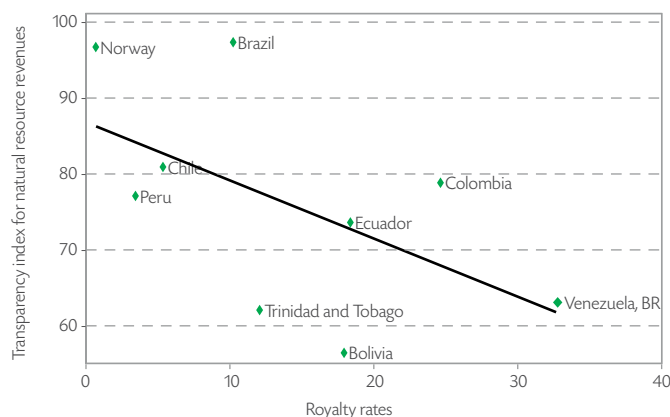
Source: author's calculation based on Transparency International and Revenue Watch Institute (2010).

Second, there is also a negative correlation between the resource revenue transparency index and the total revenues derived from natural resources. Figure 6.4 (see p. 220) correlates the revenue transparency index for the main international oil producers with the size of fiscal revenues from oil as a percentage of GDP. In spite of some dispersion in the data, resource revenue transparency clearly decreases as oil rents increase. For example, Norway attains the highest levels of oil revenue transparency, well above what may be expected considering the size of its oil rents. At the other extreme, we find Equatorial Guinea, showing the lowest levels of transparency, well below what the size of its oil rents would suggest. As mentioned in section two, a lack of transparency in resource revenue management is problematic. Limited access to information about the value of revenues at stake and problems with their distribution hinder citizen scrutiny about the use of such resources, which in turn reduces the government's incentives to perform efficiently.

Third, in addition to revenue management, Perry *et al.* (2011) find that the larger the portion of the budget that is financed by natural resource revenues, the lower the overall budget process transparency, according to a budget transparency measure[10] for a wider sample of countries.

Up to this point we have shown evidence based on averages. This conceals variations in the data, which may differ quite substantially across countries. In a more rigorous statistical analysis that exploits the variability in the data, not only across countries but also across time, Perry *et al.* (2011) use data for 184 countries between 1960 and 2010 to assess the relationship between natural resource revenues and fiscal performance. They find that higher non-renewable natural resource revenues are associated with higher ratios of public spending to GDP, but that this relationship weakens as income per capita increases. In

10. The measure is computed by the Open Budget Initiative. It is based on surveys to evaluate public access to budget information, opportunities for citizen participation in the budgetary process, and the authority of oversight bodies (legislative or external auditors).

other words, lower income countries spend a larger portion of resource revenues than higher income countries, which save more.

Figure 6.4 Transparency in oil revenue mananagement and size of oil revenues (2010)[a/]
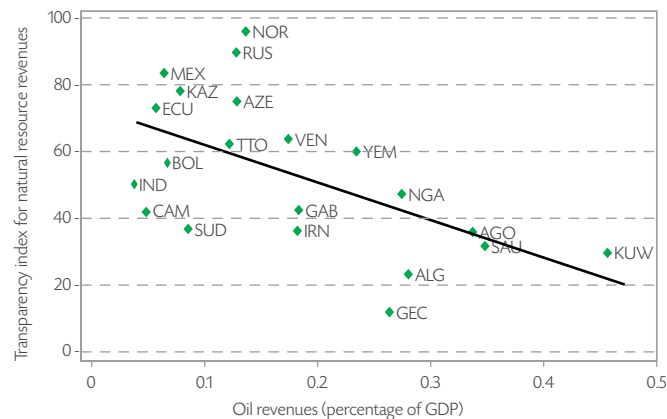
a/ Oil revenues as a percentage of GDP correspond to the 2000-2008 average.

Source: author's calculation based on Perry *et al.* (2011), Transparency International and Revenue Watch Institute (2010).

This result is consistent with the fact that the returns to physical and human capital accumulation should be higher in low-income countries than in high-income economies. In this regard, it is worth investigating whether resource rich countries in fact invest more in education, health, or public infrastructure than other countries. According to Perry *et al.* (2011), the international evidence does not suggest that the governments of countries with high resource revenues spend significantly more than others in health or education, regardless of their per capita income levels. Rather, they find that a positive and significant relationship between public investment and natural resource revenues only appears in high-income countries. This means that resource abundant low-income countries may report higher total public spending, but do not allocate a significantly higher portion of resources to public infrastructure, health, and education than other countries.

The question then arises as to whether a relationship exists between fiscal performance indicators and financing of the budget with natural resource revenues. The findings in this case suggest that a higher share of the budget financed with natural resource rents is associated with poorer indicators of spending efficiency in education (enrollment per dollar spent) and in health (life expectancy and immunization rates per dollar spent).

On the other hand, recent evidence also points to inter-temporal inefficiencies in allocation within resource-abundant countries. Humphreys and Sandbu (2007) find a positive and significant correlation between changes in government consumption and short-run natural resource revenue fluctuations; however, the sensitivity of ex-

penditures to short-term revenue fluctuations falls dramatically in countries with robust systems of checks and balances that limit government discretion. This means that, in the presence of limits to discretion, governments may be less prone to changing expenditure plans following a resource windfall. Perry *et al.* (2011) also find that public spending is more volatile in countries that finance a large portion of the budget with revenues derived from natural resources, although the data does not support the use of comparatively more pro-cyclical fiscal responses in these countries. They attribute the finding to the weak average contemporaneous co-movement between natural resource revenues and output, although there is a high degree of dispersion across countries.

These results so far are suggestive of the existence of a relationship between fiscal dependency on natural resources, lower budget transparency, and poor fiscal performance. Next, we analyze sub-national level experiences in Latin America that complement these findings.

LATIN AMERICA: THE IMPACT OF NATURAL RESOURCE REVENUES AT THE SUBNATIONAL LEVEL

Country-level empirical evidence is suggestive of the problems that can result from fiscal dependence on revenues derived from natural resources. There are some caveats, however, to establishing causality from country-level data. Non-observable factors (e.g., culture, institutions, politics, and general efficiency of the state, among others) may determine decisions about the use of resource revenues, as well as the importance of natural resources in exports and in financing the budget. Commodity price fluctuations may then not only affect the size of revenues and their allocation, but also production decisions, introducing endogeneity in models that use measures of resource abundance or fiscal dependence as explanatory variables. Naturally, this makes inferring causal relations difficult. Some of these problems can be mitigated with sub-national level data. Cross-section observations (e.g., municipalities) are more homogeneous in this case, since some non-observable factors remain constant within countries, allowing for more reliable inferences.

Local governments in Latin America play a growing role in the provision of public goods, such as basic health and education services, water and sanitation, public lightning, roads, garbage collection and treatment, among others. In spite of this, their capacity for tax collection is still quite limited. To a large extent, local governments rely on centralized transfers to finance their spending. On average, transfers represent nearly 70% of local governments' budgets.[11] Non-renewable natural resource transfers to local governments have grown in recent years in Latin America. A widely used distribution criterion for natural resource revenues is to focus the majority of benefits on the geographical divisions or jurisdictions (e.g., municipalities, counties, and states) where extractive activities are located.

A growing line of research tries to empirically assess the incidence of natural resource revenues on budget allocation decisions, spending efficiency, and budget transparency, using sub-national level data. These studies take advantage of the exogenous components of natural resource transfers associated with geographic endowment and hence production, which, for the most part, are unrelated to other local conditions (e.g., demography), in contrast to other transfers. Studies then compare the changes in interest variables between local governments that receive natural resource transfers and non-recipient local governments, before and after a resource windfall.

---

11. See Eguino *et al.* (2010) for a detailed analysis of revenue and spending structures in Latin American municipalities.

Evidence for Brazil

Caselli and Michaels (2011) employ a difference-in-differences approach to evaluate whether quality of life improved more in Brazilian municipalities that benefited from oil royalties between 1991 and 2000 than in municipalities that did not enjoy the windfall.[12] They find that municipalities with the largest concentration of oil rigs are more fiscally dependent on oil royalties. These regions obtained large revenue increases that allowed higher spending in urban infrastructure, education, and health services. Higher spending, however, did not seem to have improved public goods provision. They could not infer from the data that oil-rich municipalities registered significant improvements in housing conditions, public infrastructure, or schooling or health indicators with respect to other municipalities. The authors find no evidence of a significant increase in household incomes in oil-rich municipalities compared to other municipalities, but do find evidence of greater problems of corruption in oil-rich municipalities.

Ferraz and Monteiro (2010) study the behavior of municipal governments in oil-producing areas on the Brazilian coast between 1996 and 2008. They find that royalty windfalls induced an important increase in temporary public employment, but that this larger payroll did not significantly boost the provision of public health and education services. Larger payrolls did, however, create electoral advantages for incumbents in the short-term, but this electoral advantage dissipated in the medium-term, as voters eventually punished the lack of improvement in public goods provision.

Evidence for Peru

The strong increase in mining royalties in Peru over the past decade allows for the evaluation of differences in fiscal performance between municipalities that benefited from the windfall and non-recipient municipalities. The Mining Royalties Law in Peru establishes an intergovernmental transfer system whereby 50% of the income taxes paid by mining companies is distributed to local governments where minerals are extracted.[13] This amount is allocated as follows: i) 25% of the royalties are allocated to the government for the region in which the municipality and mine are located, as well as an additional 5% goes to public universities in the region; (ii) 10% goes to the district municipality where the mineral is extracted; (iii) 25% is directed to the municipalities of the province where the mineral is extracted; and (iv) the remaining 40% is distributed among the municipalities of the department where the mineral is extracted.[14]

As we can appreciate in Figure 6.5, royalty transfers soared with the sharp increase in metal prices after 2004. Between 2004 and 2007, when prices peaked, royalty transfers mounted more than 1000%. In spite of the decline that followed the financial crisis in 2008, royalty transfers remained at historical highs and gained ground again in 2011.

In a recent study, Sanguinetti (2010) examines the impact of the distribution of mining royalties on fiscal performance of local governments, and consequently, its effect on local development in Peru. For this purpose,

---

12. The Treasury distributes oil royalties on a monthly basis to the municipalities where production takes place or to municipalities "in front" of offshore rigs along the coast. Municipalities, in turn, can freely use transfers for public goods provision, but not to increase the municipal payroll (long-term employment contracts) or to pay debt. It is worth mentioning that municipalities are the main providers of health and education services in Brazil.

13. The income tax rate for mining companies is 30%.

14. The distribution among district, province, and department municipalities changed in 2009.

the author evaluates whether the tax effort and the expenditure structure differ significantly between royalty-recipient municipal governments and non royalty-recipient governments, before and after the windfall.

First, the author examines whether these transfers negatively affect the tax collection by local governments. He finds no statistically significant substitution effect between local tax collection and royalty transfers. In other words, royalty-recipient municipalities do not reduce other taxes. Second, Sanguinetti evaluates whether the mining royalties affect the quality and structure of public expenditures. The results indicate that larger mining royalties are, on average, associated with higher capital public expenditures, relative to current expenditures. The author relates this result to the regional mandate that mandates that royalty transfers must be devoted to public investment by recipient local governments. The author also concludes that the allocation of royalty transfers may widen the regional development gap in Peru.

Figure 6.5 Mining royalty transfers to municipalities in Peru (2001-2011)
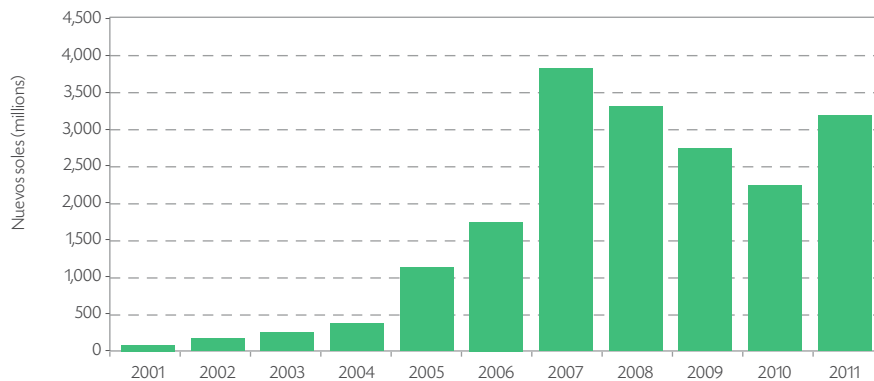
Source: author's calculation based on Ministry of Economy and Finance of Peru (2011).

Having evaluated the effect of mining royalties on tax collection and spending, it is interesting to examine the effect of mining royalty transfers on welfare indicators. Arreaza and Reuter (2012) analyze whether Peruvian municipalities that received mining royalty transfers demonstrate better welfare indicators than those that did not have access to this revenue source, before and after the windfall. They use data from the National Registry of Municipalities (known by the Spanish acronym, RENAMU), which collects annual statistical information from local governments (district and provincial municipalities, and smaller populated areas) on the state of infrastructure, local public services, and social development policy. They use reported results for 1,540 district and provincial municipalities to test whether performance indicators in royalty-recipient municipalities significantly changed between 2003 and 2007 with respect to non-recipient municipalities during the same period, controlling for some municipality-specific variables.

The results indicate that larger per capita royalties generate a significant impact on the number and value of per capita investments projects approved in the municipal budget. The evidence suggests, however, that

those municipalities receiving larger mining windfalls do not present significant improvements in performance indicators relative to the municipalities that did not. For example, in the case of health indicators, there is no significant change in the per capita number of municipal or public health establishments in municipalities that received higher mining windfalls relative to other municipalities. Similarly, the results do not support evidence in favor of a different impact on other per capita variables, such as the number of centers for the protection of children, teenagers, and the elderly and their beneficiaries; the number and beneficiaries of social organizations; or the number of public communication centers that offer internet services. Considering that these transfers are associated with higher levels of spending, at least in the municipal budget, this evidence is not inconsistent with a certain level of inefficiency in public policy management.

What explains the fact that a mining windfall is not correlated with a larger supply of public goods and services in resource-abundant municipalities? An administrative issue that may have limited the performance of Peruvian municipalities receiving these transfers is that, even though the revenues from mining royalties must be used for investment projects, the feasibility studies prior to the investment could not be financed with royalty resources.[15] This could explain some delays in the execution of investment projects. On the other hand, Maldonado (2010) finds that the rising mining royalties between 2000 and 2006 significantly increased the probability of non-official payments (bribery) within a limited sample of mining regions that benefited the most from the windfall. He concludes that resources may have been diverted from the provision of public goods.

The sub-national level evidence seems to suggest that natural resource revenues expand local revenue sources and this is associated with more spending. Nonetheless, it is not clear that budg*et all*ocations can be associated with stronger government performance or in the provision of higher quality public goods.[16]

TAX REGIMES FOR NON-RENEWABLE NATURAL RESOURCES IN LATIN AMERICA

We saw previously that if governments fund part of the budget with natural resource revenues, this may have negative consequences for budget transparency and public policy management. The importance of natural resource revenues for public finances not only depends on the magnitude of resource rents, but also on the state's share of those revenues. It is thus relevant to know how the state appropriates natural resource rents. In this section, we focus our attention on this issue, highlighting the changes in the fiscal regulation of natural resources that contributes to increasing the state's share of mining and hydrocarbon profits in the main producing countries in Latin America.

The starting point for the relationship between the state and natural resource producers is the contractual regime for natural resource extraction. As in most of the world, the state owns the soil, the sub-soil and

---

15. Since 2008, regulations allow municipalities to use a portion of the royalties for project feasibility studies, rather than solely financing them with current expenditures, as municipalities were forced to do before.

16. Other studies with sub-national level data also note that the presence of natural resource revenues has an impact on local government's fiscal performance. Gelemur and Pochat (2011) find that Argentine provinces with larger oil royalties spend more, even though this does not necessarily imply higher levels of provision of health and education services, public goods, or substantial differences in basic indicators of social welfare. Perry and Olivera (2009) study the effect of oil royalties on the fiscal performance of local governments in Colombia. Using cross-section data for municipalities, they find that oil royalties do not affect the tax collection effort for other activities. Moreover, royalties are positively correlated with the tax effort in the presence of good institutions. Royalties are also related to higher public investment, considering that by law, royalty revenues should be invested. The authors also document emblematic cases of corruption and revenue management inefficiency, such as the case of Arauca.

its resources in Latin America. It is also common for state-owned companies to exploit those resources, particularly minerals, oil, and gas. On the other hand, where the private sector participates in extractive activities, the state establishes production and fiscal arrangements with these private corporations through concessions or special contracts.

In the case of concessions, the state grants temporary property rights to the resource to private companies in exchange for fiscal contributions over the period of the concession. Contracts can take various forms, however. In shared production contracts, companies receive a previously agreed share of output as compensation. In service contracts, companies receive direct payments from the state for exploiting the resource. Payments generally depend on earnings and are exempt of certain taxes. Finally, there are contracts for joint ventures and public-private partnerships to share profits and risks.

The state can also use other mechanisms for rent appropriation, such as dividends from state or mixed companies; income taxes or value-added taxes; and special contributions for extractive activities, such as royalties, bonuses, or windfall taxes.[17]

Royalties are one of the most widely used tools by the state to appropriate natural resource rents. They constitute a given amount that the firm must pay based either on output volume (e.g., per metric ton of metal, or per barrel of oil) or on the gross value of output produced or sold. As opposed to volume-based royalties, value-based royalties fluctuate with the price of the commodity. Both types of royalties are paid regardless of profits. On the other hand, there are also profit-based royalties. Although these generate better incentives for private extraction companies, they are not very common, since the simplicity of volume or value-based royalties is more attractive for governments.[18] On the other hand, since tax authorities do not have perfect information about companies' performance, value-based royalties are more convenient in monitoring evasion as well as guaranteeing revenues that are easy to monitor and more stable than profit taxes. Governments tend to favor convenience over economic efficiency, which is why volume- or value-based royalties predominate.[19] Nonetheless, royalties do not guarantee a progressive share of earnings for the state as prices increase.

The state also charges income taxes[20] to mining, gas, and oil companies. Tax and royalty rates can be fixed or variable. Fixed rates are not progressive: average tax rates can be below marginal rates as profits increase with rising commodity prices. Instead, with variable rates that depend on price or revenue ranges, the state can ensure a more progressive system. Another way to achieve greater progressivity in the tax system is to apply higher tax rates to windfall earnings generated by higher commodity prices. Windfall taxes activate at a certain price or revenue threshold, with incremental marginal rates. The state can also capture a share of earnings through bonuses or special payments in exchange for operating licenses; output bonuses; limits to cost recovery reimbursements to companies operating at different stages of project development; fiscal ring-fencing (impediments to operation consolidation); among others (Monaldi, 2011).

On the other hand, the manner of capturing resource rents does not necessarily remain consistent over time. In fact, tax regulation of mining, gas, and oil activities has traditionally changed over commodity

---

17. See Monaldi (2011) for a detailed revision of contractual and fiscal regimes for natural resources in Latin America.

18. Only Chile and Peru (since 2011) use profit-based royalties in Latin America.

19. See Otto *et al.* (2006) for a more detailed account of mining royalties.

20. Taxes on profits: revenues minus operating costs, royalties, interest and depreciation.

cycles. If operating contracts do not consider tax progressiveness, the state captures a less than proportional share of earnings when commodity prices are high and a more than proportional share when prices are low. This often generates distributional tensions between fiscal authorities, operating companies (including state companies), local governments, and consumers, which end up leading to contract renegotiation so that the state can increase its share of profits.[21]

For example, as can be appreciated in Figure 6.6, the prices of Latin America's main export commodities soared over the last decade, compared to prices in the 1990s. When mineral and oil prices were low in the early 1990s, governments opted to reduce or eliminate taxes in order to make extractive industries more attractive to private investors, particularly foreign investors. But when commodity prices picked in the last decade, many governments changed gears and moved to increase its share of revenues by renegotiating contracts with operating companies to increase taxes and royalties or nationalizing operations (Campodónico, 2008; Otto *et al.*, 2006; Monaldi, 2011).

The rise in commodity prices meant a substantial increase in resource revenues for Latin American countries. Average fiscal revenues derived from natural resources passed from little more than 5% of GDP in 2002 to 11% of GDP in 2008, when commodity prices peaked. In spite of the price correction in the aftermath of the 2008 international financial crisis, by 2010 resource revenues had again surpassed early decade values (see Figure 6.7, left panel, p. 227).

Figure 6.6 Price indexes of the main non-renewable natural resources in Latin America (1960-2010)[a/]
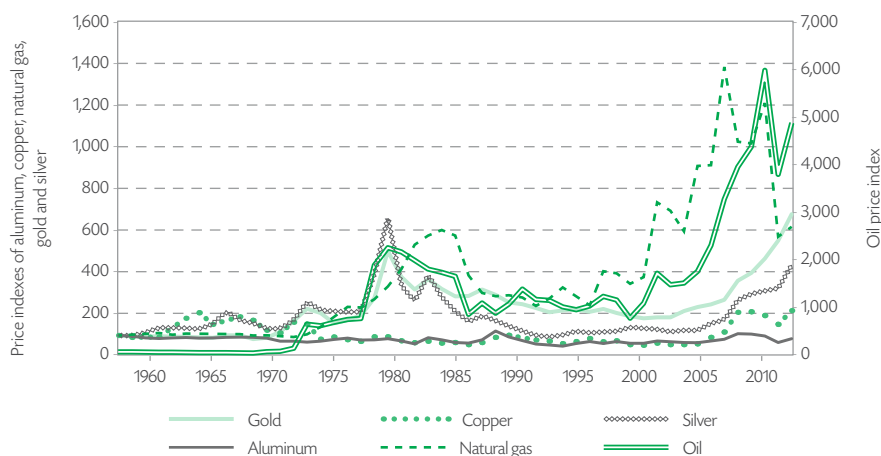
a/ 1960 = 100.
Source: author's calculation based on World Bank's GEM Commodities (2011).

---

21. See Monaldi (2011) for a detailed account of this issue.

On the other hand, the portion of the government budget financed with natural resource revenues increased, on average, from 18% to 35%, although with marked differences across countries. While in Chile and Peru the rise in mineral prices increased the weight of resource revenues in total fiscal revenues above 20%, in Trinidad and Tobago and Venezuela, oil rents funded over 60% of the budget in 2008.[22] In Colombia, however, the importance of oil and mineral rents in the budget did not increase as they did in the rest of the region, partly as a result of a regulatory environment aimed at attracting investment (see Figure 6.7).[23]

Figure 6.7 Natural resource revenues for selected Latin American countries[a/] (various years)

Natural resource revenues as percentage of GDP

Natural resource revenues as a share of total revenues

■ 2002 ■ 2008 ■ 2010
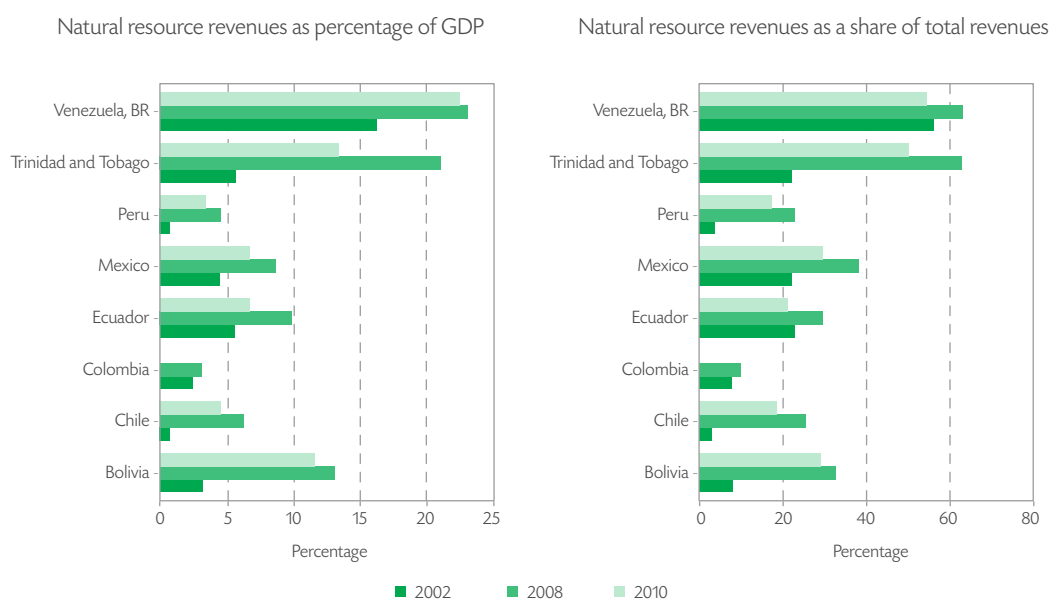
a/ The final data point for Colombia is 2007.

Source: author's calculation based on Villafuerte *et al.* (2010) and Perry *et al.* (2011).

The increase of the share of natural resource revenues in total fiscal revenues was not only the result of rising commodity prices. Rather, in many cases, tax regimes and contractual changes allowed governments to appropriate an increasing share of resource rents. Table 6.2 (see p. 228) synthesizes the main mechanisms by which governments in the main commodity producers in Latin America obtain profits from extractive activities.

22. Coverage of fiscal accounts extends to the non-financial public sector for Bolivia, Ecuador, Mexico and Venezuela, the general government for Chile, and central government for Peru, including the regions that benefit from mining royalties. In the case of Venezuela, Villafuerte *et al.* (2010) attribute part of the state oil company (PDVSA) spending to non-oil expenditures to capture the importance of quasi-fiscal expenditures in total government spending. Quasi-fiscal spending by PDVSA for social programs and sovereign funds managed by the executive reached 6.6% of GDP in 2006 and 8.5% by 2010. This definition of the public sector differs from the one presented in chapter 4 that refers exclusively to the central government.

23. It is worth mentioning the cases of Panama and Paraguay as well. A substantial part of the budget in both countries is financed by resources that do not come from taxpayers, as in resource-abundant countries. In the case of Panama, canal dividend transfers represented, on average, 3% of GDP and 12% of government revenues over the last decade. Likewise, fiscal revenues generated by energy exports from Itaipú-Yacyretá represent 3% of GDP and 17% of government revenues in Paraguay. In this chapter, however, attention centers on non-renewable natural resource producers.

Table 6.2 Tax regimes for natural resources in selected Latin American countries

Country	Royalties	Income tax rates in excess of corporate rates
Hydrocarbons		
Argentina	12% of output value (1967)	No
Bolivia	18% of audited production (2005)	No
Brazil	10% of the oil production and natural gas field production (1998)	No
Colombia	20% in old contracts and 8% - 25% in new contracts (2002)[f/]	No
Ecuador	12.5% - 18.5% of the extracted volume depending on the oilfield (1978)	100% for Petroecuador, 0% for private
Mexico	n.a.[i/]	35%
Venezuela, BR	33% of the extracted volume (2001)	16%
Mining		
Chile (copper)	0.5% - 5% of output value (2005)[d/]	No
Peru (polymetallic)	1% - 12% (2011)[j/]	No

a/ If the oil price exceeds 42 USD/b, the cut-off value formula is applied to calculate retentions.
b/ Hydrocarbons were nationalized after the Hydrocarbons Law was reformed.
c/ It is applied for large volumes of production or during periods of high profitability of oil or natural gas operators.
d/ The rate depends on production volumes.
e/ The tax applies only to state-owned CODELCO.
f/ Depends on the daily production of the field.
g/ The economic rights collected by the National Hydrocarbons Agency (ANH), aside royalties, are from the use of subsoil, the exploitation, and high prices
h/ The state will collect a 99% share of windfall profits from new concessions for the high oil prices.
i/ There are no special taxes on the oil industry in Mexico. Oil activities are exclusive to the Mexican government and Pemex.
j/ Since 2011, royalties are charged on quarterly operating profits (not on the value of sales) and all companies pay royalties under this new scheme (and not only the companies without a legal contract).
k/ This tax was introduced in 2008 and was amended in 2011 to ensure a higher share of profits for the state, when the price of the Venezuelan market basket exceeds USD/b $70.
l/ Its purpose is to reserve brokerage activities for the supply of liquid fuels for the state.
m/ The IEM is charged to companies without a stable legal contract, based on profit margins depending on operative margins.
n/ The GEM is charged to companies with a stable legal contract, based on profit margins depending on operative margins.
n.a.: not applicable.

Source: author's elaboration based on Monaldi (2011), Campodónico (2008) and national sources, several years.

State Shareholding	Other taxes	Changes in the legislation (latest 10 years)
Hydrocarbons		
Yes, YPF	Export tax Oil cutoff (2007)[a/]	Yes
Yes, YPFB was reestablished (2005)[b/]	Direct Tax on Hydrocarbons 32% (2005)	Yes
Yes, Petrobras	Special shares 10 - 40% (1998)[c/]	Yes
Yes, Ecopetrol	Taxes collected by ANH (2003)[g/]	Yes
Yes, Petroecuador	Extraordinary profits 50% (2006) 99% (2007)[h/]	Yes
Yes, Pemex	Special taxes on profits and the right to use hydrocarbons	No
Yes, PDVSA	Special Contribution Law on Extraordinary Hydrocarbon Prices (2011)[k/] Reform of the Organic Law for the Internal Market of Liquid Fuels (2008)l/[l/] Direct financing of social programs Organic Law for Hydrocarbons (2006 and 2001)	Yes
Mining		
Yes, CODELCO	Law N°18,445 10% of revenues from foreign sales (1985)[e/] Specific Tax to Operating Income 5% - 34.5% (1974)	Yes
No	Special Mining Tax (IEM) 2% - 8.4% (2011)[m/] Special Mining Tax (GEM) 4% -13.12% (2011)[n/]	Yes

First, state companies have a leading role in production. Even though the private sector participates in extractive industries in many countries, the state is often the largest, if not the only, shareholder of natural resource extraction companies, which concentrates royalties, taxes and other contributions among a limited number of players. Mining in Peru would be an exception to this rule, since private companies with concessions carry out mineral extraction. Most countries use value-based royalties; however, royalty rates vary substantially, from 5% in Chile for copper extraction up to 30% in Venezuela for oil exploitation. Governments in all countries also charge income taxes to extractive activities, but in Ecuador, Mexico and Venezuela the tax rates applied to oil companies are higher than the corporate tax rate for other activities.

It is also worth noting that over the last decade, all countries (except for Mexico) changed the regulation of natural resource sectors to increase the state's share of earnings. This was done with higher royalties and taxes, windfall taxes (Venezuela), and retentions (Argentina) to ensure a larger share of profits as commodity prices increased. Contracts with private companies were renegotiated in Bolivia, Ecuador, and Venezuela to increase the state's share in the business and thereby obtain larger revenues.

Regime changes were conditioned by natural resource endowments and maturity of existing investments. For example, net exporters with wide reserve margins and significant levels of capital in operation —such as Argentina, Bolivia, Ecuador, Mexico and Venezuela— have often extracted more rents than countries with smaller reserves, and so wish to attract investment to expand output, like Brazil, Colombia and Peru (Monaldi, 2011). Altogether, these reforms implied a considerable increase in rent appropriation by the state. Resource revenues and overall budget transparency, however, did not necessarily go hand in hand with reforms. In the appendix to this chapter, we present a more detailed account of the recent evolution of fiscal regimes for natural resources in the main producer countries in Latin America and the impact this evolution had on tax revenues and their composition.

As a consequence of the changes in tax regimes for natural resources in the context of increasing commodity prices, governments in Latin America profited from a substantial windfall over the last decade. How were resources allocated? Did the quality of public policies improve as budget constraints relaxed as a consequence of the windfall?

Country-level evidence suggests a differentiated management of the windfall. There was a steep increase in revenues in Latin America's eight main non-renewable natural resource exporters (Bolivia, Chile, Colombia, Ecuador, Mexico, Peru, Venezuela, and Trinidad and Tobago). A share of these revenues was deployed to boost spending and to reduce indebtedness, although spending expansion was much more pronounced in some cases. There was a much more dramatic expansion of spending in Colombia, Ecuador and Venezuela than in Chile where, as opposed to other countries, structural balance rules limits discretionary spending. In terms of spending composition, public investment rose considerably in Ecuador and Trinidad and Tobago, and to a lesser extent in other countries (Perry *et al.*, 2011).

Heterogeneity in results across countries may well result from differences in institutional settings. For example, better management of natural resource revenues should be expected in countries with clear budget rules and accountability compared to countries where discretion and lack of transparency prevail. This is analyzed in the next section.

BUDGET ARRANGEMENTS FOR NATURAL RESOURCE REVENUE MANAGEMENT

The results presented in previous sections indicate that having revenues derived from natural resources does not necessarily lead to better fiscal policy performance. The key question is what resource-abundant countries can do to guarantee a public policy management that improves welfare. Many resource-rich countries have resorted to sovereign stabilization or wealth funds to improve the management of natural resource-related revenues; however, the international experience indicates that the success of budget arrangements to incorporate natural resource revenues in the budget and to set the incentives for good governance seems to depend fundamentally on their transparency, compatibility with the incentives of the key players in budget decisions, and proper accountability. In this section, we analyze what conditions may guarantee more effective arrangements for natural resource revenue management.

As important as rules and funds may be, it is important to consider the political economy problems related to managing resource-related revenues, in order to avoid deviations from established policy targets. This may be facilitated by a system of checks and balances, so that budget decisions pass through several instances of debate and revision prior to approval. In addition, budget transparency is essential for citizens to become informed actors in monitoring the budget process, either through the voting process to reward or punish government performance or through their representatives (e.g. in parliament).

Ideally, budget arrangements should be designed to adapt to countries' economic, political and institutional conditions. For example, countries with solid budgetary institutions need not impose restrictive rules for the management of natural resource revenues. On the other hand, countries with weaker institutions may require restrictive rules to gain credibility and create the right incentives for all actors to abide by the rules.

Fiscal arrangements should account for the distributional pressures that may arise from resource windfalls and take measures to guarantee adequate allocation, according to countries' conditions. For example, as we mentioned in the first section, the returns to investing in education and fixed capital should be higher in developing economies than in industrialized countries. In this sense, rules for developing economies need not follow the same allocation criteria as rules in developed countries.

It is also important that the state establishes clear and transparent contracts and fiscal agreements with natural resource extraction companies, so that citizens can properly assess their contributions. It is equally important that contracts provide for progressive gains as commodity prices and profits increase, in order to reduce incentives for contract renegotiations when prices rise, which may lead to mechanisms to capture rents that are opaque or incompatible with incentives to invest. Such changes not only may hinder oversight of revenue collection, but also reduce investment in extractive activities, in turn limiting prospects for future output. At the same time, this may trigger a vicious circle where the state seizes an increasing share of natural resource rents to compensate for output reduction with distortionary and non-transparent mechanisms.

Recent studies highlight the importance of certain premises components of budgetary arrangements for natural resource revenue management (Humpreys and Sandbu, 2007; Truman, 2007). First, budget rules have the advantage of facilitating oversight and, when obeyed, budgetary institutions gain credibility and commitment to strengthening the rules. Rules can be qualitative or quantitative constraints. Quantitative constraints establish spending caps for resource revenues, either for annual income flows or for accumulated

savings in wealth funds (if they exist). There are also rules that establish how much to allocate to savings or stabilization funds. In other words, these rules limit how much is spent. Qualitative rules, on the other hand, specify spending allocation. Usually, resources are earmarked for specific programs or investment funds for strategic sectors. In other words, qualitative constrains dictate how money is spent.

Quantitative constraints have the advantage of being transparent and easy to follow by all parts involved, but the disadvantage of reducing flexibility in budget management, which may lead to modifications or even rule suppression altogether, ultimately defeating its original purpose. Simple rules facilitate accountability and surveillance. There are very simple rules that, for example, limit spending to a portion of revenues, but this may narrow the space for countercyclical policies. More complex and better-designed rules, on the other hand, may facilitate countercyclical policy management.

Qualitative constraints may grant more flexibility to fiscal policy but sometimes at the expense of transparency. Earmarked spending, for example, may lead at times to parallel budgets with a lot of discretion and little transparency, with deleterious effects on policy effectiveness and efficiency. In such cases, undue political pressures may bias spending allocations towards present consumption and less efficient uses.

Rules may even be relaxed in time, as the budget process gains transparency and credibility. If citizens trust the state, they have fewer incentives to demand spending for present consumption in order to directly benefit from the windfall, rather than allow an ineffective state to divert resources from public goods provision or savings.

Another key element to ensure good management of natural resource revenues is accountability in the budget process. In the absence of accountability and proper supervision of sovereign wealth funds activities and of compliance with budget rules, the cost of not fulfilling these mandates may be low.[24] It is crucial then to design institutional arrangements to protect rules from undue political pressures to break them.

One way to regulate the budget decision-making process is to divide responsibilities among different institutions or branches of the public sector. A decision-making process that includes key political actors (i.e., the government, the opposition parties, some government branches (e.g. parliament) or institutions (e.g. an independent that manages sovereign funds, if they exist) and citizens) can make each consider the incentives of others, potentially increasing the efficiency of the allocation of revenues. For instance, in order to keep government incentives aligned with the fulfillment of budget arrangements, decisions about how much to spend and where to spend it can be separated.[25] Supervision by an independent authority can enhance transparency and credibility of the fiscal arrangement. Each of the actors and institutions involved should be accountable and each should have enough power to do their job; for example, their opinion on transfers to sovereign funds and their investment activities could be binding.

Transparency in resource management is critical, particularly if citizens are to become important actors in the budget process. Transparency should affect policymakers' behavior as long as citizens can reward or punish their performance. Sovereign wealth funds or stabilization funds can be an opportunity to increase

24. If deviations from the rules have no negative consequences for the incumbent, low compliance with the rules can be expected. Even if the law establishes sanctions for not complying with the rules, policy makers may still have incentives to ignore or modify them if the sanction costs are low relative to the benefits of ignoring them, either because doing so increases the probability of remaining in power or because funds can be directly appropriated (corruption). If political incentives are not taken into consideration, the result may well be constant alterations of the rule (Humphreys and Sandbu, 2007).

25. See Humphreys and Sandbu (2007) for a more detailed analysis.

transparency, if there is mandatory information disclosures regarding how much money these funds receive, how it is invested, how much is taken out of the fund, and how is the money allocated through the budget process.[26]

Finally, rules for revenue and spending flows from natural resource funds should be linked to the budget. Even where decisions are made by separate actors, it is essential to integrate fund operations into the consolidated budget in order to preserve coherence in public finances and ensure transparency. A separate budget for natural resource revenues with weaker restrictions than those binding the rest of the budget may facilitate overspending and resource diversion. This is particularly relevant in developing economies with large investment requirements, where creating funds to provide —and often, expedite— financing for strategic sectors or programs is a widespread practice. In the absence of accountability and transparency in the operation of these funds, however, their effectiveness and efficiency may be compromised.

Norway is an emblematic example of good practices with sovereign wealth funds. The Norwegian experience is summarized in Box 6.2. Oil revenues that are accumulated in a sovereign savings fund are coherently incorporated into the budget, according to a rule for cash contributions and outlays. The objectives of the budget arrangements are clear: to guarantee that future generations benefit from the oil windfall and to progressively incorporate oil rents into the economy. The design of the mechanism is consistent with these objectives, taking advantage of Norway's institutional strength and checks and balances between the different branches of government. Finally, it is a highly transparent arrangement, whereby the fund's rules and operations are publicly disclosed.

Box 6.2 The Norwegian Government Pension Fund

In 1990, Norway created a sovereign fund for the long-term administration of oil rents. The purpose of the Government Pension Fund (GPF) is two-fold: it is a stabilization mechanism to manage the volatility of oil revenues as well as a mechanism for savings to facilitate the accumulation of financial assets to cover future expenses associated with the aging of the population. The latter is intended to guarantee an intergenerational distribution of oil rents.

The Fund receives the net cash flow from oil-related activities, capital returns, and the net returns from other oil-related transactions, while its outlays cover the non-oil deficit. The Fund's transfers to the government are fully integrated to the budget process.

Fiscal rules limit the size of the non-oil deficit that can be financed with the Fund's resources to no more than the real annualized long-term returns of the GPF's investments, currently estimated around 4%. This spending cap is not set on a yearly basis but over time, so this rule is actually somewhat flexible. By setting the spending cap according to the GPF's returns, the Fund's resources are not used to finance the government's annual budget. Additionally, spending is not earmarked for particular expenditures.

---

26. Some countries have made an explicit commitment to transparency by voluntarily joining the G8 and the World Bank's Extractive Industries Transparency Initiative, or by following the IMF's guidelines for sovereign wealth funds.

The Ministry of Finance (MF) is responsible for the GPF's management; however, any important changes in the Fund's strategy are discussed first in Parliament. The Ministry of Finance establishes investment guidelines, determines in which companies the resources may be invested, and may exclude investments in companies that entail high risks for the GPF's standards or that may engage in unethical behavior. The Bank of Norway (central bank) manages the assets of the GPF through the Investment Management of the Bank of Norway (IMBN) and promotes good corporate governance and broad accountability. External managers also administrate a fraction of GPF's assets.

Diagram 1. Integration of the GPF in Fiscal Policy

Returns on fund investments

Fiscal Revenues

Fund

Oil revenues

Government Budget

Transfers to finance non-oil budget deficit

Expenditures

Fiscal policy guidelines
(real returns spent over time, estimated at 4%)
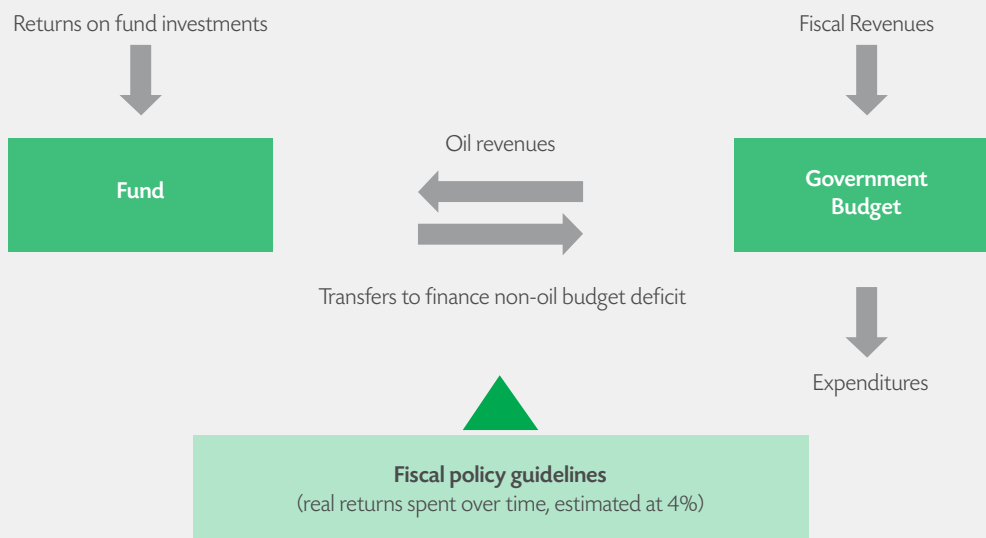
Source: CAF (2008b).

An additional body, the Strategy Council, is in charge of strengthening legitimacy by offering an independent critical view on the GPF's long-term investment strategy, by promoting debate on the GPF's decisions, and by enhancing transparency.

All relevant actors promote transparency by publicly disclosing the results of their activities. The Bank of Norway, for instance, publishes quarterly reports of the GPF's financial results. The Bank also discloses a list of all the companies where the Fund invests, as well as the Bank's decisions when it exercises its voting rights in those companies, in order to safeguard the Fund's assets. The Ministry of Finance prepares annual reports for Parliament about strategies, investment returns, and the implementation of ethical guidelines to select the companies where the Fund's resources are invested. Reports from external auditors are also disclosed.

Within this fiscal arrangement, management of the Fund, oversight, and decisions over budget allocations are spread across different government entities, limiting the political economy problems that may arise if decisions were concentrated exclusively in one actor.

Source: own elaboration based on CAF (2008b).

Latin America has had mixed experiences with budget rules to manage natural resource revenues, although Chile is often cited as the most successful country in the region. Chile created a fiscal arrangement that combines a structural balance rule (SBR) with three sovereign savings vehicles. The SBR was designed to protect public finances from cyclical fluctuations in the economy and in copper prices, so that expenditures are guaranteed under permanent sources of revenues. The RBE is a quantitative rule that establishes a 0.5% of GDP structural surplus for every fiscal year. The surplus may be adjusted according to the state's long-term liabilities. The Pension Reserve Fund (PRF) was created to complement the financing of fiscal obligations from basic pensions and contributions. In contrast, the Economic and Social Stabilization Fund (ESSF) was conceived as a savings vehicle in order to stabilize expenditures. Chile also created the Bicentennial Fund in 2008 to provide funding for scholarships and grants for study abroad.

Quantitative rules for contributions and withdrawals from these funds are clearly specified by law. For example, the government must make annual contributions to the PRF of between 0.2% and 0.5% of GDP. These contributions may come from a cash surplus, from the ESSF, or from the debt issuance. On the other hand, if there is still a cash surplus left after the PRF contribution, it must be deposited in the ESSF. The returns from both funds become part of the budget as structural revenues, although PRF's returns are allocated to social security spending. The law also limits PRF-funded social security spending, and ESSF-funded spending, in case there is a budget deficit.

Rules aside, the law mandates that the ESSF should publish and disclose quarterly financial reports and be accountable to the fiscal commissions in Congress. This clearly contributes to revenue management and budget transparency. As in the case of Norway, different independent agencies play various roles in the fiscal arrangement to guarantee checks and balances. For instance, a committee of independent experts determines the long-term price of copper and the long-term growth rate, which are used to compute the structural balance, preventing discretionary alterations of these parameters by the executive. At the same time, the funds are managed by the Central Bank. A financial committee was set up to advise on the design and investment policy of the funds, and to analyze the audited financial statements. All this increases the credibility and legitimacy of the budget process.

The Chilean fiscal arrangement is notably more rigid than the Norwegian one. In Norway, the deficit may be larger or smaller than the GPF's long-term rate of return in a particular fiscal exercise, allowing a certain degree of flexibility in managing cyclical oil revenue fluctuations. In contrast, in Chile, the SBR fixes spending caps in terms of structural revenues each year, so as to generate structural surpluses to finance existing long-term liabilities (Jul, 2008). The strength of institutions in Norway at the time the fund was created allowed for the establishment of more relaxed rules to manage oil revenues. Chile, on the other hand, imposed stricter rules to manage resource revenues in order to gain more credibility.

Although more rigid rules may entail costs in terms of short-term flexibility, their transparency and easy monitoring may also create the right incentives for compliance. This enhances credibility and strengthens fiscal institutions.

The two previously discussed cases (Norway and Chile) constitute clear examples of how fiscal arrangements should be adapted to the domestic institutional framework in order to achieve their goals. Nevertheless, transparency, accountability, and strong checks and balances were all crucial for the success of the regulatory framework chosen in each country.

The experience with fiscal arrangements in managing natural resource revenues in the rest of Latin America has been mixed. In some cases, there are clear rules, but there are no binding requirements to disclose information regarding fiscal management in a timely manner, nor are there mechanisms for accountability.

Colombia set up a savings and macroeconomic stabilization fund (known as FAEP, by the Spanish acronym) in 1995, managed by the central bank. The main actors in the arrangement were the national oil company, Ecopetrol, the national government, and oil-producing states and municipalities that benefit from royalties. FAEP was created with strict quantitative rules for contributions and withdrawals, based on a moving average of revenues, with any income in excess of this to be saved in the fund. The Fund, however, was not fully integrated to the budget, which may at least partially explain why its stabilization objectives were not fully met. For example, the national and local governments accumulated more debt than they saved through the fund. As a result, by 2000, sub-national governments were authorized to use their savings in the fund to de-leverage. The FAEP was ultimately dismantled in 2007 so that the national government could use its savings to pay down its own debt as well. Nonetheless, the fund did help to increase transparency by making fiscal imbalances more visible and helped to rein in spending among regional governments without easy access to credit markets (Villar, 2001).

In Ecuador, several fiscal arrangements have been implemented to manage oil revenues following dollarization in 2000. Among these various arrangements, recurrent non-compliance and changes to the regulatory frameworks hampered their functioning. Several funds were set up between 2005 and 2008, each with specific objectives and clear regulations around deposits and withdrawals; yet they specific provisions for the disclosure of information, for external audits, or for accountability mechanisms. The fiscal framework was modified again in 2008, when these funds were abolished and a new fiscal rule was introduced, which stipulates that current spending can only be financed with non-oil revenues (Villafuerte *et al.*, 2010); however, there were no major improvements in terms of transparency in the overall budget.

Mexico established a stabilization fund in 2000. The rules around deposits and withdrawals have been modified several times. In 2002, a new regulation was introduced stipulating that if oil revenues fell short of budget estimates, the deficit should be entirely covered by the fund. Then in 2006, a new fiscal responsibility law incorporated a balanced budget rule, a multi-annual framework, and the integration of oil funds into the budget through strict quantitative rules for deposits and withdrawals. The balanced budget rule seems to have contributed to higher levels of the credibility among fiscal institutions in recent years, to better fiscal discipline, and reining in deficits, and to fostering transparency with the periodic disclosure of information regarding budget management and the fund's transactions.

The government of Trinidad and Tobago created a stabilization fund in 2000 with the aim of breaking the link between expenditures and hydrocarbon revenue fluctuations, and of promoting fiscal discipline. The fund remained inactive for a period, and in 2007 was replaced with a new fund with the goals of both stabilization and intergenerational savings. There are clear quantitative rules for deposits and withdrawals from the fund, depending on fiscal outcomes. For instance, if hydrocarbon revenues fall below 10% of the estimated budget, the government can withdraw from the fund to cover up to 60% of the gap, but not exceeding 25% of the fund's accumulated assets. The fund is a public account and is thus subject to annual audits. The fund's Board of Governors is accountable to the Ministry of Finance for the fund's management, for its financial returns, and for submitting audited financial statements to Parliament. It is not clear, how-

ever, that the checks and balances have been strong enough as to mitigate pro-cyclical spending during the last commodity boom.

Finally, Venezuela is similar to the Ecuadorian case. Over the last decade, several funds have been created and their rules continually modified; for instance, the Macroeconomic Stabilization Fund (FEM, by its Spanish acronym), created in 1997, and the National Development Fund (FONDEN, by its Spanish acronym), created in 2005. The central bank operates the FEM, which is accountable to the legislature. FEM is integrated into the budget through a quantitative rule, although this has been changed several times, and since 2003, no deposits have been made in the fund, such that it no longer has a stabilization function. On the other hand, the Ministry of Finance taps foreign exchange reserves from the central bank (excess reserves) and the national oil company to accumulate funds in FONDEN. Transfer amounts to FONDEN made by the oil company were initially ad hoc but now depend on a windfall tax rule, although this rule has been modified twice. There is no quantitative rule for withdrawals; instead, spending is earmarked by the fund's executive board for strategic sectors (e.g., infrastructure or social projects), with the authorization of the President. The fund's operations are not audited, nor are they linked to the budget. As in the case of Trinidad and Tobago, the fiscal arrangement does not seem to have contributed to reducing pro-cyclical fiscal spending over the last oil price cycle.

CONCLUSIONS

Throughout this report we have highlighted the importance of effective and efficient fiscal policy management for development. We have emphasized that the way the budget is financed affects the quality of public policies. We have explored the argument that when fiscal revenues to a large extent do not rely on taxpayers' contributions, citizens have fewer incentives to monitor the budget process. Information problems may also arise, further hindering budget surveillance. All this leads to a less efficient allocation of expenditures by the government. Natural resource rents constitute a significant source of financing for public budgets in Latin America, regardless of taxpayers' contributions. In some cases, mineral or oil revenues account for more than half of total fiscal revenues. It is thus crucial to investigate whether the presence of natural resource revenues affects fiscal management. There is an extensive literature on the economic and institutional channels through which natural resources affect development. The budget channel, reviewed in this chapter, is perhaps one of the less studied.

Natural resource revenues are relatively exogenous to sub-national governments' behavior and yet finance a substantial part of their budgets. This allows for more reliable empirical evaluations of the effect of natural resource revenues on policy management and outcomes. At the sub-national level, the evidence we present in this chapter does not support a positive effect for the presence of non-renewable natural resource revenues on fiscal management or on the provision of public goods. Resource revenues relax budget constraints of governments, allowing for increased spending, but this higher spending does not appear to be associated with significant advances in the supply of public goods. The international evidence based on country-level data supports this findings as well.

There is no doubt that natural resource revenues will remain important sources of financing in Latin America in the medium-term, even if governments improve their capacity to tax other economic activities. The

key question is how to create the right incentives for efficient policy management so that the presence of natural resources improves welfare. A great deal of attention has been devoted to the design of mechanisms to facilitate an efficient inter-temporal allocation of non-renewable natural resource revenues, given the transitory and volatile nature of their revenues. Many countries have resorted to mechanisms such as budget rules and stabilization or sovereign wealth funds to manage these issues. It is essential that stabilization and wealth funds be fully integrated into the budget process to ensure the transparency and efficiency of the budget process; however, the mere existence of budget rules and sovereign wealth funds is not sufficient for the success of these arrangements. Transparency, accountability, and strong checks and balances are crucial for building fiscal arrangements that integrate citizen participation into budget decision-making.

The international experience suggests that these arrangements should be adapted to the institutional strengths (and weaknesses) in each country. In order to increase credibility, countries with weaker institutions may need to implement a somewhat strict but highly transparent regulatory framework that facilitates citizen scrutiny. Compliance with the established rules will build credibility among the institutions involved, so that more flexibility can be eventually introduced without diminishing the integrity of the arrangement. Finally, fiscal arrangements must be compatible with proper incentives for key actors in the budget process. Otherwise, the rules may be prone to continual changes that negate their purpose. The next chapter focuses on the development of budget institutions in Latin America and their effect on policy outcomes.

APPENDIX: FISCAL FRAMEWORKS FOR THE COLLECTION OF NON-RENEWABLE NATURAL RESOURCE REVENUES IN LATIN AMERICA

Non-renewable natural resource revenues in Latin America increased dramatically over the last decade. Soaring commodity prices, of course, explain this to a large extent; however, there were changes in the fiscal regulation of natural resources in most countries to increase the government share of resource rent windfalls. In what follows, we briefly summarize the main changes across the region.

In Argentina, the tax on oil exports increased from a 25% flat rate to a progressive rate between 25% and 45%, depending on oil prices. Subsequently, in 2007, the tax rate was set at 45%, as long as oil prices were between USD $45 and $60.9 per barrel. If oil prices exceed $60.9 per barrel, the tax rate will be calculated as a function of international oil prices and the price that the producer-exporter receives as set by the government. The government fixed the cut off price at $42 dollars per barrel. In 2008, withholding oil revenues accounted for over 50% of the total (see Figure 6.8, left panel).

In the case of Bolivia, the most significant change in the legal framework for natural resource management was the nationalization of hydrocarbons in 2005. Aside from the 18% royalty, the state also began collecting the Direct Tax on Hydrocarbons (IDH, by its Spanish acronym), set at 35% of total output. The IDH became the most relevant mechanism through which the government obtains oil revenues (see Figure 6.8, right panel).

Figure 6.8 Composition of natural resource revenues for selected Latin American countries (several years)

Argentina (2002 *vs.* 2008)

Bolivia (2004 vs. 2009)[a/]

- Royalties
- Income tax (oil and natural gas extraction)
- Export withholding tax

- Special Tax on Hydrocarbons
- Royalties
- Value Added Tax and Transactions Tax / Direct Tax on Hydrocarbons (IDH).
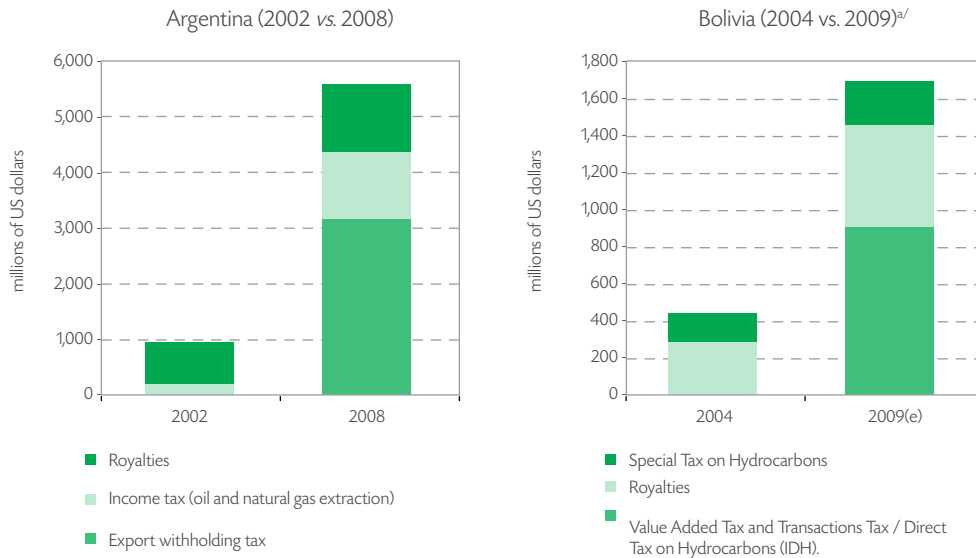
a/ Since June 2005, the IDH is collected under the new Hydrocarbons Law (N°3,058 of 17/05/2005).

(e): estimated.

Fuente: author's calculations based on Campodónico (2008), Secretaría de Energía (2002 y 2008), AFIP (2002 y 2008) y Unidad de Análisis de las Políticas Sociales y Económicas (2011).

In contrast, in Colombia, royalties changed from a 20% flat rate to a variable rate ranging from 8% to 25%, depending on output volumes. The National Agency of Hydrocarbons was created in 2003 to manage exploration and exploitation activities, to collect royalties and other revenues to which the state is entitled, and to transfer royalties to regional governments. Nevertheless, despite oil revenues doubling between 2004 and 2010, the share of oil taxes, royalties, and Ecopetrol's surplus in total revenues all remained stable.

In the case of Brazil, the most relevant change was the introduction of production-sharing contracts in 2010, between private firms and Petrobras. The share of total revenues among different types of oil revenues remained stable over the decade. Petrobras' surplus was the largest contributor (see Figure 6.9, left panel, p. 240).

The most significant change in Chilean regulation was the *Project Royalty II*, established in 2005. This law imposes a variable income tax on companies, ranging from 0.5% to 5%, depending on the volume of annual sales. The majority of mining revenues in Chile, however, comes from taxes and dividends from the national mining company, CODELCO, as shown in figure 6.9.

Figure 6.9 Composition of natural resource revenues for selected Latin American countries (several years)

Brazil (2004 *vs.* 2009)

Chile (2002 *vs.* 2010)

Legend (Brazil):
- Special shares
- Income tax
- Royalties
- Petrobras surplus (State)

Legend (Chile):
- GMP specific tax
- CODELCO (Law N° 13,196)
- CODELCO's dividens
- GMP -10 taxes[a/]
- CODELCO's taxes
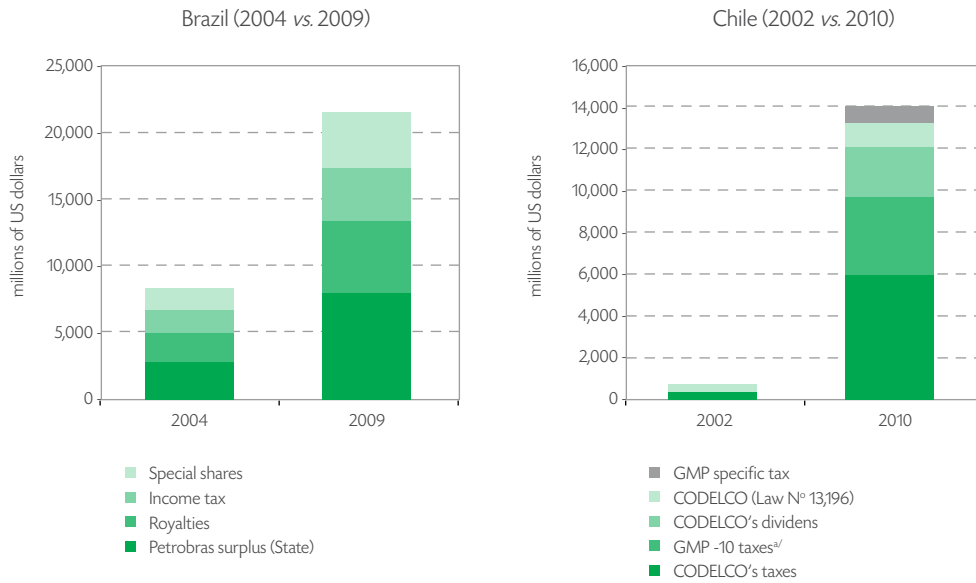
a/ GMP-10 refers to Private Mining Group of Ten, which comprises the 10 largest private copper producers in Chile.

Source: author's calculations based on Campodónico (2008), ANP (2009), Petrobras (2006 and 2009), COCHILCO (2011) and CODELCO's memories (2002 and 2010).

Figure 6.10 Composition of natural resource revenues for selected Latin American countries (several years)

Ecuador (2000 *vs.* 2005)

Mexico (2002 *vs.* 2010)

Legend (Ecuador):
- Income tax
- Royalties
- State oil revenues (Petroecuador)

Legend (Mexico):
- Oil yield tax
- PEMEX revenues
- Oil law
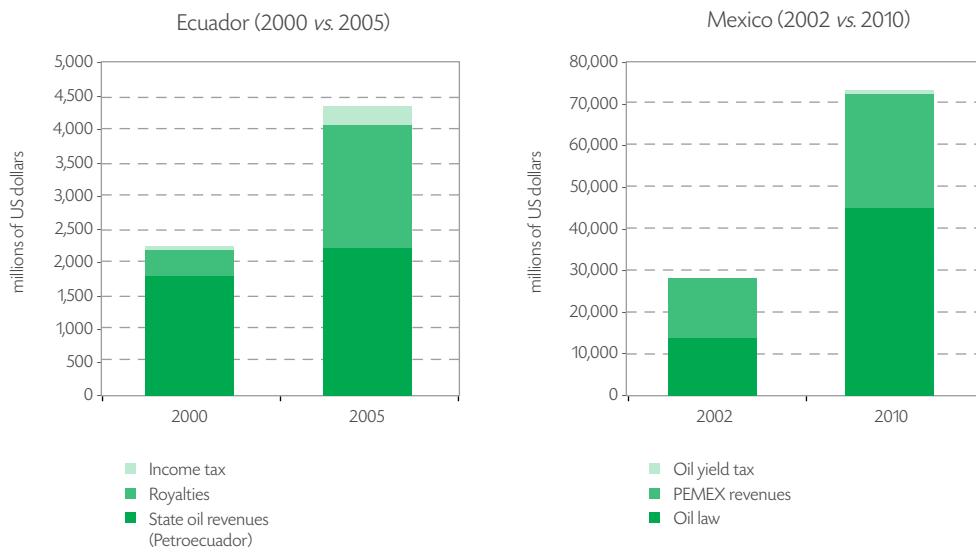
Source: author's calculations based on Campodónico (2008) and in the laws of the federation for the fiscal year (2002 and 2010).

In Ecuador, oil revenues doubled between 2000 and 2005, as royalties soared fivefold, due to the rise in output of private companies with production-sharing agreements. Consequently, royalties became nearly as significant a source of government revenues as the tax contributions of the national oil company (Petroecuador). There have also been important changes to legislation over the past five years, particularly with respect to windfall earnings. Oil contracts with foreign companies were renegotiated in 2006 to ensure that the state receives at least 50% of the difference between the average monthly oil price and the price at the time when contracts were signed. In 2007, new concessions granted the state a 99% share of windfall profits (see Figure 6.10, left panel).

There were no major changes in the legislation for natural resource management in Mexico. The state maintains exclusive rights over hydrocarbons, and as such, already captures 100% of oil rents through PEMEX, the national oil company (see Figure 6.10, right panel).

In Peru, no major changes were made to mining legislation over the last decade. During this period, the state captured mining rents mainly through taxes and royalties (between 1% and 3% of sales). Until 2010, profit taxes were the largest source of mining revenues; however, in 2011, the law was modified to increase royalties to between 1% and 12% of quarterly profits, instead of sales. Similarly, the annual voluntary contribution of companies was replaced by a new Special Mining Tax of between 2% and 8.5% of net profits, depending on

Figure 6.11 Composition of natural resource revenues for selected Latin American countries (several years)

Peru (1998 *vs.* 2010)

Venezuela, BR (2002 *vs.* 2008)

- Mining royalties
- Income tax third category (mining)

- Royalties [a]
- PDVSA's royalties
- Extraction tax
- Income tax
- Surface tax [b]
- Export registration tax [b]
- PDVSA's dividends
- Social development funds (PDVSA)
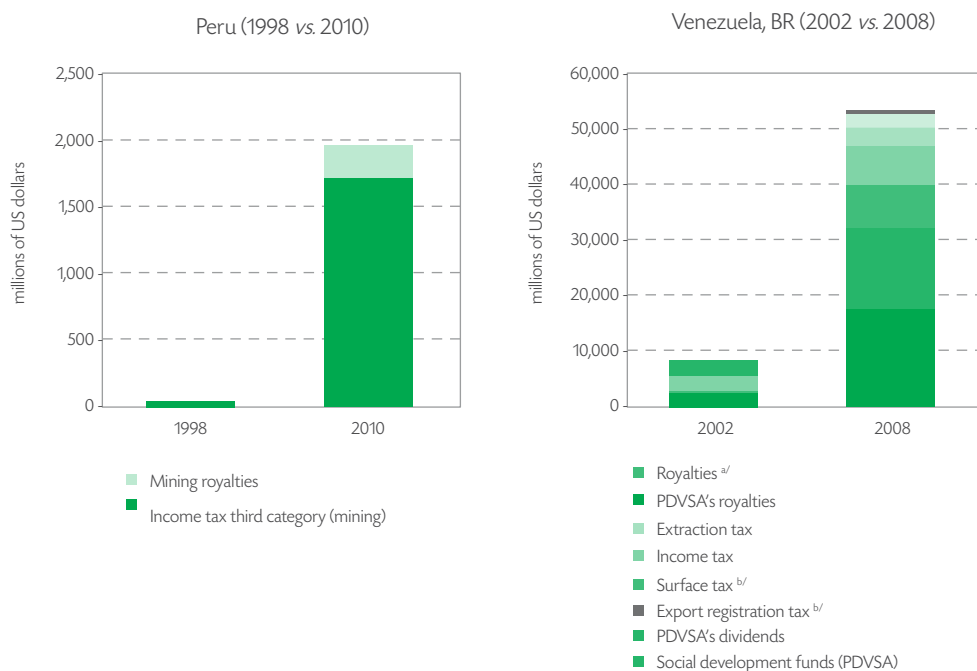
a/ Paid by: Faja (associations), Bitúmenes del Orinoco (BITOR) and operational conventions / joint ventures.
b/ Paid by PDVSA.
Source: author's calculation based on SUNAT (2011) and PODE (2007 and 2008).

the operating margins, for firms without legal stability contracts, and between 4% and 13.12% of net profits, depending on the operating margins, for firms with legal stability contracts. The new framework guarantees the state a more progressive share of mining profits, while remaining compatible with investment incentives.

Finally, Venezuela has some of the most notable changes in natural resource legislation over the last decade. The hydrocarbons law was reformed in 2001, increasing royalties to 33% for the national oil company, PDVSA, and establishing progressive increases in royalty rates for private operating companies. In 2007, oil service contracts were modified to become joint ventures, with PDVSA as the major shareholder. The government introduced a windfall tax in 2008, with incremental tax rates when oil prices exceed USD $70 per barrel. This regulation was modified in 2011 to further increase the state's share of windfall profits. In addition, since 2005, PDVSA has directly funded social programs, as a direct income tax deduction. Thus, the share of income taxes within total revenues has been declining in favor of royalties and other special contributions (see Figure 6.11, right panel).

7

The budgetary process and the connection between revenues and expenditures

The budgetary process and the connection between revenues and expenditures[1]

INTRODUCTION

The public budget plays a fundamental role in the relationship between citizens and the government; it is the space where the executive branch of government proposes priorities for both the level and composition of expenditures and taxes, which must be agreed upon by citizens' political representatives. The budgetary process also offers a framework through which income- and expenditure-related decisions are linked. As we have emphasized throughout this report, as this connection becomes more transparent and visible, it is possible to create processes of empowerment and reciprocity that in turn promote better expenditure and tax decisions. In addition, these processes not only increase the resources available to the state, but also enhance the efficiency of their use, without compromising macroeconomic stability.

Since the public budget represents the space where commitments and goals are established, it is also where citizens demand accountability from the government; the public budget therefore facilitates the processes both of articulating the needs and demands of the population, and of debating the goals or projects put forward by the executive, and who is responsible for implementation.

Thus, legislative bodies, where budgets are discussed and approved, play a key role in achieving a more efficient public administration that is responsive to the needs of the population, since they represent society's diverse interests and, in that capacity, must ensure compliance with the commitments made by the executive. Diagram 7.1 (see p. 246) shows the channels through which the budget links the government and the population.

Diagram 7.1 shows that the budget (debated by the legislative branch) is a space for political and informational intermediation between citizens and the executive power. To the extent that budgetary institutions, rules, procedures, and practices promote the connection between revenues and expenditures, and between commitments and accountability, it is possible to generate a virtuous circle between public expenditures, taxes imposed on the population, and the quality of government administration. In addition, a transparent budgetary process may improve the supervision of the use of public resources by other agencies responsible for oversight and auditing, both from the state (for example the Office of the Comptroller General) and from civil society (NGOs). Other sources of revenues are also represented in Diagram 7.1, such as debt and the sale of assets, as alternatives to financing expenditures through taxes, highlighting the importance of the budgetary process for fiscal and macroeconomic stability.

Unfortunately, in Latin America budgetary arrangements do not always serve this purpose. In fact, budgets in the region are usually formal exercises that do not acquire the necessary political relevance or fiscal im-

---

1. This chapter was prepared under the responsibility of Daniel Ortega, Michael Penfold, and Pablo Sanguinetti, with the research assistance of Tomas Lira.

Diagram 7.1 The budget as linking government and citizens

Government

Taxes and other funding sources

Spending

Budget

Delegation

Accountability

Citizens
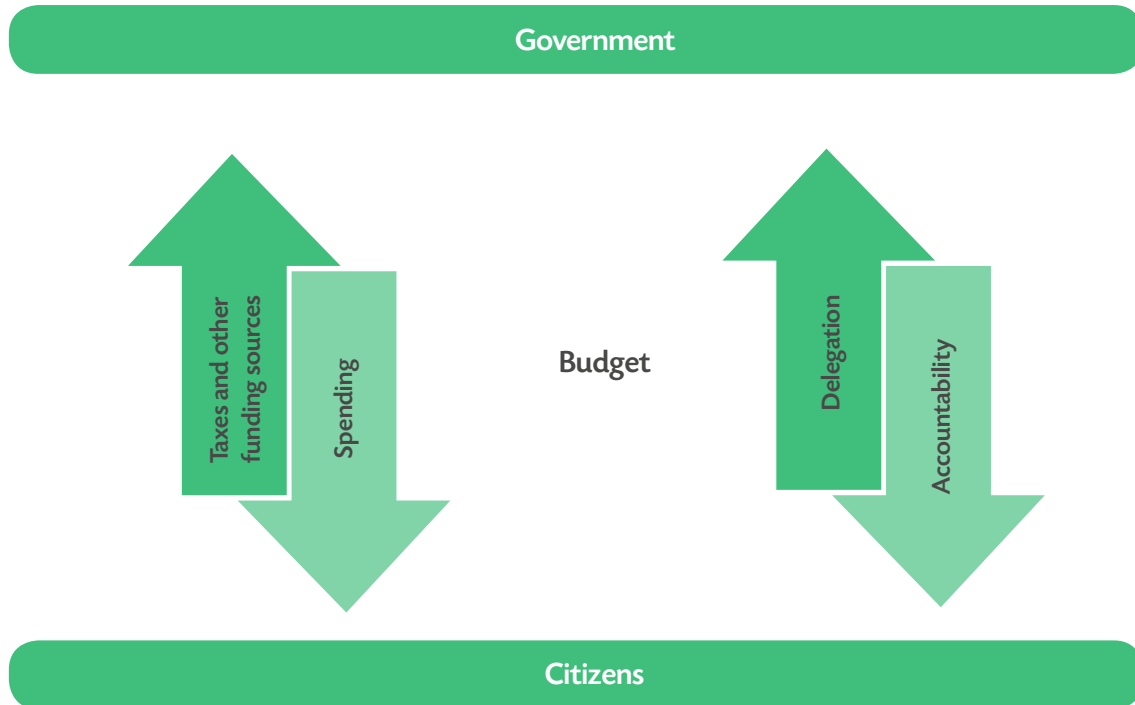
Source: own elaboration.

portance. In general, faced with the need to rationalize fiscal policy and to prevent the parliamentary political game from generating rising public expenditures and deficits, in many countries, the executive power has absorbed many of the tasks and prerogatives in budgetary decision-making at the expense of parliamentary participation. In addition to these formal limitations, structural constraints reduce the relevance of the budget as a space where important expenditure- and revenue-related decisions are made. This is due to the rigidity and inertia of expenditures, whereby most are current expenditures, while investment expenditures (where the parliament would potentially have more influence) are not relevant. At the same time, there are a variety of earmarked funds defined in extra-budgetary laws or fiscal rules that impose strong limits to the allocation of expenditures and even to the generation of revenues. These same mechanisms also weaken the links between revenues and expenditures. Paradoxically, this budgetary rigidity co-exists with practices that give discretionary powers to the executive branch in many countries in order to modify established agreements (extensions, re-estimates of revenues, re-allocation of budgetary items, allocation of non-budgetary resources, among others). These practices in turn make the budget process even less credible.

Limitations in the capacity of the legislative branch and of the population in general to process and interpret the budgetary information may be added to these structural constraints. This in turn restricts the ability of

legislators and other representatives of the population to maintain constructive debates. More importantly, budgetary arrangements tend to divide the simultaneous discussions about revenues and expenditures that should take place between the executive and legislative powers, because, while the executive determines expenditures and their limits, the legislature retains the power to approve (or not) and increase to or the creation of taxes. All these structural factors and limitations may hinder the active participation of members of parliament and, indirectly, of all citizens.

This chapter has two objectives. On the one hand, it aims to describe the budgetary processes within the region, highlighting the institutional challenges and the policies that prevent the budget from fulfilling its role of linking the government to its citizens. On the other hand, it seeks to highlight some initiatives and actions that have been carried out in different parts of Latin America aimed at strengthening the budgetary process in terms of transparency, direct citizen participation, capacity of the legislative branch, and audit and control mechanisms. Finally, the intention is to contribute to a reflection on how, beyond the tax and expenditure structures that exist in the region, budgetary institutions could be improved and strengthened to achieve the fundamental role they should play in a properly functioning democracy.

BUDGETARY INSTITUTIONS IN LATIN AMERICA

The budget is one of the mechanisms through which the government clearly articulates the structure of its priorities for the distribution of resources, and should reflect the needs and aspirations of the different segments of society. At the same time, it should consider the global constraints of these resources. In this regard, each stage of the budgetary process (drafting, approval, implementation, and control) is of vital importance to strengthening governmental institutions, to promoting efficiency in public spending, and to generating more trust and credibility in the government's policies, preventing the "hidden budgets" that facilitate embezzlement and government failures (Schick, 1998). In principle, strong budgetary institutions, establishing a transparent link between revenues and expenditures, allow for better coordination between public agencies, promoting greater fiscal stability and improving the performance of government (Heald, 2003). Strong budgetary institutions also encourage greater social control by the citizens, both in terms of the planning and execution of public expenditures.

In general terms, budgetary transparency may be defined as the timely and systematic disclosure of fiscal information (OECD, 2002). This information strengthens democratic control over public decision-making on the allocation of resources, and fosters collaboration to reduce the diversion of funds to socially unproductive uses. Recently, interest has grown in the connection between revenues and expenditures with the aim of promoting higher levels of fiscal transparency, both within government and among the civil society. Despite its importance, however, budgetary issues in Latin America have little political relevance as a result of several factors, including technical access barriers to information, discussions that favor expenditure-related decisions to the detriment of revenue-related ones, legal restrictions that limit budget transparency and effectiveness, excessive delegation of budgetary issues to the national executive power, lack of institutional capacity among legislatures, and poorly organized civil societies that lack the capacity to demand greater accountability. This problem is even more serious in countries where institutions are weak and where there is a high level of fiscal dependence on non-renewable natural resources.

The importance of this issue in Latin America has encouraged diverse civil society groups and even multilateral organizations to support reforms aimed at promoting the strengthening of budgetary institutions through legal and constitutional changes, strengthening legislative and auditing authorities, the modernization of information systems, and the development of instruments to measure and monitor transparency at the national, regional, and local levels (Pereira and Melo, 2011). Many of these initiatives, however, face obstacles to implementation. Politicians, within both the executive and legislative branches, may have electoral incentives to hide revenues or expenses, which make it difficult to ensure the transparency of budgets. At the same time, citizens are faced with a collective action problem, as they must dedicate time and resources to acquiring knowledge on fiscal and budgetary issues, which carries a high opportunity cost on the individual level.
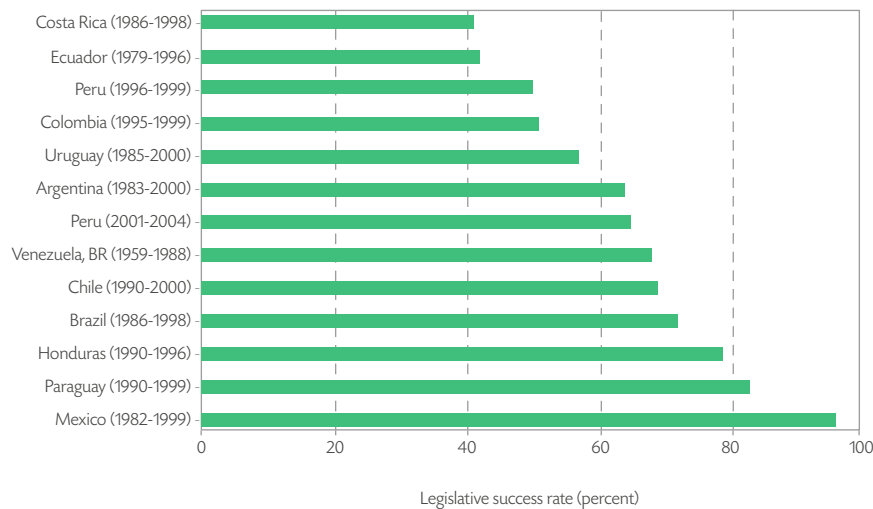
The role of the legislative branch in the budgetary process

The budgetary process involves actors with formal responsibilities, such as the executive and legislative powers, as well as political parties. It also involves others with more of an informal role, such as the media, NGOs, citizen associations, and entrepreneurs, among others. The interaction between these various actors is complex, as each could have a decisive impact on the budget; however, given the predominant role of the legislative and executive powers, most of studies concentrate on the balance of influence between these two actors and how, under different circumstances, it leads to results that are more or less in line with citizens' demands (Cox and Morgestern, 2001; Amorim *et al.*, 2003; Saiegh, 2005).

The legislative power represents the needs and aspirations of voters, but it also proposes and approves laws that ensure the implementation of and compliance with public policies, and oversees and monitors the executive branch. In Latin America some of these duties have been blurred as a consequence of the active role of the executive to the detriment of the legislature in the budgetary process (Santiso, 2006). This process has varied between countries in the region; some parliaments actively participate in the budgetary process, even retaining veto powers and limiting legislative initiatives by the executive, but others have a more reactive role, with marginal interventions on budgetary issues. Some studies suggest that these differences significantly impact the quality of the policies implemented (Stein *et al.*, 2006).

An active, capable, and efficient legislative branch is able to promote a budgetary process and subsequently to monitor public policies, ensuring that these are sustainable from a political and economic point of view, implemented efficiently, and responsive to the needs of the population. The executive branch has had an important influence on the legislative process throughout Latin America. Figure 7.1 shows the portion of the legislative bills submitted by the national executive that have ultimately been approved by parliament. Among 13 countries, 9 have a legislative success rate above 50%, suggesting the dominance of the executive power in the process of enacting laws. Although this indicator suggests a high degree of executive influence over the approval of budgetary legislation, it is a partial measure, as it does not consider the amendments that parliament can make to the executive's proposed legislation or the informal mechanisms through which the former may influence the policies (Stein *et al.*, 2006). It does, however, suggest a certain level of imbalance in the roles of the executive and legislative branches of government in legislative initiatives (of which the annual budget is a part).

Figure 7.1 Portion of executive initiatives approved by the legislature for selected Latin American countries (several years)

Source: Saiegh (2005).

The participation of the legislative branch in budgetary activities is limited by structural factors linked both to the internal organization of the legislature itself, as well as to the relationship between the executive and the legislative powers. Stein *et al.* (2006) identify some of these factors, including the constitutional powers of the executive and the legislative; the balance of partisan forces within both powers; the structure, organization, and capabilities of the legislature; and the individual objectives of legislators based on their partisan and electoral incentives.

Solutions to these imbalances are often legal and require considerable institutional strengthening; however, reform processes with a legalistic bias may end up imposing more norms and regulations on the budgetary process, making it even more complex (Alesina and Perotti, 1999). At the same time, there are other alternatives that point toward a greater public and private institutional specialization on budgetary issues. Among these reforms, it has been suggested that strengthening an independent legislative body, establishing institutions external to the government with technical and oversight functions, or delegating these tasks to nationally and internationally recognized civic institutions, could all be more effective reforms than formal changes to the budgetary process (Alesina and Perotti, 1999).

In general terms, the budget must comply with a series of principles that make it politically relevant. These principles are the following: i) responsibility, that is, it must reflect and guarantee the state's ability to reconcile

its payment capability with the evolution of its revenues (Scartascini and Stein, 2009); ii) transparency, providing timely and verifiable information regarding the contents of the budget (OECD, 2002 and *International Budget Partnership*, 2010); iii) comprehensiveness, reflecting all the revenues and expenditures of the state, without favoring parallel mechanisms designed to avoid certain controls and oversight; iv) representation, favoring collective interests over individual interests as a result of a public discussion and democratic approval (Scartascini and Stein, 2009; Przeworsky *et al.*, 1999); and v) coordination, implying that all relevant government bodies participate in its drafting, approval, and control, without putting any of the above mentioned principles at risk. As will be discussed, however, this political relevance may be seriously affected by diverse factors.

The need to maintain fiscal balance and its impact on budgetary governance

There are a number of institutional factors that limit the relevance of budgetary processes in discussions of public policies, and that could be revised without threatening fiscal responsibility. This complex relationship between the relevance of the budget as a mechanism for public policy debate is not always easy to balance with fiscal responsibility due to technical considerations, the number of stakeholders involved, and the political incentives built into the electoral systems (Hallerberg *et al.*, 2009). There is evidence to suggest that most countries in Latin America have favored fiscal considerations over reforms aimed at giving greater importance to budget negotiations. The reasons for this are many, but the primary one is the adoption of budgetary rules and procedures that give the executive branch a predominant role over parliament.

The drafting of the budget is a process of negotiation between diverse actors, each with their own interests, political power, and institutional incentives, who try to influence the distribution of state resources. The fact that these individual interests and incentives exist within the negotiation process may result in an inefficient allocation of public resources, as the power games between different actors could favor certain individual interests over the needs of the general population. As the available resources are typically insufficient to meet all needs, this influence over the allocation of resources frequently leads to a result that does not adequately correspond to citizen demands. Based on a set of rules and procedures that govern the drafting, approval, implementation, and control of the budget, budgetary institutions play a relevant role in this process, whether through restrictions or through the distribution of constitutional powers, responsibilities, and information between the actors that participate in the negotiations (Von Hagen and Harden, 1995; Stein *et al.*, 1999; Alesina *et al.*, 1999).

Presidential systems, which prevail in most democracies in Latin America, give the executive a set of powers that limits the participation of the legislative power in the budgetary process. The imbalance of powers between the executive and the legislative –attributed to their respective legal powers – is clearly observable in each of the stages of the budgetary process in Latin American countries. In the drafting of the budget, the executive is the dominant actor as the only one with the information and technical capacity to determine the budget required for public sector activities. Undoubtedly, this is at least partly due to the fact that the executive is responsible to voters for ensuring its ability to pay expenditures. In general, the proposal made by the executive is submitted to a review by the legislative before it is approved, frequently with little room for modifications. In a review of the experience of 20 countries[2] in the region (Santiso, 2006), it is suggested that the relationship between the executive and the legislative branches is framed by five factors: the powers

2. Argentina, Brazil, Bolivia, Chile, Colombia, Costa Rica, Cuba, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Dominican Republic, Uruguay and the Bolivarian Republic of Venezuela.

of parliaments to make amendments; presidential veto powers; the counter veto powers of legislatures; the timeframe for the review and approval of the budget; and the processes and general structures of the legislature. There is considerable variation between countries with respect to these factors, although generally they have resulted in an imbalance of power that favors the executive.

From the beginning of the 1990s, Latin America has undergone a continuous process of reforms of its budgetary institutions, aimed at improving fiscal performance. Within this process of change, the countries in the region most commonly have opted for a model of restrictive budgetary institutions, whether by introducing fiscal rules (i.e., that limit expenditures) or by granting more power to ministries of finance in the budgetary debates (through hierarchical rules for procedures). In this regard, budgetary institutions in Latin America tend to favor a more hierarchical structure (i.e., concentration of powers in the executive) rather than collegiate (i.e., with negotiation spaces in the legislature), precisely to ensure better fiscal results.

Two key moments have shaped the budgetary reform process in Latin America. First, during the mid-1990s, there was an increase in reforms allocating more power to ministries of finance on budgetary matters and/or making the structure of the budget process more hierarchical. These reforms were aimed at empowering the ministries of finance not only over other ministries, but also over legislatures, in order to decrease the risks associated with political negotiation of the budget and to facilitate the fiscal adjustment process. Second, towards the end of the same decade, a new set of reforms led to the adoption of measures of fiscal restriction and transparency. This second stage involved reform processes aimed at promoting greater stability and fiscal responsibility (Filc and Scartascini, 2005).

In Brazil, the fiscal responsibility reform, implemented at the beginning of the millennium, established expenditure limits for the states, discretional withholding of federal transfers to subnational governments that do not comply with their goals and obligations, and rules requiring a real increase in recurring revenues for an increase in current expenditures (OECD, 2006). In Chile, fiscal reforms were aimed at decreasing the volatility of expenditures by fixing revenues according to the average rate of permanent medium-term revenues, especially from copper. This rule allowed the central government to establish structural surplus goals that favored public savings and enabled the responsible use of countercyclical policies in times of crisis. In addition, other countries, such as Colombia and Peru, also adopted this type of reform.

The diverse indices of budgetary institutional hierarchy show similar results for Latin America (Alesina *et al.*, 1999; Filc and Scartascini, 2005; Dabla Norris *et al.*, 2010). In general, budgetary rules aim to define the functions of the various actors involved in the negotiations of each stage of the process. Alesina *et al.* (1999) classify these rules based on the attributes and degree of leadership of these actors in the negotiations. Hierarchical institutional structures are those that prioritize the role of the minister in charge of drafting the budget (normally the Minister of Finance or Planning) within the executive power, with predominance over the legislative, thus limiting the power of the legislature to amend it. On the contrary, a collegial institutional structure distributes power more democratically in each stage of the budgetary process, between ministries within the government as well as between the legislative and executive branches.

Alesina *et al.* (1999) propose an index of 20 countries in Latin America measuring the degree of hierarchy or collegiality of budgetary institutions in the drafting process for the budget. The data for the index was obtained from two questionnaires, applied to the directors of the relevant budgetary agencies in each country.

The first questionnaire sought detailed information on the budgetary process of the year under study, while the second focused on the evolution of these institutions over time, in terms of fiscal rules, procedures, and transparency regulations.[3] Similarly, Filc and Scartascini (2005) built an index to evaluate the characteristics of budgetary institutions, taking into account –as Alesina *et al.* (1999) did– the fiscal, procedural, and transparency rules, and using new data compiled by the OECD, the World Bank, and the IDB.

The two studies reach similar conclusions, pointing out that budgetary institutions in the region exhibit high levels of hierarchal organization (see Figure 7.2).[4] In addition, these studies find evidence that these institutions have an impact on fiscal results; specifically, countries with rules limiting expenditures (following hierarchical institutional procedures) and with institutions that grant greater power to finance ministers tend to show a lower governmental primary deficit (Alesina *et al.*, 1999[5]; Filc and Scartascini, 2005).

Figure 7.2 Indices of hierarchy in budgetary institutions in selected Latin American countries (several years)[a/ b/]

a/ The Alesina *et al.* (1999) index takes the average value for the period 1980-1992. The Scartascini and Filc (2005) index took the values from 2000.
b/ The Alesina *et al.* (1999) index uses a scale of 1 to 100, while the Filc and Scartascini (2005) index uses a scale of 1 to 10.

Source: Alesina *et al.* (1999) and Filc and Scartascini (2005).

When negotiating power is concentrated in the Ministry of Finance, the participation of the legislature in budgetary issues becomes marginal; as such, although the process may gain efficiency and flexibility, the adapt-

---

3. For more information on the questionnaire, see Alesina *et al.* (1999).

4. In the case of the index developed by Alesina *et al.* (1999), the authors themselves suggest that the values between 50 and 80 are high, although they do not offer a comparison with regions where hierarchical organization is considered to be low.

5. Alesina *et al.* (1999) classify budgetary institutions according to a hierarchy/collegial scale and present empirical evidence on the relationship between the index of budgetary institutions and fiscal results. This evidence suggests that countries with hierarchical institutions and transparent procedures were associated with greater fiscal discipline during the 1980s and the beginning of the 1990s.

ability and representation of the budget is lost (Stein *et al.*, 2006)[6]. As a consequence of this hierarchical organization of budgetary rules, the budget ceases to be a central instrument of the political process –and, therefore, of the citizens– and becomes simply a technical instrument of fiscal policy that lacks democratic content.

Hierarchical budgetary institutions tend to grant the executive the power to limit and assign expenditures but do not necessarily the power to determine the source of income, the responsibility for which typically falls to the legislative branch. Despite the fact that both expenditures and taxes may result from initiatives by the executive branch, they are not usually discussed at the same time, thus hampering the connection between income and expenditures. A way of maintaining this connection would be to separate the process into two phases: one to discuss the overall amount, where the basic criteria would lie in macroeconomic stability; and the other to discuss the allocation of expenditures within the previously approved overall amount. This would require a balance between the executive and legislative powers that the current hierarchical organization complicates.

The emphasis of hierarchical rules is based on sequential restrictions to procedures and centralized control of the agenda. The delegation of authority to a hegemonic fiscal authority (for example, a Minister of Finance) enables decisions by a single actor and promotes fiscal discipline (von Hagen, 1992; Alesina and Rosenthal, 1995). To be effective, this actor must be able to monitor others as well as to provide selective incentives that allow for the punishment of offenders and/or reward collaborators.

Hallerberg *et al.* (2009) term this hegemonic decision-making process the "delegation mode," in contrast with the "compromise mode," where a group of actors with similar decision-making rights reach an agreement to comply with certain budgetary norms, such as the establishment of budgetary objectives for one or several years. The theory predicts that the delegation mode is efficient in countries where governmental actors feel comfortable delegating power to a central agent (e.g., the Presidency represented by the Ministry of Finance or Planning). In practice, these countries have governments based on a majority party, or based on parties aligned with the government that stand in elections as a block. The compromise mode works in countries with coalition governments, where the coalition partners could confront each other in future elections. After the elections, the parties negotiate the budgetary objectives and then form a coalition agreement.

As mentioned before, despite the fact that a hierarchical budgetary framework may be more efficient from a fiscal point of view, it carries some risks (Santiso, 2006). First, this type of structure grants the executive considerable discretionary power regarding the public budget, complicating accountability mechanisms. At the same time, the executive's expansive discretionary power, along with the lack of accountability mechanisms, undermines the credibility of the budget as an instrument to plan and reflect socio-political agreements.

Secondly, hierarchical rules limit the space to redirect public expenditures toward higher priority objectives, such as social policies, since these rules emphasize maintaining a certain level of fiscal discipline over operational efficiency, and setting strategic priorities that may emerge from new electoral realities or from discussions in the democratic sphere (Santiso, 2006). Another tension generated by the differences between both types of institutions (hierarchical versus collegial) is budgetary transparency. Alesina *et al.* (1999) maintain that more hierarchical rules and institutions tend to create less transparent budgets, mainly due to the monopoly that the executive has over the information about public finances. In contrast, collegial rules and

---

6. Paradoxically, the legislative powers may react to this hierarchical organization by imposing greater rigidity on the budgetary process, such as through rules on transfers to territories, or minimal allocation of resources for certain sectors.

institutions allow for the implementation of mechanisms for improved accountability and supervision, due to a more prominent role played by the legislative body, as the information asymmetries between the different budgetary actors are greatly reduced.

It could be argued that, without necessarily risking fiscal stability, governments and legislatures could promote reforms aimed at increasing transparency. The executive could introduce institutional changes that would allow citizens to access and participate directly in the preparation of the budget; at the same time, it could favor the creation of institutional spaces so that legislatures could have a greater role in the review and oversight of legislative bills. Thus, as will be argued later, Latin America has an opportunity to improve budgetary transparency, granting a more active role both to the citizens as well as Congress, without compromising the fiscal discipline that many countries have already achieved.

Figure 7.3 shows an index of institutional strength with respect to the budgetary process, reflecting the obligatory nature of consultations between the legislative and executive powers, the legal authority to make amendments, and the timeframe for the approval of the budget, among others.[7] The graph shows that, in general, the indicator of institutional strength is significantly lower for Latin American countries compared to those of the OECD, suggesting that there is considerable space to strengthen the formal collaboration mechanisms between the executive and legislative branches, which are key to supporting the capacity of legislators and their technical teams.

Figure 7.3 Strength of legislative institutions Index in selected Latin American countries and the OECD (2010)
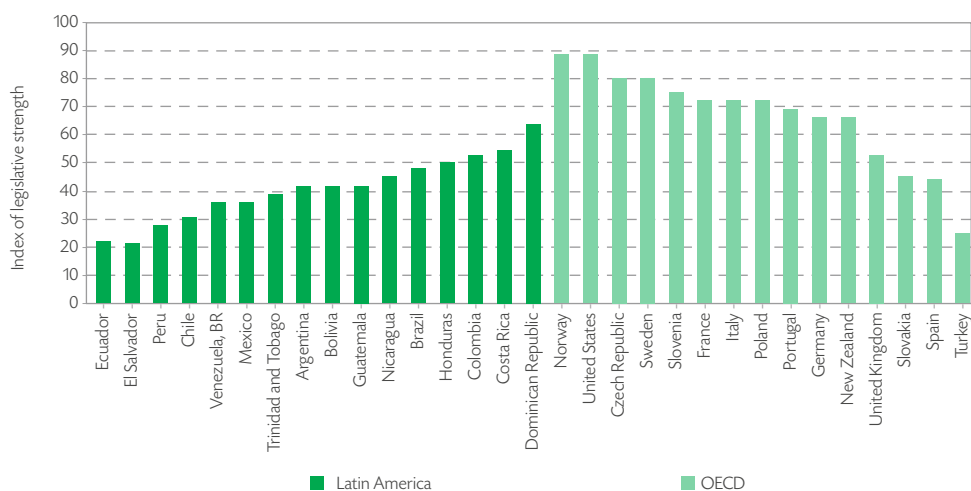
Source: International Budget Partnership (2010).

7. The legislative strength index, prepared by the *International Budget Partnership* (IBP), is calculated as the simple average between the results for 12 of the 123 questions in the open budget survey, which evaluates the participation of the legislative branch in the drafting and approval of the public budget. For more details regarding the questionnaire, see: http://internationalbudget.org/what-we-do/open-budget-survey/research-resources/guides-questionnaires/

In their analysis of the democratic deficit with regard to fiscal issues, Hallerberg and Marrier (2004) suggest that a strong legislature is a key component of a strong democracy. Most of the legislatures in Latin America have a reactive role and little influence over budgetary matters, except where amendments are presented that have distributive electoral consequences (Hallerberg *et al.*, 2009). Similarly, Cox and Morgenstern (2001) evaluate parliamentary institutions in Argentina, Brazil, Chile, and Mexico, and offer a classification of pro-active and reactive legislatures. The authors conclude that in Latin America, congresses are more reactive than proactive because the executive power dominates the initiation of bills.

The separation of revenue and expenditure-related decisions between the legislative and executive branches does not facilitate the democratic role of the budget, but rather limits its political relevance. Budgetary rules could help to integrate expenditure-related decisions with revenue-related decisions. This has not been fully considered and could alone explain many of the deficiencies of budgetary institutions in Latin America. Achieving a better connection between revenues and expenditures is only possible with a greater coordination between the executive and legislative branches, which implies improving the technical capacity of congresses so that they may play a more constructive role in the budgetary process, as well as increasing transparency within the executive, so that the diverse actors –including civil society– may receive information on the budget in a timely manner such that citizens can participate and articulate demands to the government.

STRENGTHENING THE ROLE OF THE BUDGET

Legislative capacity

Debate of the public budget in the legislature is an integral part of the functioning of democracies. Indeed, budget laws define the priorities of public expenditures, establish the basic parameters of fiscal and tax policies, and provide an opportunity for the democratic debate of public policies. Throughout the history of Latin America, however, budgetary processes have had little political relevance, low transparency, and, as argued in the previous section, have been dominated by the executive branch. This is surprising, considering the magnitude of the economic, social, and fiscal challenges faced by the region, as well as increasing citizen demands aimed at democratizing the political systems.

Legislative participation is generally carried out through specialized budgetary committees or commissions. Effective participation then requires permanent institutional capacity in the legislative branch, and, in particular, among these committees. In any political system, the drafting of the budget generates an extensive negotiation process of budgetary priorities, through a highly institutionalized and specialized system of committees and subcommittees that actively participate in the different phases of this process. This division of work in the legislative branch lends itself to greater efficiency because legislators may specialize and develop capabilities to participate in the discussion and drafting of the budget, and also in the supervision of its implementation.

In addition to providing incentives for legislators to acquire experience on issues that are highly specialized, these committees offer independent technical assistance on fiscal and tax issues, as well as more generally in all areas of public policy. Permanent consulting personnel are a necessary condition (although not sufficient) for informed and effective legislative participation. Even in those countries where such committees are weak, the delegation of powers to auditing institutions as a mechanism to counterbalance and control the executive may improve the quality of the process, as will be discussed later.

Empirical evidence analyzing the functioning of congresses in Latin America suggests that there are great differences in the institutional and political capacities of legislative bodies. In their analysis of the characteristics of parliaments and legislators in Latin America, Stein and Tommasi (2006) assess the degree to which Latin American parliaments have the ability to intervene in the process of formulating public policies, including the budget. The authors build an index that considers objective aspects, such as the level of public confidence in Congress, the effectiveness of legislative bodies, the average experience of the legislators (in years), the percentage of legislators with a university education, the number of committees per legislator, as well as more subjective aspects, such as the strength of the commissions, the possibility of making a career within the legislature, and technical experience.

Table 7.1 Summary of legislative capacity in selected Latin American countries (several years)[a/]

Country	Confidence in Congress	Effectiveness of legislative bodies	Average years of experience of legislators	Percentage of legislators with university degrees	Average number of committees per legislator
Argentina	39	2.06	2.90	69.60	4.50
Bolivia	28	2.26	3.30	78.40	1.66
Brazil	44	2.41	5.50	54.00	0.92
Chile	41	3.85	8.00	79.40	1.95
Colombia	33	2.98	4.00	91.60	0.86
Costa Rica	47	2.44	2.60	80.40	2.09
Dominican Republic	32	2.57	3.10	49.60	3.54
Ecuador	24	1.84	3.50	83.10	1.26
El Salvador	25	2.46	3.90	64.00	2.44
Guatemala	17	2.08	3.20	68.40	3.24
Honduras	41	3.19	3.00	73.10	2.34
Mexico	28	2.45	1.90	89.50	2.43
Nicaragua	21	2.16	3.50	85.60	1.96
Panama	37	2.40	5.80	85.60	1.86
Paraguay	28	1.99	5.50	85.60	3.15
Peru	14	2.08	5.20	92.90	2.44
Uruguay	62	3.37	8.80	68.40	0.98
Venezuela, BR	49	1.55	4.90	74.60	0.97

a/ Confidence in Congress, 2010; effectiveness of legislative bodies, average 2006-2011; percentage of legislators with university degrees, 2002; average years of experience of legislators and average number of committees per legislator, 2005.

Source: *Latinobarómetro* (2011), PELA (2002), World Economic Forum (2006-2011) and Stein and Tommasi (2006).

Table 7.1 shows the components of the index for several countries, highlighting both the low average rate of experience among legislators (average of 4.4 years) and the low thematic specialization, which is reflected in the fact that, on average, a legislator sits on two commissions in parliament. In addition, only three-quarters of legislators have a university degree –an important element in explaining the low levels of effectiveness– and public confidence in Congress is generally quite low (on average, 33.9%, according to the *Latinobaró- metro* survey, 2011).

By including these factors in one index, Stein and Tommasi (2006) obtain a general description of the capac- ity of the legislative branch in each country. They find that, as may be observed in Figure 7.4, Brazil, Chile, Colombia, and Uruguay have the legislative institutions with the greatest capacities.

Figure 7.4 Legislative capacity index[a/] in selected Latin American countries
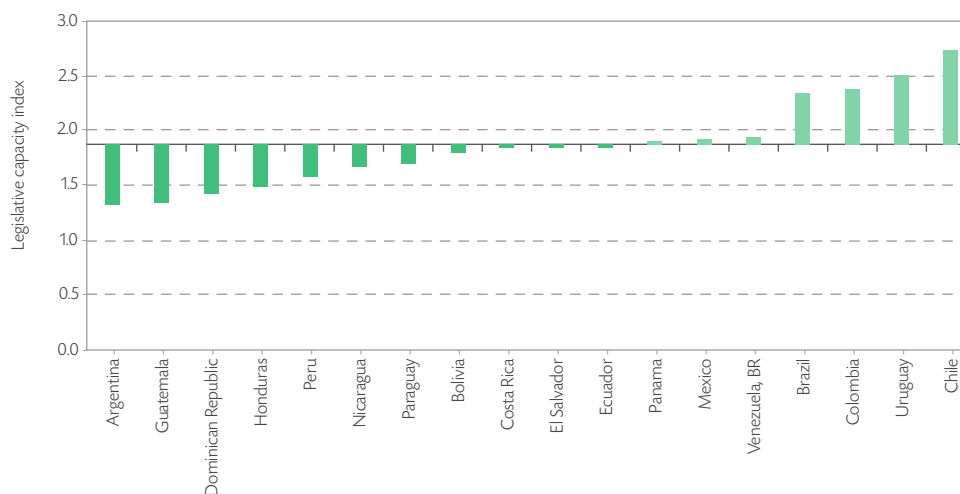
a/ Scale of 1 to 3.

Source: Stein and Tommasi (2006).

It is important to point out that deficiencies in legislative capacity are not the only element affecting the abil- ity of Congress to influence the budgetary process; thus, the classification of countries based on this index does not necessarily correlate with the effectiveness of their parliaments.

In theory, both Congress and Parliament are responsible for the supervision and control of the executive and its actions, including the budget, but in reality, legislators in Latin America do not properly fulfill this function. Congress does not always have the necessary incentives to dedicate the resources required for *a posteriori* of the budget. With rare exceptions, such as Brazil, Chile, and Colombia, the region is character-

ized by legislatures that are poorly institutionalized and underprepared, particularly with regard to their committee systems. According to the OECD (2006), only five countries in the region (Brazil, Chile, Costa Rica, Guatemala, and Mexico) have a research organization specializing in budget analysis attached to the legislative branch. In 43% of the countries analyzed in Latin America, there are fewer than five employees formally employed by the committees in charge of reviewing and discussing the budget.

As discussed in the previous section, there are institutional conditions that define the scope of legislative powers and actions. These conditions interact with the capacities of the legislature such that they not only determine to what extent or under which circumstances these capacities may be relevant, but also imply that the less important the legislature is, the lower the incentives to increase the capacity of Congress will be.

The low capacity of legislators to affect budgetary issues could be associated to a certain extent with the electoral incentives that dominate the political career of congressional representatives. Weak party systems that are often fragmented, proportional electoral systems that reduce direct accountability to the electorate, and limitations on the re-election of legislators, which inhibits their parliamentary specialization, all serve to reinforce their low capacities. Latin American countries must strengthen the role of legislatures, particularly with respect to the organization of legislative committees, the level of technical capacity for legislative consultation, and legislative research capacity (Santiso, 2006). Increasing the legislative capacities, especially with regard to consultations and budgetary research, would enable parliaments to play a more active role in the analysis and monitoring of public policies. The institutional fragility of emerging democracies –as is the case of Latin American countries– necessitates efficient and responsible mechanisms for budgetary matters in addition to greater external control of public finances by parliaments and civil society more broadly (Santiso, 2006).

A series of initiatives to strengthen legislative capacity have been implemented in the region, some of which are summarized in Table 7.2. In countries like Argentina, Chile and Peru, initiatives seeking to improve the technical capacity of consulting bodies within the legislative branch have been implemented. Though there is no precise evaluation of their effect, they represent a significant step forward in efforts to improve the quality of legislative debate and of budgetary discussions as a space to negotiate the priorities of the electorate, while accounting for limited resources.

Table 7.2 Initiatives of capacity building in Latin America

Initiatives / Programs	Objectives	Reach
Parliamentary Elites of Latin America (PELA)	To extend and strengthen the knowledge of attitudes, opinions, and values in Latin American legislatures and of their role as a determining factor in the consolidation and quality of democracy in the region.	Latin America
Superior Training Center (Honorable Senate of the Argentine Nation)	To offer a variety of courses for all legislative staff, with the aim of improving the administrative and parliamentary work of the Senate of the Nation.	Argentina

| Area of Institutional Strengthening (CIPPEC)	To work with the various political parties and levels of government, to contribute to their training, and to effect changes in the functioning of the state and the services it provides to its citizens.	Latin America
Center for Training and Parliamentary Studies (Congress of the Republic of Peru)	To develop, organize and implement capacity-building programs among the congressional staff (officials, experts, and consultants), both in the service as well as in the parliamentary organization, involved in the contents and application of the parliamentary rules and its procedures and legislative techniques.	Peru
ICAL legislative program (Alejandro Lipschutz Science Institute)	To link social demands with legislative initiatives, and viceversa. To generate products, services and, in general, all information that serves as legislative inputs. Integration with and independence from other actors in the process.	Chile
United Nations Development Programme (UNDP)	To develop initiatives, at the local and regional levels, focused on education and training of public officials, for the strengthening of the legislative system and public administration more generally.	Chile
Latin American and Caribbean Institute of Economic and Social Planning (ILPES-ECLAC)	To offer international, national and subnational courses aimed at capacity-building in Latin American and Caribbean countries, by providing knowledge, methods, tools and best practices for the design, implementation and evaluation of public policies and programs at both the national and subnational levels.	Latin America
Office of Legislative Technical Assistance (Congress of the Republic of Colombia)	To provide legal research and high quality technical legislative advice to congressional committees. Similarly, to increase citizen participation in the drafting and decision-making process for public policy.	Colombia
Selection and Training Institute of the State (INSELCAP)	To recruit, train and evaluate the performance of public officials in the legislature and judiciary, at all levels of government, as established in the Law of Professional State and Municipal Civil Service in Zacatecas, Mexico.	Zacatecas, Mexico
Open Government Initiative (USAID)	To promote efficiency, transparency, accountability and participation of government institutions and the public in the processes of policy reform at all levels of government. It also provides technical leadership through research, training and dissemination of best practices and centralized management of the mechanisms designed to support the government programs at national level.	Latin America and Caribbean

Source: UNDP (2011), USAID (2011), Elite (2011), Congress of the Republic of Colombia (2011), Congress of the Republic of Peru (2011), Sciences Institute Alejandro Lipschutz (2011), Senate of the Argentine Nation (2011), CIPPEC (2011).

Transparency in the budgetary process

In order for the budgetary process to effectively address the goal of democratic deepening and development, citizens – and the organizations to which they delegate authority – must have full and timely access to information about the budget and to the documentation of the decisions made by the congressional committees and the executive. Effective social control and accountability require a transparent budgetary process, where all actors involved have the ability not only to make demands but also to review the positions and decisions of others. This is a fundamental requirement for the budget to adequately reflect citizens' needs, as well as to reconcile the link between public expenditures and revenues.

Currently, there are several efforts being made by different international organizations to measure and compare budgetary transparency (for example, the OECD, FUNDAR, and IBP). Among these, the IBP has carried out the Open Government Survey, an initiative seeking to establish a regular, comparative, and independent measure of budgetary transparency and accountability across a large group of countries. Based on this survey, an Open Budget Index (OBI) was developed, reflecting the availability of eight key documents in the budgetary process, the type of information contained in these documents, the effectiveness of auditing institutions, and the opportunities for direct participation by civil society.

Figure 7.5 Open Budget Index for selected Latin American countries (2010)
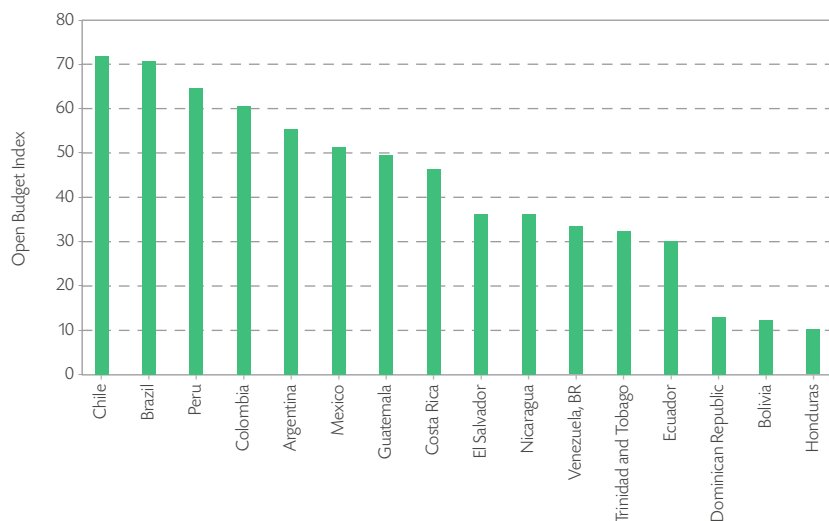
Source: International Budget Partnership (2010).

Figure 7.5 indicates the OBI indicator for several countries in Latin America in 2010. With few exceptions, the level of budgetary transparency in the region is generally very low, with most countries scoring below 50 out of a maximum of 100.
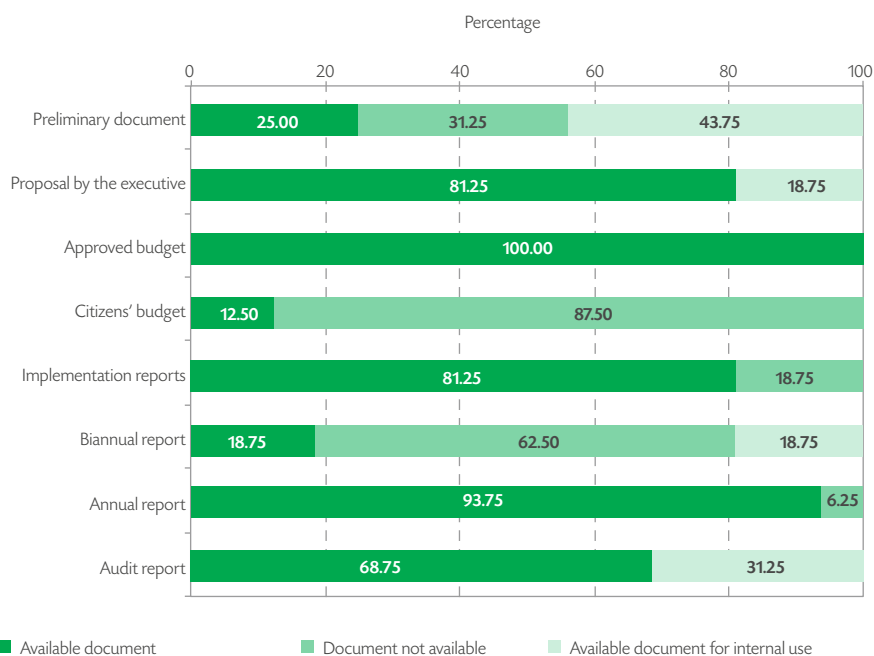
The results of this international initiative highlight the global problem of a lack of transparency in budgetary matters. Only 20 of the 94 countries evaluated provide enough information on budgetary activities, with an index average of only 42%. Thus, most countries evaluated provide less than half the necessary information to the public to be considered transparent. In Latin America, 16 countries were included in the index, scoring an average of 43%, very close to the global average. Chile, Brazil, Peru, and Colombia were the only countries with comparable levels of transparency to developed nations. In contrast, Bolivia, Honduras, and the Dominican Republic scored among the lowest in the region.

Based on this information, it is also possible to establish a relationship between levels of transparency and government revenues, and between transparency and the dependence on natural resources revenues. In general, countries with higher per capita incomes have more transparent budgetary processes, while countries with lower incomes have less transparent processes. In addition, the countries that are highly dependent on revenues from hydrocarbons –such as Bolivia, Colombia, Ecuador, Mexico, Trinidad and Tobago and the Bolivarian Republic of Venezuela– have low levels of transparency in the budgetary process. These patterns do not necessarily imply causality between an abundance of natural resources and opaque budgetary processes, but rather that the challenge of transparency seems to be more significant in these countries, as seen in chapter 6.

A disaggregated analysis of these same indicators (see Figure 7.6) reveals even more glaring weaknesses. Of the 16 countries evaluated in Latin America, only 25% (Brazil, Colombia, El Salvador, and Mexico) create and publish a preliminary document on the content of the budget, compared 31.25% do not write this document at all, and 43.75% that do not make the document public. In other words, the citizens of Latin America are rarely informed by the executive of the contents of the draft budget, and are therefore excluded from the decision-making process. This is particularly true of citizens' ability to interact with the Ministry of Finance or Planning (i.e., the leading authority for the drafting of the budget). In Bolivia, Honduras, and the Dominican Republic, the information contained in this document is not published. On the other hand, the fact that other countries do publish it does not mean that citizens have the opportunity to see the original proposal discussed in government. Rather, the document is only made public once the draft bill is approved by the Ministry of Finance and sent for discussion and approval by the legislature.

The budget approved by the legislature is published in all countries; however, 87.5% of Latin American countries do not prepare a public document on the budget for dissemination among the electorate. The only exceptions are Chile and El Salvador. At the same time, budget bills are generally quite complex, making access in terms ability to understand the bill quite difficult. The opportunity cost for citizens to learn about the issues is very high, so it makes sense for the government to invest resources in communicating the contents of the budget in a simple manner.

In terms of the implementation of the budget, the results are not more encouraging. Budget implementation reports are prepared in all the countries; however, many do not publish the information for the public. Of the countries evaluated, 62.5% do not issue biannual implementation reports (see Figure 7.6). The rest of the countries do prepare such a document, but only Chile, Costa Rica, and Peru make it public. An annual report is prepared and published in all countries except for one. Finally, only 68.75% of the countries publish an audit report.

Figure 7.6 Availability of key documents in selected Latin American countries (2010)[a/]

Percentage

Document	Available document	Document not available	Available document for internal use
Preliminary document	25.00	31.25	43.75
Proposal by the executive	81.25		18.75
Approved budget	100.00		
Citizens' budget	12.50	87.50	
Implementation reports	81.25		18.75
Biannual report	18.75	62.50	18.75
Annual report	93.75		6.25
Audit report	68.75		31.25

■ Available document   ■ Document not available   ■ Available document for internal use

a/ Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Peru, Trinidad and Tobago and Venezuela, RB.
Source: International Budget Partnership (2010).

The difference between the number of documents required for the budget process to be considered transparent and the number of published reports is not the only indicator of a weak budgetary process in Latin America. The differences in the nature of the information contained in each of these documents also stands out. In countries that do prepare and publish a citizens' budget and that circulate the approved budget and implementation reports, the information that is published is generally quite complete. In contrast, the audit reports, on average, only contain about 30% of the information required to be considered transparent, while the proposal by the executive, the preliminary document, and the biannual reports contain only slightly more than half the required information (IBP, 2010).

Other initiatives have attempted to highlight the budgetary issues within the different levels of government (national, regional, and municipal), such as the Association of Open Accounts[8] (*Associação Contas Abertas*) in Brazil, the Argentine Budget Association and Public Financing Administration (*Asociación Argentina*

8. The Association of Open Accounts is an independent non-profit civil society organization, which brings together social leaders, entrepreneurs, students, journalists, and any individuals who are interested in learning about and contributing to improving public spending, with respect to its quality, priorities, and legality (http://contasabertas.uol.com.br).

de Presupuesto y Administración Financiera Pública - ASAP)[9] in Argentina, and the Federal Council for Fiscal Responsibility (*Consejo Federal de Responsabilidad Fiscal*) in Argentina as a public agency for budgetary monitoring at the federal level.

Despite these reforms, the indicators detailed above suggest there is very little transparency at the different stages of the budgetary process in Latin America. This lack of transparency undermines effective social control, the establishment of a clearer link between revenues and expenditures (thus increasing budgetary effectiveness and efficiency), and improved identification of investment priorities.

Budgetary audit and control

Autonomous auditing institutions act as an auxiliary arm of the legislature in overseeing the government, reducing the information asymmetries between the executive and legislative branches, increasing budgetary transparency and accountability, and providing incentives for more effective public spending (Pereira and Melo, 2011). Allen and Tommasi (2001) identify three models of auditing institutions: the monocratic model, the court model, and the collegial model.

The monocratic or uninominal model is based on an audit institution, led by a single general auditor, and focused on ex-post control and financial and management auditing rather than monitoring compliance. This model is closely linked to the bureaucracy, although it has a high level of autonomy. An example in the region is the Office of the Comptroller General of the Republic of Chile.

Audit institutions in the court model are composed of a collegiate tribunal of auditors, with semi-judicial powers regarding administrative issues, and that typically acts as an administrative court. This type of institution gives more importance to the monitoring of financial and legal compliance than to management audits. An example of this type of institution is the *Tribunal de Contas da União* in Brazil.

The collegial model is a hybrid of these two models, with audit institutions led by a board of auditors without jurisdictional authority or judicial powers. Under this model, the audit institution only informs the legislature of the reliability and validity of governmental accounts, as is the case for the *Auditoría General de la Nación Argentina*.

Beyond the specific model, it is essential that these institutions be independent from the executive, although this does not mean that the relationship with the executive must be fragmented or that it does not flow easily. On the contrary, given that many audit institutions have no sanctioning powers, a close relationship, without sacrificing independence, is important.

Table 7.3 shows some of the characteristics of the main audit institutions in 18 countries in Latin America. It is a heterogeneous group, although most audit institutions are linked to the legislative branch and in many cases also hold semi-judicial powers. In some cases, the relationship with the legislature is weak, as the latter only participates in the appointment of the auditing authority (for example, in Colombia, Chile, Peru, Dominican Republic, among others).

---

9. ASAP is a non-profit civil society association that seeks to promote research and the study of public finances and of the financial administration systems of the national, provincial, and municipal public sectors (http://www.asap.org.ar/).

Beyond these characteristics, however, the IBP compiles an indicator to evaluate the institutional strength of these audit institutions in eight countries in Latin America (see figure 7.7). The figure shows that the strongest audit institutions are in Brazil and Chile. Interestingly, these two countries have adopted different institutional models (Brazil, the collegial model, and Chile, the uninominal), suggesting that the model established is not the only factor that determines institutional strength. Colombia (uninominal model) and Costa Rica (also uninominal) also have relatively strong audit institutions compared to the regional average (51.5%). Nevertheless, the indicators across the region remain below the OECD average, with the exceptions of Brazil and Chile.

There are other studies that analyze the importance of factors such as independence from the executive, the reliability of audit results, the timeliness of audit reports, and the implementation of auditors' recom-

Table 7.3 Design of audit institutions in selected Latin American countries

Country	Name	Type	Institutions linked to the executive	Institutions linked to the legislature	Semi-judicial powers
Argentina	Auditor General of the Nation	Collegial		X	
Bolivia	General Comptroller of the Republic	Uninominal	X		
Brazil	*Tribunal of Auditors of the Union*	Collegial		X	X
Chile	General Comptroller of the Republic	Uninominal			X
Colombia	General Comptroller of the Republic	Uninominal			X
Costa Rica	General Comptroller of the Republic	Uninominal		X	
Dominican Republic	General Comptroller of the Republic	Collegial			
Ecuador	General Comptroller of the State	Uninominal			
El Salvador	Accounts Court of the Republic	Collegial			X
Guatemala	General Comptroller of Accounts	Uninominal		X	X
Honduras	Superior Tribunal of Accounts	Collegial		X	
Mexico	Superior Federal Auditor	Uninominal		X	
Nicaragua	General Comptroller of the Republic	Collegial		X	
Panama	General Comptroller of the Republic	Uninominal			X
Paraguay	General Comptroller of the Republic	Uninominal		X	
Peru	General Comptroller of the Republic	Uninominal			
Uruguay	Tribunal of Accounts	Collegial		X	
Venezuela, BR	General Comptroller of the Republic	Uninominal			X

Source: author's calculation based on Santiso (2007).

Figure 7.7 Institutional strength for audit institutions in selected Latin American countries and the OECD (2010)
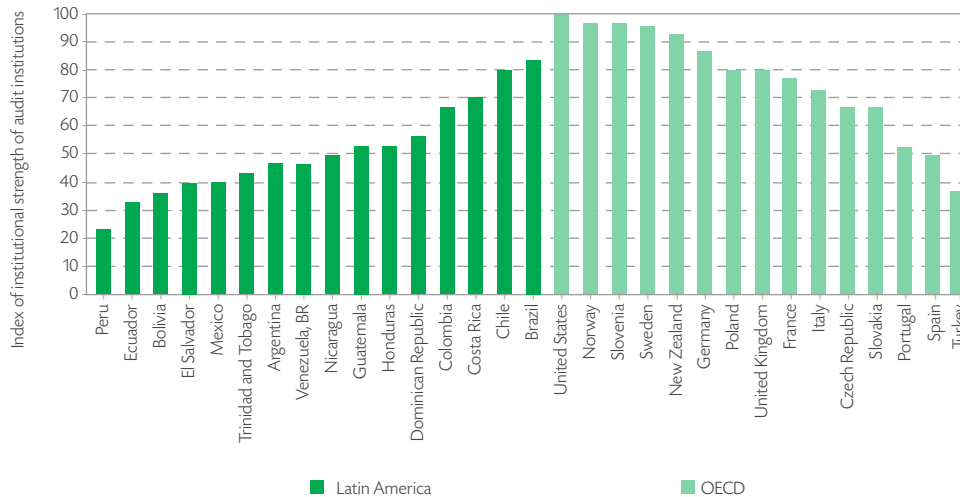
Source: International Budget Partnership (2010).

mendations (Santiso, 2007). This set of factors may be combined to construct an alternative index of the performance of audit institutions; the results suggest a picture that is coherent with that of Figure 7.7, where countries such as Colombia, Costa Rica, Chile, and Brazil have stronger institutional frameworks that are generally more effective (Santiso, 2007).

Citizen participation

Citizen participation in the budgetary process is fundamental for the budget to adequately reflect the needs and aspirations of the population. To the extent that the budgetary process facilitates greater citizen partici-pation, it makes an important contribution to development. The question remains, however, as to whether traditional mechanisms for participation through delegation to citizens' representatives in government (es-pecially in the legislature) are sufficient, or if new mechanisms for participation are needed.

The representatives elected to parliament represent the diversity of society, so the best way to guarantee citizens' participation through them should be through transparency and representation in the electoral process, as well as through the institutional strength and capacity to effectively exercise this representa-tion function. For many reasons, however, this has not always been the case; therefore, complementary schemes have emerged for more direct participation in decision-making processes, such as participa-tory budgeting. This new participatory method gives citizens the power to manage and allocate public resources –generally at a municipal level– through discussion and negotiation of their demands and priorities (Spada, 2009).

In Latin America, Brazil pioneered the development and application of this model of citizen participation, beginning with the experience of the city of Porto Alegre, following the 1988 election of the *Partido Dos Trabalhadores* (PT) in the municipal elections. That year, the budget was almost entirely committed to the payment of wages and salaries, with only 2% remaining for investments, so the mayor decided to allow the community to decide the allocation of public funds through consultation. The first year, participation reached approximately 1,000 people, increasing to 15,400 people by 1999, and more than 18,000 in 2001, where most belonged to low- and lower-middle income groups. At first, the increase in the number of participants was attributed to the perception of an improvement in municipal public finances, the reduction of conflicts related to salaries with public employees, and a better functioning of municipal services and investments (Goldsmith and Vainer, 2001). In 2002, citizen participation began to decline after a change in the rules around participation and as a result of the deterioration of the popular support for the PT (Baierle, 2002, 2007; Chávez, 2006; Spada, 2010).

In general, however, the expansion of participatory budgeting has been noteworthy, as more than 350 cities in Brazil have since adopted the framework over the past 20 years, along with various other cities across Latin America, including in Argentina, Chile, Mexico, the Dominican Republic, Uruguay, and the Bolivarian Republic of Venezuela. What began as a modest process for citizen participation has spread throughout the region as common practice, although the portion of the budget at stake continues to represent a small fraction of the total, and the share of the population that participates and trusts these mechanisms remains small (see chapter 5).

In addition, there are some signs that participatory budgeting may have improved the efficiency of public management in some places (see the Database of Budgetary Practices and Procedures in the World Bank/ OECD survey), although the empirical evidence is not conclusive, perhaps due to the fact that a careful analysis of the effects of these schemes is complex, and not necessarily because they have no effect. It is clear, however, that these schemes currently remain small-scale. Though it might be worthwhile promoting such mechanisms for participation as a more direct channel of communication between citizens and the executive (generally at the municipal level), the most important channel will continue to be citizens' delegation of participation to their representatives in parliament. This relationship must be strengthened and validated as central to the democratic role of the budget.

The other historically significant mechanism for citizen participation –and which will continue to be relevant– is through the activity of NGOs interested in budgetary processes and who mediate between the population, parliament, and the executive. Although it is difficult to quantify the presence of this type of organization in the region compared to others, in an institutionally weak context such as in Latin America, they may have an important role to play in complementing (and sometimes substituting) the official mechanisms for citizen participation and government accountability.

CONCLUSIONS

The budget has a very important function in democratic and economic development in Latin America, as it should reflect citizens' needs and aspirations and it should translate them into a commitment by the government and the state more generally. This commitment is fundamental to the accountability of the executive

branch of government, and therefore, to democratic control of public resources, and to improving efficiency and deepening democracy.

In the 1990s, the budgetary debate was dominated by the priority of fiscal discipline and macroeconomic stability. Given the perception that it is difficult to respect the overall budget constraints in parliament –because none of the actors participating in the debate would internalize it adequately in their deliberations and demands for resources (known as the tragedy of the commons)–, in practice the legislative role in the budgetary process has been limited (through rules that strengthen the executive over the legislature). Thus, the democratic role of the budgetary process and its function as a space for authentic deliberation and negotiation of needs and priorities of different sectors of society have been diminished. Currently, there is a clear opportunity to return that function to the legislature, without sacrificing overall fiscal discipline.

In this respect, the region currently seeks to strengthen the democratic and participatory mechanisms for the control and oversight of the state and to improve representation delegated to elected authorities. Some of the most important initiatives in Latin America are related to the strengthening of the analytic and information capacity of parliaments, as well as of audit institutions, which contribute to citizen oversight of compliance with the commitments made in the budget.

Finally, there are a series of political-institutional restrictions that condition the feasibility of these initiatives, and which must be taken into consideration. The multiplicity of actors, the multiple arenas in which decisions are debated, the differences in preferences for austerity or fiscal space, the rules for election and re-election, the constitutional prerogatives available, and the strengths or weaknesses of the bureaucracy are all factors that have an impact of the quality of the budgetary debate. In this respect, in contrast to some theoretical efforts that have tried to identify a single political factor as the determinant (for example, the effect of the electoral systems, or of the presidential versus parliamentary characteristics of the constitution), it is important to underline that it is a combination of institutional elements that influences the budgetary process with a variety of consequences for the quality of public policies in general, and of the budgetary process itself.

References

Ablo, E. and Reinikka, R. (1998). *Do budgets really matter? Evidence from public spending on education and health in Uganda.* (Policy Research Working Paper N° 1926). Washington D.C.: World Bank.

Acosta, P., Leite, P. and Rigolini, J. (2011). *Implications for poverty and inequality in Latin America.* (Policy Research Working Paper N° 5875). Washington D.C.: World Bank.

Administración Nacional de la Seguridad Social (ANSES). (2011). *Análisis de la cobertura previsional del SIPA: protección, inclusión e igualdad.* Buenos Aires: Administración Nacional de la Seguridad Social.

Afonso, A. and St. Aubyn, M. (2005). Non-parametric approaches to education and health efficiency in OECD countries. *Journal of Applied Economics*, *8(2)*, 227-246.

Afonso, A., Schuknecht, L. and Tanzi, V. (2006). *Public sector efficiency: Evidence for new EU member states and emerging markets.* (ECB Working Paper N° 581). Frankfurt: European Central Bank.

Afonso, A., Schuknecht, L. and Tanzi, V. (2010). Income Distribution Determinants and Public Spending Efficiency. *Journal of Economic Inequality*, *8(3)*, 367-389.

Agência Nacional do Petróleo, Gás Natural e Biocombustíveis (ANP). (2010). *Relatório de Gestão 2009.* http://www.anp.gov.br/?id=312

Agência Nacional do Petróleo, Gás Natural e Biocombustíveis (ANP). (2011). *Anuário Estatístico Brasileiro do Petróleo, Gás Natural e Biocombustíveis 2011.* http://www.anp.gov.br/?pg=57890#Seo_2

Aidt, T. and Jensen, P. (2009). The taxman tools up: an event history study of the introduction of the personal income tax. *Journal of Public Economics, 93(1-2)*, 160-175.

Aidt, T. and Eterovic, D. (2011). Political competition, electoral participation and public finance in 20th century Latin America. *European Journal of Political Economy, 27(1)*, 181-200.

Aigner, D., Lovell, C. and Schmidt, P. (1977). Formulation and estimation of stochastic frontier production function models. *Journal of Econometrics*, *6(1)*, 21-37.

Akitoby, B., Clements, B., Gupta, S. and Inchauste, G. (2006). Public spending, voracity, and Wagner's Law in developing countries. *European Journal of Political Economy, 22(4)*, 908-924.

Albi Ibáñez, E., González Páramo, J. and Zubiri, I. (2004). *Economía Pública I.* (2nd ed.). Barcelona: Ariel.

Alcaldía Mayor de Bogotá D.C., Secretaría Distrital de Hacienda. (2011). *Sistema Integrado de Información de Estadísticas Comparadas (SIEC).* http://impuestos.shd.gov.co/portal/page/portal/portal_internet_sdh/economia/siec_eco/SIEC

Alesina, A. and Rosenthal, H. (1995). *Partisan politics, divided government and the economy.* Cambridge: Cambridge University Press.

Alesina, A., Hausmann, R., Hommes, R. and Stein, E. (1999). Budget institutions and fiscal performance in Latin America. *Journal of Development Economics, 59(2)*, 253-273.

Alesina, A. and Perotti, R. (1999). Budget deficits and budget institutions. In J. Poterba and J. von Hagen (Eds.), *Fiscal Institutions and Fiscal Performance* (pp. 103-133). Chicago: University of Chicago Press.

Alesina, A., Campante, F. and Tabellini, G. (2008).Why is fiscal policy often pro-cyclical? *Journal of the European Economic Association, 6(5)*, 1006-1036.

Allcott, H. (2009). *Social norms and energy conservation.* (Working Paper N° 09-014). Cambridge: Center for Energy and Environmental Policy Research, MIT.

Allen, R. and Tommasi, D. (2001). *Managing public expenditure: A reference book for transition countries.* Paris: Organisation for Economic Co-operation and Development (OECD).

Alm, J., McClelland, G. and Schulze, W. (1992). Why do people pay taxes? *Journal of Public Economics, 48(1)*, 21-48.

Álvarez-Parra, F. and Sánchez, J. (2009). Unemployment insurance with a hidden labor market. *Journal of Monetary Economics*, *56(7)*, 954-967.

Álvarez-Parra, F. (2012). *Diferencias en la calidad de la educación e ineficiencia: un análisis para Chile y Perú.* Manuscript submitted for publication, Caracas, CAF.

Álvarez Parra, F. and St. Aubyn, M. (2012). *Government spending efficiency in Latin America: a frontier approach.* Manuscript submitted for publication, Caracas, CAF.

Alzúa, M., Cruces, G. and Ripani, L. (2010). *Welfare programs and labor supply in developing countries. Experimental evidence from Latin America.* (CEDLAS Working Paper N° 95). La Plata: Center for Distributive, Labor and Social Studies - Universidad Nacional de la Plata.

Amorim, O., Cox, G. W. and McCubbins, M. (2003). Agenda power in Brazil's Câmara dos Diputados, 1989-1998, *World Politics, 55(4)*, 550-578.

Andreoni, J., Erard B. and Feinstein, J. (1998). Tax compliance. *Journal of Economic Literature, 36(2)*, 818-860.

Ardanaz, M. (2011). *The politics of booms and busts: fiscal policy over the business cycle in developing countries.* Unpublished doctoral dissertation. New York: Columbia University.

Arezki, R. and van der Ploeg, F. (2007). *Can the natural resource curse be turned into a blessing? The role of trade policies and institutions.* (IMF Working Paper N° 07/55). Washington D.C.: International Monetary Fund.

Arreaza, A. and Reuter, A. (2012). *Can a mining windfall improve welfare? Evidence from Peru with municipal level data.* Unpublished manuscript, Caracas, CAF.

Aterido, R., Hallward Driemeier, M. and Pagés, C. (2011). *Does expanding health insurance beyond formal sector workers encourage informality? Measuring the impact of Mexico's Seguro Popular.* (Policy Research Working Paper N° WPS 5785). Washington D.C.: World Bank.

Atkinson, A. and Stiglitz, J. (1976). The design of tax structure: Direct versus indirect taxation. *Journal of Public Economics*, *6(1-2)*, 55-76.

Atkinson, A. (1977). Optimal taxation and the direct versus indirect tax controversy. *The Canadian Journal of Economics*, 10(4), 590-606.

Atkinson, G. and Pearce, D. (1993). Capital theory and the measure of sustainable development: an indicator of weak sustainability. *Ecological Economics, 8(2),* 103-108.

Azar, K., Gerstenblüth M. and Rossi, M. (2008). *Moral fiscal en el Cono Sur.* (Working Paper N° 02/08). Montevideo: Department of Economics, Universidad de la República.

Bagüés, M. and Esteve Volart, B. (2011). *Politicians' luck of the draw: Evidence from the Spanish Christmas Lottery.* (Working Paper N° 2011-01). Madrid: Fundación de Estudios de Economía Aplicada (FEDEA).

Baierle, S. (2002). OP ao termidor? In J. Verle and L. Brunet (Eds.), *Construindo um novo mundo: avalia*ção *da experiência do Orçamento Participativo em Porto Alegre-Brasil* (p. 132-164). Porto Alegre: Guayí.

Baierle, S. (2007). *Urban struggles in Porto Alegre: Between political revolution and transformism.* Porto Alegre, Brasil: CIDADE - Centro de Assesoria e Estudos Urbanos.

Banerjee, A., Deaton, A. and Duflo, E. (2004). Wealth, health, and health services in rural Rajasthan. *The American Economic Review, 94(2)*, 326-330.

Banerjee, A., Cole, S., Duflo, E. and Linden, L. (2005). *Remedying education evidence from two randomized experiments in India.* (NBER Working Paper N° 11904). Cambridge: National Bureau of Economic Research.

Banerjee, A. and Duflo, E. (2006). Addressing absence. *Journal of Economic Perspectives, 20(1)*, 117-132.

Barrow, L., Brock, T., Richburg Hayes, L. and Rouse, C. (2009). *Paying for performance: the education impacts of a community college scholarship program for low-income adults.* (Federal Reserve Bank of Chicago Working Paper N° 09-13). Chicago: Federal Reserve Bank of Chicago.

Behrman, J. (2011). How much might human capital policies affect earnings inequalities and poverty? *Estudios de Economía*, *38(1)*, 9-41.

Behrman, J., Parker, S. and Todd, P. (2011). Do conditional cash transfers for schooling generate lasting benefits? A five-year follow up of PROGRESA/Oportunidades. *The Journal of Human Resources, 46(1)*, 93-122.

Bénabou, R. (1996). Inequality and growth. In B. Bernanke and J. Rotemberg (Eds.), *NBER Macroeconomics Annual 1996 (pp. 11-92)*. Boston: MIT Press.

Bénabou, R. (2000). Unequal societies: Income distribution and the social contract. *The American Economic Review*, *90(1)*, 96-129.

Bénabou, R. (2002). Tax and education policy in a heterogeneous-agent economy: What levels of redistribution maximize growth and efficiency? *Econometrica, Econometric Society, 70(2)*, 481-517.

Besfamille, M. (2011). *The economics of tax evasion.* (Working Paper CAF N° 2011/10). Caracas: CAF.

Bird, R. (1971). Wagner's 'Law' of expanding state activity. *Public Finance*, *26(1)*, 1-26.

Bird, R. (1972). The 'displacement effect': a critical note. *Finanzarchiv*, *30(3)*, 454-463.

Bird, R., Martínez-Vázquez, J. and Torgler, B. (2004). *Societal Institutions and Tax Effort in Developing Countries.* (ITP Paper N° 04011). Institute for International Business: University of Toronto.

Bird, R. and Gendron, P. (2007). *The VAT in developing and transitional countries.* Boston: Cambridge University Press.

Bird, R. (2008). *Tax challenges facing developing countries.* (IIB Working Paper Nº 12). Institute for International Business: University of Toronto.

Bird, R. and Vázquez Caro, J. (2011). Benchmarking tax administrations in developing countries: A systemic approach. *e-Journal of Tax Research, 9(1)*, 5-37.

Boldrin, M. and Montes, A. (2005). The intergenerational state education and pensions. *Review of Economic Studies*, *72(3)*, 651-664.

Boldrin, M. and Montes, A. (2009). Assessing the efficiency of public education and pensions. *Journal of Population Economics*, *22(2)*, 285-309.

Boschini, A., Pettersson, J. and Roine, J. (2007). Resource curse or not: A question of appropriability. *Scandinavian Journal of Economics, 109(3)*, 593-617.

Bourguignon, F. (2002). The growth elasticity of poverty reduction: Explaining heterogeneity across countries and time periods. In T. Eichler and S. Turnovsky (Eds.). *Growth and Inequality*. Cambridge: MIT Press.

Brollo, F., Nannicini, T., Perotti, R. and Tabellini, G. (2010). *The Political Resource Curse.* (NBER Working Paper N° 15705). Cambridge: National Bureau of Economic Research.

Brunnschweiler, C. and Bulte, E. (2008). The resource curse revisited and revised: a tale of paradoxes and red herrings. *Journal of Environmental Economics and Management, 55(3)*, 248-264.

Buchanan, J. (1970). *The Public Finances* (3rd ed.). Homewood, Illinois: Irwin.

CAF. (2008a). *Oportunidades en Am*é*rica Latina. Hacia una mejor política social*. Caracas: CAF.

CAF. (2008b). *Los fondos soberanos de riqueza: tendencias globales y casos de estudio*. (Special Document of Economic Overview N° 2008/01). Caracas: CAF.

CAF (2009). *Caminos hacia el futuro. Gesti*ó*n de la infraestructura en Am*é*rica Latina.* Caracas: CAF.

CAF. (2011a). *Servicios financieros para el desarrollo. Promoviendo el acceso en Am*é*rica Latina*. Caracas: CAF.

CAF. (2011b). *Encuesta sobre acceso, calidad y satisfacción con los servicios públicos en América Latina*. Unpublished manuscript, Caracas, CAF.

Calderón, C. and Servén, L. (2004). *The effects of infrastructure development on growth and income distribution*. (Policy Research Working Paper N° 3400). Washington D.C.: World Bank.

Calderón, C. and Servén, L. (2010). *Infrastructure in Latin America*. (Policy Research Working Paper N° 5317). Washington D.C.: World Bank.

Calvo, E., Bertranou, F. and Bertranou, E. (2010). Are old-age pension system reforms moving away from individual retirement accounts in Latin America? *Journal of Social Policy, 39(2)*, 223-234.

Camacho, A., Conover, E. and Hoyos, A. (2009). *Effects of Colombia's social protection system on workers' choice between formal and informal employment*. (CEDE Paper N° 2009-18). Bogotá: Center of Economic Development Studies, School of Economics, Universidad de los Andes.

Campodónico, H. (2008). *Renta petrolera y minera en pa*í*ses seleccionados de Am*é*rica Latina*. Project document. Santiago de Chile: Economic Commission for Latin America and the Caribbean.

Cárdenas, M., Ramírez, S. and Tuzemen, D. (2011). *Commodity Dependence and Fiscal Capacity*. (Research Working Paper N° RWP 11-08). Kansas City: Federal Reserve Bank of Kansas City.

Carrasco, C. (2010). Instrumentos y técnicas para la medición de la evasión. *Serie Temática Tributaria Nº 7*. Inter-American Center of Tax Administrations.

Caselli, F. and Michaels, G. (2011). *Do oil windfalls improve living standards? Evidence from Brazil*. (NBER Working Paper N° 15550). Cambridge: National Bureau of Economic Research.

Catanho, C. (2011). *Ingresos fiscales petroleros y transparencia presupuestaria: evidencia de municipios en Venezuela.* Unpublished manuscript, Caracas, CAF.

Cattaneo, M., Galiani, S., Gertler, P., Martínez, A. and Titiunik, R. (2009). Housing, Health, and Happiness.

American Economic Journal: Economic Policy, 1(1), 75-105.

Cecchini, S. and Madariaga, A. (2011). *Programas de Transferencias Condicionadas: Balance de la experiencia reciente en América Latina y el Caribe*. Santiago de Chile: ECLAC.

Centrángolo, O. and Gómez-Sabaíni, J. (2006). *Tributación en América Latina: en busca de una nueva agenda de reformas*. Santiago de Chile: Economic Commission for Latin America and the Caribbean.

Inter-American Center of Tax Administrations (CIAT). (2011). Tributación y Administración Tributaria –América Latina–. (Working Paper Nº 1-2011). *Series comparativas*.

Center for the Implementation of Public Policies Promoting Equity and Growth (CIPPEC). (2011). http://www.cippec.org

Chantrill, C. (2011a). *Time Series of UK Public Spending*. http://www.ukpublicspending.co.uk

Chantrill, C. (2011b). *Time Series of Government Revenue*. http://www.usgovernmentrevenue.com

Charnes, A., Cooper, W. and Rhodes, E. (1978). Measuring the efficiency of decision making units. *European Journal of Operational Research, 2(6)*, 429-444.

Chaudhury, N., Hammer, J., Kremer, M., Muralidharan, K. and Rogers, F. H. (2006). Missing in action: teacher and health worker absence in developing countries. *Journal of Economic Perspectives, 20(1)*, 91-116.

Chávez, D. (2006). Participation lite: the watering down of people power in Porto Alegre. *Transnational Institute*. Retrieved January 24th, 2012, from http://www.tni.org/

Chetty, R. and Sáez, E. (2009). *Teaching the Tax Code: Earnings responses to an experiment with EITC recipients*. (NBER Working Paper N° 14836). Cambridge: National Bureau of Economic Research.

Clark, T. and Dilnot, A. (2002). *Long-term trends in British taxation and spending*. (Briefing Note N° 25). London: The Institute for Fiscal Studies.

Clements, B., Faircloth, C. and Verhoeven, M. (2007). *Public Expenditure in Latin America: Trends and Key Policy Issues*. (IMF Working Paper N° 07/21). Washington D.C.: International Monetary Fund.

Coelho, I. (2009, October). *Taxing banking transactions – The experience in Latin America and elsewhere*. Paper prepared for the 3rd ITD conference, Beijing, China.

Collier, P. and Hoeffler, A. (2004). Greed and grievance in Civil War. *Oxford Economic Papers, 56(4),* 563-595.

Collier, P., van der Ploeg, F., Spence, M. and Venables, A. (2010). Managing Resource Revenues in Developing Economies. *IMF Staff Papers, 57*(1), 84-118.

Comisión Chilena del Cobre (COCHILCO). (2011). *Anuario de Estadísticas del cobre y otros minerales 1991- 2010*. http://www.cochilco.cl/productos/descarga/anuarios/anuario2010.pdf

Conesa, J., Kitao, S. and Krueger, D. (2009). Taxing capital? Not a bad idea after all! *The American Economic Review*, *99(1)*, 25-48.

Congreso de la República de Colombia. (2011). http://www.senado.gov.co

Congreso de la República del Perú. (2011). http://www.congreso.gob.pe

Consejo Nacional Electoral de Ecuador. (2011). *Resultados elecciones 2009*. http://app.cne.gob.ec/resultados2009/

Constitución de la República Bolivariana de Venezuela. (1999). *Gaceta Oficial* No 36.860. Caracas, December 30th, 1999.

Corden, W. and Neary, J. (1982). Booming sector and de-industrialization in a small open economy. *Economic Journal, 92(368)*, 825-848.

Corporación Nacional del Cobre (CODELCO). (2012). *Memoria Anual*. http://www.codelco.cl/flipbook/memorias/memoria2010/MEMORIA_00.PDF

Corte Electoral, República Oriental de Uruguay. (2011). *Estadísticas de Elecciones Nacionales*. http://www.corteelectoral.gub.uy/

Cox, G. W. and Morgenstern, S. (2001). Latin America's Reactive Assemblies and Proactive Presidents. *Comparative Politics, 33(2)*, 171-190.

Cox, J., Friedman, D. and Sadiraj, V. (2008). Revealed Altruism. *Econometrica, 76(1),* 31-69.

Crouch, L. and Fasih, T. (2004). *Patterns in educational development: Implications for further efficiency analysis*. Unpublished manuscript, Washington D.C., World Bank.

Cruces, G., Pérez, R. and Tetaz, M. (2011). *Biased perceptions of income distribution and preferences for redistribution: Evidence from a survey experiment*. (IZA Discussion Papers N° 5699). Bonn: Institute for the Study of Labor.

Currie, J. (2009). Healthy, wealthy, and wise: Socioeconomic status, poor health in childhood, and human capital development. *Journal of Economic Literature, 47(1)*, 87-122.

Dabla-Norris, E., Allen, R., Zanna, L. F., Prakash, T., Kvintradze, E., Lledo, V., Yackovlev, I. and Gollwitzer,

S. (2010). *Budget Institutions and Fiscal Performance in Low-Income Countries*. (IMF Working Paper N° 10/80). Washington D.C.: International Monetary Fund.

Dalgaard, C. and Olsson, O. (2006). *Windfall gains, political economy, and economic development*. (Working Papers in Economics N° 223), Göteborg: Göteborg University.

Das, J., Do, Q-T. and Özler, B. (2005). Reassessing Conditional Cash Transfer Programs. *The World Bank Research Observer, 20(1)*, 57-80.

Daude, C. and Melguizo, A. (2010). *Taxation and more representation?: On fiscal policy, social mobility and democracy in Latin America*. (Working Paper N° 294). Paris: OECD Development Centre.

Debreu, G. (1951). The coefficient of resource utilization. *Econometrica, 19(3)*, 273-292.

Decreto N° 2705 sancionado el 03 de agosto de 1998. *Diário Oficial da Uni*ão N° 147. Brasilia, Brazil, August 4th, 1998. http://www.anp.gov.br/brasilrounds/round1/Docs/LDOC02_pt.pdf

Decreto N° 1760 de 2003. *Diario Oficial N° 45.230.* Bogota, Colombia, June 26th, 2003.

http://www.anh.gov.co/media/normatividadANH/creacion/decreto_1760_2003.pdf

Decreto Ejecutivo N° 662 sancionado el 4 de octubre del 2007. *Registro Oficial N° 193.* Quito, Ecuador, October, 18th, 2007. http://www.derechoecuador.com/index.php?option=com_content&task=view&id=1483

Decreto Supremo N° 009-2005-ED: Reglamento de la Gestión del Sistema Educativo. *Diario Oficial El Peruano.* Lima, Peru, April 29th, 2005. http://www.minedu.gob.pe/normatividad/decretos/DecSupN009-2005-ED.pdf

Decreto Supremo N° 173-2011-EF: Gravamen especial a la minería N° 29790. *Edición Extraordinaria del Diario Oficial El Peruano.* Lima, Perú, September 29th, 2011. http://www.congreso.gob.pe/ntley/Imagenes/Leyes/29790.pdf

Decreto N° 1510 con fuerza de Ley Orgánica de Hidrocarburos. Gaceta Oficial de la República Bolivariana de Venezuela N° 37323. Caracas, República Bolivariana de Venezuela, November 13th, 2001. http:// www.pgr.gob.ve/dmdocuments/2001/37323.pdf

Decreto con rango, valor y fuerza de ley que crea contribución especial por precios extraordinarios y precios exorbitantes en el mercado internacional de hidrocarburos. Gaceta Oficial de la República Bolivariana de Venezuela N° 6.022. Caracas, Bolivarian Republic of Venezuela, April 18th, 2011. http://www.pgr.gob.ve/dmdocuments/2011/6022.pdf

De Ferranti, D., Perry, G., Ferreira, F., Walton, M., Coady, D., Cunningham, W., Gasparini, L., Jacobsen, J., Matsuda, Y., Robinson, J., Sokoloff, K. and Wodon, Q. (2003). *Inequality in Latin America and the Caribbean: Breaking with history?* Washington D.C.: World Bank.

De Janvry, A. and Sadoulet, E. (2006). Making conditional cash transfer programs more efficient: Designing for maximum effect of the conditionality. *The World Bank Economic Review, 20(1)*, 1-29.

De Paula, A. and Scheinkman, J. (2010). Value – Added taxes, chain effects, and informality. *American Economic Journal: Macroeconomics 2(4),* 195-221.

Dohrmann, T. and Pinshaw, G. (2009). *The road to improved compliance.* Nueva York: McKinsey & Company.

Downs, A. (1957). An economic theory of political action in a democracy. *Journal of Political Economy, 65(2),* 135-150.

Drazen, A. and Eslava, M. (2005). *Electoral manipulation via expenditure composition: Theory and evidence.* (NBER Working Paper N° 11085). Cambridge: National Bureau of Economic Research.

Due, J. and Frielaender, A. F. (1973). *Government finance: Economics of the public sector.* Homewood, Illinois: Irwin.

Duflo, E. and Sáez, E. (2003). The role of information and social interactions in retirement plan decisions: Evidence from a randomized experiment. *Quarterly Journal of Economics*, *118(3),* 815-842.

Duflo, E. and Hanna, R. (2005). *Monitoring works: Getting teachers to come to school.* (NBER Working Paper N° 11880). Cambridge: National Bureau of Economic Research.

Durevall, D. and Henrekson, M. (2011). The futile quest for a grand explanation of long-run government expenditure. *Journal of Public Economics, 95(7-8),* 708-722.

Easterly, W. and Rebelo, S. (1993). *Marginal income tax rates and economic growth in developing countries.* (Policy Research Working Paper N° 1050). Washington D.C.: World Bank.

Economic Commission for Latin America and the Caribbean (ECLAC). (2010a). *Panorama Social de América Latina 2010*. Santiago de Chile: Economic Commission for Latin America and the Caribbean and United Nations.

Economic Commission for Latin America and the Caribbean (ECLAC). (2010b). *La hora de la igualdad. Brechas por cerrar, caminos por abrir.* Santiago de Chile: Economic Commission for Latin America and the Caribbean and United Nations.

Economic Commission for Latin America and the Caribbean (ECLAC). (2011). *La política fiscal para el afianzamiento de las democracias en América Latina: reflexiones a partir de una serie de estudios de caso.* A. Bárcena and O. Kacef (Comps.). Santiago de Chile: Economic Commission for Latin America and the Caribbean and United Nations.

Economic Commission for Latin America and the Caribbean (ECLAC). (2011). *Base de datos de Programas de Protección Social no contributiva en América Latina.* http://dds.cepal.org/bdptc/

Economic Commission for Latin America and the Caribbean (ECLAC). (2011). CEPALSTAT Statistics in Latin America and the Caribbean: http://websie.eclac.cl/sisgen/ConsultaIntegrada.asp

Eguino, H., Garriga, M., Pineda, C., Porto, A. and Rosales W. (2010). *Estudio de las características estructurales del sector municipal en Am*érica *Latina*. (Discussion Paper N° IDB-DP-145). Washington D.C.: IDB.

Engel, E., Fischer, R. and Galetovic, A. (2008). *Public-Private partnerships: When and how.* Unpublished manuscript, Caracas, CAF.

Engerman, S., Maeriscal, S. and Sokoloff, K. (2002). *The evolution of schooling institutions in the Americas, 1800-1945.* Unpublished manuscript, Department of Economics: UCLA.

Engerman, S. and Sokoloff, K. (2005). The evolution of suffrage institutions in the Americas. *Journal of Economic History, 65*, 41-102.

Erosa, A. (2001). Financial intermediation and occupational choice in development. *Review of Economic Dynamics*, 4(2), 303-334.

Erosa, A. and Gervais, M. (2002). Optimal taxation in life-cycle economies. *Journal of Economic Theory*, *105(2)*, 338-369.

Escobar, R. (2008). La medición y control de la erosión de las bases tributarias: los gastos tributarios y la evasión tributaria. *Serie temática tributaria* N° 2. Inter-American Center of Tax Administrations.

Esteban, J. and Ray, D. (1999). Conflict and Distribution. *Journal of Economic Theory, 87(2)*, 379-415. Farejohn, J. (1986). Incumbent performance and electoral control. *Public choice, 50(1),* 5-25.

Farrel, M. J. (1957). The measurement of productive efficiency. *Journal of the Royal Statistical Society*, *120(3)*, 253-281.

Fay, M. and Morrison, M. (2005). *Infrastructure in Latin America and the Caribbean: Recent developments and key challenges.* Washington D.C.: World Bank.

Federal Administration of Public Revenue (AFIP). (2002). *Anuario de estad*ística*s tributarias*. http://www.afip.gob.ar/institucional/estudios/anuario.asp

Federal Administration of Public Revenue (AFIP). (2007). *Plan de gesti*ó*n 2008.* http:// www.afip.gob.ar/

Federal Administration of Public Revenue (AFIP). (2008). *Anuario de estad*ística*s tributarias*. http://www.afip.gob.ar/institucional/estudios/anuario.asp

Fellman, J., Jäntti, M. and Lambert, P. (1999). Optimal tax-transfer systems and redistributive Policy. *The Scandinavian Journal of Economics*, *101(1)*, 115-126.

Fellner, G., Sausgruber, R. and Traxler, C. (2011). *Testing enforcement in the field: threat, moral appeal, and social information.* Manuscript submitted for publication, Journal of the European Economic Association.

Fernald, J. (1999). Roads to prosperity? Assessing the link between public capital and productivity. *The American Economic Review, 89(3)*, 619-638.

Fernández, A. and Oviedo, E. (2010). *Salud electrónica en América Latina y el Caribe: avances y desafíos.* Santiago de Chile: Economic Commission for Latin America and the Caribbean and United Nations.

Fernández, A. (2011, July). *Avances y retos de política pública en Salud-e: visión regional.* Presentation presented at the II Seminario Regional de Telemedicina y Salud-e: Prácticas de innovación y estándares, Caracas, Venezuela.

Ferraz, C. and Finan, F. (2009). *Electoral accountability and corruption: Evidence from the audits of local Governments.* (NBER Working Papers N° 14937). Cambridge: National Bureau of Economic Research.

Ferraz, C. and Monteiro, J. (2010). *Does oil make leaders unaccountable? Evidence from Brazil's offshore oil boom.* Unpublished manuscript, Pontifical Catholic University of Rio de Janeiro.

Filc, G. and Scartascini, C. (2005). Budget institutions and fiscal outcomes: Ten years of inquiry on fiscal matters at the research department of the Inter-American Development Bank. *International Journal of Public Budget, 59(32)*, 81-138.

Fiszbein, A. and Schady, N. (2009). *Conditional Cash Transferences: Reducing present and future poverty.* Washington D.C.: World Bank.

Inter-American Development Bank (IDB). (2010). *La era de la productividad.* Washington D.C.: IDB.

International Monetary Fund (IMF). (2001). *Manual de Estadísticas de Finanzas Públicas.* (2nd ed.). Washington D.C.: International Monetary Fund/Statistics Department.

International Monetary Fund (IMF). (2011). *Movilización de ingresos en los países en desarrollo.* Department of Public Finance. Washington D.C.: International Monetary Fund.

Forsyth, P. and Kay, J. (1980). The economic implications of north sea oil revenues. *Fiscal Studies, 1(3),* 1-28.

Forsyth, P. and Kay, J. (1981). Oil revenues and manufacturing output. *Fiscal Studies, 2(2),* 9-17.

Forteza, A., Apella, I., Fajnzylber, E., Grushka, C., Rossi, I. and Sanroman G. (2009). *Work histories and pension entitlements in Argentina, Chile and Uruguay.* (SP Discussion Paper N° 0926). Washington D.C.: World Bank.

Frey, B. and Meier, S. (2004). Social comparisons and pro-social behavior: Testing 'Conditional Cooperation' in a field experiment. *The American Economic Review, 94(5),* 1717-1722.

Frey, B. and Torgler, B. (2007). Tax morale and conditional cooperation. *Journal of Comparative Economics, 35(1),* 136-159.

Fullerton, D. and Rogers, D. (1993). *Who bears the lifetime tax burden?* Washington D.C.: The Brookings Institution.

Fundación de Investigaciones Económicas Latinoamericanas (FIEL). (2011). *Eficiencia.gob.ar: la construcción de un Estado moderno y eficaz para la Argentina*. Unpublished manuscript, FIEL.

Gadenne, L. (2011). *Tax me, but spend wisely: The political economy of taxes, evidence from Brazilian local Governments*, Unpublished manuscript, Paris School of Economics.

Gasparini, L., Haimovich, F. and Olivieri, S. (2009). Labor informality bias of a poverty-alleviation program in Argentina. *Journal of Applied Economics, 12(2)*, 181-205.

Gasparini, L., Galiani, S., Cruces, G. and Acosta, P. (2011). *Educational upgrading and returns to skills in Latin America. Evidence from a Supply-Demand Framework, 1990-2010.* (CEDLAS Working Paper N° 127). La Plata: Center for Distributive, Labor and Social Studies - Universidad Nacional de la Plata.

Gasparini, L. and Lustig, N. (2011). *The rise and fall of income inequality in Latin America.* (CEDLAS Working Paper N° 118). La Plata: Center for Distributive, Labor and Social Studies - Universidad Nacional de la Plata.

Gelemur, A. and Pochat, L. (2011). *Recursos naturales. ¿Bendición o maldición?: el efecto de las regalías petroleras en las provincias argentinas.* Paper presented to obtain the title of Economist, Universidad Torcuato di Tella, Buenos Aires, Argentina.

Georgetown University. (2011). *Political Database of the Americas.* http://pdba.georgetown.edu/Elecdata/Bolivia/pres05.html

Goldsmith, W. and Vainer, C. (2001). Presupuesto participativo y políticas de poderes en Porto Alegre. *EURE, 27(82)*, 115-119.

Gómez-Sabaíni, J. (2006). Cohesión social, equidad y tributación. Análisis y perspectivas para América Latina. *Serie Políticas Sociales N°127.* Santiago de Chile: Economic Commission for Latin America and the Caribbean.

Gómez-Sabaíni, J., Jiménez, J. and Podestá, A. (2010). Tributación, evasión y equidad en América Latina. In J. Jiménez, J. Gómez-Sabaíni and A. Podestá (Eds.), *Evasión y equidad en América Latina.* Santiago de Chile: Economic Commission for Latin America and the Caribbean and German Technical Cooperation.

Gómez-Sabaíni, J. and Jiménez, J. (2011). *Estructura tributaria y evasión impositiva en América Latina.* (CAF Working Paper N° 2011/08). Caracas: CAF.

González, J., Guasch, J. and Serebrisky, T. (2007). *Consulta de San José 2007. Latin America: Addressing high logistics costs and poor infrastructure for merchandise transportation and trade facilitation.* Washington D.C.: World Bank.

González, D., Martinoli, C. and Pedraza, J. (2009). *Sistemas tributarios de América Latina. Situación actual, reformas y políticas para promover la cohesión social.* Proyecto Eurosocial Sector Fiscalidad. Madrid: Instituto de Estudios Fiscales.

González-Navarro, M. and Quintana-Domeque, C. (2010). *Urban Infrastructure and Economic Development: Experimental Evidence from Street Pavement.* (IZA Discussion Paper N° 5346). Bonn, IZA.

González-Rozada, M. and Llenera-Pinto, F. (2011). *The effects of a Conditional Transfer Program on the labor market: The human development bonus in Ecuador.* (Working Paper Economía N° 2011-1). Buenos Aires: Universidad Torcuato di Tella.

González-Rozada, M., Ronconi, L. and Rufflo, H. (2011). *Protecting workers against unemployment in Latin America and the Caribbean: Evidence from Argentina.* (IDB Working Paper N° 268). Washington D.C.: Inter-American Development Bank.

Goñi, E., López, H. and Servén, L. (2011). Fiscal redistribution and income inequality in Latin America. *World Development*, *39(9)*, 1558-1569.

Green, W. (2005). Reconsidering heterogeneity in panel data estimators of the stochastic frontier model. *Journal of Econometrics, 126,* 269-303.

Guasch, J. and Kogan, J. (2006). Inventories and logistic costs in developing countries: Levels and determinants – a red flag for competitiveness and growth. *Revista de la Competencia y de la Propiedad Intelectual, 1(1)*, 5-29.

Hallerberg, M. and Marier, P. (2004). Executive authority, the personal vote, and budget discipline in Latin American and Caribbean countries. *Journal on Political Science, 48(3)*, 571-587.

Hallerberg, M., Scartascini, C. and Stein, E. (2009). *Who decides the budget? A political economy analysis of the budget process in Latin America.* Washington D.C.: Inter-American Development Bank.

Hamilton, K. (1994). Green Adjustments to GDP. *Resources Policy, 20(3),* 155-168.

Hamilton, K. and Hartwick, J. (2005). Investing exhaustible resource rents and the path of consumption. *Canadian Journal of Economics, 38(2)*, 615-21.

Hansen, G. and İmrohoroğlu, A. (1992). The role of unemployment insurance in an economy with liquidity constraints and moral hazard. *Journal of Political Economy*, *100(1)*, 118-142.

Hartwick, J. (1977). Intergenerational equity and the investing of rents from exhaustible resources. *The American Economic Review, 67(5),* 972-974.

Heald, D. (2003). Fiscal transparency: Concepts, measurement and UK practice. *Public Administration, 81(4)*, 723-759.

Heckman, J., Lochner, L. and Taber, C. (1998). *Tax policy and human capital formation.* (NBER Working Paper N° 6462). Cambridge: National Bureau of Economic Research.

Heckman, J. (2006). Skill formation and the economics of investing in disadvantaged children. *Science, 312(5782)*, 1900-1902.

Herrera, S. and Pang, G. (2005). *Efficiency of public spending in developing countries: an efficiency frontier approach.* (Policy Research Working Paper N° 3645). Washington D.C.: World Bank.

Herrera, S. and Pang, G. (2008). Efficiency of infrastructure: The case of Container Ports. *Associação Nacional dos Centros de Pósgraduação em Economia, 9(1)*, 165-194.

Hirschman, A. (1978). Exit, voice and the State. *World Politics, 31(1),* 90-107.

Holtz-Eakin, D. (1994). Public sector capital and the productivity puzzle. *Review of Economics and Statistics, 76(1),* 12-21.

Hudson, H. (1990). *Communication satellites: their development and impact.* New York: Free Press.

Humphreys, M. and Sanbdu, M. (2007). The Political Economy of Natural Resource Funds. In M. Humprheys, J. Sachs and J. Stiglitz (Eds.), *Escaping the natural resource curse.* (pp. 194-233). New York: Columbia University Press.

Husted, T. and Kenny, L. (1997). The effect of the expansion of the voting franchise on the size of the government. *Journal of Political Economy, 105(1)*, 55-82.

International Labour Organization (ILO). (2011). *LABORSTA.* http://laborsta.ilo.org/

Instituto de Ciencias Alejandro Lipschutz. (2011). http://www.ical.cl/

Instituto Federal Electoral de México. (2011). *Sistema de consulta de las estadísticas de las elecciones federales 2008-2009.* http://www.ife.org.mx/documentos/RESELEC/SICEEF/principal.html

Internal Revenue Service (IRS). (2006). *IRS updates tax gap estimates.* IRS-2006-28. http://www.irs.gov/pub/irs-news/tax_gap_figures.pdf

International Budget Partnership (IBP). (2010). *The Open Budget Survey.* Washington D.C.: International Budget Partnership.

International Tax Dialogue (ITD). (2007, October). *Tributación de la pequeña y mediana empresa.* Second Global Conference on Taxation of Small and Medium Enterprises, Buenos Aires, Argentina.

International Tax Dialogue (ITD). (2010). Revenue Administration in Sub-Saharan Africa. *ITD Comparative Information Series N°1.* Freetown: Sierra Leone.

IPSOS-Napoleón Franco. (2011, July). *Encuesta de percepción ciudadana Bogotá Cómo vamos 2011.* Presentation presented at the presentation of results perception survey Bogotá Cómo vamos 2011. Bogotá, Colombia.

Iregui, A. M., Melo, L. and Ramos, J. (2006). Evaluación y análisis de eficiencia de la educación en Colombia.

Borradores de Economía N° 381. Bogotá: Banco de la República de Colombia.

Jiménez, J. and Podestá, A. (2010). Inversión, incentivos fiscales y gastos tributarios en América Latina. *Serie Macroeconómica del Desarrollo N°77.* Santiago de Chile: Economic Commission for Latin America and the Caribbean.

Jorrat, M. and Podestá, A. (2010). Análisis comparativo de las metodologías empleadas para la estimación de la evasión en el impuesto a la renta. In J. Jiménez, J. Gómez-Sabaíni and A. Podestá (Eds.), *Evasión y equidad en América Latina.* Santiago de Chile: Economic Commission for Latin America and the Caribbean and German Technical Cooperation.

Kalmanovitz, S. (2008). Consecuencias económicas de la Independencia de Colombia. *Revista de Economía Institucional, 10(19),* 207-233.

Karabarbounis, L. (2011). One Dollar, One Vote. *The Economic Journal, 121(553),* 621-651.

Katz, R. (2009). *El papel de las TIC en el desarrollo: propuesta de América Latina a los retos económicos actuales* (2nd ed.). Madrid: Ariel.

Keen, M. and Lockwood, B. (2010). The value added tax: its causes and consequences. *Journal of Development Economics, 92(2),* 138-151.

Kenny, L. and Winer, S. (2006). Tax systems in the world: an empirical investigation into the importance of tax bases, administration costs, scale and political regime. *International tax and public finance, 13(2),* 181-215.

Khandker, S, Pitt, M. and Fuwa, N. (2003). *Subsidy to promote girls' secondary education: The female stipend program in Bangladesh.* Washington D.C.: World Bank.

Kleven, H., Knudsen, M., Kreiner, C., Pedersen, S. and Sáez, E. (2010). *Unwilling or unable to cheat? Evidence from a randomized tax audit experiment in Denmark.* (NBER Working Paper N° 15769). Cambridge: National Bureau of Economic Research.

KPMG. (2011). *Corporate and Indirect Tax Survey 2011.* KPMG International.

Kremer, M. and Chen, D. (2001). *An interim Report on a teacher attendance incentive program in Kenya.* Unpublished manuscript, Harvard University.

Lamartina, S. and Zaghini, A. (2008). *Increasing public expenditures: Wagner's Law in OECD countries.* (CFS Working Paper N° 2008/13). Rome: Center for Financial Studies.

Lane, P. and Tornell, A. (1996). Power, growth, and the voracity effect. *Journal of Economic Growth, 1(2),* 213-241. Latinobarómetro. (2011). *Database.* http://www.latinobarometro.org/

La Vigne, N., Lowry, S., Markman, J. and Dwyer, A. (2011). *Documenting the use of public surveillance cameras for crime control and prevention in three U.S. cities.* Washington D.C.: Urban Institute.

Lazear, E. (2000). Performance pay and productivity. *The American Economic Review*, *90(5)*, 1346-1361.

Lederman, D. and Maloney, M. (2007). *Natural resources: neither curse nor destiny*, Washington D.C.: World Bank and Standford University Press.

Lee, Y. and Gordon, R. (2005). Tax structure and economic growth. *Journal of Public Economics, 89(5-6),* 1027-1043.

Leuven, E., Lindahl, D., Oosterbeek, H. and Webbink, M. (2007). The effect of extra funding for disadvantaged children on achievement. *The Review of Economics and Statistics, 89(4)*, 721-736.

Levine, R. (2005). Finance and growth: theory and evidence. *Handbook of Economic Growth, 1(1)*, 865-934.

Ley de Hidrocarburos N° 17.319 sancionada el 23 de junio de 1967. *Boletín Oficial N° 21.220.* Buenos Aires, Argentina, June 30th, 1967. http://mepriv.mecon.gov.ar/Normas/17319.htm

Ley de Hidrocarburos N° 3058 sancionada el 17 de mayo de 2005. *Gaceta Oficial de Bolivia N ° 2749.* La Paz, Bolivia, May 19th, 2005. http://www.hidrocarburos.gob.bo/sitio/images/stories/normas/ley%20de%20 hidrocarburos.pdf

Ley de impuesto sobre la renta, contenida en el Artículo 1° del Decreto Ley N° 824 sancionada el 27 de diciembre de 1974. *Diario Oficial N° 29041.* Santiago de Chile, Chile, December 31st, 1974. http://www. leychile.cl/Navegar?idNorma=6368

Ley Nº 20.026. Establece un impuesto específico a la actividad minera sancionada el 27 de mayo del 2005. *Diario Oficial N° 38187.* Santiago de Chile, Chile, June 16th, 2005. http://www.defensadelcobre.cl/?q=node/25

Ley Nº 756 sancionada el 23 de julio de 2002. *Diario Oficial* N° 44.878. Bogotá, Colombia, July, 25th, 2002. http://www.secretariasenado.gov.co/senado/basedoc/ley/2002/ley_0756_2002.html

Ley de Hidrocarburos. Decreto Supremo Nº 2967. *Registro Oficial 711.* Quito, Ecuador, November, 15th, 1978.

Ley de Ingresos de la Federación. *Diario Oficial de la Federación.* Mexico City, Mexico, January 1st, 2002.

Ley de Ingresos de la Federación. *Diario Oficial de la Federación*. Mexico City, Mexico, November 25th, 2009.

Ley de regalía minera N° 29788 que modifica la Ley Nº 28258. *Edición Extraordinaria del Diario Oficial El Peruano.* Lima, Peru, September 29th, 2011. http://www.congreso.gob.pe/ntley/Imagenes/Leyes/29788.pdf

Ley N° 29789 que crea el Impuesto Especial a la Minería. *Edición Extraordinaria del Diario Oficial El Peruano.* Lima, Peru, September 29th, 2011. http://www.presidencia.gob.pe/documentos/leyes/Ley%20que%20crea%20el%20Impuesto%20Especial%20a%20la%20Miner%C3%ADa.pdf

Ley Orgánica de Reordenamiento del mercado interno de los combustibles líquidos. *Gaceta Oficial de la República Bolivariana de Venezuela N° 3.919.* Caracas, Bolivarian Republic of Venezuela, September 18th, 2008. http://www.pgr.gob.ve/dmdocuments/2008/39019.pdf

Lijphart, A. (1997). Unequal participation: Democracy's unresolved dilemma. *The American Political Science Review, 91(1)*, 1-14.

Limao, N. and Venables, A. (2000). Infrastructure, geographical disadvantage, transport costs, and trade. *The World Bank Economic Review, 15(3)*, 451-479.

Lindert, P. (2004). *Social spending and economic growth since the eighteenth century growing public.* Cambridge: Cambridge University Press.

Lindert, K., Skoufias, E. and Shapiro, J. (2006). *Redistributing income to the poor and the rich: Public transfers in Latin America and the Caribbean.* (SP Discussion Paper N° 0605). Washington D.C.: World Bank.

Lledo, V., Schneider, A. and Moore, M. (2003). *"Pro-poor tax reform in Latin America: A critical survey and policy recommendations",* IDS, Sussex, March.

López-Calva, L. and Lustig, N. (2010). *Declining inequality in Latin America: a decade of progress?* New York: The Brookings Institution.

Lott, J. and Kenny, L. (1999). Did women's suffrage change the size and scope of government? *Journal of Political Economy*, *107(6)*, 1163-1198.

Lovell, C. (1992). Production frontiers and productive efficiency. In H. Fried, C. Lovell and S. Schmidt (Eds.), *The measurement of productive efficiency: Techniques and applications.* Oxford: Oxford University Press.

Lustig, N. (Coordinator). (2012). *Fiscal policy and income redistribution in Latin America: Challenging the conventional wisdom.* Project member of the "Commitment to Equity", in collaboration with Pessino, C., Gray Molina, G., Jiménez, W., Paz, V., Yánez, E., Pereira, C., Higgins, S., Scott, J. and Jaramillo, M. Manuscript submitted for publication, Caracas, CAF.

Lustig, N., López-Calva, L. and Ortiz Juárez, E. (2011). *The decline in inequality in Latin America: How much, since when and why*. (Tulane Economics Working Paper N° 1118). New Orleans: Tulane University.

Macleod, W. and Urquiola, M. (2009). *Anti-Lemons: School reputation and educational quality*. (NBER Working Paper N° 15112). Cambridge: National Bureau of Economic Research.

Madisson, A. (2011). *Historical statistics of the world economy: 1-2008 A.D.* http://www.ggdc.net/maddison/ Historical_Statistics/horizontal-file_02-2010.xls

Maldonado, S. (2010). *Resource windfall and corruption: Evidence from a natural experiment in Peru*. Unpublished manuscript, University of California.

Manacorda, M. (2011, August). *Social assistance and labor market outcomes: Lessons from the evaluation of the Uruguayan PANES*. Presentation presented in the IEN-LACEA, Buenos Aires, Argentina.

Manzano, O. and Rigobón, R. (2001). *Resource curse or debt overhang?* (NBER Working Paper N° 8390). Cambridge: National Bureau of Economic Research.

Martínez-Vázquez, J. (2008). The impact of budgets on the poor: Tax and expenditure benefit incidence analysis. In B. Moreno Dodson and Q. Wodon (Eds.), *Public finance for poverty reduction. Concepts and case studies from Africa and Latin America*, (pp. 113-1162). Washington D.C.: World Bank.

McKee, D. and Todd, P. (2011). The longer-term effects of human capital enrichment programs on poverty and inequality: Oportunidades in Mexico. *Estudios de Economía*, *38(1)*, 67-100.

Mehlum, H., Moene, K. and Torvik, R. (2006). Institutions and the resource curse. *Economic Journal, 116(508),* 1-20.

Meltzer, A. and Richard, S. (1981). A rational theory of the size of government. *Journal of Political Economy, 89(5)*, 914-927.

Mesquita, M., Volpe, C. and Blyde, J. (2008). *Unclogging the arteries: The impact of transport costs on Latin American and Caribbean trade.* Washington D.C.: Inter-American Development Bank.

Metcalf, G. (1994). Life cycle versus annual perspectives on the incidence of a value added tax. In J. Poterba (Ed.), *Tax Policy and the Economy,* (pp. 45-64). Cambridge: MIT Press.

Mikesell, J. and Birskyte, L. (2007). The tax compliance puzzle: Evidence from theory and practice. *International Journal of Public Administration, 30(10),* 1045-1081.

Ministerio del Interior de Argentina, Dirección Nacional Electoral. (2011). *Resultados de las Elecciones Nacionales del 23 de octubre de 2011, por distrito y departamento.* http://www.elecciones.gov.ar/estadistica/estadistica.htm

Ministerio del Poder Popular de Petróleo y Minería. (2011). *Petróleo y otros datos estadísticos (PODE) 2007-2008.* http://www.menpet.gob.ve/secciones.php?option=view&idS=179

Mitchell, M. (1992). *International historical statistics: The Americas 1750-1988.* London: Macmillan.

Monaldi, F. (2011). *La economía política de los impuestos a los hidrocarburos y otros recursos minerales en América Latina.* Unpublished manuscript, IESA.

Moore, M. (2007). *How does taxation affect the quality of Governance?* (IDS Working Paper N° 208). Brighton: University of Sussex, Institute of Development Studies.

Murillo-Zamorano, L. R. (2004). Economic efficiency and frontier techniques. *Journal of Economic Surveys, 18(1)*, 33-77.

Musgrave, R. A. (1959). *The theory of public finance: A study in public economy.* Nueva York: McGraw-Hill.

Ocampo, J. A. and Malagón, J. (2011). *El tamaño del Estado y su impacto redistributivo en América Latina.* (Working Paper CAF N° 2011/11). Caracas: CAF.

Oficina Nacional de Procesos Electorales del Perú. (2011). *Reporte Electoral, 66.* Lima: Biblioteca Nacional del Perú.

Organisation for Economic Co-operation and Development (OECD). (2001). *Compliance Measurement – Practice Note.* (Paper N° GAP004). Centre for Tax Policy and Administration.

Organisation for Economic Co-operation and Development (OECD). (2002). OECD Best Practices for Budget Transparency. *OECD Journal on Budgeting, 1(3)*, 7-14.

Organisation for Economic Co-operation and Development (OECD). (2002). OECD Best Practices for Budget Transparency. *OECD Journal on Budgeting, 1*(3), 155-171

Organisation for Economic Co-operation and Development (OECD) and World Bank. (2006). Results of the survey on budget practices and procedures. *OECD Journal on Budgeting.*

http://webnet.oecd.org/budgeting/Budgeting.aspx

Organisation for Economic Co-operation and Development (OECD). (2010). *PISA 2009 Results: What students know and can do – Student performance in Reading, Mathematics and Science.* (Volumen I). http://dx.doi.org/10.1787/9789264091450-en

Organisation for Economic Co-operation and Development (OECD). (2011a, marzo). *Tax administration in OECD and selected non-OECD countries: Comparative Information Series 2010.* Forum on Tax Administration, Centre for Tax Policy and Administration, Paris.

Organisation for Economic Co-operation and Development (OECD). (2011b). Private schools: Who benefits? *PISA in Focus, N° 7*. Paris: OECD.

Organisation for Economic Co-operation and Development (OECD). (2011). *Database*. http://stats.oecd.org/Index.aspx

Ortega, D. (2003). ¿*Por qué* la *desigualdad importa para el desempeño económico?* Documentos para la discusión, Informe sobre Desarrollo Humano en Venezuela, New York: United Nations Program for Development.

Ortega, D., Ronconi, L. and Sanguinetti, P. (2012). *Reciprocity and willingness to pay taxes: Evidence from Latin America*. Manuscript submitted for publication, Caracas, CAF.

Otto, J., Andrews, C., Cawood, F., Doggett, M., Guj, P., Stermole, F., Stermole, J. and Tilton, J. (2006). *Mining royalties: A global study of their impact on investors, government, and civil society*. Washington D.C.: World Bank.

Pagés, C. (Comp.). (2010). *La era de la productividad. C*ómo *transformar las economías desde sus cimientos.*

Washington D.C.: Inter-American Development Bank.

Pattillo, G. (2003). Asignación de recursos a las Fuerzas Armadas en Chile. *Estudios Públicos*, *89*, 89-128.

Peacock, A. and Wiseman, J. (1961). *The growth of public expenditure in the United Kingdom*. Princeton: Princeton University Press.

Pecho-Trigueros, M. (2010). *Tributación y administración tributaria en los países miembros del CIAT*. (Working Paper Nº 2-2010), Inter-American Center of Tax Administrations.

Pereira, C. and Melo, M. (2011, June). *The political economy of budgeting in Latin America: Procedures, oversight and participation*. Paper presented at the CAF Workshop, Bogotá, Colombia.

Perry, G. and Oliveira, M. (2009). *The impact of oil and mining in regional and local development in Colombia*. (CAF Working Paper N° 2009/06). Caracas: CAF.

Perry, G., Bustos, S. and Ho, S. (2011). *What do non-renewable natural resource rich countries do with their rents?* (CAF Working Paper N° 2011/06). Caracas: CAF.

Pessino, C. and Fenochietto, R. (2010). Determining countries' tax effort. *Revista de Economía Pública, 195(4)*, 65-87. Hacienda Pública Española.

Petrobras (2006). *Informe Anual 2006*. Brasilia: Petrobras. Petrobras (2009). *Informe Anual 2009*. Brasilia: Petrobras.

Pomeranz, D. (2010). *No taxation without information: Deterrence and self-enforcement in the value added tax*. (Job Market Paper). Harvard University.

Programme for International Student Assessment (PISA). (2006). *Database*. http://pisa2006. acer.edu.au/

Programme for International Student Assessment (PISA). (2009). *Database*. http://pisa2009. acer.edu.au

Proyecto Élites Latinoamericanas (PELA). (2011). http://americo.usal.es/oir/elites/index.htm

Przeworsky, A., Stokes, S. C. and Manin, B. (1999). *Democracy, accountability and representation*. Cambridge: Cambridge University Press.

Registraduría Nacional del Estado Civil de Colombia. (2010). *29.997.574 colombianos están habilitados para votar en la elección presidencial del 30 de mayo*. (Comunicado de prensa N° 127).

Consejo Nacional Electoral, Bolivarian Republic of Venezuela. (2011). *Estadísticas de Elección Presidencial – 3 de diciembre 2006*. http://www.cne.gob.ve/divulgacionPresidencial/resultado_nacional.php

Resolución N° 394. *Boletín Oficial de la República de Argentina N° 31283*. Buenos Aires, Argentina, November 16th, 2007. http://200.69.252.41/hypersoft/Normativa/NormaServlet?id=15120

Resolución N° 1352. *Consejo Nacional Electoral*. Bogotá, Colombia, June 24th, 2010.

Ribas, R. and Soares, F. (2011, June). *Is the effect of conditional transfers on labor supply negligible everywhere?* Paper presented at the Sixth Conference of IZA and World Bank about Employment and Development. Mexico City, Mexico.

Rioja, F. K. (2003). The penalties of inefficient infrastructure. *Review of Development Economics, 7(1)*, 127-137.

Robinson, J., Torvik, R. and Verdier, T. (2006). Political Foundations of the Resource Curse. *Journal of Development Economics, 79(2)*, 447-468.

Rodríguez, F. (2004). Inequality, redistribution, and rent-seeking. *Economics & Politics, 16(3)*, 287-320.

Rodríguez-Oreggia, E. and Freije, S. (2010). *Long term impact of a Cash Transfers Program on Labor Outcomes of the Rural Youth*. Unpublished manuscript.

Rodrik, D. (1997). *Has globalization gone too far?* Washington D.C.: Institute for International Economics.

Rofman, R., Lucchetti, L. and Ourens, G. (2009). *Pensions System in Latin America: Concepts and Measurements of Coverage*. (SP Discussion Paper N° 0616). Washington D.C.: World Bank.

Roger, G. and Li, W. (2009). Tax structures in developing countries: Many puzzles and a possible explanation. *Journal of Public Economics, 93(7-8)*, 855-866.

Rogoff, K. (1990). Equilibrium political budget cycles. *The American Economic Review, 80(1)*, 21-36.

Rouse, C. and Krueger, A. (2004). *Putting computerized instruction to the test: A randomized evaluation of a "Scientifically-based" Reading Program*. (NBER Working Paper N° 10315). Cambridge: National Bureau of Economic Research.

Sachs, J. and Warner, A. (1997). *Natural resource abundance and economic growth*. (Harvard Institute of Economic Research Discussion Paper N° 517). Cambridge: Harvard University.

Sachs, J. and Warner, A. (2001). The curse of natural resources. *European Economic Review, 45(4-6)*, 827-838.

Saiegh, S. M. (2005, February). *The role of legislatures in the policymaking process*. Paper prepared for the Workshop on State Reform, Public Policies and Policymaking Processes, Washington D.C.: Inter-American Development Bank.

Sala-i-Martin, X. and Subramanian, A. (2003). *Addressing the natural resource curse: An Illustration from Nigeria*. (NBER Working Paper N° 9804). Cambridge: National Bureau of Economic Research.

Sanguinetti, P. (2010). *Canon minero y decisiones fiscales subnacionales en el Per*ú. (CAF Working Paper N°2010/01). Caracas: CAF.

Santiso, C. (2006). *Parliaments and budgeting: Understanding the political economy of the budget in Latin America*. (Working Paper N° 39). Paris: The American University of Paris.

Santiso, C. (2007). Eyes Wide Shut? *The Politics of Autonomous Audit Agencies in Emerging Economies*. Buenos Aires: Centro de Implementación de Políticas Públicas para la Equidad y el Crecimiento.

Scartascini, C. and Stein, E. (2009). A new framework. In M. Hallerberg, C. Scartascini and E. Stein (Eds.), *Who decides the budget? A political economy analysis of the budget process in Latin America* (pp. 1-23). Washington D.C.: Inter-American Development Bank.

Schick, A. (1998). *A contemporary approach to public expenditure management*. Washington D.C.: World Bank Institute.

Scott, J. (1999). *Análisis del Programa de Educación, Salud y Alimentación (PROGRESA): México. Experiencias exitosas de combate a la pobreza rural: lecciones para una reorientación de las políticas*. Mexico City: Centro de Investigación y Docencia Económicas.

Secretaría de Energía (2010). *Informació*n *Estadí*stica *de Hidrocarburos*. http://energia3.mecon.gov.ar/contenidos/verpagina.php?idpagina=3181

Senado de la Nación Argentina. (2011). http://www.senado.gov.ar/

Shelton, C. (2007). The size and composition of government expenditure. *Journal of Public Expenditure,*

91(11-12), 2230-2260.

Slemrod, J., Blumenthal, M. and Christian, C. (2001). Taxpayer response to an increase probability of audit: evidence from a controlled experiment in Minnesota. *Journal of Public Economics, 79(3)*, 455-483.

Sociedad Nacional de Minería, Petróleo y Energía (2011). *Reporte Canon Minero 2010*. Lima: Sociedad Nacional de Minería.

Socio-Economic Database for Latin America and the Caribbean (SEDLAC). (2011). *CEDLAS and World Bank database*. http://sedlac.econo.unlp.edu.ar/esp/index.php

Sokoloff, K. and Zolt, E. (2007). Inequality and the evolution of institutions of taxation: evidence from the economic history of the Americas. In S. Edwards, G. Esquivel and G. Márquez (Eds.), *The decline of Latin American Economies: growth, institutions and crises*. Cambridge: National Bureau of Economic Research.

Spada, P. (2009, June). *The economic and political effects of participatory budgeting*. Paper presented at the Congress of the Latin American Studies Association, Rio de Janeiro, Brazil.

Spada, P. (2010). *Political competition and the diffusion of policy innovations in local Government: the case of participatory budgeting in Brazil*. (Job Market Paper). Cambridge: Harvard University.

Stein, E., Talvi, E. and Grisanti, A. (1999). Institutional arrangements and fiscal performance: The Latin American experience. In J. Poterba and J. von Hagen (Eds.), *Fiscal Institutions and Fiscal Performance* (pp. 103-133). Chicago: Chicago University Press.

Stein, E. and Tommasi, M. (2006). La política de las políticas públicas. *Política y Gobierno, 13(2)*, 393-416.

Stein, E., Tommasi, M., Echebarría, K., Lora, E. and Payne, M. (2006). *The politics of policies: Economic and social progress in Latin Americ*a. Washington D.C.: Inter-American Development Bank.

Superintendencia Nacional de Aduanas y de Administración Pública (SUNAT). (2010). *Database*: http://www.sunat.gob.pe/estadisticasestudios/busqueda_ingresos.html

Tanzi, V. and Shome, P. (1993). Tax evasion: causes, estimation methods, and penalties, a focus on Latin America. *Serie Política Fiscal N° 38*. Santiago de Chile: Economic Commission for Latin America and the Caribbean.

Tanzi, V. and Schuknecht, L. (2000). *Public spending in the 20th century. A global perspective*. Cambridge: Cambridge University Press.

Tanzi, V. and Zee, H. (2000). Tax policy for emerging markets: developing countries. *National Tax Journal*, *53(2)*, 299-322.

Tanzi, V. (2005). The economic role of the State in the 21st century. *Cato Journal, 25(3)*, 617-638.

Timmons, J. (2011). *Government performance, taxation and citizen participation: Evidence from Brazil*. Unpublished manuscript, Caracas, CAF.

Torgler, B. (2005). Tax morale in Latin America. *Public Choice, 122(1-2),* 133-157.

Transparency International and Revenue Watch Institute. (2010). *The Revenue Watch Index (2010): Transparency: Governments and the oil, gas and mining industries*. New York: Revenue Watch Institute.

Tribunal Calificador de Elecciones de Chile. (2011). *Estadísticas Elección de Presidente 2009*. http://www.elecciones.gov.cl/SitioHistorico/index2009_pres.htm

Tribunal Supremo Eleitoral de Brasil. (2011). *TSE Statistics*. http://www.tse.jus.br/eleicoes/eleicoes-anteriores/eleicoes-2010/eleicoes-2010/estatisticas

Tribunal Superior de Justicia Electoral, República del Paraguay. (2011). Resultados nacionales para presidente de la República. http://www.tsje.gov.py/e2008/

Trostel, P. (1993). The effect of taxation on human capital. *Journal of Political Economy, 101(2)*, 327-350.

Truman, E. (2007, October). *A scoreboard for sovereign wealth funds*. Paper presented at the Conference on China's Exchange Rate Policy of Peterson Institute, Washington D.C.

Unidad de Análisis de las Políticas Sociales y Económicas. (2011). *Operaciones consolidadas del Gobierno general. Database*. http://www.udape.gob.bo/portales_html/dossierweb2011/htms/doss0301.htm

United States Agency for International Development (USAID). (2011). http://www.usaid.gov/

United Nations Development Programme (UNDP). (2011). http://www.undp.org/content/undp/es/home.html

University of Oxford. (2011). *The Montevideo-Oxford Latin American Economic History Database (MOxLAD)*. http://oxlad.qeh.ox.ac.uk/

U.S. Government Printing Office. (2011). *Budget of the United States Government: Historical Tables Fiscal Year 2011*. http://www.gpoaccess.gov/usbudget/fy11/hist.html

Van der Ploeg, F. and Poelhekke, S. (2009). Volatility and the natural resource curse. *Oxford Economic Papers, 61(4)*, 727-760.

Van der Ploeg, F. and Venables, A. (2010). *Absorbing a windfall of foreign exchange: Dutch disease dynamics*. (OxCarre Research Paper N° 52). Oxford: Oxford Centre for the Analysis of Resource Rich Economies.

Van der Ploeg, F. (2011). Natural resources: curse or blessing? *Journal of Economic Literature, 49(2)*, 366-420.

Vegas, E. and Umansky, I. (2005). *Improving teaching and learning through effective incentives. What we can learn from education reforms in Latin America?* Washington D.C.: World Bank.

Vera, M. (2011). *La importancia del sistema público de educación para el desarrollo de una economía: análisis para las distintas jurisdicciones de la Argentina durante la década de los noventa.* Andalucía: Universidad Internacional de Andalucía.

Villafuerte, M., López Murphy, P. and Ossowski, R. (2010). *Riding the roller coaster: fiscal policies of nonrenewable resource exporters in Latin America and the Caribbean.* (IMF Working Paper N° 10/251). Washington D.C.: International Monetary Fund.

Villar, L. (2001). Reglas versus discrecionalidad en las políticas fiscales, monetaria y cambiaria: un problema de economía política y credibilidad. *Revista del Banco de la República, 74(880)*, 68-76.

Villela, L., Lemgruber, A. and Jorrat, M. (2009). *Los presupuestos de gastos tributarios. Conceptos y desafíos de implementación.* (Working Paper N° 131). Washington D.C.: Inter-American Development Bank.

Von Hagen, J. (1992). *Budgeting procedures and fiscal performance in the European communities.* (Center for German and European Studies Working Paper N° 1.9). European Economy: University of California, Berkeley.

Von Hagen, J. and Harden, I. (1995). Budget processes and commitment to fiscal discipline. *European Economic Review, 39(3-4)*, 771-779.

Wagner, A. (1911). Staat in national ökonomischer Hinsicht. *Handwörterbuch der Staatswissenschaften.* Jena: Lexis.

Wenzel, M. (2001). *Misperceptions of social norms about tax compliance: A field experiment.* (Working Paper N° 8). Canberra: Centre for Tax System Integrity, Australian National University.

Widmalm, F. (2001). Tax structure and growth: Are some taxes better than others? *Public Choice, 107(3/4)*, 199-219.

Witherspoon, J., Johnstone, S. and Wasem, C. (1993). *Rural Telehealth: telemedicine, distance education, and informatics for rural development.* Boulder, CO: WICHE Publications.

Wong, W. and Welch, E. (2004). Does e-government promote accountability? A comparative analysis of Website openness and government accountability. *Governance: An International Journal of Policy, Administration and Institutions, 17(2)*, 275-297.

World Bank. (2010). *Health coverage, social assistance coverage, and pension coverage: Data by country and income deciles.* http://siteresources.worldbank.org/INTLACREGTOPLABSOCPRO/Resources/Coverage.pdf

World Bank. (2011). *A break with history: Fifteen years of inequality reduction in Latin America.* Washington

D.C.: World Bank.

World Bank. (2011). *Global Economic Monitor Commodities*. http://data.worldbank.org/data-catalog/com-modity-price-data

World Bank. (2011). *World Development Indicators*. http://data.worldbank.org/indicator

World Economic Forum. (2005). *The Global Competitiveness Report*. New York: Oxford University Press.

World Economic Forum. (2006). *The Global Competitiveness Report*. New York: Oxford University Press.

World Economic Forum. (2007). *The Global Competitiveness Report*. New York: Oxford University Press.

World Economic Forum. (2008). *The Global Competitiveness Report*. New York: Oxford University Press.

World Economic Forum. (2009). *The Global Competitiveness Report*. New York: Oxford University Press.

World Economic Forum. (2010). *The Global Competitiveness Report*. New York: Oxford University Press.

World Economic Forum. (2011). *The Global Competitiveness Report*. New York: Oxford University Press.

World Health Organization (WHO). (2011). *Financiación de los sistemas de salud: el camino hacia la cober-tura universal*. Geneva: WHO.

World Values Survey. (2011). *Opinion polls*. http://www.worldvaluessurvey.org/

Zambrano, R. (2010). *La fusión de funciones, la fusión de sistemas*. http://www.ciat.org/blog

Zweifel, P., Breyer, F. and Kifmann, M. (2009). *Health Economics*. (2nd ed.). London: Springer.