

Fiscal Panorama of Latin America and the Caribbean

2017

Mobilizing resources to
finance sustainable
development



UNITED NATIONS

ECLAC



cooperación
española

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Foreword

Growth in global economic output and trade is expected to be higher in 2017 than in 2016. However, these improvements in the rate of growth are taking place amidst increasing uncertainty and risk. A particular concern is the rise in protectionist tendencies, which has placed global trade under strain in a context of challenging financial and growth dynamics.

Fiscal policy in the region's countries is not unaffected by the vagaries of the global economy, and has been heavily influenced by the (relatively slow) pace of growth in global output and trade and by the evolution of prices for the region's principal export goods, especially commodities such as hydrocarbons and minerals and metals. Uncertainties arising from the debate about fiscal reform in the United States have been another factor. Among the main measures expected to be included in this reform is the proposed 20% import tax. According to multiple estimates, this measure could entail a substantial appreciation of the dollar (about 25%) that would have major macroeconomic repercussions around the world, particularly on trade and financial flows.

Against this background, the average fiscal deficit of the countries in Latin America held steady in 2016 relative to 2015, coming in at 3.0% of GDP for the second year running. This was the net outcome of a rise in interest payments offset by higher public revenues. The primary balance (before interest payments) also improved slightly to show a deficit of 0.8% of GDP.

Differences in countries' macroeconomic performance, as well as between distinct types of productive specialization, are reflected in a great diversity of fiscal situations in the region. Fiscal accounts improved in the north of the region (the Central American isthmus, the Dominican Republic, Haiti and Mexico), where the average fiscal deficit continued to decline (from 2.4% of GDP in 2015 to 2.2% of GDP in 2016). Mexico performed particularly well, with the federal public sector deficit also narrowing from 3.5% of GDP in 2015 to 2.7% of GDP in 2016, thanks to the favourable evolution of public revenues. This pattern was different from that of the region's other hydrocarbon exporters, whose fiscal deficits increased.

South America's fiscal deficit deteriorated from 3.6% of GDP in 2015 to 4.0% of GDP in 2016, an indication that the drop in public revenues that began in 2013 had worsened by 2016, bringing them to 20.3% of GDP (as against 20.8% of GDP in 2015). Public spending, meanwhile, edged down from 24.4% of GDP to 24.3% of GDP in the same period, with higher current spending being more than offset by lower capital spending.

In the English- and Dutch-speaking Caribbean, the fiscal deficit is estimated to have narrowed substantially (from 2.6% of GDP in 2015 to 0.7% of GDP in 2016). This was mainly due to higher public revenues (up from 28.1% of GDP to 28.8% of GDP in the same period), in some cases because of extraordinary receipts associated with citizenship by investment programmes. Conversely, public spending fell from 30.5% of GDP to 29.5% of GDP.

Gross public debt in the countries of Latin America as a group has been moving upward and averaged 37.6% of GDP in 2016, an increase of 1.7 percentage points of GDP over 2015. This trend could be seen in 16 of the 19 countries in the region, with Brazil having the highest level of public debt (70.5% of GDP), followed by Argentina (57.9% of GDP), Honduras (46.6% of GDP) and Uruguay (46.3% of GDP). At the other extreme, Paraguay presented the region's lowest level of public debt (19.6% of GDP), followed by Peru (20.8% of GDP) and Chile (21.1% of GDP).

When net figures are taken, some countries' debt levels look quite different. Net general government debt in Brazil was 45.2% of GDP in 2016 (65% of its gross debt), while net central government debt in Chile was -3.3% of GDP and net non-financial public sector debt in Uruguay was 20.4% of GDP, less than half its gross debt. Although public debt in the region increased on average in 2016, the rate of debt growth has declined as countries have moderated their borrowing in the interests of sustainability in their public accounts.

Reflecting fiscal consolidation, public capital spending fell by an average of 0.1 percentage points of GDP in 2016 across Latin America as a whole, although it is important to note that the average decline in the South American countries was larger (0.5 percentage points of GDP). This version of the *Fiscal Panorama of Latin America and the Caribbean* examines the region's public investment trends, which have been shaped by substantial cuts, although not in all countries. In response to this situation, the Economic Commission for Latin America and the Caribbean (ECLAC) has highlighted the importance of protecting public investment when fiscal consolidation measures are considered, given the positive effect of public-private investment on medium-run economic growth.

This edition of the *Fiscal Panorama* also analyses the need to strengthen the tax take, not only to protect public investment but also to meet ongoing spending needs, particularly in the area of social expenditures. Despite progress in recent years, a number of the region's countries still have a long way to go where the tax burden is concerned. This is particularly true of personal income tax, revenues from which remain very low compared with other countries in the world, even allowing for differences in development levels. As chapter II indicates, this tax as applied in the region continues to suffer from structural weaknesses aggravated by high levels of evasion.

Studies on personal income tax evasion have found that revenues from this tax in the Latin American countries are significantly lower than would be expected given its current level, and its redistributive capacity has been undermined as a result, in stark contrast to the countries of the European Union.

Besides personal income tax evasion, high levels of evasion affect other taxes that are vital to the region, such as corporate income tax and value added tax. ECLAC has estimated that the region's countries forfeited about US\$ 340 billion (6.7% of GDP) in 2015 from evasion of these three taxes, implying a revenue shortfall equivalent to more than double the total value of capital spending by central governments in Latin America (about US\$ 150 billion that year).

The region's countries have made efforts to deal with the challenge of tax evasion, both domestically and internationally. As detailed in chapter II, many countries have taken substantial measures to confront this phenomenon, of which the advances in electronic invoicing and achievements in the area of international taxation warrant special mention.

Chapter III reviews the progress made with environmental taxation in the region's countries, on the basis of available statistical information and a survey of recent experience (successful or otherwise), in order to identify lessons that may benefit the countries in future tax reforms. It examines the situation in Latin America, where there are numerous taxes whose particular tax bases are environmentally relevant but whose design and operation are driven by revenue considerations alone.



Lastly, chapter IV examines territorial disparities and their implications for the design and configuration of fiscal policy in the region's countries. Fiscal capacities differ both between levels of government and between subnational governments themselves, a situation that is having direct repercussions on the coverage and quality of local provision of public goods and services. Given these differences, central and subnational governments have resorted to intergovernmental transfers (initially in the education sector) and borrowing to deal with these imbalances and to finance public spending. What the study of fiscal policy has revealed so far is not a reduction in territorial disparities but the existence of major institutional challenges for the region's countries.

Alicia Bárcena
Executive Secretary
Economic Commission for
Latin America and the Caribbean (ECLAC)



CHAPTER

The fiscal situation: deficit, debt, expenditure and revenue trends

Introduction

- A. Fiscal pressures remain, although with significant differences between subregions
- B. Tax revenues dropped in South America but rose in Central America and Mexico
- C. The evolution of public spending was shaped by the dynamics of fiscal revenues and public debt
- D. Public debt is still rising in Latin America but falling slightly in the Caribbean
- E. Public investment trends: the pressures of retrenchment

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Introduction

The fiscal accounts of the region's countries continued to diverge in 2016, reflecting substantial differences in the dynamics of domestic demand, fiscal initiatives and the positive and negative effects associated with terms-of-trade shocks. These dynamics are revealed most clearly when the north of the region (the countries of the Central American isthmus, the Dominican Republic, Haiti and Mexico) is compared with the countries of South America.

The first group's fiscal balance improved by 0.2 percentage points of GDP in 2016, leaving a deficit of 2.2% of GDP, even as capital expenditure rose. Public revenues grew strongly in the countries of the region's north. Income tax receipts were particularly buoyant, which boosted the tax burden. As for public debt, although it rose only moderately (1.1 percentage points of GDP), this increase was somewhat larger than expected given the primary balance in these countries (-0.2% of GDP in 2016).

In South America, conversely, despite a significant reduction in capital expenditure (0.5 percentage points of GDP), the fiscal deficit grew from 3.6% of GDP to 4.0% of GDP, driven by higher debt service costs and a rise in current primary spending. These increases were compounded by a decline in fiscal revenues that averaged 0.5 percentage points of GDP, the result of a drop in the tax take as domestic demand slowed and revenues from non-renewable natural resources continued to fall. Despite this, the change in public debt was moderate, with an increase (2.5 percentage points of GDP in 2016) that was in line with the financing requirements of the primary deficit.

The fiscal situation is different in the English- and Dutch-speaking Caribbean because of the strong fiscal pressures created by high levels of public debt in the countries of this subregion. Although the debt burden diminished slightly in 2016 (by an average of 1.5 percentage points of GDP), considerations of long-run sustainability do not leave much scope for active short-term fiscal policies. These countries' fiscal deficits have tended to improve in recent years (they averaged an estimated 0.7% of GDP in 2016) as a result of measures taken to ensure public debt sustainability and of the temporary effects of extraordinary revenues.

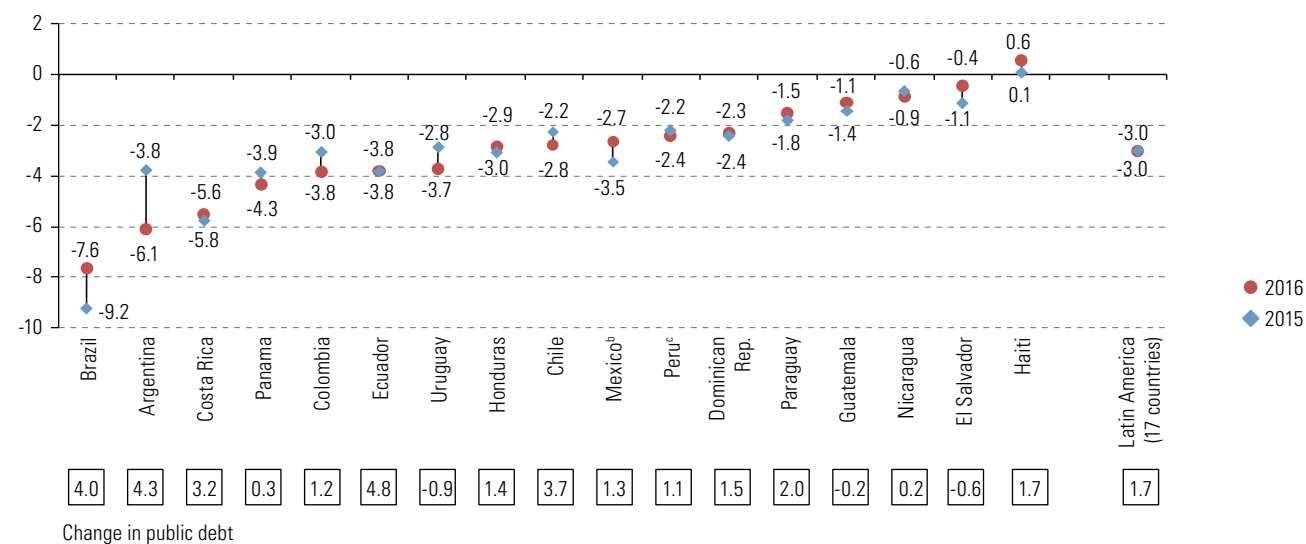
Against this background, in addition to detailing the evolution of the fiscal accounts in the region, it is important to revisit a fundamental issue: public investment. As was pointed out in the *Economic Survey of Latin America and the Caribbean, 2015* (ECLAC, 2015a), there is considerable evidence for the importance of protecting public investment when fiscal consolidation measures are considered, as it has been shown to boost medium-run economic growth considerably. The final section of this chapter contributes to the regional dialogue by reviewing the state of public investment, considering the widest coverage possible. It observes that public investment is being cut back significantly in the region, although not in all countries. It also reveals the diversity of actors that implement public investment, which makes it all the more necessary to coordinate efforts both between the different levels of government and between general government and public enterprises.

A. Fiscal pressures remain, although with significant differences between subregions

The fiscal deficit of the 17 Latin American countries considered held steady in 2016 at 3.0% of GDP for the second year running. At the same time, the level of central government debt for these countries reached 37.9% of GDP, a rise of 1.7 percentage points of GDP, as compared to an increase of 2.5 percentage points of GDP in 2015. As figure I.1 shows, results varied at the country level, reflecting different economic trends in the north and south of the region. On the whole, fiscal deficits and public debt have risen most sharply in the South American countries. Conversely, both indicators have stabilized or improved lately in the countries of the north, although public debt has remained on an upward trend in certain of them.

Figure I.1

Latin America (17 countries): overall fiscal balance and changes in central government debt, 2015-2016^a
(Percentages of GDP)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

^a The 2016 fiscal balance figures are preliminary. In the case of public debt, the latest figures available for 2016 were taken.

^b Federal public sector.

^c General government.

In the south of the region, the negative effects of the cycle and fresh declines in international prices for non-renewable natural resources were factors in a worsening of the fiscal deficit to 4.0% of GDP in 2016 from 3.6% of GDP in 2015. Public debt in South America rose by an average of 2.5 percentage points of GDP, although this reflects the primary balance (averaging -1.6% of GDP in 2016) and the evolution of exchange rates and interest rates.

By contrast, the fiscal deficit in the north of the region (the Central American isthmus, the Dominican Republic, Haiti and Mexico) improved by 0.2 percentage points of GDP to 2.2% of GDP. This outcome largely reflects the positive impact on fiscal revenues of the dynamics of domestic demand in these countries. As for public debt, although it rose by only a moderate 1.1 percentage points of GDP, this increase was somewhat larger than expected given the primary balance in these countries (-0.2% of GDP in 2016).

At the country level, deficits rose by 0.5 percentage points of GDP or more in Argentina (2.4 percentage points of GDP), Uruguay (0.9 percentage points of GDP), Colombia (0.8 percentage points of GDP), Chile (0.6 percentage points of GDP) and Panama (0.5 percentage points of GDP). Public debt often followed suit, rising in line with the size of the primary deficit and the depth of the economic slowdown and with the interest rates paid. However, public debt increased only modestly in Panama (0.3 percentage points of GDP) and Peru (1.1 percentage points of GDP) and actually decreased in Uruguay (by 0.9 percentage points of GDP).

At the same time, there were improvements of at least 0.5 percentage points of GDP in the fiscal balances of Brazil (1.6 percentage points of GDP), Mexico (0.9 percentage points of GDP), El Salvador (0.7 points of GDP) and Haiti (0.5 points of GDP). Among these countries, the rise in Mexico's public debt (2.7 percentage points of GDP) exceeded its primary deficit (0.3 percentage points of GDP), mainly because the federal government took over the labour liabilities of PEMEX and the Federal Electricity Commission (CFE) as part of the 2013 energy reform. In El Salvador, conversely, public debt fell relative to output (by 0.6 percentage points of GDP), reflecting a lower fiscal deficit.

Changes in fiscal deficits (and by extension public debt) in the region reflect trends in public revenue and spending decisions by the economic authorities of each country in the current environment. As figure 1.2 shows, public spending tracked revenue in most of the countries (the 45° line represents an exact match between the two), explaining why there was little change in their public deficits. Some countries opted to increase public spending despite lower revenues (Chile and Panama), or to reduce it only moderately (Colombia). In others, public revenue growth was outstripped by increases in public spending (Nicaragua and Uruguay). Argentina and Brazil are special cases, as total spending varied considerably but revenues changed little from year to year. In the case of Argentina, the main factor was a rise in interest payments (from 1.8% of GDP in 2015 to 3.8% of GDP in 2016). In Brazil, conversely, it was a decline in the cost of public debt service (from 7.3% of GDP in 2015 to 5.2% of GDP in 2016).

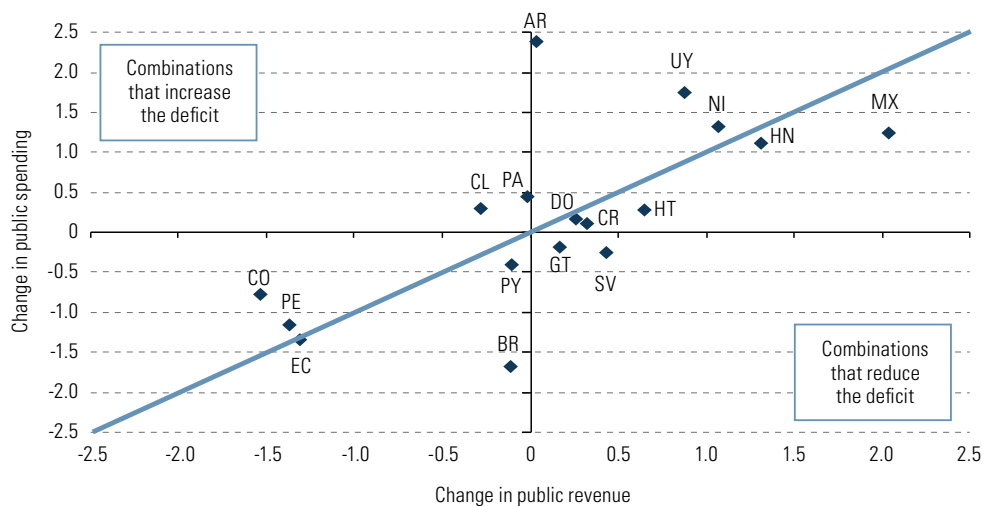


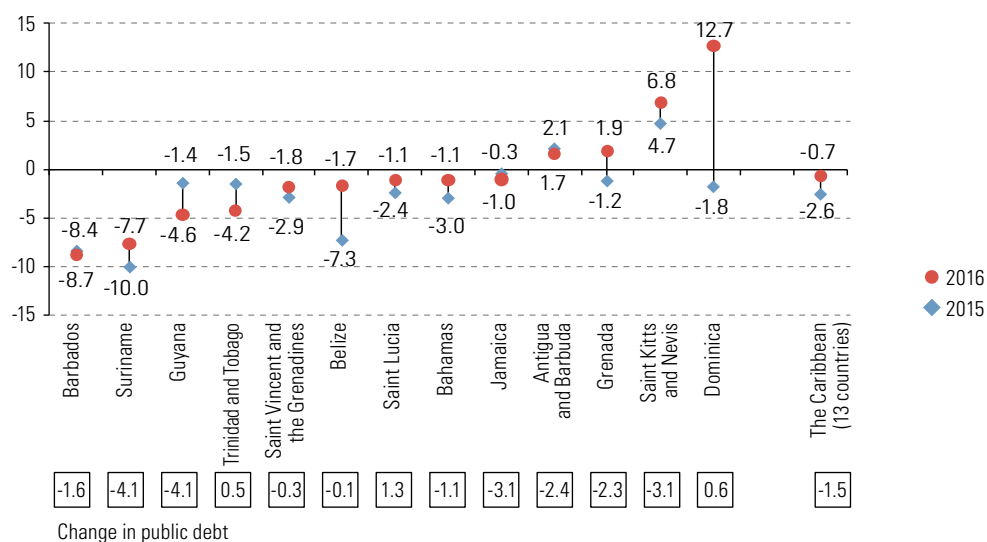
Figure 1.2
Latin America (17 countries):
changes in public revenue
and expenditure, 2015-2016^a
(Percentages of GDP)

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

^a The figures are for general government in Peru and the federal public sector in Mexico.

In the Caribbean, the fiscal deficit narrowed substantially, falling from 2.6% of GDP in 2015 to an estimated 0.7% of GDP in 2016. This was due mainly to improvements in the fiscal deficits of Belize and Dominica, although progress was also made in other countries (see figure I.3). This favourable trend extended to public debt, which dropped by an average of 1.5 percentage points of GDP in the subregion.

Figure I.3
The Caribbean (13 countries): changes in central government debt and overall balances, 2015-2016^a (Percentages of GDP)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

^a Preliminary figures as simple averages. In the cases of Antigua and Barbuda, Dominica, Grenada, Saint Kitts and Nevis, Saint Lucia and Saint Vincent and the Grenadines, the 2016 figures are the cumulative total for the 12 months ending in September.

B. Tax revenues dropped in South America but rose in Central America and Mexico

Total revenues as a share of output in Latin America rose slightly in 2016, averaging 18.4% of GDP in the 17 countries covered (see figure I.4). This result was due to a rise in public revenues in Mexico (2.0 percentage points of GDP) and the Central American isthmus, the Dominican Republic and Haiti (0.5 percentage points of GDP), as there was a large drop in South America (0.5 percentage points of GDP).

This dynamic is accounted for mainly by differing trends in tax receipts in the region. In 2016, there were large increases in tax pressure in Mexico (1.3 percentage points of GDP) and in the Central American isthmus, the Dominican Republic and Haiti (0.6 percentage points of GDP). It is important to stress that tax revenues increased in all the countries of this group (see figure I.5). In South America, conversely, they dropped by 0.4 percentage points of GDP, with declines in six of the eight countries for which information is available.

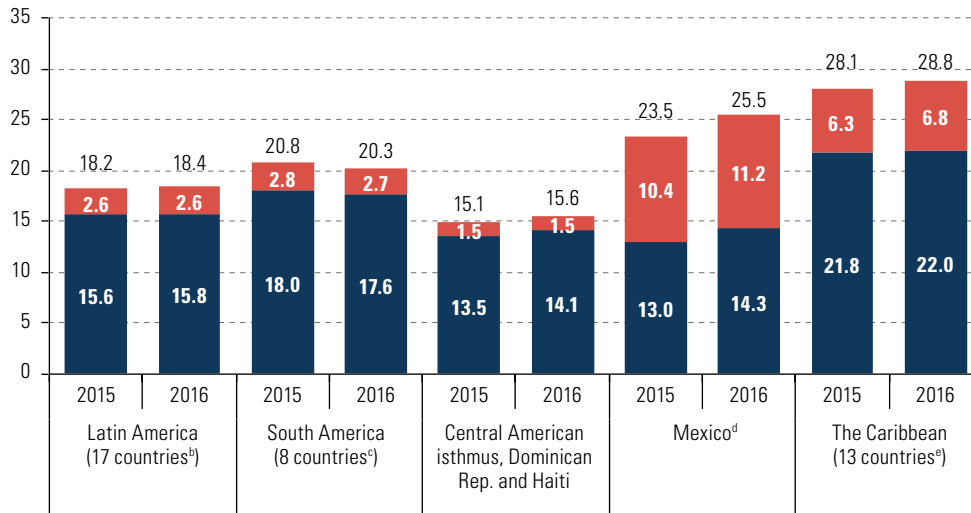


Figure I.4
Latin America and the Caribbean: disaggregated central government revenue, 2015-2016^a
(Percentages of GDP)

■ Other revenues
■ Tax revenues

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

^a Preliminary figures, given as simple averages. Figures may not add up exactly because of rounding.

^b Argentina, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru and Uruguay.

^c Argentina, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru and Uruguay. Figures are for general government in the case of Peru.

^d Federal public sector.

^e Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname and Trinidad and Tobago. In the cases of Antigua and Barbuda, Dominica, Grenada, Saint Kitts and Nevis, Saint Lucia and Saint Vincent and the Grenadines, the 2016 figures are the cumulative total for the 12 months ending in September.

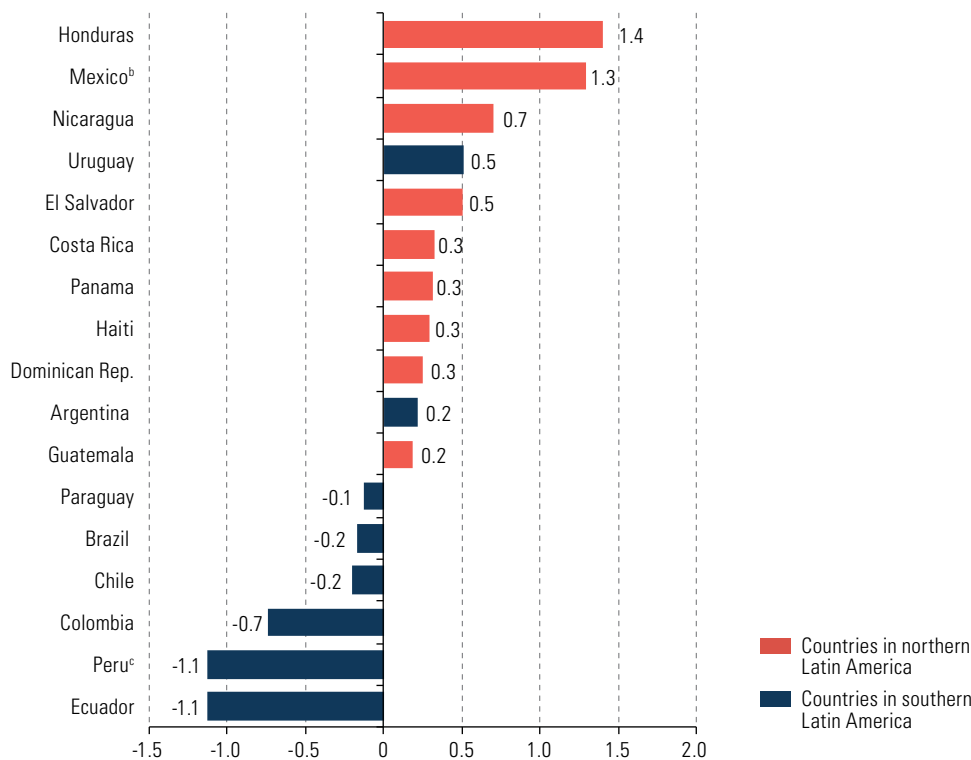


Figure I.5
Latin America (17 countries): changes in tax revenues, 2015-2016^a
(Percentage points of GDP)

■ Countries in northern Latin America
■ Countries in southern Latin America

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

^a Preliminary figures.

^b Federal public sector.

^c General government.

A key factor in the strength of tax revenues in the north of the region was a larger income tax take. In Mexico, where tax revenues increased by 1.3 percentage points of GDP, receipts from income tax were up by 0.8 percentage points of GDP, mainly because of an increase in the number of taxpayers (especially natural persons, whose number doubled during the year), although payments also increased in line with the growing strength of the domestic market. In particular, there was a large rise in income tax payments by manufacturing firms, partly reflecting a greater volume of exports to the United States during the year.

Similarly, the latent dynamism of domestic demand in the Central American isthmus and the favourable evolution of the terms of trade drove up income tax revenues and thence the overall tax take in Honduras (1.4 percentage points of GDP), Nicaragua (0.7 percentage points of GDP), El Salvador (0.5 percentage points of GDP) and Costa Rica (0.3 percentage points of GDP). In Guatemala, the increase in receipts from this tax (0.4 percentage points of GDP) more than offset a drop in value added tax (VAT), leaving tax revenues 0.2 percentage points of GDP higher. In most of the countries of the Central American isthmus, revenue from VAT on imported products fell because of the drop in the international crude oil price, although in several cases this was offset by higher domestic revenues.

In South America, meanwhile, tax revenues dropped substantially as economic activity weakened. The tax take in Brazil fell by 0.2 percentage points of GDP, although it is important to highlight the increase of 0.4 percentage points of GDP in income tax receipts as the result of a tax amnesty for undeclared assets abroad, which yielded revenue of some 0.8 percentage points of GDP; income from other taxes dropped by 0.6 percentage points of GDP. In Argentina, conversely, despite a large drop in the income tax take relative to output (1.0 percentage points of GDP), tax revenues rose by 0.2 percentage points of GDP thanks to payments worth 1.3 percentage points of GDP made under the fiscal disclosure regime.

The negative evolution of tax revenues in South America was also due to the ongoing decline in international prices for crude oil and for minerals and metals, which affected public revenues associated with production of these (see box I.1). In Colombia, tax revenues dropped by 0.7 percentage points of GDP, partly reflecting the fact that central government oil revenues were close to zero because of the loss declared by Ecopetrol in 2015. In Peru, the income tax take from the extraction sector fell by half (from 0.4 to 0.2 percentage points of GDP), but the decline in tax receipts (1.1 percentage points of GDP) was mainly accounted for by slow growth in VAT receipts and a rise in VAT refunds.

Box I.1

Trends in fiscal revenues from non-renewable natural resources

The evolution of international commodity prices in 2016 provided little relief to countries dependent on fiscal revenues from non-renewable natural resources. According to estimates by the International Monetary Fund (IMF), there were fresh falls in the prices of crude oil (-15%) and the basket of metals (-8%). However, a turning point in the price trend can be identified in mid-year. This was particularly apparent for the different mining products, particularly iron ore, tin, zinc and coal. Furthermore, the crude oil price picked up in the fourth quarter of the year.

Despite this recovery, fiscal revenues from natural resources continued to fall, largely because of the severe financial situation facing many producers in the region. Their net profits have trended downward in recent years, and this has had a negative effect on tax receipts (from income tax and other taxes on operating profits) and non-tax revenues such as dividends. This downward trend intensified recently and a number of producers have declared losses: PETROBRAS in Brazil, the National Copper Corporation (CODELCO) in Chile, EcoPetrol in Colombia and Petrotrin in Trinidad and Tobago.

Box I.1 (concluded)

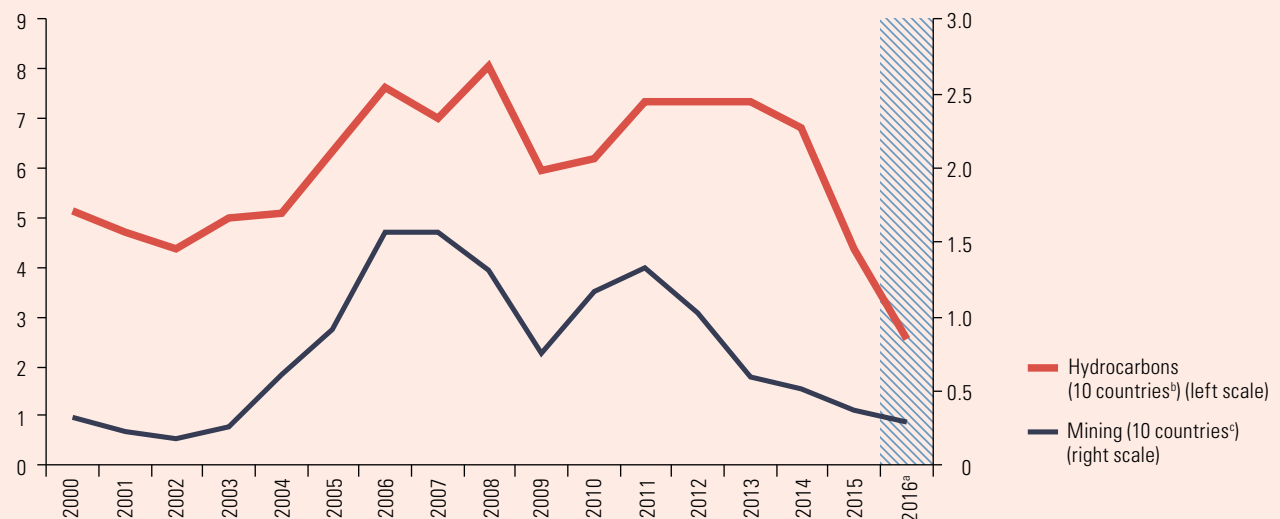
Year-on-year changes in selected international commodity prices, 2015-2016
(Percentages)

Commodity	2015	2016				
		Q1	Q2	Q3	Q4	Total
Metals	-23	...	...	...	...	-8
Copper	-20	-20	-22	-8	-2	-14
Iron ore	-43	-24	-5	6	20	-2
Tin	-27	-16	8	19	22	7
Zinc	-11	-19	-13	22	42	5
Lead	-15	-4	-12	8	13	1
Crude oil	-47	-37	-26	-6	15	-15
Coal	-19	-17	-12	15	29	3

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of International Monetary Fund (IMF), IMF Primary Commodity Prices [online] <http://www.imf.org/external/np/res/commod/index.aspx>.

In this context, ECLAC estimates that revenues associated with hydrocarbon production and commercialization fell from 4.4% of GDP in 2015 to 2.6% of GDP in 2016, the lowest level since the start of the period analysed (2000-2016) (see following chart). Meanwhile, revenues from mining are also estimated to have fallen in 2016 from 0.4% to 0.3% of GDP on average, although it is important to note that receipts from certain mining-related instruments rose in some countries. In Brazil, for example, the royalty known as financial compensation for the exploitation of mineral resources (CFEM) yielded 20.1% more in 2016, reflecting higher output and a rising iron ore price.

Latin America and the Caribbean: revenues from non-renewable natural resources, 2000-2016
(Percentages of GDP)



Source: Economic Commission for Latin America and the Caribbean (ECLAC).

^a Values for 2016 are based on official government estimates given in public budget reports for 2017. Where no official estimates were available, annual revenues per instrument were estimated from monthly data for the first three quarters of the year. Where no monthly data were available on payments of corporation tax by sector, revenues were usually estimated by applying to 2015 income the year-on-year change in the local currency price of the most representative commodity for the instrument concerned.

^b Argentina, Bolivarian Republic of Venezuela, Brazil, Colombia, Ecuador, Mexico, Peru, Plurinational State of Bolivia, Suriname and Trinidad and Tobago.

^c Argentina, Brazil, Chile, Colombia, Dominican Republic, Jamaica, Mexico, Peru, Plurinational State of Bolivia and Suriname.

Source: Economic Commission for Latin America and the Caribbean (ECLAC).

In Chile, tax receipts dropped by 0.2 percentage points of GDP because of the collapse in revenues from private sector mining, which fell from 0.8 percentage points of GDP to almost zero. The value of taxes paid by other taxpayers rose by 0.6 percentage points of GDP, however, reflecting higher receipts from income tax (excluding private sector mining) and from the legal transactions tax as a result of changes included in the 2014 tax reform.

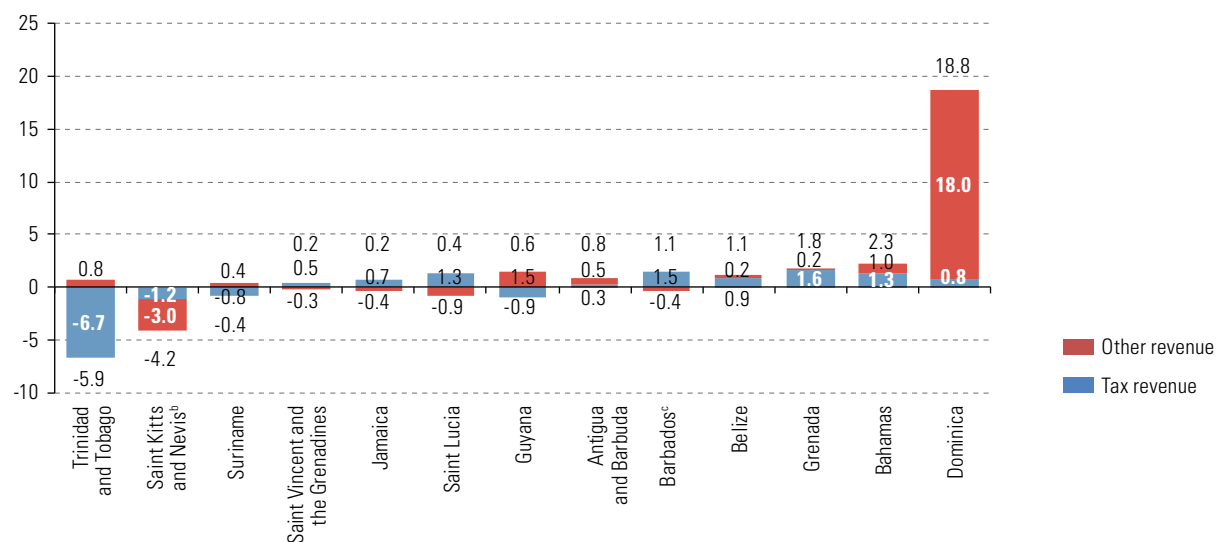
In Ecuador, the negative impact of the business cycle and the devastation caused by the April 2016 earthquake contributed to a drop of 1.1 percentage points of GDP in tax revenues. The main elements in this were declines of 0.9 percentage points of GDP in VAT receipts and 1.1 percentage points of GDP in income tax, although in the latter case the fall was from a particularly high level the year before, owing to a tax amnesty. These negative developments were partly offset by the application of some special taxes after the earthquake.

Of the South American countries, only in Uruguay did tax revenues rise as a share of output during the year. This was due to stronger income tax receipts from both natural persons (up 0.2 percentage points of GDP) and legal persons (0.5 percentage points of GDP) which more than offset a decline in revenues from indirect taxes.

In the English- and Dutch-speaking Caribbean, total revenues rose substantially (by 0.7 percentage points of GDP on average, taking them to 28.8% of GDP) as the result of rises both in the other receipts category and in tax receipts, which were up from 21.8% of GDP to 22.0% of GDP (see figure I.4). As can be seen in figure I.6, total receipts increased in 10 of the 13 countries in the subregion, although some countries experienced extreme fluctuations (Dominica, Saint Kitts and Nevis and Trinidad and Tobago).

Figure I.6

The Caribbean (13 countries): changes in total public revenue, by income source, 2015-2016^a
(Percentage points of GDP)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

^a Preliminary figures. In the cases of Antigua and Barbuda, Dominica, Grenada, Saint Kitts and Nevis, Saint Lucia and Saint Vincent and the Grenadines, the 2016 figures are the cumulative total for the 12 months ending in September. Figures may not add up exactly because of rounding.

^b Federal government.

^c Non-financial public sector.

Among the countries where total revenues increased, they were particularly strong in Dominica (up by 18.8 percentage points of GDP), the Bahamas (2.3 percentage points of GDP) and Grenada (1.8 percentage points of GDP). Revenue growth in Dominica reflected a substantial inflow of other receipts from the citizenship for investment programme and a change in the way this income was accounted for. In the Bahamas and Grenada, an improved tax take was the main factor behind the trend.

Conversely, total revenues fell sharply in Saint Kitts and Nevis (4.2 percentage points of GDP) and Trinidad and Tobago (5.9 percentage points of GDP). In Saint Kitts and Nevis, this decline was accounted for by a drop in income from the citizenship for investment programme, reflected in the other income category. In Trinidad and Tobago, conversely, a decline in oil-related receipts (mainly in the form of income tax paid by firms operating in the sector) was the main factor behind the drop in tax revenues and thence total revenues.

C. The evolution of public spending was shaped by the dynamics of fiscal revenues and public debt

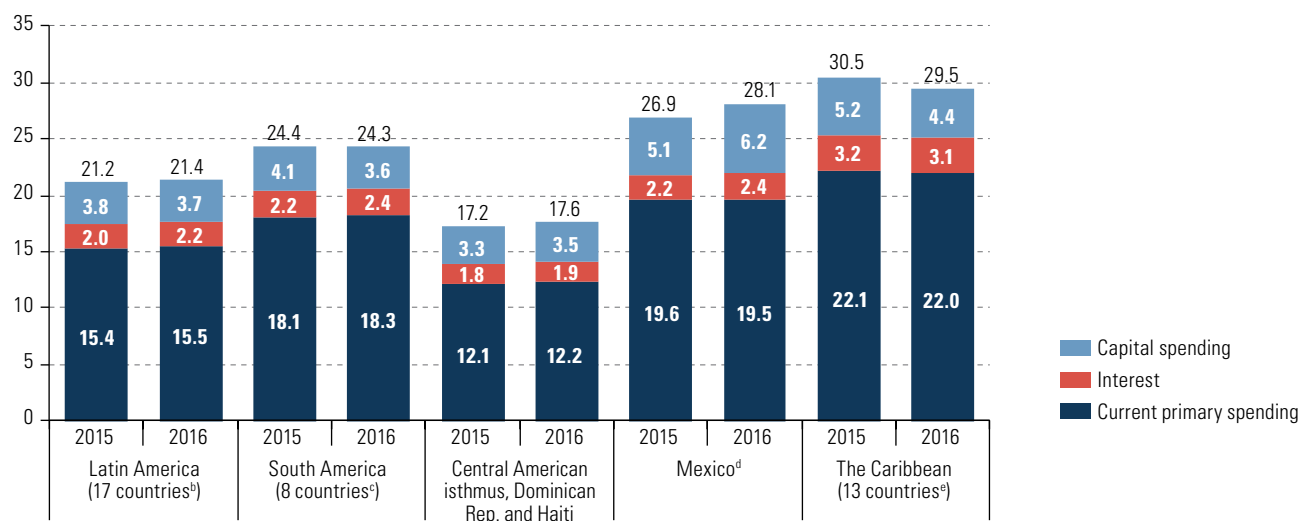
Public spending increased slightly on average (by 0.2 percentage points of GDP) in the countries of Latin America in 2016, largely reflecting trends in overall revenues and public debt. Interest payments were higher throughout the region, but especially in South America (0.2 percentage points of GDP), the Central American isthmus, the Dominican Republic and Haiti (0.1 percentage points of GDP) and Mexico (0.2 percentage points of GDP) (see figure I.7). This was due not only to growth in public debt overall, but also to changes in exchange rates (conditioned by the volume of debt issued in other currencies, especially dollars) and higher interest rates (reflecting the use of variable-rate instruments or the issuance of short-term debt with higher rates).

The rise in debt service was greater than average in Argentina (1.9 percentage points of GDP), Colombia (0.9 percentage points of GDP) and Uruguay (0.4 percentage points of GDP). In Brazil, conversely, there was a sharp downward correction in interest payments of 2.1 percentage points of GDP during 2016, mainly because of the monetary adjustment resulting from lower inflation (3.8 percentage points less than in 2015), which moved the cost of short-term debt downward.

Capital spending in Latin America fell slightly on average (0.1 percentage points of GDP), although there was a divergence in trends between the north and south of the region. As can be seen in figure I.8, such spending rose strongly in Mexico (1.1 percentage points of GDP, mainly because PEMEX was recapitalized by the federal government) and in the Central American isthmus, the Dominican Republic and Haiti (0.2 percentage points of GDP), where Nicaragua (0.8 percentage points of GDP) and Honduras (0.6 percentage points of GDP) were the best performers. Conversely, capital spending dropped substantially in South America (0.5 percentage points of GDP), especially Colombia (1.1 percentage points of GDP), Ecuador (1.1 percentage points of GDP), Peru (0.7 percentage points of GDP), Argentina (0.5 percentage points of GDP) and Brazil (0.5 percentage points of GDP).

Figure I.7

Latin America and the Caribbean: disaggregated central government spending, by subregion and country grouping, 2015-2016^a
(Percentages of GDP)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

^a Preliminary figures. Figures may not add up exactly because of rounding.

^b Argentina, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru and Uruguay.

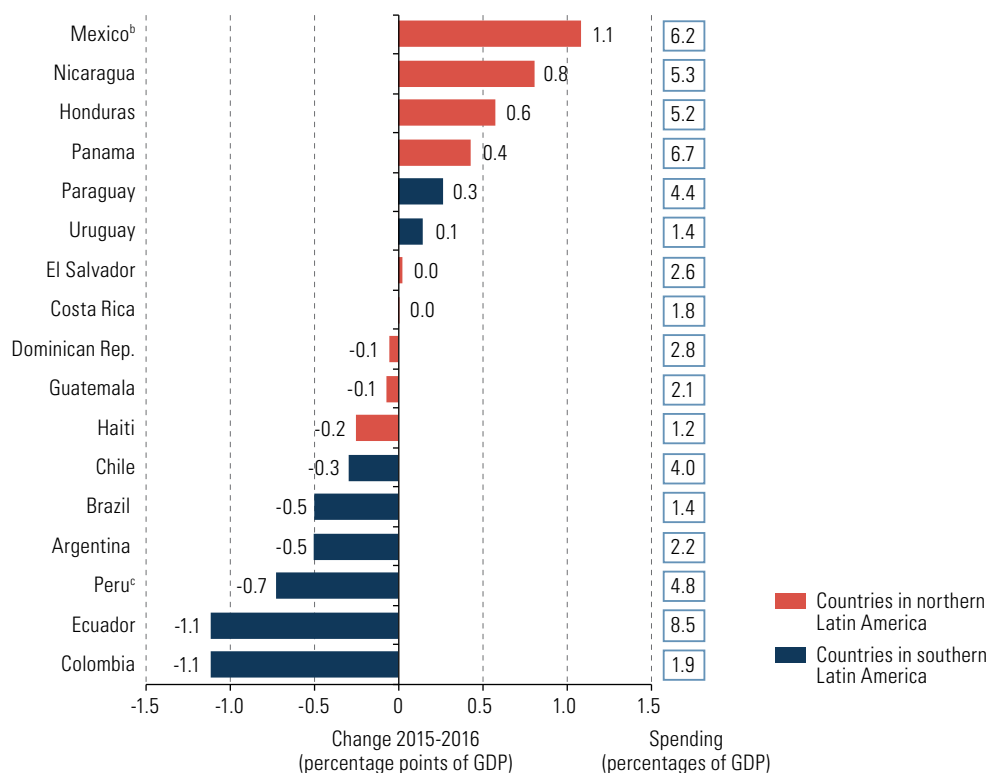
^c Argentina, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru and Uruguay. Figures are for general government in the case of Peru.

^d Federal public sector.

^e Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname and Trinidad and Tobago. In the cases of Antigua and Barbuda, Dominica, Grenada, Saint Kitts and Nevis, Saint Lucia and Saint Vincent and the Grenadines, the 2016 figures are the cumulative total for the 12 months ending in September.

Figure I.8

Latin America (17 countries):
levels of central government
capital spending and
changes on the previous
year, 2016^a
(Percentage points of GDP and
percentages of GDP)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

^a Preliminary figures.

^b Federal public sector.

^c General government.

Current primary spending in Latin America held fairly steady on average, although this stability masks a variety of results at the country level, with significant increases in Uruguay (1.2 percentage points of GDP), Argentina (1.0 percentage points of GDP), Brazil (0.9 percentage points of GDP) and Chile (0.5 percentage points of GDP). Conversely, current primary spending rose just slightly relative to output in the countries of Central America (0.1 percentage points of GDP) and dropped in Mexico (by 0.1 percentage points of GDP).

Overall spending dropped by 1.0 percentage points of GDP in the English- and Dutch-speaking Caribbean in 2016, mainly reflecting cuts in capital spending and lower public debt service. It is important to stress that capital spending tends to fluctuate sharply from year to year depending on the availability of financing for particular projects. In Saint Kitts and Nevis, for example, it dropped by 4.5 percentage points of GDP in 2016 because of the completion of certain infrastructure projects. It also declined substantially in Belize (4.7 percentage points of GDP) as externally funded projects were curtailed and capital transfers fell following an exceptional increase in 2015.

Although public debt service declined on average relative to output in 2016, it remains very substantial in some countries of the subregion. This is particularly true of Barbados and Jamaica, where interest payments increased to the equivalent of over 25% of total revenues in 2016 (see figure I.9). Conversely, debt service dropped substantially in Grenada (by 0.7 percentage points of GDP).

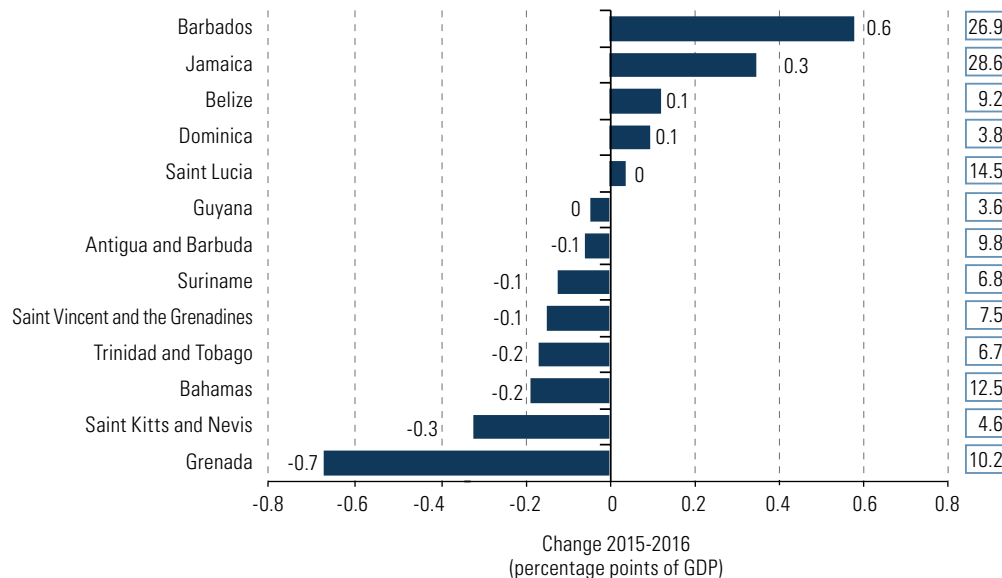


Figure I.9

The Caribbean (13 countries): changes in interest payments from previous year and amounts as a share of total revenues, 2016^a (Percentage points of GDP and percentages)

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

^a Preliminary figures. In the cases of Antigua and Barbuda, Dominica, Grenada, Saint Kitts and Nevis, Saint Lucia and Saint Vincent and the Grenadines, the 2016 figures are the cumulative total for the 12 months ending in September.

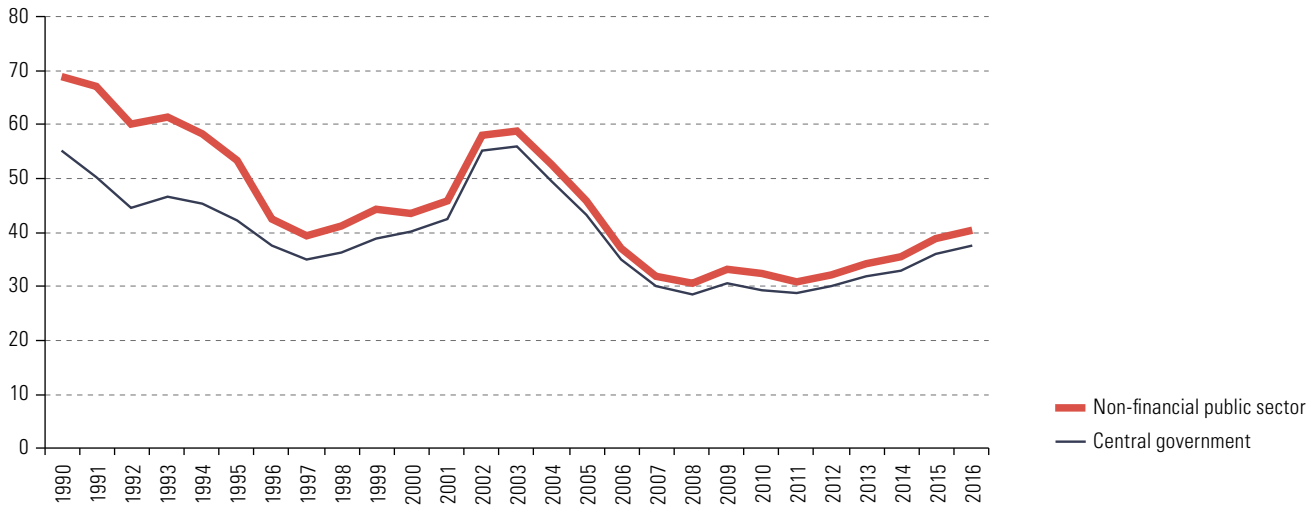
D. Public debt is still rising in Latin America but falling slightly in the Caribbean

In recent years, the region has increased public borrowing while maintaining sound fiscal indicators. In 2015, this began to change and pressures on public debt sustainability mounted. Although financing conditions are still favourable for most Latin American countries, the depreciation of most of their currencies has pushed up external financing costs for public borrowing, and this, combined with low growth, has increased the burden of interest payments and their negative repercussions for fiscal balances.

Public debt has increased in most of the region's countries relative to levels before the 2008 crisis, with non-financial public sector debt rising from 30.6% to 40.4% of GDP on average between 2008 and 2016, a cumulative increase of 9 percentage points of GDP (see figure I.10).

Figure I.10

Latin America: gross central government and non-financial public sector debt, 1990-2016
(Percentages of GDP)

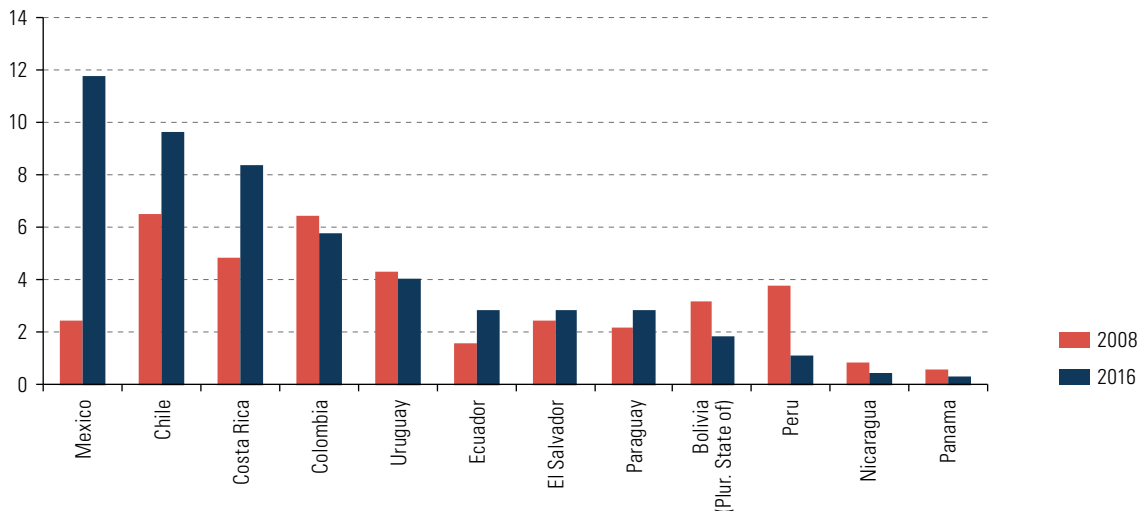


Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

There are a variety of situations as regards the difference between central government and non-financial public sector debt levels, depending on the evolution of borrowing by non-financial public enterprises in each country and the dynamics of subnational borrowing, as will be seen in chapter IV. As figure I.11 shows, the gap between the two categories of public sector operations has widened in Chile, Costa Rica and Mexico, showing that the debt of public enterprises has risen faster.

Figure I.11

Gaps between central government and non-financial public sector debt, 2008 and 2016
(Percentage points of GDP)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

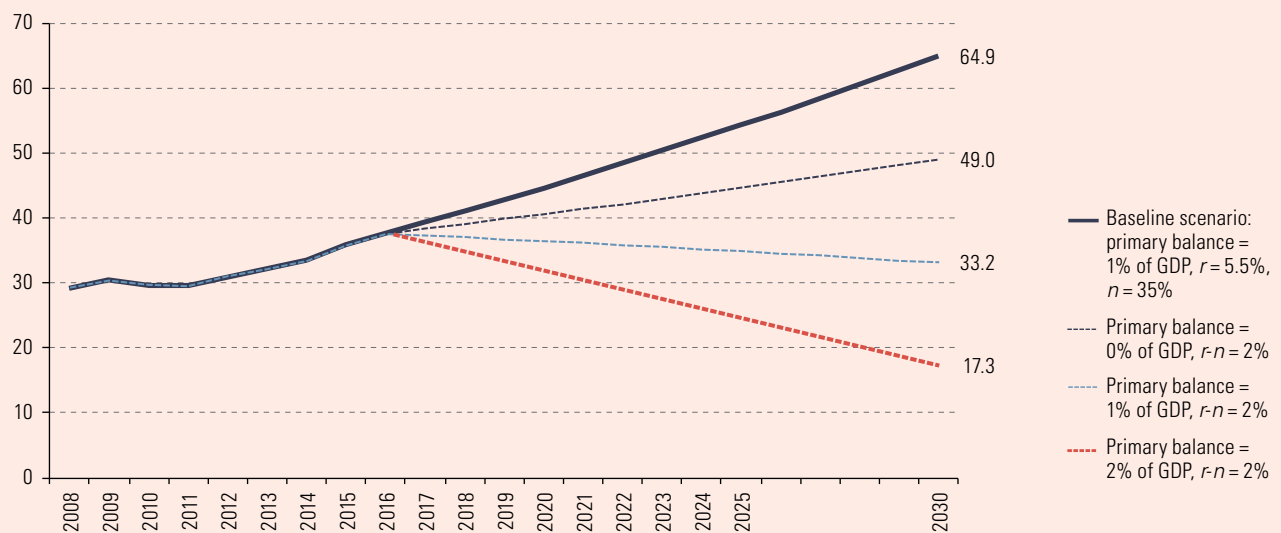
Gross central government debt in the region averaged 37.6% of GDP in 2016, 30% more than in 2008. Despite this increase, it is important to note that the pace of borrowing slackened during the year, reflecting the different policies adopted by many countries (increased tax pressure, spending cuts and borrowing restraint) in an economic context that requires the sustainability of public accounts to be strengthened. As box I.2 shows, failure to implement fiscal consolidation measures could result in the region's public debt growing more quickly again in the medium run.

Box I.2

Public debt scenarios in Latin America to 2030

As detailed in the *Economic Survey of Latin America and the Caribbean, 2016* (ECLAC, 2016), it is possible to configure simple simulations that can illustrate scenarios for the medium-run evolution of public debt under certain assumptions (for further information on how these scenarios are constructed, see ECLAC, 2016b). If current parameters were maintained in Latin America (an implicit interest rate of 5.5%, trend growth of 3.5% and a primary deficit of 1% of GDP), central government debt would reach an estimated 46% of GDP in the next five years and 64.9% of GDP by 2030 (see following chart).

Latin America: medium-run public debt under different public sector primary balance scenarios, 2030
(Percentages of GDP)



Source: Economic Commission for Latin America and the Caribbean (ECLAC).

Note: r is the real interest rate on public debt and n is the real growth rate.

However, if the countries succeed in attaining a neutral primary fiscal balance, public debt will be 49%. If they hold down spending or boost revenues in the medium term until they achieve a positive primary fiscal balance of 1% of GDP, debt will fall to 33.2% of GDP. If the adjustment achieves a positive primary balance of 2% of GDP, the region's debt level will be only 17.3% of GDP.

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of *Economic Survey of Latin America and the Caribbean, 2016* (LC/G.2684-P), Santiago, 2016.

Debt rose in 16 of the 19 Latin American countries considered. Of these, Brazil is the one with the highest level of public debt, equivalent to 70.5% of GDP, followed by Argentina (57.9% of GDP), Honduras (46.6% of GDP) and Uruguay (46.3% of GDP). At the other extreme, Paraguay has the lowest level of public debt in the region (19.6%), followed by Peru (20.8% of GDP) and Chile (21.1% of GDP).

It is worth including the region's holdings of financial assets in the analysis, as for some countries these are sizeable. Net debt figures provide greater clarity about each country's net financial position. In 2016, the countries with the largest portfolios of financial assets were Brazil, Chile and Uruguay, with levels of about 24% of GDP. Brazil had net general government debt of 45.2% of GDP, equivalent to 65% of its gross debt. In Chile, the net central government debt figure was negative in 2016 (-3.3% of GDP), as the country had more gross assets than liabilities. Uruguay had a net debt of 20.4% of GDP, less than half its gross debt. These countries were followed at lower levels by Argentina, Colombia, Ecuador, Mexico and Peru (see figure I.12).

Central government debt in the English- and Dutch-speaking Caribbean has risen by 16% since 2008, although the trend has been clearly downward in recent years. In 2016, public debt averaged 69.6% of GDP, a drop of 1.5 percentage points of GDP from 2015. Jamaica is still the country with the highest level of public debt (124% of GDP), followed by Barbados (103% of GDP) and Belize (78% of GDP). Although debt levels are often still quite high, there were declines in 10 of the 13 countries in the subregion, most particularly Antigua and Barbuda, Guyana, Jamaica and Suriname (ECLAC, 2016c).

Figure I.12

Latin America and the Caribbean: gross and net central government debt, 2008-2016^a
(Percentages of GDP)

A. Latin America (19 countries)

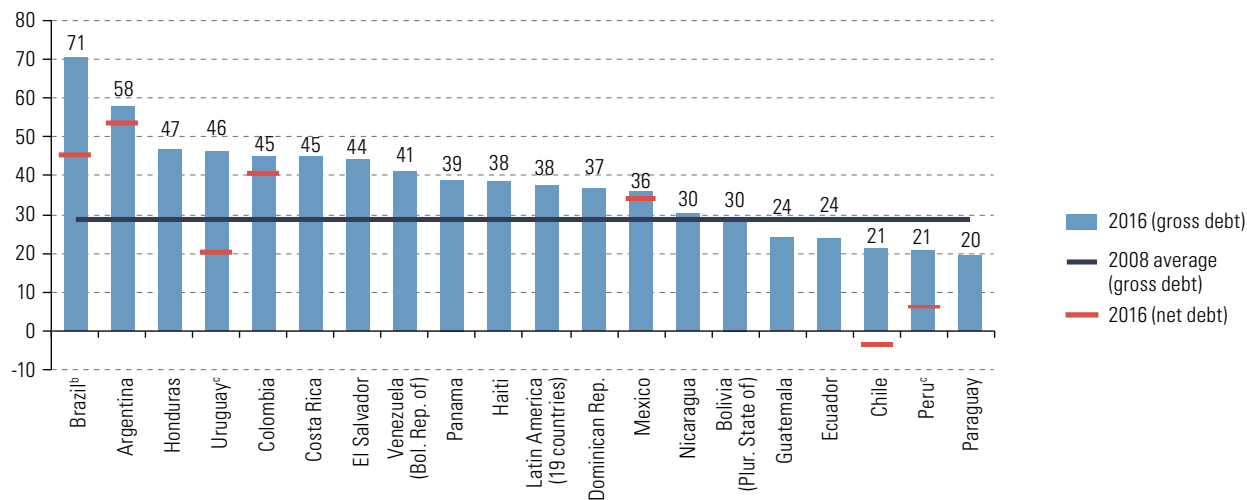
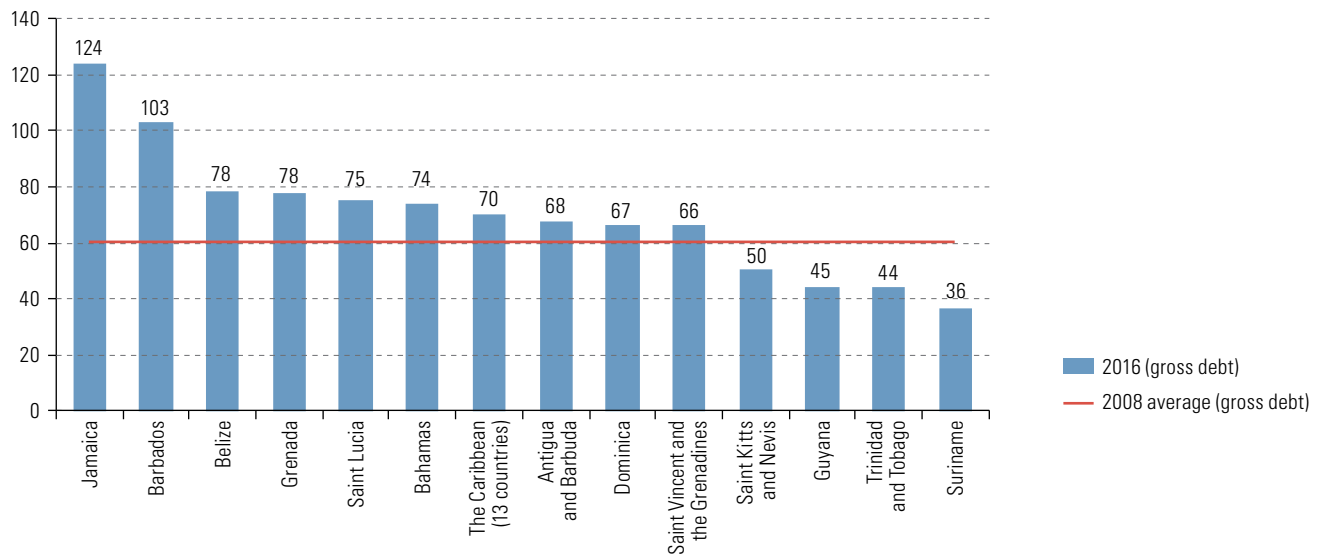


Figure I.12 (concluded)

B. The Caribbean (13 countries)

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

^a Net debt is defined as gross debt minus financial assets.

^b General government.

^c Net debt is that of the non-financial public sector.

E. Public investment trends: the pressures of retrenchment

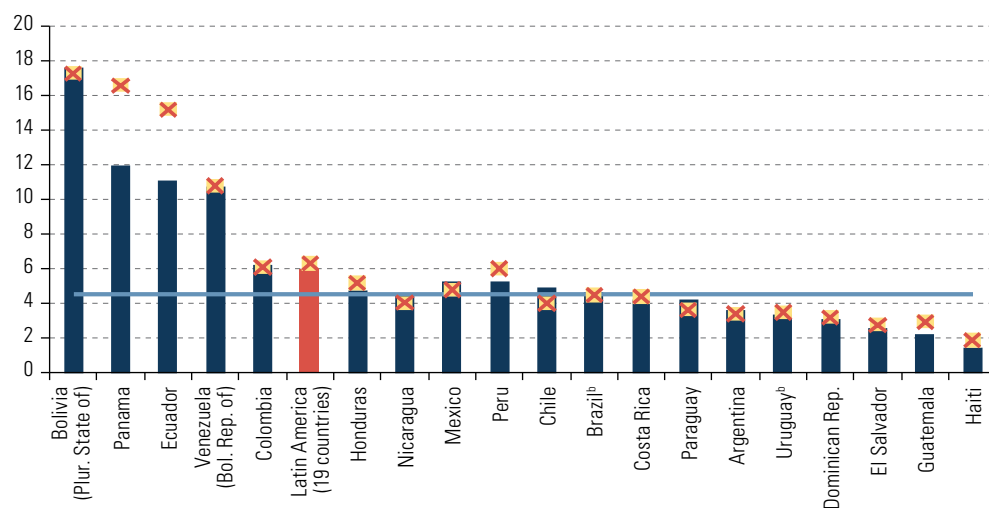
In the current context of fiscal vulnerability, the region has made an effort to keep its fiscal accounts sustainable. In many of its countries, the drop in revenues over recent years has been offset by public spending retrenchment, reflected mainly in cutbacks to public investment. Although fiscal space has diminished,¹ it is of the highest importance that investment should be incentivized as a driver of growth (ECLAC, 2015a).

With a view to broadening the analysis, this section reviews investment trends at different levels of government. The inclusion of actors such as public enterprises, which are important in many countries, provides a fuller picture of the scale of public investment spending in each country. In Latin America, the simple average of public capital spending (including public enterprises in countries where these are important) in 19 countries rose from 4.5% to 6.0% of GDP between 2000 and 2015 (see figure I.13). In the Caribbean, the average for 13 countries rose by 1.0 percentage points of GDP to 5.7% of GDP in the same period. The depressed starting point helps explain the more dynamic relative performance of investment in the last decade and a half, particularly since 2008, when the rate of public investment accelerated in Argentina, Ecuador, Panama, Peru and the Plurinational State of Bolivia. Conversely, other countries with higher investment rates in the 1990s, such as Barbados, Belize, Guyana, Grenada, Honduras and Saint Vincent and the Grenadines, have seen investment fall sharply in recent years.

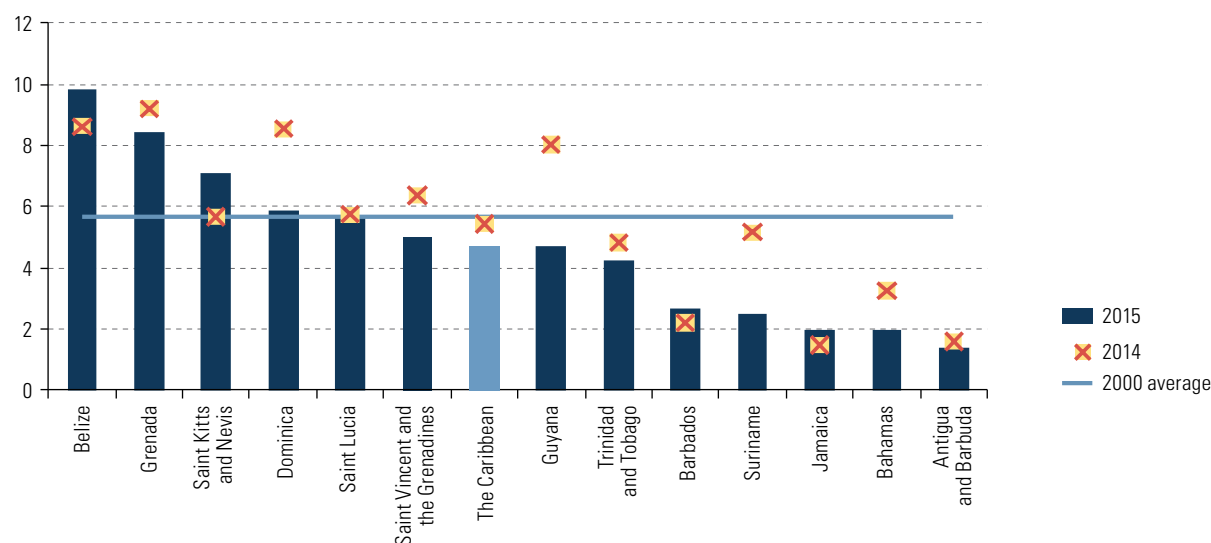
¹ See ECLAC (2016a and 2015b).

Figure I.13
Latin America and the Caribbean: rates of public investment, 2000, 2014 and 2015^a
(Percentages of GDP)

A. Latin America (19 countries)



B. The Caribbean



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

^a Public investment is defined as non-financial public sector capital spending net of intergovernmental transfers. Central government figures are used for El Salvador, Guatemala, Haiti, Honduras, Nicaragua, Paraguay and the Caribbean.

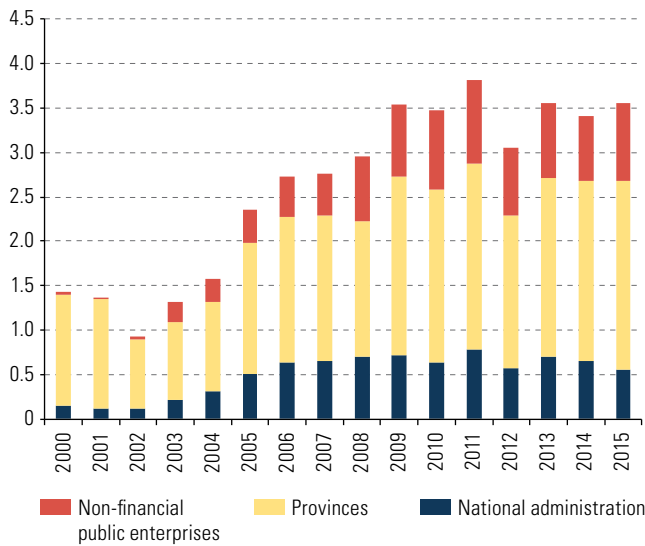
^b For reasons of information availability, the figures are for 2013 and 2014.

This dynamic altered radically in 2015, when pressure on fiscal resources resulted in public investment stalling and contracting, albeit only slightly in many countries of the region. As figure I.13 shows, 11 of the 19 countries in the region cut capital spending in 2015, with the largest falls in Ecuador and Panama (4.0 and 4.9 percentage points of GDP, respectively), where investment levels are over 10% of GDP. Guatemala, Haiti, Honduras and Peru cut capital spending by over 0.5 percentage points, the other countries by less. Just 8 of the 19 countries increased capital spending: Chile, Mexico, Nicaragua and Paraguay by over 0.5 percentage points of GDP, and Argentina, Brazil, Colombia and the Plurinational State of Bolivia by less than 0.2 percentage points of GDP.

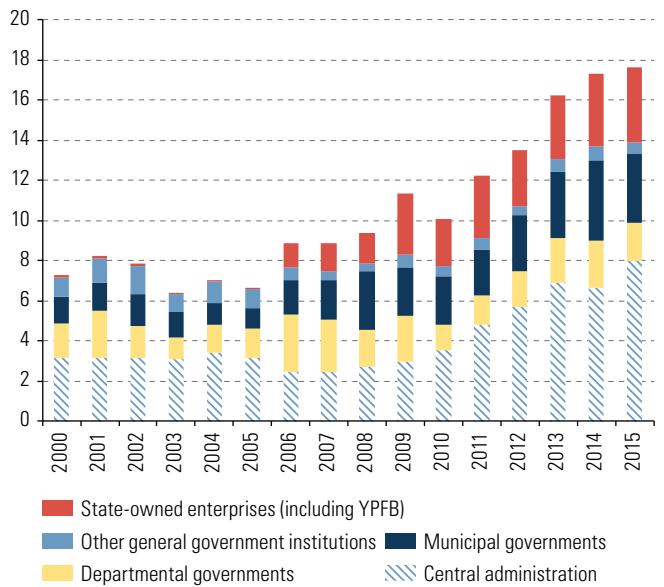
Public investment in gross capital formation at different levels of government can be taken to identify the sectors that public resources are focused on. As figure I.14 shows, Ecuador, Panama and the Plurinational State of Bolivia have greatly raised public investment and now spend over 10% of GDP, far above the average for the region. Chile, Colombia, Mexico and Peru have held spending at around 5% of GDP. Argentina, Costa Rica, the Dominican Republic and Uruguay differ in the amounts they spend.

Figure I.14
Rates of public investment by level of government, 2000-2015^a
(Percentages of GDP)

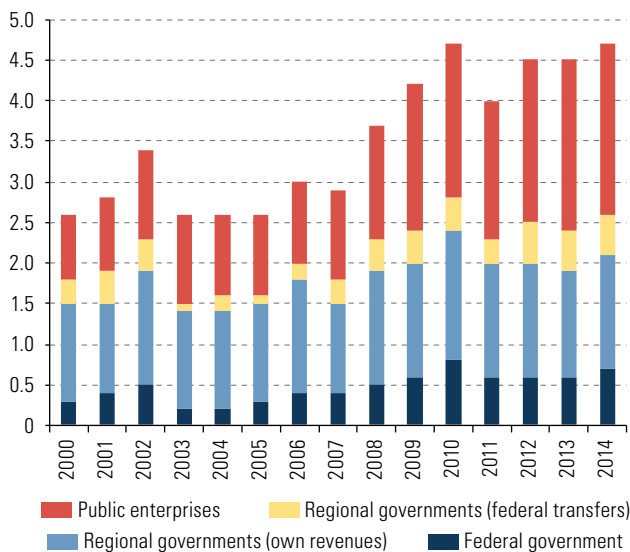
A. Argentina



B. Bolivia (Plurinational State of)



C. Brazil



D. Chile

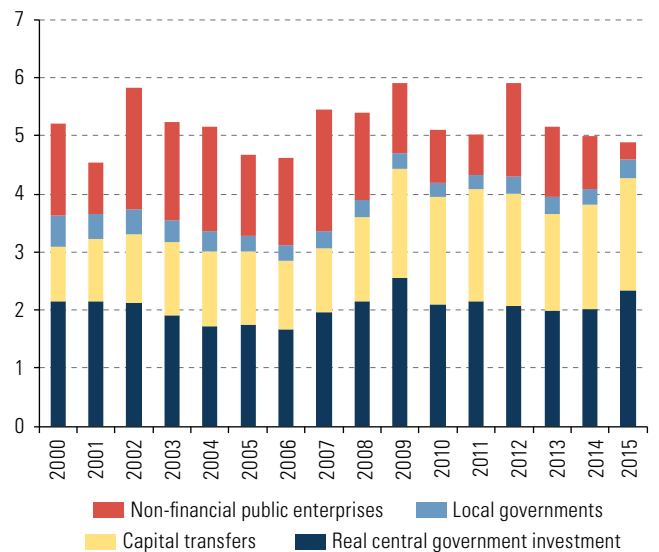
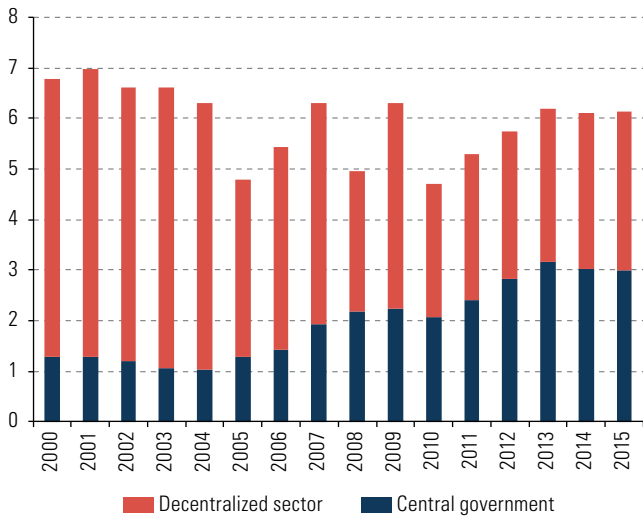
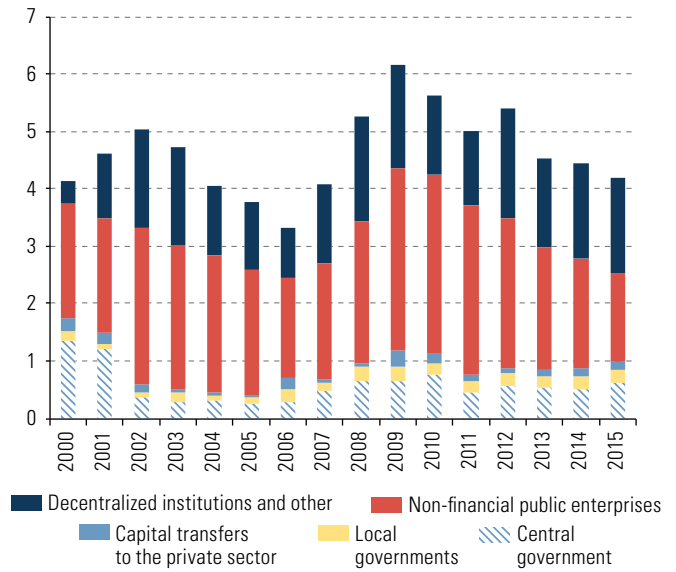


Figure I.14 (continued)

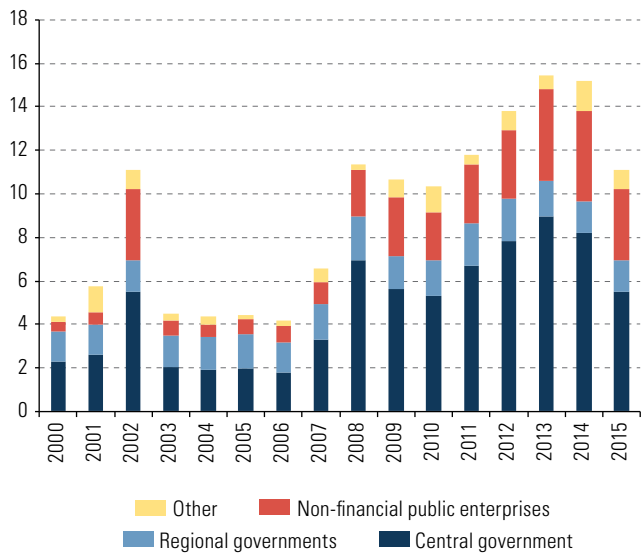
E. Colombia



F. Costa Rica



G. Ecuador



H. Mexico

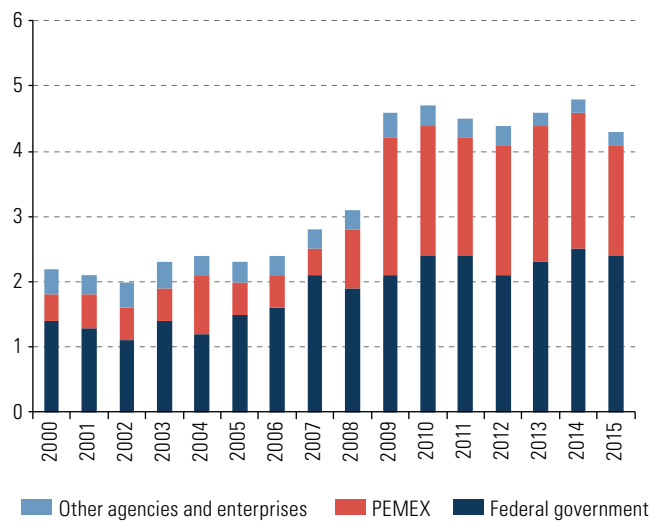
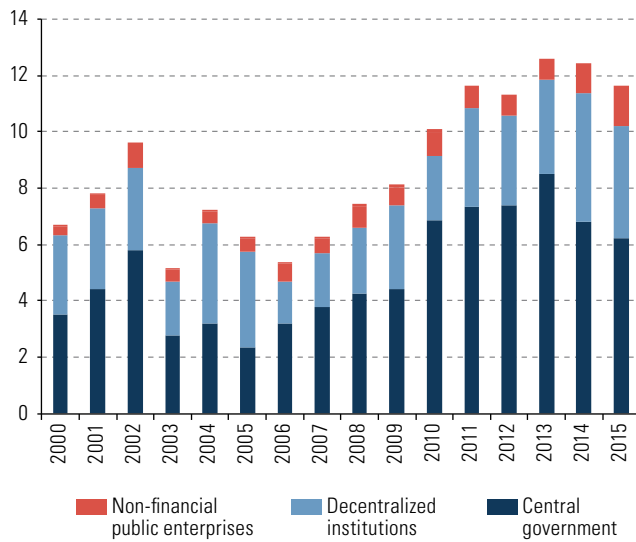
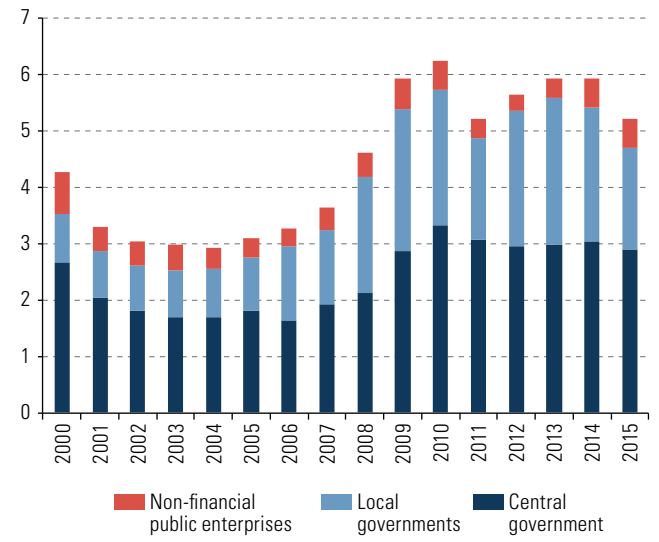


Figure I.14 (concluded)

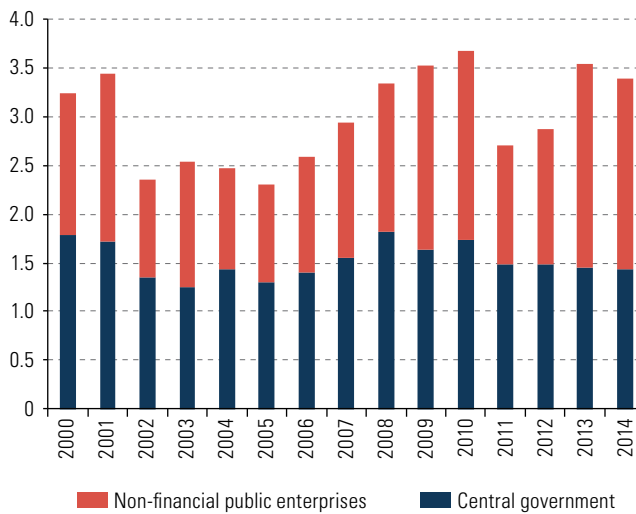
I. Panama



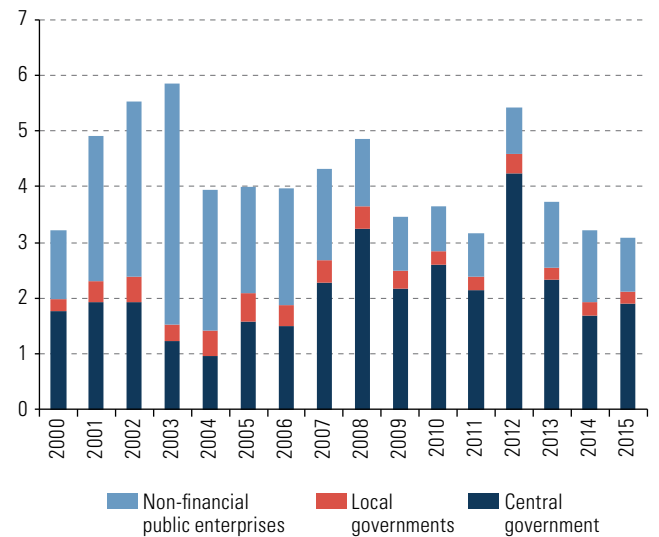
J. Peru



K. Uruguay



L. Dominican Republic



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

^a Figures available up to 2014 are given for Brazil and Uruguay.

Investment by the non-financial public sector in Argentina was 3.6% of GDP in 2015. The national administration financed over 50% of this, although it only executed about 15%, or less than 1% of GDP. Investment by the provinces represented 60% of the total, or 2.1% of GDP. These allocations were financed mainly out of local funds and transfers from the national level, together with trust funds and capital transfers for specific projects (housing). Off-budget investment by national and provincial public enterprises amounted to 0.9% of GDP, representing 25% of total public investment.

Argentina is the country that best illustrates the transformations of recent years. As pointed out by Cetrángolo, Gómez Sabaini and Morán (2015), public investment played a dominant role in capital formation up to the early 1980s, with levels as high as 10% of GDP. The need to adjust the public accounts as the country emerged from the debt crisis meant that capital spending had to be cut during the 1980s, and these fiscal constraints came at a time when the belief that the State should withdraw from many sectors of the economy was at its strongest. The consequent privatization of numerous public enterprises, coming on top of the crisis, meant that the 1990s was marked by an unprecedented drop in public investment, which bottomed out below 1% of GDP in 2002, a level that certainly meant public capital was being run down in net terms.

In the Plurinational State of Bolivia, capital spending by the non-financial public sector peaked at 17.6% of GDP in 2015, a rise of 10 percentage points of GDP from 2000. Despite the country's high level of fiscal decentralization, the largest share of investment spending was carried out by the central administration, with 45% of the total, while substantial portions were executed by municipal governments (3.4% of GDP) and departmental governments (1.9% of GDP), whose resources amount to 30% of the investment total.

Investment by public enterprises, driven by nationalizations and renationalizations, began to increase substantially in 2006, so that it rose from less than 1% of GDP in the early 2000s to some 4% of GDP in 2015. Yacimientos Petrolíferos Fiscales Bolivianos (YPFB) and Empresa Nacional de Electricidad (ENDE) accounted for about 60% of this. Investment in the production and infrastructure sectors recovered vigorously, with levels there rising from less than 0.5% of GDP in 2000 to 5% of GDP in 2015. Social investment also climbed, especially in the health, education and urban development and housing sectors, reaching 4% of GDP. On the financing side, domestic resources made a key contribution, funding 81% of the total in 2015, a large rise on the 34% of 2004. The nationalization of hydrocarbons in 2006, and the implementation of a new fiscal framework for the sector, created a major source of public investment funding.

In Brazil, public investment by the non-financial public sector was 4.7% of GDP in 2014. Public enterprises executed 45% of the total, followed by regional governments with 40% (investment worth 1.4% of GDP from their own funds and 0.5% of GDP from federal funds). The federal government executed just 15% of the total, worth 0.7% of GDP.

State investment began to play a prominent role once more in the wake of the 2008 crisis, rising from an average of 2.7% of GDP in 2003-2008 to 4.3% of GDP in 2008-2014. While this growth was partly due to large infrastructure projects, investment was heavily concentrated in PETROBRAS. The Growth Acceleration Programme (PAC) funded 20% of public sector investment, equivalent to 0.8% of GDP, which was not included in the fiscal targets. Moreover, several programmes to incentivize investment via public service concessions were introduced. In 2015, there was a cut of about 30% to discretionary spending that translated into lower levels of public investment, including in PETROBRAS. This contraction reduced infrastructure investment by 46%. A law freezing public investment for 20 years by limiting spending increases to the previous period's inflation rate was passed in 2016.

In Chile, public sector investment was 4.9% of GDP in 2015, with the central government executing 2.3% of GDP, or about 44% of all public investment, while non-financial public enterprises (including CODELCO) invested 0.3% of GDP, or less than 10% of total investment. Capital transfers amounted to 1.9% of GDP (40% of the investment budget), and were largely allocated to social housing (0.6% of GDP) and economic affairs, with transportation accounting for 0.2% of GDP.

Between 2000 and 2015, public investment held steady at 5% of GDP, but its structure by level of government changed. Capital transfers increased by 1.0 percentage points of GDP, while investment by public enterprises fell by 1.3 percentage points of GDP. In particular, CODELCO slashed investment by some 80% in 2015, to just 0.2% of GDP.

A number of plans to boost public investment and ease the effects of the economic slowdown on jobs were implemented during 2015. In addition, projects implemented in different production sectors are expected to increase the overall infrastructure investment rate from 2.5% to 3.5% of GDP by 2020, mainly through a public-private action plan.

In Colombia, investment by the non-financial public sector was 6.1% of GDP in 2015, with the central government accounting for 48% of the total, equivalent to 3.0% of GDP, and the decentralized sector (encompassing social security, national and local enterprises and regional governments) for 52%, or 3.2% of GDP. The public investment rate was high throughout the period at about 6% of GDP, with central government investment doubling from its 2000 level, mainly because of housing and public works policies. By contrast, the share of investment executed by the decentralized sector shrank somewhat, although it remained above 3% of GDP.

Investment rose by 5.9% in 2015 to 46.2 billion Colombian pesos, and this trend will be sustained by a number of investments directed mainly at infrastructure and social affairs. Medium-term strategic projects include improvements in the national road network, the Ruta del Sol highway concession, the construction of road corridors, upgrades to productive infrastructure and an injection of funds into the family housing subsidy programme (for the construction of 100,000 dwellings). Public investment is expected to fall off during 2016, albeit only slightly, mainly because of lower investment in mining and energy.

In Ecuador, capital spending by the non-financial public sector rose from just 4.0% of GDP in 2000 to 11.1% in 2015, when the central government was responsible for the largest share of fixed capital formation (5.5% of GDP), followed by non-financial public enterprises (3.3%) and regional and local governments (1.5%). As regards the destination of public investment, the figures show 23% going to production sectors, 14% to human capital development and 16% to the social sector. Under the current fiscal rule, capital spending is funded from non-permanent resources, meaning that the behaviour of investment essentially tracks that of oil revenues. Reduced financing explains the drop of 4 percentage points in investment during 2015, particularly that by central government and non-financial public enterprises.

In Panama, investment by the non-financial public sector was 11.7% of GDP in 2015, a sharp rise on the 6.7% in 2000. The bulk of such investment (55% of the total) is implemented by the central government, followed by autonomous institutions (including transport) with 36% and non-financial public enterprises, whose investment levels are equivalent to 1.5% of GDP or 8% of total public investment. There was a small drop in investment by the non-financial public sector, and particularly by the central government, over the course of the year. Other levels of government were able to offset this decline by increasing their own investment thanks to implementation of the Strategic Government Plan, which envisions investment projects totalling US\$ 19.5 billion up to 2019, mainly in the Panama City metro system, upgrades to the road network, the building of a “hospital city,” and the Colón Corridor highway.

In Peru, public sector investment was 5.2% of GDP in 2015. The central government accounted for 60% of total investment, local governments for 30% (1.8% of GDP) and non-financial public enterprises, including Petroperú, for 0.5% of GDP. The strong recovery in public investment after 2008 was essentially driven by subnational governments, revealing a very dynamic decentralization process. This has entailed the consolidation of the National System for Public Investment (SNIP), given the need to evaluate multiple investment projects in a context of fragmented decision-making.

One interesting initiative in Peru is the Works for Taxes Act (Shack, 2015), a public investment scheme whereby companies or private consortiums receive a discount of up to 50% on their previous year's income tax if they fund and implement public infrastructure projects. The law provides national, regional and local authorities with a management tool that is intended to encourage private investors to engage actively with the development process in their local area.

In Mexico, public sector investment was 4.3% of GDP in 2015. The federal government invested 2.4% of GDP (equivalent to 56% of the total) and public enterprises 1.9% of GDP (about 44% of the total). PEMEX accounted for over 90% of the total invested by public enterprises, equivalent to 1.7% of GDP.

The country's public investment rate doubled in 2000-2015 from 2% to over 4% of GDP. This increase was due mainly to the effort by the federal government and PEMEX, which increased their level of investment by over a percentage point of GDP. Public investment dropped slightly in 2015 (by 0.5 percentage points of GDP from the year before), mainly because PEMEX investment plans were cut back by 0.4 percentage points of GDP. The outlook for the government's medium-term plan of boosting public investment to 5.2% of GDP by 2020 is looking difficult to achieve.

Public investment in Uruguay was 3.4% of GDP in 2014, with the central government investing 1.4% of GDP and non-financial public enterprises 1.9% of GDP, or about 60% of the total. The public enterprises investing most, the National Telecommunications Administration (ANTEL) and the National Electric Power Plant and Transmission Administration (UTE), have held their investment levels fairly steady since 2008.

A determining factor in the negative trend of gross fixed capital formation in Central America has been the contraction of public investment (see Cabrera, 2015). In the cases of Costa Rica, El Salvador, Guatemala and Honduras, this is explained by a lessening of fiscal space since the international financial crisis of 2008, which resulted in a gradual increase in the fiscal deficit, especially in Costa Rica. Between 2014 and 2015, a policy of public spending retrenchment was initiated in the subregion, with particular emphasis on capital spending.

An exception to this is Nicaragua, where central government investment has increased. In this case, the construction of road projects and social infrastructure has kept gross capital formation levels up. The country's fiscal deficit has not widened but remains below 1% of GDP.

Public investment in Costa Rica was 4.2% of GDP in 2015. The central government invested 0.6% of GDP, local governments 0.2% of GDP, public enterprises 1.6% of GDP and other public bodies such as decentralized institutions and agencies a combined 1.7% of GDP. Over 50% of all public sector investment was earmarked for transport, followed by housing (14%), education (12%) and health (9%).

In the case of the Dominican Republic, public sector investment held steady at around 3% of GDP in 2015, with the central government executing 62% of the total (1.9% of GDP), non-financial public enterprises some 30% (1.0% of GDP) and local governments less than 1 percentage point of GDP.

Bibliography

- Cabrera, M. (2015), "Estudio de los impactos de las reformas tributarias y de gasto público sobre el crecimiento y la inversión en Guatemala, Nicaragua y Panamá"; *Macroeconomía del Desarrollo* series, No. 168 (LC/L.4099), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC).
- Cetrángolo, O., J.C. Gómez Sabaini and D. Morán (2015), "Argentina: reformas fiscales, crecimiento e inversión (2000-2014)"; *Macroeconomía del Desarrollo* series, No. 165 (LC/L.4042), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC).
- ECLAC (Economic Commission for Latin America and the Caribbean) (2016a), *Fiscal Panorama of Latin America and the Caribbean 2016: Public finances and the challenge of reconciling austerity with growth and equality* (LC/L.4140), Santiago, March.
- (2016b), *Economic Survey of Latin America and the Caribbean, 2016* (LC/G.2684-P), Santiago.
- (2016c), *Preliminary Overview of the Economies of Latin America and the Caribbean, 2016* (LC/G.2698-P), Santiago.
- (2015a), *Economic Survey of Latin America and the Caribbean, 2015* (LC/G.2645-P), Santiago.
- (2015b), *Fiscal Panorama of Latin America and the Caribbean 2015: Policy space and dilemmas* (LC/L.3962), Santiago.
- Shack, N. (2016), "Reformas de gasto público y crecimiento económico: el caso de las asociaciones público-privadas en el Perú y la inversión 'impulsada'"; *Macroeconomía del Desarrollo* series, No. 171 (LC/L.4153), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC).



CHAPTER



Recent trends in income tax reforms and measures to confront tax non-compliance in Latin America

Introduction

- A. While progress has been made, revenue from personal income taxes remains low
- B. Timely and systematic quantification of evasion continues to be a pending issue for most countries in the region
- C. The redistributive capacity of personal income tax is still very weak in the region
- D. Countries in the region approved a number of changes to their tax systems in 2016
- E. Latin American countries have adopted a number of measures in the areas of tax compliance and international taxation

Bibliography

Introduction

Public finances in Latin American countries have traditionally been characterized as relying on a tax system skewed towards consumption taxes and a taxation policy with a weak redistributive impact. The region's tax systems raise much less from personal income tax than those of the rest of the world, so that the Latin American countries have been described as "allergic" to income tax (Tanzi, 2000). Although this tax usually offers advantages in terms of both macroeconomic stabilization and income distribution, it generates little revenue in Latin American countries.

Since the first edition of the *Fiscal Panorama of Latin America and the Caribbean*, ECLAC has been collating and analysing the tax reforms and measures of the region's countries, which have been oriented towards a variety of goals and encompassed different taxes and different aspects of these.

Many of these changes have involved income taxes. Given the challenge of raising further resources to implement public policies oriented towards sustainable development and poverty reduction, it is important to evaluate and analyse the causes behind the poor performance of personal income taxation, in terms of both revenue and its redistributive impact.

In addition, countries in the region have shown a growing determination to pursue greater tax compliance, both domestically and internationally, through the implementation of a number of measures to prevent evasion. There is still some way to go, however, in terms of the availability of systematic official data to measure evasion of the main taxes and its evolution over time, as the present chapter shows.

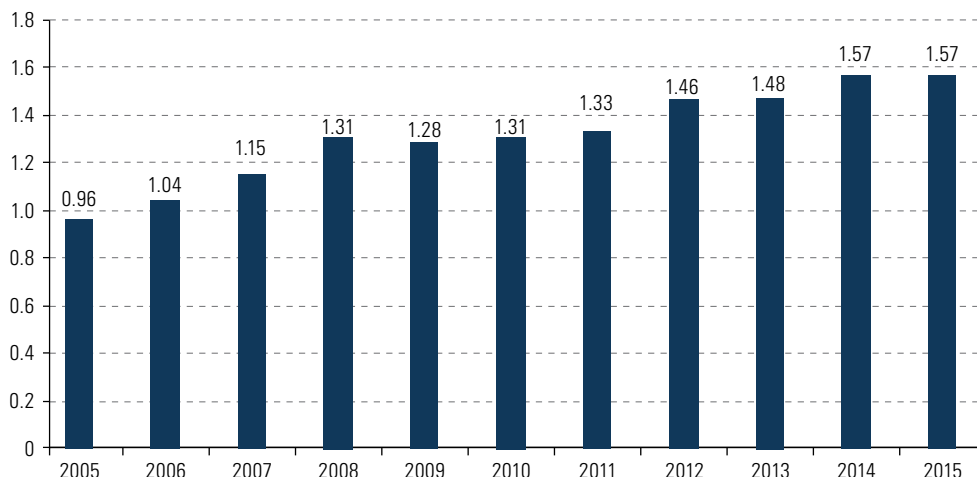
As regards efforts to deal with tax non-compliance internationally, particular mention should be made of the Organization for Economic Cooperation and Development (OECD) and Group of 20 (G20) Base Erosion and Profit Shifting (BEPS) project, under which countries have agreed to a final package of measures to deal with international tax problems. This package incorporates new or strengthened international standards and concrete actions to deal with BEPS.¹ Accordingly, this chapter also identifies and analyses the actions being taken by the region's countries to combat tax evasion and avoidance, both domestically and externally. In addition, as is customary in the editions of the *Fiscal Panorama*, it identifies and compares the main tax measures or reforms approved by the countries of Latin America during 2016.

A. While progress has been made, revenue from personal income taxes remains low

Revenue from personal income taxes has grown over the last decade, with the average for 15 countries of Latin America rising from less than 1% of GDP in 2005 to about 1.6% of GDP in 2015 (see figure II.1). This progress notwithstanding, the fiscal revenues raised are still very small, even though a number of countries have implemented reforms to expand the tax base and moved forward in implementing proportional taxes on capital income, which was formerly exempt, together with more progressive taxes on earnings. However, the personal income tax take as a share of GDP remains modest in the region and falls far short of levels in the countries of the European Union (10.7% of GDP) or the Organization for Economic Cooperation and Development (OECD) (8.4% of GDP).

¹ It also includes country-by-country reporting requirements that will give tax administrations an overview of multinational firms' operations, provisions to prevent treaty shopping with the aim of eradicating the use of investment channelling companies in countries with tax agreements, and measures to counter harmful tax practices. It likewise contains a review of current international fiscal standards for preventing double taxation, as a result of which new transfer price guidelines have been issued, among other things.

Figure II.1
Latin America (15 countries):
personal income tax
revenue, 2005-2015
(Percentages of GDP)

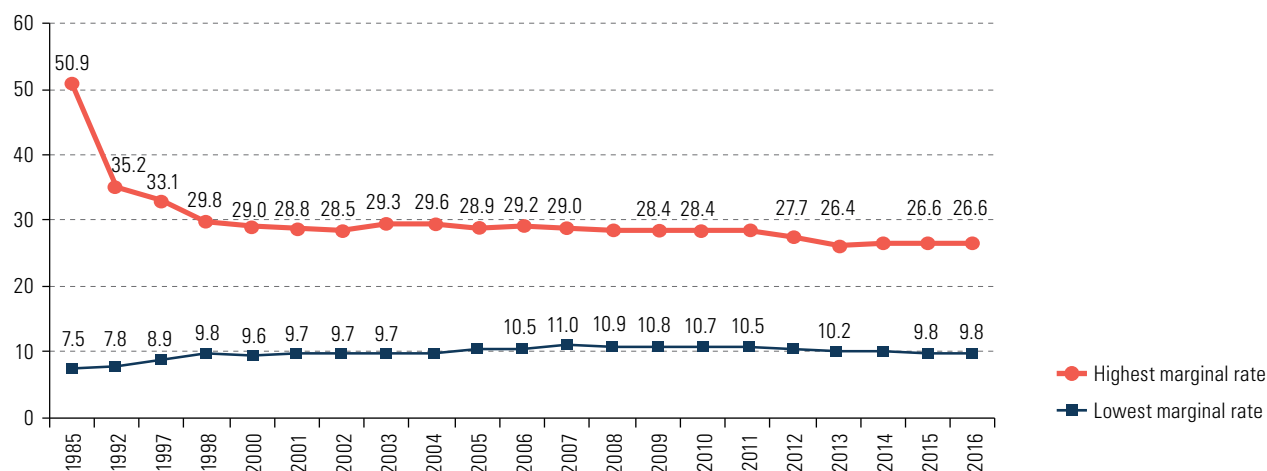


Source: Economic Commission for Latin America and the Caribbean (ECLAC).

Jiménez and Podestá (2016a) suggest three factors that have limited the performance and impact of this tax in Latin America: (i) the evolution of legal tax rates, resulting in a reduction in the average top marginal rate applied by the countries in the region; (ii) a narrow tax base, owing to the large number of exemptions, permitted deductions, simplified regimes and lower tax thresholds that leave out a large number of taxpayers and a great deal of income; (iii) high levels of non-compliance (evasion and delinquency) in almost all the countries.

Top marginal personal income tax rates have fallen in Latin America from an average of 50.9% in the 1980s to about 26.6% in 2016, well below international levels (see figure II.2). For example, in 2014 top marginal income tax rates averaged 45% in the countries of the eurozone and 39.4% in the 28 countries of the European Union. Indeed, rates are 50% or more in a number of European countries such as Austria, Belgium, Denmark, Finland, France, the Netherlands, Portugal, Spain and Sweden (European Union, 2014).

Figure II.2
Latin America: lowest and highest marginal rates of personal income tax, 1985-2016
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of V. Tanzi, "Taxation in Latin America in the last decade", paper presented at the Conference on Fiscal and Financial Reforms in Latin America, Stanford University, 9 and 10 November 2000 (figures from 1985 to 1998); CEPALSTAT and Inter-American Centre of Tax Administrations (CIAT) (figures from 2000 onward).

In contrast, the lowest marginal rates increased in Latin America from an average of 7.5% in the 1980s to 9.8% in 2016, peaking around 2007 at an average of 11.0%. The average gap between the highest and lowest marginal rates thus narrowed, affecting the progressiveness and the redistributive impact of the tax (see table II.1).

Table II.1

Latin America: highest and lowest marginal rates of personal income tax, by country, 1985–2016

(Percentages)

	1985 or 1986		1992		2000		2008		2016	
	Lowest	Highest	Lowest	Highest	Lowest	Highest	Lowest	Highest	Lowest	Highest
Argentina	16.5	45.0	15.0	30.0	9.0	35.0	9.0	35.0	9.0	35.0
Bolivia (Plurinational State of)	10.0	10.0	10.0	10.0	13.0	13.0	13.0	13.0	13.0	13.0
Brazil	0.0	60.0	10.0	25.0	15.0	27.5	15.0	27.5	7.5	27.5
Chile	0.0	57.0	5.0	50.0	5.0	45.0	5.0	40.0	4.0	40.0
Colombia	10.0	49.0	5.0	30.0	10.0	35.0	19.0	33.0	19.0	33.0
Costa Rica	5.0	50.0	10.0	25.0	10.0	25.0	10.0	15.0	10.0	15.0
Dominican Republic	2.0	73.0	3.0	70.0	15.0	25.0	15.0	25.0	15.0	25.0
Ecuador	19.0	40.0	10.0	25.0	5.0	15.0	5.0	35.0	5.0	35.0
El Salvador	3.0	60.0	10.0	30.0	10.0	30.0	10.0	30.0	10.0	30.0
Guatemala	11.0	48.0	4.0	34.0	15.0	25.0	15.0	31.0	5.0	7.0
Honduras	3.0	40.0	12.0	40.0	10.0	25.0	10.0	25.0	15.0	25.0
Mexico	3.0	55.0	3.0	35.0	3.0	40.0	1.92	28.0	1.92	35.0
Nicaragua	15.0	50.0	8.0	35.5	10.0	30.0	10.0	30.0	15.0	30.0
Panama	13.0	56.0	3.5	56.0	2.0	30.0	16.5	27.0	15.0	25.0
Paraguay	...	...	...	...	...	...	...	...	8.0	10.0
Peru	2.0	56.0	6.0	37.0	15.0	30.0	15.0	30.0	8.0	30.0
Uruguay	...	...	...	...	...	...	10.0	25.0	10.0	30.0
Venezuela (Bolivarian Republic of)	12.0	45.0	10.0	30.0	6.0	34.0	6.0	34.0	6.0	34.0
Latin America (18 countries)	7.5	50.9	7.8	35.2	9.6	29.0	10.9	28.4	9.8	26.6

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of V. Tanzi, "Taxation in Latin America in the last decade", paper presented at the Conference on Fiscal and Financial Reforms in Latin America, Stanford University, 9 and 10 November 2000 (figures from 1985 to 1992); CEPALSTAT and Inter-American Centre of Tax Administrations (CIAT) (figures from 2000 onward).

The low personal income tax take and narrow tax base are due to the generous treatment of personal deductions and non-taxable gains provided for in the tax legislation, the numerous exemption or tax expenditure regimes and the proliferation and entrenchment of simplified tax regimes (the *monotributo* in Argentina, Brazil's Unified Special Regime for Collection of Taxes and Contributions from Micro and Small Enterprises (SIMPLES) and System for Individual Micro-entrepreneurs (SIMEI), and the Simplified Tax Regime (RTS) of the Plurinational State of Bolivia), which started out as paths into formality but have consolidated as permanent features of tax systems (Gomez Sabaini and Morán, 2012).

An important limitation of the personal income tax in Latin America is that it is raised essentially from wage earners, i.e., it is paid by formal sector employees who have it deducted from their wages at source. According to the studies compiled in Gómez Sabaini, Jiménez and Podestá (2010), 60% or more of all personal income tax is paid by wage employees in the countries with information available, such as Ecuador, El Salvador, Mexico and Peru. This lopsided structure affects the horizontal equity of the tax, since most of it is borne by workers of this type, while self-employed workers have greater scope for evasion and avoidance and capital income benefits from preferential treatment, being generally taxed at a lower rate or not at all.

The low personal income tax take and narrow tax base are due to the generous treatment of personal deductions and non-taxable gains provided for in the tax legislation, the numerous exemption or tax expenditure regimes and the proliferation and entrenchment of simplified tax regimes, which started out as paths into formality but have consolidated as permanent features of tax systems.

In addition, the proliferation of simplified systems, which entail a smaller tax burden, may mean further erosion of the base for this tax if they are not properly coordinated (Gómez Sabaini and Morán, 2016a). Avoidance and arbitrage between the two regimes by taxpayers, while not necessarily resulting in a great loss of resources, undermine the horizontal equity of the system insofar as they signify discrimination between taxpayers with a similar ability to pay.

As regards tax thresholds, a comparison between different regions of the world reveals that while the tax-free portion of income is equivalent to an average of 1.4 times per capita GDP in the countries of Latin America, this tax becomes payable at a third of per capita GDP on average in the countries of Western Europe and at 0.2 times this in the United States (see table II.2). To some extent, this difference between regions in the income levels at which the lowest rate of income tax becomes payable can be justified by differences in per capita income levels and the need to leave out of the tax an income amount sufficient for a family to subsist.

Table II.2
Taxable incomes and rates
for personal income tax,
around 2012-2013
(Multiples of per capita GDP
and percentages)

	Taxable income ^a (multiples of per capita GDP)		Rate (percentages)	
	Lowest	Highest	Lowest	Highest
Latin America (18)	1.40	7.34	9.80	26.60
The Caribbean (11)	1.37	4.30	17.70	31.10
East Asia and the Pacific (29)	1.06	11.17	9.10	28.20
Eastern Europe and Central Asia (31)	0.94	3.67	13.70	19.20
Middle East and North Africa (15)	0.77	6.27	9.40	26.60
South Asia (7)	2.27	27.44	5.60	25.70
Sub-Saharan Africa (47)	2.17	12.89	10.40	35.00
Western Europe (20)	0.31	3.98	14.60	40.90
United States and Canada (2)	0.60	5.56	12.50	32.00

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of legislation and of information from the Inter-American Centre of Tax Administrations (CIAT) and ECLAC (for Latin America); United States Agency for International Development (USAID), "Collecting Taxes 2012-2013" [online] <https://www.usaid.gov/data/dataset/cdeb8a1b-3440-4e88-b6cb-81b2428f8cea> (for other regions).

^a Income levels at which the lowest and highest personal income tax rates, respectively, begin to apply, expressed as multiples of per capita GDP in each country or region (simple average of countries).

It is harder to justify the level at which the top marginal rate comes in, since whereas in the developed countries this is 3 or 4 times per capita GDP, in Latin American countries it only applies to incomes upward of 7.3 times per capita GDP, and then at significantly lower rates than in developed countries.

Once again, the situation varies greatly from country to country, although in most there has been a declining trend in the level of taxable income at which the lowest rate begins to apply. This is due to reforms in the design of taxable income bands and the abolition of exemptions and personal deductions that reduced exemption levels by an average of 36% between 2007 and 2016. The countries with the lowest levels of exemption include Argentina, the Bolivarian Republic of Venezuela, Brazil, Chile, Mexico, Panama and Uruguay, where the minimum income at which income tax becomes payable is below the average per capita income. The other countries present exemption levels ranging from 1.3 to 2.0 times per capita GDP, with the exception of Paraguay, where the tax is of more recent application and this indicator is equivalent to 5.8 times per capita income (see table II.3).



	Income level at which the lowest rate applies (exemption level) ^a		Income level at which the highest marginal rate applies ^b	
	2007	2016	2007	2016
Argentina ^c	0.5	0.2	4.7	2.4
Bolivia (Plurinational State of)	0.1	0.2	0.1	0.2
Brazil	1.5	0.8	3.0	1.9
Chile	1.2	0.8	13.6	9.1
Colombia	2.4	1.8	10.1	6.9
Costa Rica	1.8	1.5	2.7	2.2
Dominican Republic	2.3	1.3	4.9	2.7
Ecuador	2.7	1.9	23.5	19.0
El Salvador	1.1	1.3	10.4	5.8
Guatemala	3.1	1.9	13.9	9.5
Honduras	3.2	2.0	22.9	8.5
Mexico	0.1	0.7	4.7	19.6
Nicaragua	3.3	1.6	33.4	8.0
Panama	1.9	0.8	6.3	3.6
Paraguay	...	5.8	...	9.7
Peru	2.5	1.4	19.3	8.8
Uruguay	...	0.6	...	9.8
Venezuela (Bolivarian Republic of)	1.6	0.6 ^d	9.2	4.6
Latin America (16 countries)^e	1.8	1.2	11.4	7.0
Latin America (18 countries)	1.8	1.4	11.4	7.3

Table II.3
Latin America: income levels at which the lowest and highest income tax rates apply, 2007 and 2016
(Multiples of per capita GDP)

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of legislation and of information from the Inter-American Centre of Tax Administrations (CIAT) and ECLAC (for Latin America); United States Agency for International Development (USAID), "Collecting Taxes 2012-2013" [online] <https://www.usaid.gov/data/dataset/cdeb8a1b-3440-4e88-b6cb-81b2428f8cea> (for other regions).

^a Income level at which the lowest marginal rate of personal income tax becomes payable. Where a personal deduction or living wage applies, that value is given as a multiple of per capita GDP.

^b The lowest income level at which the top marginal rate of personal income tax becomes payable. When a country applies a flat rate to all personal income, as in the Plurinational State of Bolivia, the two indicators are the same.

^c In Argentina, the net income level at which the top rate applies was calculated with reference to the case of a married employee with two children.

^d Figure for 2015.

^e Paraguay and Uruguay are not included because they did not apply this tax in 2007.

The income level at which the top marginal rate applies dropped by an average of 38% in the 2007-2016 period, although the situation within the region remains diverse. On the one hand, there is a group of countries comprising Argentina, Brazil, Costa Rica, the Dominican Republic and Panama where the top marginal rate takes effect at an income level close to or even below the 4 times per capita GDP that is the average for the developed countries. In other Latin American economies, conversely (Ecuador, Guatemala, Mexico, Paraguay and Uruguay), the top rate only affects taxpayers earning some 10 times their country's per capita income or more.

High tax expenditures are another factor that have reduced tax bases, with the region's countries using exemptions, deductions, reduced rates, special regimes and other types of tax spending to pursue different goals that include attracting foreign direct investment, encouraging saving, developing financial markets and backward regions, fostering industrialization, stimulating and diversifying exports, promoting technology transfer, creating jobs and caring for the environment. While their effectiveness and efficiency in securing these multiple goals have been greatly questioned and little evaluated, such tax expenditures have certainly eroded tax bases, especially for value added tax (VAT) and income tax, and have taken their toll on receipts (Gómez Sabaini and Morán, 2014).

Lastly, another factor limiting countries' income tax collection capacity is a low level of tax compliance and high rates of evasion. There are few estimates of evasion rates in the region, particularly for personal income tax. The studies available show that evasion levels are high in Latin America compared to other regions of the world, and higher for income taxes than for VAT, with average non-compliance rates of 47.5% and 27.8%, respectively, as presented in section B.

High levels of non-compliance reduce the resources available for the State to discharge its duties of stabilization and provision of public goods and services and to fulfil its redistributive role. Furthermore, tax evasion and avoidance undermine the redistributive capacity of income tax, affecting both the horizontal and the vertical equity of tax systems.

In short, although progress has been made in the area of income taxation in recent years, the region's countries have yet to raise much revenue from personal income tax or achieve a substantial impact in terms of efficiency and equity. A number of factors explain this performance. First, there has been a steady reduction in top marginal rates, which are usually lower than in the developed countries. Additionally, the large number of exemptions, personal deductions and tax expenditures have all eroded the tax base, as has the persistence of simplified regimes, limiting the amount of revenue raised. High levels of evasion, delinquency and avoidance are another factor in the poor performance of this tax.

The high concentration of wealth and income that makes Latin America the most unequal region on the planet calls for a careful approach to the tax system and the reforms to be implemented, which need to take full advantage of its redistributive potential. Within this approach, personal income tax must be strengthened and its revenue-raising and distributive effects enhanced by promoting a general, broad-based tax that includes all of a taxpayer's income in its base, in coordination with the different simplified regimes. This comprehensive approach would enhance its impact on equity, whether in terms of the principle of the ability to pay (vertical equity) or of equality of tax treatment for those with equivalent incomes (horizontal equity), even if these come from different sources (wages or capital) or different types of contractual arrangements (wage employment or self-employment).

B. Timely and systematic quantification of evasion continues to be a pending issue for most countries in the region

In the *Fiscal Panorama of Latin America and the Caribbean, 2016*, ECLAC analysed the issue of tax evasion in the region's countries in detail, highlighting the fact that only a few countries prepare systematic, regular estimates of tax non-compliance, and that even these usually extend no further than VAT. Furthermore, only in isolated cases are sectoral estimates of this tax and of corporate income tax prepared, usually for internal use only, while evasion of other taxes is rarely analysed.²

This can be seen in table II.4, which shows that fewer countries have estimates for income tax non-compliance (with several coming from an ECLAC study) and that these calculations are fairly old.

² See ECLAC (2016a) for further details.



	VAT		Income tax			
	Year	Evasion rate	Year	Total	Corporate	Personal
Argentina	2007	19.8	2005	49.7	49.7	49.7
Bolivia (Plurinational State of)	2013	17.9	...	...	...	...
Brazil	2015	27.5	2014	28.1	26.6	34.1
Chile	2015	20.3	2009	31.0	31.0	27.0
Colombia	2015	20.1	2012	34.4	34.4	...
Costa Rica	2013	33.1	2013	66.2	70.0	57.3
Dominican Republic	2014	38.6	2009	65.2	68.9	51.8
Ecuador	2004	31.8	2005	63.8	65.3	58.1
El Salvador	2010	33.1	2005	45.3	51.0	36.3
Guatemala	2015	34.2	2006	63.7	62.8	69.9
Mexico	2012	24.3	2012	28.9	31.4	26.3
Nicaragua	2013	31.8	...	...	...	...
Panama	2012	39.7	...	...	...	...
Paraguay	2014	30.9	...	...	...	...
Peru	2014	28.3	2006	48.5	51.6	32.6
Uruguay	2012	13.4	2013	...	39.6	...
Venezuela (Bolivarian Republic of)	...	...	2000-2005	45.6	...	...

Table II.4
Latin America: value added tax (VAT) and income tax evasion rates, latest years available (Percentages)

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from the Inter-American Centre of Tax Administrations (CIAT) and national tax administrations; J.C. Gómez Sabaini, J.P. Jiménez and A. Podestá, "Tributación, evasión y equidad en América Latina y el Caribe", *Evasión y equidad en América Latina*, Project Documents, No. 309 (LC/W.309), Santiago, ECLAC, 2010; and Union of Attorneys of the National Treasury (SINPROFAZ), "Sonegação no Brasil: uma estimativa do desvio da arrecadação do exercício de 2015", Brasília, June 2016 [online] <http://www.quantocustaobrasil.com.br/artigos/sonegacao-no-brasil-uma-estimativa-do-desvio-da-arrecadacao-do-exercicio-de-2015>.

According to the latest information available, the average VAT evasion rate in the countries of Latin America is 27.8%, although there are differences between them (see table II.4 and figure II.3). First there is Uruguay, with the region's lowest rate of evasion. Then comes a group of countries with rates close to or higher than 20% but below 30%, such as a number of South American countries and Mexico. Finally, there is a group with values in excess of 30%, such as a number of Central American countries, Ecuador and Paraguay.

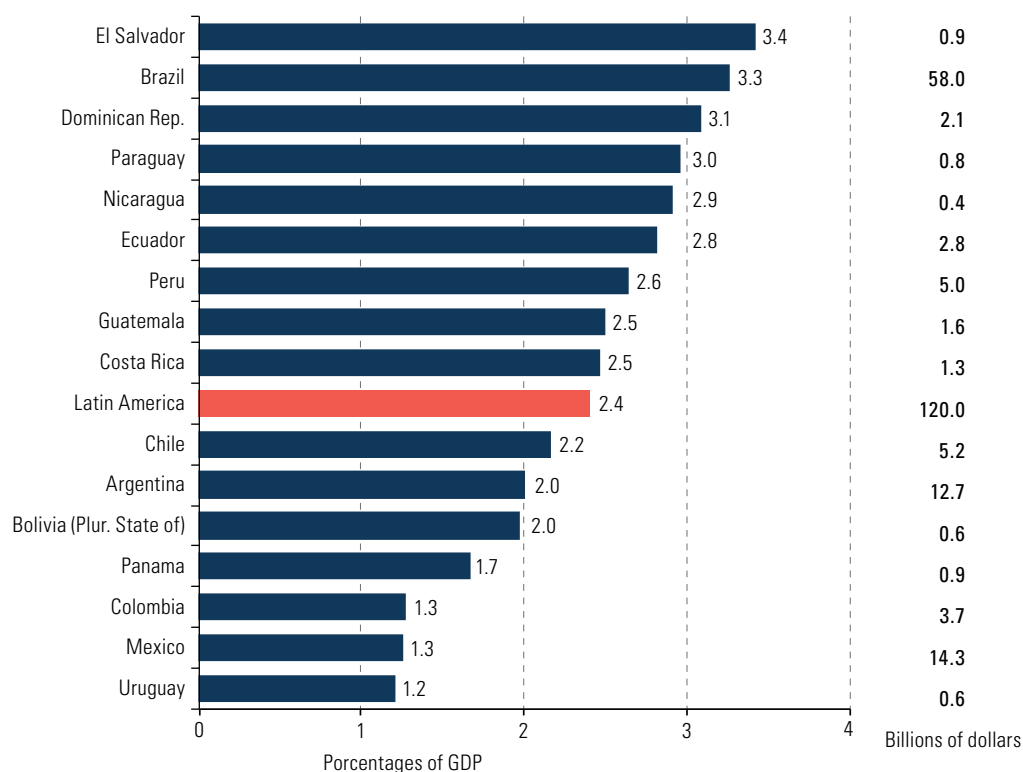
Although they correspond to earlier periods, estimates of income tax evasion are significantly higher, with an average of 47.5% for the region. While there are methodological differences that complicate comparisons between countries, there is considerable variation in evasion rates for this tax. At one extreme are Costa Rica, the Dominican Republic, Ecuador and Guatemala, with rates of about 65%, and at the other Brazil, Chile and Mexico, with substantially lower values of between 28% and 31%.

On the whole, evasion rates are higher for corporate than for personal income tax, with averages of 48.9% and 44.3%, respectively. This is explained by the common practice of employers withholding at source the tax payable by their employees, who account for the bulk of revenue, since other income sources (dividends, interest, income from public securities and capital gains) are often untaxed (or were when the measurement was carried out) or taxed at a lower rate.³

³ However, as Gómez Sabaini and Morán (2016b) point out, the income tax reforms introduced by a number of countries in more recent years could move the evasion rates estimated up or down as personal income tax bases expand (this particularly applies to the dual systems found in Peru, Uruguay and the Central American countries) and greater use is made of models of presumptive taxation (minimum taxes on companies' assets) and simplified taxation regimes for small taxpayers, which can distort the private decisions of those subject to corporate income tax.

Figure II.3

Latin America: estimated tax foregone because of value added tax (VAT) evasion, 2015
(Percentages of GDP and billions of dollars)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of legislation and of information from the Inter-American Centre of Tax Administrations (CIAT) and national tax administrations.

On the basis of evasion rates from different studies, ECLAC estimates that tax non-compliance is equivalent to 2.4% of GDP in the case of VAT and 4.3% of GDP in the case of income tax, giving a combined total of US\$ 340 billion in 2015.

On the basis of evasion rates from different studies like those presented in table II.4, ECLAC estimates that tax non-compliance is equivalent to 2.4% of GDP in the case of VAT and 4.3% of GDP in the case of income tax, giving a combined total of US\$ 340 billion in 2015.

Meanwhile, the international dimension of tax evasion, and particularly base erosion and profit shifting (BEPS), has been a growing concern for some years now. Although there are no studies quantifying tax losses associated with BEPS in the region, ECLAC has made an effort to estimate the illicit financial outflows deriving from the manipulation of trade prices and the revenues foregone by treasuries as a result. During 2013, these illicit flows totalled over US\$ 100 billion and represented about 1.8% of regional GDP. The fiscal revenues that could be collected if these activities were monitored and taxed amount to about 0.5% of GDP, i.e., some US\$ 31 billion a year.⁴

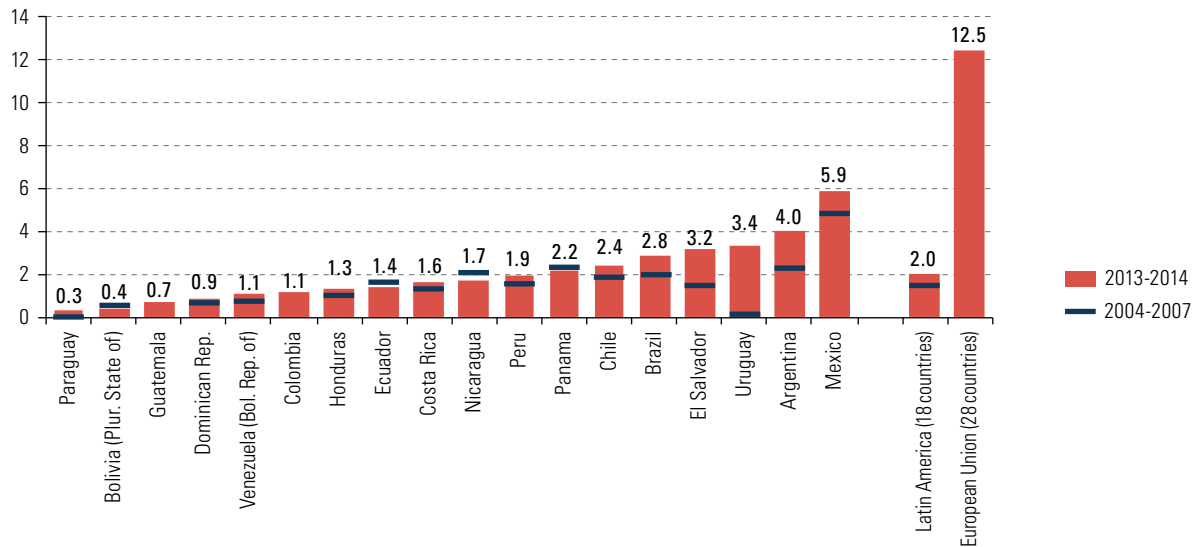
C. The redistributive capacity of personal income tax is still very weak in the region

The modest progress with personal income taxes examined above is also reflected in the evolution of the redistributive power of this instrument. As figure II.4 illustrates, the reduction in the Gini coefficient due to personal income tax averaged 2% in the 18 countries of Latin America during 2013-2014. Although this is a slight improvement on its redistributive performance in 2004-2007 (1.5%), it still falls far short of the reduction in inequality recorded in the countries of the European Union (12.5%).

⁴ For further details, see ECLAC (2016b) and Podestá, Hanni and Martner (2017).

Figure II.4

Latin America (18 countries) and European Union (28 countries): reduction in the Gini coefficient due to personal income tax, 2004-2014 (Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of estimates from household surveys in the countries of the region and EUROMOD Statistics on the Distribution and Decomposition of Disposable Income, version G4.0.

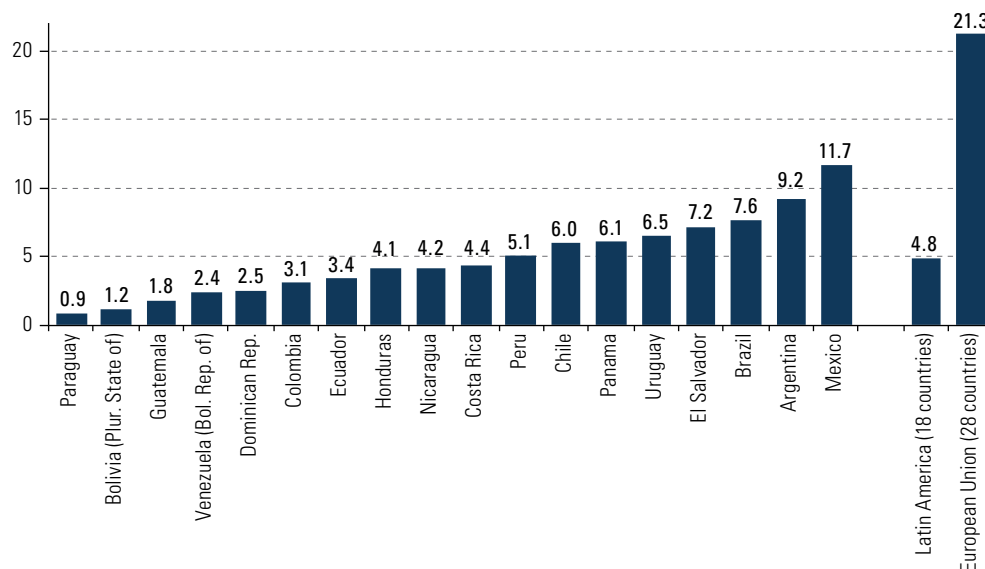
The regional average masks a great heterogeneity of results. In some countries, the low redistributive power of the tax has not altered significantly in the past decade, examples being the Bolivarian Republic of Venezuela, Costa Rica, Ecuador, Honduras, Nicaragua, Panama, Peru and the Plurinational State of Bolivia. Conversely, there has been progress with the redistributive impact of the tax in Argentina, Brazil, Chile, the Dominican Republic, El Salvador, Mexico and Uruguay. This has mainly been due to growth in income from wages and salaries and alterations in the structure of the tax.

With respect to this last factor, key developments have included the introduction of personal income tax in Uruguay under the 2007 reform and the reforms in El Salvador and Mexico aimed at increasing the tax pressure on the wealthiest decile, among other measures. It is important to note that the increase in Argentina was due mainly to high nominal wage and salary growth that was not offset by changes in the tax threshold, income scales or the other nominal parameters of the tax over the years covered by this measurement, so that a growing number of taxpayers were brought into the higher marginal rates.

The low tax burden on the wealthiest taxpayers continues to be a challenge for the region. As can be seen in figure II.5, the effective tax rate for the tenth decile in Latin America averaged just 4.8% in 2014, which contrasts sharply with the average of 21.3% in the countries of the European Union. One of the main factors behind this is that capital income is taxed at lower rates than earnings in the region, and in some countries not at all. Furthermore, the richest taxpayers are best able to use aggressive tax planning to minimize the taxes they pay in their countries of residence.

The low tax burden on the wealthiest taxpayers continues to be a challenge for the region. The effective tax rate for the tenth decile in Latin America averaged just 4.8% in 2014, which contrasts sharply with the average of 21.3% in the countries of the European Union.

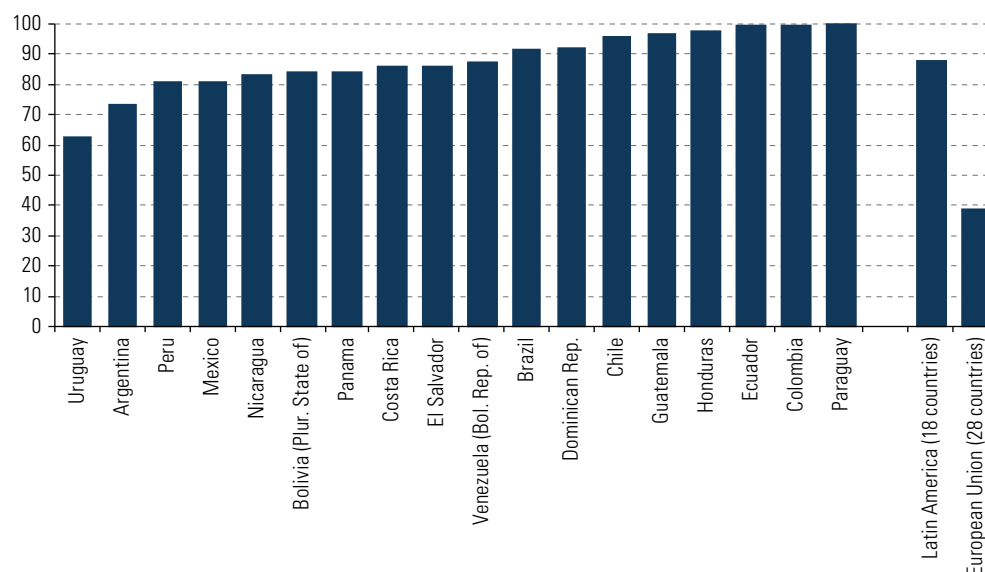
Figure II.5
Latin America (18 countries)
and the European Union
(28 countries): average
effective tax rates in
decile X, around 2014^a
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of estimates from household surveys in the countries of the region and EUROMOD Statistics on the Distribution and Decomposition of Disposable Income, version G4.0.
^a Average effective rates are calculated from gross income before direct taxes.

Although taxation of the richest taxpayers is a cause for concern, another fundamental challenge for most countries in the region is how to bring the middle class into the income tax system. Figure II.6 shows that payment of personal income tax is heavily concentrated in the top decile in Latin America (an average of 88.0%), which stands in contrast to the countries of the European Union (39.2%). While this might look like a positive outcome at first sight, in reality the low participation of the bulk of the population in income tax weakens not only its revenue-raising potential but also its ability to alter the income distribution more generally. Nor is this a propitious context for the formation of virtuous circles of reciprocity in which citizens assent to paying higher taxes in exchange for high-quality public services.

Figure II.6
Latin America (18 countries)
and European Union
(28 countries): share of total
personal income tax paid by
decile X, around 2014
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of estimates from household surveys in the countries of the region and EUROMOD Statistics on the Distribution and Decomposition of Disposable Income, version G4.0.

D. Countries in the region approved a number of changes to their tax systems in 2016⁵

Although the region's countries approved a number of adjustments and alterations to their tax systems during 2016, on the whole they did not carry out significant structural reforms, since many of them did this in previous years. The exception was Colombia, whose Law No. 1819 of 29 December brought in a structural tax reform and strengthened mechanisms for combating tax evasion and avoidance.

As in 2015, only a few Latin American countries altered general income tax rates during 2016, since changes were mainly confined to rates for particular sectors or income types and, especially, to measures affecting the base for this tax.

Only Argentina cut the lowest personal income tax rate (from 9% to 5%) even as it increased the number of income brackets from seven to nine and updated the scales, while Peru increased the corporation tax rate (from 28% to 29.5%) and cut the withholding rate for dividends (from 6.8% to 5%). In Colombia, corporate income tax rates were unified with the abolition of the income tax for equity (CREE), and a general rate of 34% was established for 2017, falling to 33% from 2018 (with a surcharge of 6% in 2017 and 4% in 2018), while a 20% rate will apply to firms in free zones.

Some countries raised tax rates for capital income, examples being Brazil, Colombia and Uruguay. In Brazil, Law No. 13259 (which converted Provisional Measure No. 692 of 2015 into law) replaced a fixed 15% rate of income tax on capital gains (before the provisional measure) with progressive rates ranging from 15% to 22.5%. Colombia established a schedular system of personal income tax, meaning that tax is calculated independently for each type of income (earnings, pensions, capital rents, non-work income and dividends and profit shares), and increased the top rate for non-work income and capital rents from 33% to 35%. In Uruguay, the rate of personal income tax on returns from movable capital increased to 7% from the 3% or 5% that had applied previously, depending on the investment type and maturity. The country also raised (from 12% to 25%) the non-resident income tax rate for companies located in countries with low or zero taxation, while increasing rates in the upper brackets for the workers' income tax and the social security assistance tax (IASS), which applies to pension income.

In Ecuador, following the 2016 earthquake, a special one-off contribution of 3% was introduced for firms' and individuals' previous year's earnings (from US\$ 12,000 a year upward in the case of individuals), excluding the affected areas and income earned as an employee.

Argentina, Colombia, the Dominican Republic, Paraguay and Uruguay all made changes with a view to expanding the income tax base, whether by abolishing some exemptions, bringing more income into the tax base or limiting permitted deductions. In the specific case of Argentina, it was established that judges would start paying this tax, while Colombia began to tax dividends and profit-sharing at progressive rates of between 0% and 10%, depending on the dividend bracket. Paraguay limited the deduction of expenditures and investments for personal income tax purposes. In the Dominican Republic, the Bureau of Internal Revenue (DGII) made dividends or profits paid by firms in free zones to their shareholders subject to income tax, thus giving effect to a provision of Law 253-12. Uruguay placed limits on certain deductions and inflation adjustment for the tax on income from economic activities (IRAE), a presumptive dividend scheme was set up, the exemption for certain distributed profits was abolished and the fixed deduction for workers was reduced.

⁵ Analytical tables of measures adopted in the region in 2016 can be found at [online] http://repositorio.cepal.org/bitstream/handle/11362/40997/PF2017Cuadros_analiticos.pdf.

By contrast, some countries extended, expanded or created tax benefits, granted income tax exemptions or added to the deductions permitted, thus narrowing the tax base, examples being Argentina, Chile, Colombia, Ecuador, Guatemala, Mexico, Peru and Uruguay. In particular, some of these brought in fiscal benefits for particular economic zones or sectors (Colombia, Ecuador and Guatemala), small and medium-sized enterprises (Argentina, Mexico and Peru) or investors in science and in technological innovation (Mexico and Uruguay).

Argentina abolished the withholding system whereby a definitive flat-rate income tax of 10% was deducted from dividends and profits and abolished the minimum presumptive earnings tax with effect from 1 January 2019.

As regards actions related to international taxation, the most significant measures were taken in Chile, Colombia, Ecuador, Peru and Uruguay and dealt variously with transfer price rules, residence for tax purposes and other related issues. The new Tax Code of Honduras, approved in late December 2016, abolished the concept of worldwide income and established that of territorial income.

A striking feature of 2016 was the use of tax moratorium programmes to pay off tax arrears and debts to customs or social security systems, whether national or local, in countries such as Argentina, Honduras and the Plurinational State of Bolivia. In Peru, similarly, Law No. 30506, which empowered the executive to legislate for 90 days on certain issues relating to the formalization and reactivation of the economy, was used to grant an amnesty that reduced penalty interest and fines for natural persons and micro, small and medium-sized enterprises paying off tax arrears.

Likewise, Argentina and Brazil implemented programmes of regularization for undeclared assets abroad, requiring their owners not to repatriate the capital but to declare it to the tax authorities. In the first case, the authorities report that the amount held abroad as of 31 December 2016 in the form of cash, financial assets and real estate was US\$ 97.842 billion, of which 86% consisted of holdings and goods abroad. Thus, the amount raised in Argentina by a special tax⁶ during the first two phases of the Fiscal Disclosure Plan was 106.769 billion pesos, or about US\$ 6.7 billion, and there is still time left before the final deadline of 31 March 2017.⁷ In Brazil, 169.94 billion reais were declared (about US\$ 53.3 billion), with 50.981 billion reais (some US\$ 16 billion) being raised in taxes and fines as a result.⁸ In Peru, the executive created a temporary regime replacing income tax under the law mentioned earlier, with reduced rates when undeclared income was declared, repatriated and invested.

In December 2016, the Law to Strengthen the Fight against Fiscal Fraud in Costa Rica was passed. This incorporates a set of measures to prevent tax evasion and avoidance by physical and legal persons.⁹ The authorities expect implementation of the different components of this law to raise the equivalent of 0.5% of GDP.¹⁰

As regards VAT changes, the measures approved mainly involved alterations to tax bases (Argentina, Chile, Costa Rica, Ecuador, Mexico, Peru and Uruguay), although in some specific cases (Colombia and Ecuador) rates were changed as well.

In Colombia, the general VAT rate was increased by 3 percentage points from 16% to 19%, while in Ecuador the VAT rate was increased temporarily by 2 points on

⁶ The special tax applies at progressive rates of between 5% and 15%. Declared holdings and securities are exempt when placed in mutual funds that invest in the real economy or when used to purchase particular public securities.

⁷ See [online] <https://servicios1.afip.gov.ar/genericos/prensa/VerGacetilla.aspx?id=141>.

⁸ See [online] <http://idg.receita.fazenda.gov.br/noticias/ascom/2016/novembro/programa-de-regularizacao-de-ativos-brasileiro-atinge-objetivos>.

⁹ The main provisions of this law are explained in section E dealing with tax compliance.

¹⁰ See [online] <http://presidencia.go.cr/comunicados/2016/08/comision-de-asuntos-hacendarios-dictamina-proyecto-de-ley-de-lucha-contra-el-fraude-fiscal/>.

top of the general rate of 12% for one year in order to raise extra resources for areas affected by the earthquake.

A number of countries applied measures that have tended to shrink the tax base but that were designed with other goals concerning social policy or economic formalization in view. This is the case with VAT rebates for recipients of minimum pensions and family allowances in Argentina, credits and exemptions for certain property transactions in Chile, and partial VAT refunds on operations carried out with electronic money in Costa Rica, Ecuador and Uruguay. In Honduras, sales tax relief of 15% was approved for certain categories of products to foster investment in the agricultural and agroindustrial sector.

Colombia and Costa Rica set out to expand the base for this tax, taxing the first sale of high-value new homes in the first case and temporary property rentals in the second.

At the same time, different taxes were abolished or created in countries such as Argentina, Colombia, Ecuador, El Salvador and Honduras. Argentina abolished export duties on various mining products, while creating new taxes on gambling and speculative operations. In El Salvador, the San Salvador municipal tax known as the *tarifa de arbitrios*, levied on private sector firms' assets, had to be rescinded because it was declared unconstitutional.

The Colombian reform gave rise to the flat tax and a number of others such as the national carbon tax, the parafiscal fuel levy, taxes on plastic bags, mobile telephony data usage and medicinal cannabis consumption, and the national property appreciation tax. Ecuador also created a number of taxes and levies with a view to financing recovery after the earthquake,¹¹ while Panama approved a new tax on insurance. Like Colombia's, the new Honduran Tax Code created a flat tax, defined as a special regime based on stepped rates that is to replace the obligation to pay any tax on direct or related income in the national tax regime.

As regards specific taxes on goods and services, such as cigarettes and cars, some countries cut their rates. Argentina lowered rates for both cars and cigarettes, Costa Rica zero-rated the selective consumption tax on digital to analogue television convertors, Colombia increased its cigarette tax and Mexico provided for certain exemptions to the tax on new automobiles (ISAN) with a view to protecting the environment.

Other countries besides Mexico extended some fiscal benefits, examples being Ecuador, Panama and Uruguay. Under Ecuador's Organic Law on Solidarity and Citizen Co-responsibility for the Reconstruction and Revival of Areas Affected by the Earthquake of 16 April 2016, for example, the provinces of Manabí and Esmeraldas were exempted from a number of taxes. Panama reorganized the special regime of the Colón Free Zone and changed the activities permitted, while Uruguay granted relief for economically important construction projects not only from the tax on income from economic activities (IRAE) and VAT but from the asset tax as well.

In turn, with regard to taxes on property and wealth, Argentina raised the exemption threshold for the personal property tax, whose rates it has been gradually reducing with a view to abolishing it in 2019. Colombia abolished its wealth tax and Uruguay increased the asset tax rate for corporations located in tax havens or jurisdictions with low or zero taxation.

Lastly, Brazil altered the financial transactions tax applying to currency conversion and operations involving bonds and securities. The rate on currency acquisitions in the form of cash and repurchase operations rose from 0.38% to 1.10%. Colombia decided to make the financial movements tax permanent at a rate of 4 pesos for every 1,000 pesos transacted, and altered some territorial taxes.

¹¹ These included a levy equivalent to a day's wages for workers receiving a monthly wage of US\$ 1,000 or more, payable over a period of one to eight months depending on earnings. One-off solidarity levies were also established on the assets of individuals worth US\$ 1 million or more (at a rate of 0.9%) and on real estate and equity in foreign corporations (at a rate of 0.9% or 1.8% depending on whether the firm was domiciled in a tax haven or not).

E. Latin American countries have adopted a number of measures in the areas of tax compliance and international taxation¹²

During 2016, the region's countries continued to take measures to improve tax compliance, both domestically and internationally. These included anti-avoidance measures, regularization programmes, improved regulation of transfer prices and double taxation agreements and different types of information-sharing accords with other countries.

Regarding measures affecting international taxation, Argentina, the Bolivarian Republic of Venezuela, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, Mexico, Panama and Uruguay produced new rules on the bilateral exchange of information, signed agreements on this with other countries or drew up new treaties to prevent double taxation.

Also during 2016, as explained below, Brazil, Chile, Costa Rica, Mexico and Uruguay signed multilateral agreements on the automatic exchange of tax information, dealing variously with financial accounts (within the framework of the Standard for Automatic Exchange of Financial Account Information) or country-by-country reports containing information on multinational firms (within the framework of Action 13 of the BEPS Action Plan). Another three countries (the Dominican Republic, Panama and Uruguay) signed the Convention on Mutual Administrative Assistance in Tax Matters.

In addition, some countries modified or improved the implementation of transfer pricing rules, examples being Chile, Colombia, Costa Rica, Ecuador and Uruguay, while Nicaragua postponed implementation of its transfer pricing rules from 1 January 2016 to 30 June 2017. Mexico reached a technical agreement with the United States on the transfer pricing methodology for assessing income tax in maquila sector operations between subsidiaries of United States firms in Mexico, with double taxation thus prevented by means of prior agreements on transfer pricing governed by this agreed framework.

The Colombian tax reform, the international fiscal transparency law in Uruguay and new standards in Brazil, Chile and Peru all sought to incorporate into local legislation the guidelines proposed in Action 13 of the BEPS Action Plan for reporting operations with transfer prices. Thus, two new formal requirements were introduced concerning the supporting documentation for transfer prices. In addition to the local report containing information on each type of operation carried out by the taxpayer to show that transfer pricing has been properly conducted, a master report is now also required, containing the relevant general information about the multinational group and a country-by-country report containing information on the global allocation of income and taxes paid by the multinational group, together with certain indicators on its worldwide economic activity. At the same time, the Colombian reform established a regime for organizations controlled from abroad.

In Brazil and Ecuador, meanwhile, new guidelines were established to determine whether a jurisdiction should be treated as low-tax or a tax haven. Brazil also established criteria for determining whether a firm had substantial economic activity in the country, while Ecuador reformed the Internal Tax Regime Act with a view to the disclosure and dissemination of information on companies related to others in tax havens and on aggressive fiscal planning practices. In addition, promoters, advisors, consultants and legal practices are required to provide the Internal Revenue Service (SRI) with information on the creation, use and final beneficiaries of firms in tax havens.

¹² Analytical tables of measures adopted in the region in 2016 can be found at [online] http://repositorio.cepal.org/bitstream/handle/11362/40997/PF2017Cuadros_analiticos.pdf.

As mentioned earlier, Argentina and Brazil implemented programmes to regularize undeclared assets abroad, while in Peru the executive recently established a scheme for declaring and repatriating undeclared income.

In Honduras, a new tax administration, the Revenue Administration Service (SAR), was created to replace the Executive Revenue Directorate (DEI) with a view to more efficient collection of fiscal revenues. The new institution has the same powers as the old one and some more besides, such as the right to require that third parties, be they public or private, should furnish accounting, financial, stock market, registry and any other type of information, to appoint agents for the collection or withholding of any tax, and to approve particular and general tax agreements, among others.

In Guatemala, an amendment to bank secrecy came into force in February 2017, establishing that the Superintendency of Tax Administration (SAT) may require financial organizations to provide information on the banking operations of natural or legal persons where it believes there to be reasonable doubt about activities or operations meriting investigation. The SAT must obtain authorization from a competent judge to demand information in this way.

Uruguay also amended bank secrecy, establishing an obligation for financial institutions to furnish the tax administration with an annual report giving the balances of and income from accounts held by natural or legal persons or other entities, whether or not resident in the country for fiscal purposes. It also established an obligation to keep registers of the shareholders and final beneficiaries of Uruguayan corporations.

A number of countries undertook other actions to improve fiscal oversight and reduce evasion. In Mexico, for example, thanks to the widespread use of electronic invoicing, the existence of institutional databases and the information received by the tax authority, electronic audits began to be conducted with a view to identifying inconsistencies between the information provided by taxpayers and that available elsewhere.

The Colombian reform act includes anti-evasion measures and provides for large fines and even prison for those evading taxes, while Costa Rica passed the Law to Strengthen the Fight against Fiscal Fraud. Among other measures, this law provides for the creation of a centralized register of shareholders and final beneficiaries of legal persons, while implementing penalties for tax advisers providing services whose objective is non-payment of taxes or colluding in the alteration and presentation of false information in taxpayers' accounts. It also includes measures to strengthen judicial recovery of unpaid taxes and disqualifies those with tax arrears from entering into or negotiating permits, concessions or authorizations with any State institution. The act also requires all physical and legal persons to accept electronic payment methods such as debit or credit cards and creates the possibility of consumers being reimbursed for up to 1 percentage point of the general sales tax when payment is made in this way. Lastly, it requires taxpayers to register their operations digitally and to issue electronic invoices.

Some countries took measures relating to electronic invoicing, an example being Argentina, which began to make this compulsory by stages for VAT-registered taxpayers, prepaid medicine firms, private schools and others. Similarly, the Plurinational State of Bolivia brought in the virtual invoicing system (SFV), which is compulsory for certain types of taxpayers, and the Facilito and QRquincho applications, which facilitate compliance with tax obligations. In Colombia, electronic invoicing will begin to be compulsory during 2017 for certain taxpayers as stipulated by the tax authority. Costa Rica created a new system of electronic receipts that will be implemented in 2017 and will be compulsory for certain taxpayers, while Panama set in train a programme to design and implement electronic invoicing, while also making it compulsory for all income tax returns to be presented over the Internet via a new digital system, e-Tax 2.0. In Peru, the obligation to issue electronic receipts was extended to more taxpayers in 2017.

The benefits ascribed to electronic invoicing, from both the taxpayer's and the tax authority's point of view, are well known. For the former, it not only facilitates compliance with tax obligations but reduces operating and administration costs by cutting the costs of printing, storing and distributing invoices, reducing invoicing times and the administrative burden on the staff involved and facilitating document processing, filing and searches for filed invoices, thus improving firms' internal processes. In addition, it helps protect the environment, as paper use and energy consumption are reduced in the document printing and distribution processes alike.

In the case of the authorities, this invoicing system is an important compliance tool, as information analysis and cross-checking can be used to reconcile the sales and purchases of firms and physical persons in order to detect possible irregularities or inconsistencies. Electronic invoicing thus reduces the risk or likelihood of fraud, improves fiscal oversight and contributes to anti-evasion efforts. For these positive effects to be obtained, though, it is important for this system to become compulsory for more taxpayers, and this means putting in place certain conditions of computer use and accessibility among the population and strengthening the processing, information analysis and oversight capabilities of tax administrations.

In this respect, it is important to note the differing extents to which electronic invoicing has been deployed and enforced in the countries of Latin America. At one extreme, this technology has been applied on a wide scale in Mexico, where it is compulsory for all taxpayers, and in Argentina, Brazil and Chile, where it is compulsory for almost all firms, albeit with some variations (see table II.5). The take-up of electronic invoicing has been a progressive process in these countries, with universal or near-universal implementation taking several years. In 2015, according to information compiled by the Mexican Association of Authorized Certification Service Providers (AMEXIPAC, 2016), 1.022 billion electronic invoices were issued in Argentina, 3.5 billion in Brazil, 367 million in Chile and 5.782 billion in Mexico during 2015.

Other countries have also been making progress, examples being Ecuador, Guatemala, Peru, the Plurinational State of Bolivia and Uruguay, where electronic invoicing is compulsory for certain taxpayers, as it is being phased in gradually by sector or by taxpayers' administrative capacity.

Another group of countries is only now setting off down the path of compulsion for this technology, examples being Colombia and Paraguay, where it is voluntary at present, although Colombia has been selecting the categories of taxpayers who will be required to use it from 2017. Costa Rica will implement electronic invoicing that same year, and the Bolivarian Republic of Venezuela, the Dominican Republic, El Salvador and Panama have been looking at options for implementing this invoicing system.

There are different global arrangements for participation and coordination of efforts between countries with a view to combating international tax avoidance and evasion by adopting measures to enhance transparency and cooperation on the exchange of information.

Table II.5

Latin America: compulsory electronic invoicing, 2016

Country	Compulsory	Taxpayers for whom compulsory	Taxpayers for whom optional
Argentina	Yes	Payers of value added tax (VAT), higher categories of flat-tax payers, exporters and certain sectors	Lower categories of flat-tax payers
Bolivia (Plurinational State of)	Yes	Major and large taxpayers, exporters, those with three or more activities or invoicing monthly, those invoicing over a certain sum and e-commerce businesses	All other taxpayers
Brazil	Yes	Legal persons	Primary producers
Chile	Yes	Large firms and urban SMEs	Microenterprises and rural firms
Colombia	No (voluntary)	Currently being selected ^a	All
Costa Rica	No (will be in 2017)		
Ecuador	Yes	Financial institutions, special taxpayers, exporters, Internet sales and public sector institutions	All other taxpayers
El Salvador	No (under consideration)		
Guatemala	Yes	Individuals or legal persons classed as special taxpayers	Taxpayers applying to the Superintendency of Tax Administration (SAT) for authorization
Honduras	Yes	Introduced in stages for natural and legal persons required to issue fiscal documents, starting with large taxpayers then moving on to medium-sized and small ones	Any taxpayer meeting the requirements and authorized by the Revenue Administration Service (SAR)
Mexico	Yes (universal)	Legal persons and physical persons with a business activity	None (compulsory for all)
Nicaragua	No		Authorized taxpayers ^b
Panama	No (under consideration)		
Paraguay	No	Only virtual retentions for withholding agents	Registered self-employed taxpayers providing personal services and others as designated by the Subsecretariat of State for Taxation (SET)
Peru	Yes	Major taxpayers	All other taxpayers
Dominican Republic	No (under consideration)		
Uruguay	Yes	Legal and physical persons in some specific sectors	All other taxpayers
Venezuela (Bolivarian Republic of)	No (under consideration)		

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of Mexican Association of Authorized Certification Service Providers (AMEXIPAC), *Estudio comparativo de factura electrónica en Latinoamérica*, Mexico City, 2016, and information from the countries' tax administrations.

^a According to article 308 of Law No. 1819 on tax reform, taxpayers required to declare and pay VAT and the consumption tax must issue electronic invoices from 10 January 2019 on the terms laid down by the regulations. During fiscal years 2017 and 2018, taxpayers required by the tax authorities to issue electronic invoices will be selected in accordance with sectoral criteria, with priority for sectors where a high risk of evasion and greater ease of implementation are identified.

^b Not yet applied. According to article 81 of the Tax Code of Nicaragua, any taxpayer or person responsible for tax payments may make use of electronic information channels to issue invoices, subject to prior authorization certified by auditors from the compliance section of the Department of Major Taxpayers or the Revenue Administration, as appropriate.

Table II.6 presents the current situation of the Latin American countries as regards their participation in international fiscal transparency and information exchange initiatives.

Table II.6

Latin America: participation in international fiscal transparency and information exchange initiatives
(Situation as of November or December 2016)

Signatory jurisdiction	Global Forum on Transparency and Exchange of Information for Tax Purposes		Signatory to Convention on Mutual Administrative Assistance in Tax Matters	Date effective	Multilateral Competent Authority Agreement on Automatic Exchange of Information		
	Member	Completion of phases (November 2016)			Financial accounts	Earliest date for exchange	Country-by-country reports
Argentina	Yes	Phases 1 and 2 mainly complete	Yes	1/1/2013	Yes	September 2017	Yes
Bolivia (Plurinational State of)	No	-	No	-	No	-	No
Brazil	Yes	Phases 1 and 2 mainly complete	Yes	1/10/2016	Yes	September 2018	Yes
Chile	Yes	Phases 1 and 2 mainly complete	Yes	1/11/2016	Yes	September 2018	Yes
Colombia	Yes	Phases 1 and 2 complete	Yes	1/7/2014	Yes	September 2017	No
Costa Rica	Yes	Phases 1 and 2 partially complete	Yes	1/8/2013	Yes	September 2018	Yes
Dominican Republic	Yes	Phases 1 and 2 partially complete	Yes	Not yet in force	No	-	No
Ecuador	No	-	No	-	No	-	No
El Salvador	Yes	Phases 1 and 2 mainly complete	Yes	Not yet in force	No	-	No
Guatemala	Yes	Phase 1 not complete	Yes	Not yet in force	No	-	No
Honduras	No	-	No	-	No	-	No
Mexico	Yes	Phases 1 and 2 complete	Yes	1/9/2012	Yes	September 2017	Yes
Nicaragua	No	-	No	-	No	-	No
Panama	Yes	Phases 1 and 2 not complete	Yes	Not yet in force	No ^a	-	No
Paraguay	Yes	-	No	-	No	-	No
Peru	Yes	Phase 1 complete (has moved to phase 2)	No	-	No	-	No
Uruguay	Yes	Phases 1 and 2 mainly complete	Yes	1/12/2016	Yes	September 2018	Yes
Venezuela (Bolivarian Republic of)	No	-	No	-	No	-	No
Total Latin American countries	13		11		7		6
Total signatory countries	137		108		87		50

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from the Organization for Economic Cooperation and Development (OECD).

^a Although Panama has not signed this agreement, the authorities have undertaken to exchange financial information with effect from 2018. See [online] <https://www.oecd.org/tax/automatic-exchange/crs-implementation-and-assistance/crs-by-jurisdiction/crs-by-jurisdiction-2018.htm>.

One of these initiatives is the Global Forum on Transparency and Exchange of Information for Tax Purposes. According to OECD (2013), the Forum is the multilateral framework within which work in the area of tax transparency and exchange of information is carried out by over 130 jurisdictions. The Forum is charged with monitoring and peer review of the implementation of the international standards of transparency and exchange of information for tax purposes. The agreed standards provide for international exchange of information on request and automatic exchange of information. The 137 member jurisdictions have undertaken to apply international standards regarding the former, while over 90 have committed themselves to implementing the new standard of automatic exchange of information. Furthermore, to ensure that all members, and developing countries in particular, can benefit from improvements in transparency and information

exchange, the Forum has a technical assistance programme for its members. In addition, all members and other relevant jurisdictions are evaluated in a two-phase process. The phase 1 review evaluates the quality of a jurisdiction's legal and regulatory framework for transparency and exchange of information, while the phase 2 review observes how this framework is implemented in practice.¹³

Thirteen countries of Latin America are participating in the Global Forum: Argentina, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, El Salvador, Guatemala, Mexico, Panama, Paraguay, Peru and Uruguay, although the level of completion and the ratings assigned in these phases have been quite variable (table II.6). The best performers have been Colombia and Mexico, which have obtained a "complete" rating for phases 1 and 2. Next, with "mainly complete" in these two phases, come Argentina, Brazil, Chile, El Salvador and Uruguay, followed by Costa Rica and the Dominican Republic with "partially complete." Peru has completed phase 1 and moved to the next, while Guatemala and Panama have not yet met the standards required (Panama has been evaluated for both phases and Guatemala only for phase 1).¹⁴

In addition, 11 of these 13 countries have signed the Convention on Mutual Administrative Assistance in Tax Matters, a multilateral agreement designed to promote international administrative cooperation on tax advice and collection, with a view to combating avoidance and evasion.¹⁵ The Convention extends the network of countries and jurisdictions with which information can potentially be exchanged for tax purposes and has now come into force in seven of them (Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico and Uruguay).

Of these countries, Argentina, Colombia and Mexico are noteworthy for having committed themselves under the Multilateral Competent Authority Agreement on Automatic Exchange of Financial Account Information to conducting their first automatic exchange of banking information for tax purposes in September 2017, while another four countries (Brazil, Chile, Costa Rica and Uruguay) will do so in September next year. With the exception of Colombia, these countries have also signed the Multilateral Competent Authority Agreement on the Exchange of Country-by-Country Reports, the purpose of which is to establish the rules and procedures needed for the competent authorities in signatory jurisdictions to be able to implement the automatic exchange of country-by-country reports on the global operations of multinationals. These reports will provide tax administrations with an overview of these companies' operations, as they must indicate where firms' profits, taxes and economic activities are declared. Specifically, they will have to report their revenues, profits before tax, corporation tax paid and accrued, number of workers, stated capital, undistributed profits and tangible assets in each of the jurisdictions where they operate.

¹³ For further information, see [online] <http://www.oecd.org/tax/transparency/about-the-global-forum/>.

¹⁴ See [online] <http://www.oecd.org/tax/transparency/GFRatings.pdf>.

¹⁵ For further information, see [online] http://www.oecd.org/ctp/exchange-of-tax-information/ESP_Convention_Flyer.pdf.

Bibliography

- AMEXIPAC (Mexican Association of Authorized Certification Service Providers) (2016), *Estudio comparativo de factura electrónica en Latinoamérica*, Mexico City.
- ECLAC (Economic Commission for Latin America and the Caribbean) (2016a), *Fiscal Panorama of Latin America and the Caribbean 2016: Public finances and the challenge of reconciling austerity with growth and equality* (LC/L.4140), Santiago.
- (2016d), *Economic Survey of Latin America and the Caribbean, 2016* (LC/G.2684-P), Santiago.
- European Union (2014), "Taxation trends in the European Union. Data for the EU member states, Iceland and Norway"; Luxembourg, Publications Office of the European Union.
- Gómez Sabaini, J.C and D. Morán (2016a), "Monotributo: simplicidad o complicidad?"; *Alquimias Económicas* [online] <https://alquimiaseconomicas.com/2015/08/11/monotributo-simplicidad-o-complicidad/>.
- (2016b), "Evasión tributaria en América Latina: nuevos y antiguos desafíos en la cuantificación del fenómeno para los países de la región", *Macroeconomía del Desarrollo* series, No. 172 (LC/L.4155), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC).
- (2014), "Tax policy in Latin America: assessment and guidelines for a second generation of reforms", *Macroeconomía del Desarrollo* series, No. 133 (LC/L.3632), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC).
- (2012), "Informalidad y tributación en América Latina: explorando los nexos para mejorar la equidad", *Macroeconomía del Desarrollo* series, No. 124 (LC/L.3534), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC).
- Gómez Sabaini, J.C., J.P. Jiménez and A. Podestá (2010), "Tributación, evasión y equidad en América Latina y el Caribe", *Evasión y equidad en América Latina*, Project Documents, No. 309 (LC/W.309), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC).
- Gómez Sabaini, J.C., J.P. Jiménez and D. Rossignolo (2012), "Imposición a la renta personal y equidad en América Latina: nuevos desafíos", *Macroeconomía del Desarrollo* series, No. 119 (LC/L.3477), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC), April.
- Jiménez, J.P. and A. Podestá (2016a), "Los impuestos sobre la renta de las personas físicas en América Latina"; Madrid, Institute for Fiscal Studies (IEF), unpublished.
- (2016b), "La tributación sobre la renta en América Latina: desafíos y perspectivas"; unpublished.
- OECD (Organization for Economic Cooperation and Development) (2013), *Global Forum on Transparency and Exchange of Information for Tax Purposes Peer Reviews: Argentina 2012. Combined: Phase 1 + Phase 2*, OECD Publishing.
- Podestá A., M. Hanni and R. Martner (2017), "Flujos financieros ilícitos en América Latina y el Caribe", *Macroeconomía del Desarrollo* series, No. 183 (LC/L.4277), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC), January.
- SINPROFAZ (Union of Attorneys of the National Treasury) (2016), "Sonegação no Brasil: uma estimativa do desvio da arrecadação do exercício de 2015"; Brasilia, June [online] <http://www.quantocustaobrasil.com.br/artigos/sonegacao-no-brasil-uma-estimativa-do-desvio-da-arrecadacao-do-exercicio-de-2015>.
- Tanzi, V. (2000), "Taxation in Latin America in the last decade", paper prepared for the Conference on Fiscal and Financial Reforms in Latin America, Stanford University, 9-10 November.



CHAPTER



Environmental taxation in Latin America: opportunities, progress and challenges

Introduction

- A. Environmental taxes: origins, evolution and current trends
- B. The global trend towards carbon pricing opens up opportunities for the region
- C. Reformulating motor vehicle taxes for environmental purposes
- D. Using taxes to deal with other environmental problems
- E. Conclusions and prospects for the countries of the region

Bibliography

Introduction

Taxes are an essential tool for States seeking to secure a greater volume of reasonably predictable revenues (as opposed to more volatile ones like those from the exploitation of natural resources), ride out the macroeconomic cycle better, bring about income redistribution and provide citizens with infrastructure and basic services such as health care and education. Over the years, the idea of taxation as an essential component of development has been given greater and greater weight.

Nonetheless, economic development cannot be achieved without regard to the costs it entails. In other words, it needs to be sustainable over time, considering that the planet's resources are finite and that most human economic activities entail environmental damage which on the whole is not taken properly into account by those producing it. Environmental pollution is thus a problem that society faces and that may be local, regional or indeed global in extent. In view of these phenomena, one option countries have is to use tax instruments to induce changes in private sector agents' behaviour with a view to protecting the environment.

For more than two decades, a number of (mainly European) member countries of the Organization for Economic Cooperation and Development (OECD) have been exploring different alternatives along these lines. Thus, there have been new taxes like those on polluting emissions (including carbon taxes), on waste generation and on artificial pesticide and fertilizer use. In a number of cases, too, other taxes already applied in most countries, such as those on liquid fuels and motor vehicles, have been redesigned following clear environmental criteria that reflect the harm their consumption or use does to the environment.

Although the application of environmental taxes in developed countries is fairly recent by comparison with traditional taxes, there is a range of evidence to show that they have had a positive effect in most cases by increasing the cost of polluting products or activities and thereby discouraging consumption or production of these in excess of the sustainable and socially optimum level. Nonetheless, use of these instruments is still fairly limited in many countries.

This is true of Latin America, where numerous taxes are levied on environmentally relevant tax bases but designed and implemented in a way that shows their purpose does not extend beyond revenue-raising. Some countries have very recently made their first forays into this area, and these are encouraging because they represent a source of experience for the other countries in the region, which often go by the results neighbouring countries have achieved when they themselves set out to adapt taxes and better implement them in accordance with their own situations.

In a global context marked by slow economic growth (compared to the last decade), the environmental dimension needs to be taken into account to avoid short-term solutions that may prove harmful in future. It is essential, then, to work towards a better understanding of the complementarities and dilemmas between economic and environmental goals, so that environmental priorities can be better integrated into needful reforms to the economic structure. Only in this way can there be progress on shifting the tax burden towards environmental taxes and doing away with discrepancies in tax systems that are harmful to the environment.

The goal of this chapter is to relaunch the debate about environmental taxation in the region's countries. Although studies already exist, the present one moves the discussion on by offering updated conceptual approaches to the subject and the statistical information available. Likewise, its survey of recent experiences (successful or otherwise) serves to identify certain lessons that may be of use to the countries in future tax reforms.

The chapter is divided into five sections besides this introduction. The first section lays out the main concepts and theoretical underpinnings of environmental taxation as a public policy tool, reviews the environmental tax reforms implemented in the developed countries over the past two decades and offers an up-to-date quantitative perspective on the level and structure of environmentally related taxes in both OECD and Latin America. The second section discusses the global trend towards carbon pricing as countries seek to respond to the increasingly alarming phenomenon of global warming, and highlights some very recent experiences in two countries of Latin America that open up opportunities for the region's other countries. The third section deals with the tendency, very widespread in developed countries, for motor vehicles taxes to be reformulated for environmental ends, an area in which there has also been some innovation in Latin American countries. The fourth section presents some alternative measures taken to expand the scope of taxation to other environmental problems, again looking at some recent examples in the region. The fifth and final section includes the main conclusions and a number of policy recommendations for the region's countries.

A. Environmental taxes: origins, evolution and current trends

1. The appearance of environmental taxes and pioneering reforms in Europe

In the early 1990s, some developed countries, most of them in Scandinavia, pioneered what would later be called environmental tax reforms. Although the possibility of taxes being used as instruments to discourage environmentally harmful practices was not new to economic theory (see box III.1), this was the first wave of successful applications in the effort to fuse or reconcile fiscal and environmental policies in a way that favoured sustainable development.

A second generation of reforms began in the late 1990s in cases such as Finland (1997), Germany (1999 and 2003) and the United Kingdom (1996 and 2001). Although the instruments applied were similar, these reforms, unlike those of the first generation, were focused on what is known as "revenue recycling", i.e., the possibility of using the resources yielded by new environmental taxes to offset cuts in distorting taxes, particularly social security contributions.¹ As a rule, then, they all provided for distributive measures to compensate the groups or sectors most affected by the fiscal change.

The first reforms of this type were carried out in Finland (1990), Sweden (1991), Norway (1992), Denmark (1994) and the Netherlands (1995). According to Gago and Labandeira (2012), this first generation of reforms was characterized by the use of powerful environmental taxes, generally related to the energy sector.² They included the first taxes on emissions of carbon dioxide (CO₂) in the first three cases (together with sulphur dioxide (SO₂) and nitrogen dioxide (NO₂) in Sweden), differential tax rates for less polluting fuels (Sweden), water pollution taxes (Netherlands) and taxes on the generation of waste of different kinds. By and large, revenue from these new taxes was used to reduce income taxes, and there were often exemptions for industry to avoid loss of competitiveness, so that the fiscal burden fell mainly on final consumers (Fanelli, Jiménez and López Azcúnaga, 2015).

¹ In 2008, Czechia also applied a reform of this type, extending and increasing energy taxation while cutting social security contributions for employers and employees.

² In 2006, Estonia introduced a reform in the same spirit that heavily increased fuel taxes and reduced income taxes for physical persons.

Box III.1

Environmental externalities and Pigouvian taxes

In economic theory, pollution is a clear example of an externality, a concept developed by Alfred Marshall (1842-1924) that refers to the positive or negative effects which the production or consumption of a good has on consumers or firms not involved in buying or selling it, but which are not fully reflected in market prices. In this specific case, the problem arises because the decisions of economic agents do not take account of the harm they cause to the environment (and third parties), and they end up producing a level of pollution in excess of the social optimum owing to a lack of mechanisms to translate the social value of the environment into an economic constraint for private sector agents.

This creates the need for some kind of public intervention to ensure that the agents generating pollution adjust their behaviour for society's benefit. One of the best-known solutions to these problems, establishing a link between environmental externalities and fiscal policy, is the one proposed by Arthur Pigou (1920), which consists in applying a corrective tax directly to the source of pollution.^a In theory, this should allow the social optimum to be achieved at the point where the marginal private benefit of polluting equals the marginal social cost. In other words, the Pigouvian tax is set at a level such that it is not feasible for the agent causing the externality to obtain additional net income without offsetting this by an effective reduction in the pollution produced (Vollebergh, 2012).

In practice, taxes of this type tend to involve very high implementation costs (and higher compliance costs) because they require a great deal of information on the pollutant and the actual harm it does to the environment, so that these are generally regarded as ideal models. However, their essential feature of public intervention to enforce the polluter pays principle has served as an inspiration for the development of instruments that pursue the same goal but are more feasible to apply in practice.

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of A.C. Pigou, *The Economics of Welfare*, London, Macmillan and Co., 1920 and H. Vollebergh, *Environmental Taxes and Green Growth*, The Hague, PBL Netherlands Environmental Assessment Agency, 2012.

^a Although they set out from the same logic, the alternative proposal by R. Coase (1960) differs from Pigou's in suggesting that an optimum solution could be achieved if ownership of the medium through which the externality is transmitted were assigned via private negotiation to one of the parties involved (without the need for public intervention).

Since then, the use of tax policy as a solution to environmental problems has been gaining ground both in developed countries and in some developing ones. Indeed, some more recent and far more heterogeneous reforms can be seen as forming part of a third generation in which fiscal consolidation goals prevail, the proceeds are treated more flexibly (no explicit revenue recycling) and there is a better fit with the new economic environment. These reforms were led by the one Italy introduced in 1999 and 2000, raising taxes on oil derivatives and using a third of the proceeds for offsetting distributive and energy efficiency measures. This approach to revenue was also enshrined in later reforms such as those of Sweden (2002) and, more recently, Switzerland (2008), Ireland (2010) and Australia (2011), where emissions taxes were introduced, among other supplementary measures, although the scope differed in each particular case.

It should be remarked, however, that taxes are just one of many instruments now available to control and manage externalities such as environmental pollution. Other features of what is known as the economic approach to environmental policy,³ which consists in the use of market-based mechanisms, are subsidies to reduce polluting emissions, pollution quotas granted by the State and systems of pollution rights that can be transferred between private sector agents.

³ Conversely, the traditional regulatory approach is based on direct control by the State via, for example, quantitative limits on the pollution produced or strict standards for technologies. Voluntary or cooperative approaches (which require a commitment by the polluting agents) have also been used to induce changes in private behaviour with a view to protecting the environment.

Although the choice of environmental policy instruments is beyond the scope of this study, the suitability of one or a set of these instruments in each particular case is determined by a number of administrative, institutional and information constraints. These decisions can also be influenced by issues of political economy (since their implementation may affect powerful interest groups) and fiscal interactions, depending on how they complement and interact with the other components of the tax system. This has led many authors to suggest that the optimum solution is usually a combination of several of these instruments simultaneously (Goulder and Parry, 2008).

In recent years, however, it has been possible to note a growing preference among governments for the use of taxes and other charges with a clear environmental orientation. According to Fullerton, Leicester and Smith (2008), instruments of this type have a number of relative advantages, one being that they are more effective than conventional direct regulations at minimizing the costs associated with the changes in consumption and production patterns pursued by environmental policies (static efficiency). Their implementation can also yield dynamic efficiency gains, since the higher costs perceived by private sector agents can encourage technological innovation aimed at reducing external effects without influencing other economic variables.

Environmental taxes can be particularly effective policy instruments for addressing current environmental priorities that go beyond problems at the point of origin, examples being emissions from smokestacks and more dispersed and mobile sources of pollution such as solid waste (packaging, batteries and building rubble) and pollutants in agriculture (pesticides and fertilizers) and transport (motor vehicles and their fuels, including air and sea transport).

Furthermore, environmental taxes can not only induce a reduction in the pollution produced but have the potential to yield additional tax revenues for the State. In turn, the revenue raised from these taxes can be used to reduce other taxes that distort the tax system, such as those on wages or investment (revenue recycling). For this reason, a number of authors (Oates, 1995; Goulder, 1995) have remarked that Pigouvian taxes can generate a double dividend: a cleaner environment and a more efficient tax system, insofar as the revenue generated by taxes on the consumption and production of polluting goods means that they can replace taxes on capital and earnings, offsetting the fiscal cost.

Leaving aside the debate about how certain and large the double dividend might be, the really important thing is to achieve good integration between tax reform policies and environmental policy so that the ultimate net effect on overall welfare can finally be evaluated. Besides the function of raising resources to meet public needs, modern tax policy calls for the inclusion of non-fiscal objectives to supplement the traditional one of financing the State. This is essential for turning particular taxes into social or economic policy instruments oriented towards different goals of general interest, such as environmental protection.

2. A broader approach: environmentally related taxes

Whatever the virtues of Pigouvian taxes as an environmental policy instrument, applying the polluter pays principle requires the value of the externality to be known so that the optimum rate for the tax can be calculated, which in turn means knowing exactly what the marginal damage is: who emits, how much and to whose detriment (Heine, Norregaard and Parry, 2012). Furthermore, constantly changing output and technology make it hard to adapt a tax when earlier information grows obsolete.

Given that Pigouvian taxes are impracticable, efforts have been under way since the pioneering reforms of the 1990s to identify and analyse a range of environmentally related taxes. OECD, the International Energy Agency (IEA) and the European Commission have agreed to define these taxes as any compulsory, unrequited payment to general government levied on tax bases deemed to be of particular environmental relevance.⁴ This includes taxes and charges on energy products, motor vehicles, solid and liquid waste, measured or estimated gas emissions and natural resources (OECD, 2010).

According to the statistics available,⁵ revenue from environmental taxes in the developed countries of OECD have been remarkably stable over time, albeit with a declining tendency from 2000 (when the average for these countries was 1.83% of GDP) to 2014 (when it was 1.56%). In relative terms, these taxes accounted for between 5% and 6% of total tax revenues in the same period, again with a gradual decline in the latter years.

Although the proceeds from taxes designed to prevent environmental pollution are significant in most cases, however, there are very marked differences between member countries as regards the relative (and absolute) scale of such resources. Thus, whereas total revenues from environmental taxes in Denmark, Italy, Slovenia and Turkey were about 4% of GDP in 2014, at the other extreme Canada, Mexico and the United States raised very limited amounts from them (about 1% of GDP).⁶

These differences can also be observed in Latin America, where the specific weight of environmentally related taxation differs by country. There is a clear contrast between countries such as Brazil, Costa Rica, the Dominican Republic and Honduras, with an environmental tax take of over 2% of GDP in 2014, and others such as Guatemala (0.8%), Peru (0.5%) and, the paradigmatic case, Mexico (below 0.1%),⁷ where these taxes do not represent a significant share of GDP.

Table III.1 presents data on environmental tax revenues in a selection of OECD and Latin American countries. The information covers three reference years (2000, 2007 and 2014), enabling the scale of changes over recent years to be ascertained. Although there has been a general decline in the share represented by these resources, especially in the years since the international crisis of 2008 and the sharp drop in crude oil and fuel prices, there are exceptions such as Italy, a country that has implemented environmentally oriented tax reforms and fundamentally strengthened fossil fuel taxation.⁸

⁴ The definition of a tax used here is that of the International Monetary Fund publication *A Manual on Government Finance Statistics*, 1986 (IMF, 1986).

⁵ An essential statistical resource is the database developed jointly by OECD and the European Environment Agency (EEA), a compendium of information on over 1,000 instruments used for environmental policy and natural resource management in the OECD member countries and some of the larger non-member countries (see OECD database on Policy Instruments for the Environment [online] <http://www2.oecd.org/eoicinst/queries/>).

⁶ Information available at [online] <http://www.oecd.org/env/tools-evaluation/environmentaltaxation.htm>.

⁷ In Mexico, environmental tax revenue comes from the special production and services tax (IEPS) on liquid fuel consumption, the tax on new automobiles (ISAN) and, since 2014, the new fossil fuel taxes (see section B). What has set Mexico apart is the way the first of these taxes has been calculated, with the effective rate and the tax take being inversely related to the international crude oil price. Thus, when prices were high in the last decade the IEPS became a subsidy (peaking at 1.8% of GDP in 2008), with the government having to compensate Petróleos Mexicanos (PEMEX) for the difference between international gasoline and diesel prices and the lower domestic prices set by the authorities. The Federal Revenue Act for fiscal year 2015 abolished this subsidy, and as a result the gasoline and diesel IEPS has begun to generate public revenue and its potential negative influence on the overall environmental tax take in Mexico for the coming years has been neutralized.

⁸ In this small group, mention may also be made of the cases of Estonia, Slovenia and Turkey, which all carried out tax reforms with a similar orientation.

Table III.1

Latin America and Organization for Economic Cooperation and Development (OECD) (selected countries): environmental tax revenues, 2000, 2007 and 2014 (Percentages of GDP)

Country	2000	2007	2014
Australia	2.41	1.93	1.91
Canada	1.34	1.16	1.15
Denmark	4.98	4.88	4.11
Finland	3.10	2.69	2.88
France	2.24	1.87	1.97
Germany	2.29	2.17	1.95
Italy	2.89	2.60	3.85
Netherlands	3.55	3.45	3.33
Portugal	2.61	2.74	2.20
Spain	2.19	1.85	1.89
United Kingdom	2.84	2.31	2.31
United States	0.96	0.82	0.72
OECD average (34 countries^a)	1.83	1.64	1.56
Argentina	1.56	0.97	1.30
Brazil ^b	1.93	3.41	2.62
Chile	1.57	1.13	1.21
Colombia ^c	0.87	0.98	0.99
Costa Rica	0.42	2.47	2.21
Dominican Republic	1.09	2.66	2.02
Guatemala	1.05	0.92	0.83
Honduras	1.84	2.39	2.17
Mexico	1.31	-0.19	0.06
Nicaragua	2.10	1.53	1.28
Peru	1.25	0.83	0.45
Uruguay	2.64	1.96	1.69

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of Organization for Economic Cooperation and Development (OECD), OECD.Stat.

^a The OECD average includes Chile and Mexico.

^b The values for Brazil were recalculated with reference to official information.

^c The latest year with information for Colombia is 2013.

As other documents have pointed out,⁹ other than in some outliers (Argentina and Brazil, for example), there is a large gap between the two groups of countries in terms of the total tax burden: in 2014, the OECD average (34 countries) was 34.2% of GDP, while the Latin American average (18 countries) was 21.0% of GDP. Consequently, it would be more appropriate to consider the results in relation to each country's total tax revenues, subject to certain methodological considerations. What comes to light is that environmentally related taxation, while varying between countries, is a far from negligible proportion of total tax resources in both the developed countries and Latin America (see table III.2).

⁹ See, for example, Gómez Sabaini and Morán (2014).



Country	2000	2007	2014
Australia	7.91	6.52	6.89
Canada	3.79	3.55	3.70
Denmark	10.62	10.51	8.18
Finland	6.77	6.49	6.57
France	5.20	4.40	4.36
Germany	6.31	6.21	5.38
Italy	7.11	6.23	8.80
Netherlands	9.63	9.56	8.93
Portugal	8.38	8.58	6.41
Spain	6.55	5.07	5.59
United Kingdom	8.23	6.80	7.20
United States	3.43	3.06	2.77
OECD (34 countries^a)	5.85	5.30	5.07
Argentina	7.38	4.20	4.02
Brazil ^b	9.34	10.30	8.08
Chile	8.37	4.97	6.09
Colombia ^c	5.91	5.11	4.94
Costa Rica	2.32	11.23	9.79
Dominican Republic	8.74	17.74	14.28
Guatemala	9.53	6.59	6.54
Honduras	12.00	12.59	10.95
Mexico	7.91	-1.07	0.37
Nicaragua	16.14	8.84	6.32
Peru	8.56	4.49	2.42
Uruguay	12.24	7.84	6.25

Table III.2
Latin America and Organization for Economic Cooperation and Development (OECD) (selected countries): environmental tax revenues, 2000, 2007 and 2014 (Percentages of total tax revenues)

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of Organization for Economic Cooperation and Development (OECD), OECD.Stat.

^a The OECD average includes Chile and Mexico.

^b The values for Brazil were recalculated with reference to official information.

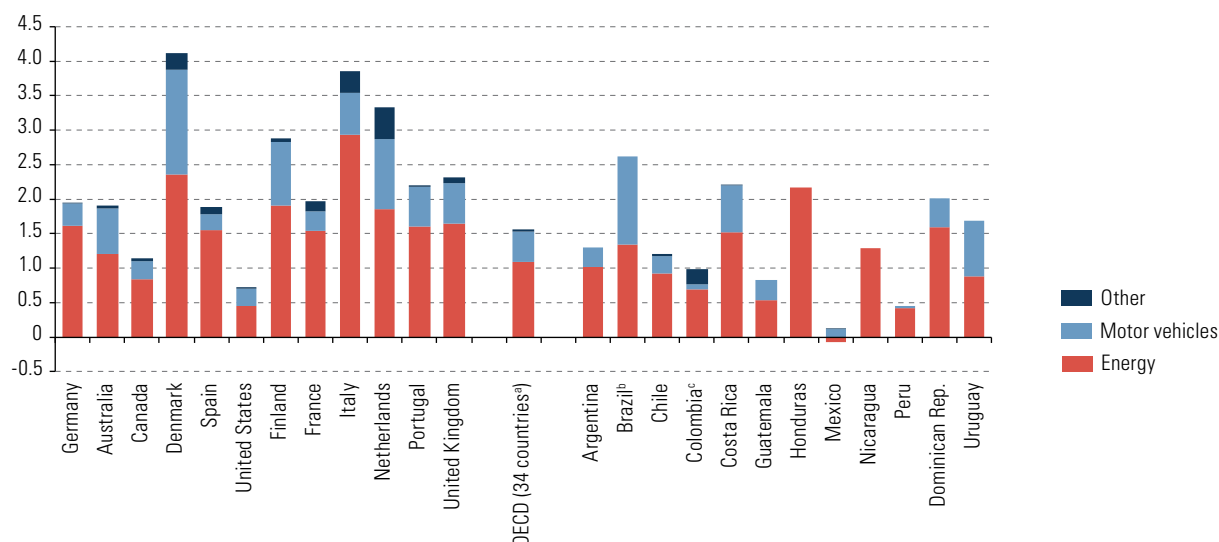
^c The latest year with information for Colombia is 2013.

As regards the type of instruments used, taxes with some explicit environmental purpose are usually classified into three general categories by tax base: (i) energy taxes (generation and production in different forms), (ii) motor vehicle taxes (ownership and use) and (iii) other (very diverse) environmental taxes.

According to this criterion, the first group (energy) includes fuel taxes, the take from which has been gradually decreasing over recent years but still averages over two thirds of the total in OECD countries. Motor vehicle taxes average about a third of the environmental tax take in those same countries, while in only a few such as Belgium, Denmark, Estonia, Hungary and the Netherlands do environmental taxes other than these (on waste, air traffic, energy consumption or pesticide and fertilizer use) contribute substantially. Figure III.1 presents the structure of environmental taxation in a limited sample of OECD and Latin American countries.

Figure III.1

Latin America and Organization for Economic Cooperation and Development (OECD) (selected countries): structure of environmental taxation, 2014
(Percentages of GDP)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of Organization for Economic Cooperation and Development (OECD), OECD.Stat.

^a The OECD average includes Chile and Mexico.

^b The values for Brazil were recalculated with reference to official information.

^c The latest year with information for Colombia is 2013.

As can be seen, taxes associated with power generation predominate in the countries of the region as well, and particularly the Central American countries (Costa Rica, Honduras and Nicaragua). The heterogeneity typical of Latin American tax systems is evident in the fact that there are countries where taxes on motor vehicles (and other forms of transport) are very high, examples being Brazil, Costa Rica and Uruguay. Other than in Colombia, where mining royalties are included, and Chile, with its special mining tax, no other environmental taxes are observed in the Latin American countries analysed.

These regularities are consistent with the findings of a number of studies on the subject (OECD, 2006 and 2010; Barde, 2005) showing that for the last 20 years the great bulk of environmental tax revenue (about 90% on average) has come almost exclusively from taxes on gasoline, diesel and motor vehicles generally. Only in some specific cases and more recently have certain countries taken the initiative of applying taxes to other tax bases of potential environmental relevance.

B. The global trend towards carbon pricing opens up opportunities for the region

1. The international context and the instruments available

Since the celebrated United Nations Conference on Environment and Development was held in Rio de Janeiro (Brazil) in 1992, the United Nations has been the organization pressing hardest for a global commitment to avoid the negative consequences associated with anthropogenic climate change. In 1997, a crucial milestone was reached with the

signing of the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC), whose goal was to reduce greenhouse gas emissions by at least 5% from their 1990 levels between 2008 and 2012. This agreement came into force when the ratification threshold was reached in 2005 (ratification documents signed and lodged by at least 55 parties to the UNFCCC accounting for over 55% of 1990 emissions of CO₂). To date, 192 parties (191 States and the European Union) have signed and ratified the Kyoto Protocol and are now at the second stage of implementation (2013-2020). The United States has not ratified it.

Because of the widespread view that the commitments of the Kyoto Protocol were not enough to prevent global warming, a second crucial milestone was reached much more recently: the twenty-first session of the Conference of the Parties to the UNFCCC (COP 21) was held in Paris from 30 November to 11 December 2015,¹⁰ and there a historic universal climate agreement was reached and approved unanimously by the 195 parties to the Convention. The aim of the Paris Agreement is to prevent warming of more than 2°C from preindustrial levels (1880-1899), to which end the States have set a target of achieving CO₂ emissions cuts of 50% by 2050 and 100% by 2100. Quickly ratified by a large number of countries (the conditions were the same as for the Kyoto Protocol), the Paris Agreement officially came into force on 4 November 2016, just before the twenty-second session of the Conference of the Parties, held in Marrakesh (Morocco).¹¹

Under this first universal climate agreement, States are obliged to contribute to the reduction of greenhouse gas emissions and to review their commitments every five years. The signatory countries are required to implement national adaptation plans that foster sustainable models of economic development and improve access to and conditions of use and development of green technologies. Known as intended nationally determined contributions (INDCs), these commitments vary from country to country both in their quantifiable objectives and in the instruments and programmes involved in each case.

With the exception of Nicaragua, which has declined to do so, all the countries of Latin America have now submitted their respective INDCs, some of which contain estimates, whether unconditional (using the countries' own resources) or conditional (subject to international financial support), for greenhouse gas reductions over particular time frames (see table III.3). For example, Argentina plans an effective reduction of between 15% (unconditional) and 30% (conditional) from the level of emissions projected for 2030 in the absence of mitigation actions, while Chile has set itself a target of between 30% (unconditional) and 45% (conditional), Colombia and Peru one of between 20% and 30% (depending on international assistance) and Mexico one of between 25% and 40% under the same parameters, while the Bolivarian Republic of Venezuela is proposing a 20% reduction subject only to external support. Brazil, the region's largest emitter of greenhouse gases, has promised a 37% cut in total emissions by 2025 relative to 2005 values.

¹⁰ The sessions of the Conference of the Parties have been an annual event since 1995 (Berlin). The Kyoto Protocol came out of the third session of the Conference, held in 1997 (Japan).

¹¹ At the time of writing, Republican candidate Donald Trump's recent victory in the United States presidential election had raised serious doubts about the future of these commitments, especially in view of the environmental policy measures suggested during the campaign. Nonetheless, in the event that signatory countries opt to withdraw, they must respect the provisions signed up to for at least three years after they come into force.

Table III.3

Latin America^a: estimated greenhouse gas reductions in countries' intended nationally determined contributions (INDCs) submitted as of June 2016

Country	Commitment accepted in the country's INDC		
	Unconditional (with country's own resources)	Conditional (with international support)	Time frame
Argentina	15%	30%	Compared to emissions projected for 2030 ^b
Bolivia (Plurinational State of)	Unspecified	Unspecified	Commitment based on sectoral actions
Brazil	37%	Unspecified	By 2025 compared with 2005 (total emissions)
Chile	30%	45%	By 2030 compared with 2007 (emissions relative to GDP)
Colombia	20%	30%	Compared to emissions projected for 2030 ^b
Costa Rica	25%	Unspecified	By 2030 compared with 2012 (total emissions)
Dominican Republic	Unspecified	25%	Compared to emissions projected for 2030 ^b
Ecuador	20,4%	45,8%	Compared to emissions projected for 2025 ^b (energy sector only)
El Salvador	Unspecified	Unspecified	Commitment based on sectoral actions
Guatemala	11,2%	22,6%	Compared to emissions projected for 2030 ^b
Honduras	Unspecified	15%	Compared to emissions projected for 2030 ^b
Mexico	25%	40%	Compared to emissions projected for 2030 ^b
Panama	Unspecified	Unspecified	Commitment based on sectoral actions
Paraguay	10%	20%	Compared to emissions projected for 2030 ^b
Peru	20%	30%	Compared to emissions projected for 2030 ^b
Uruguay	Unspecified	Unspecified	Goals for reducing greenhouse gas emissions intensity by sector compared to 1990
Venezuela (Bolivarian Republic of)	Unspecified	20%	Compared to emissions projected for 2030 ^b

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of data from the United Nations Framework Convention on Climate Change (UNFCCC).

^a Nicaragua is not included as it has yet to present its INDCs.

^b The planned reduction in greenhouse gas emissions is relative to the level of emissions projected for the reference year in a scenario of growth without implementation of any new mitigation measures.

It is thus clear that the countries of Latin America will have to progressively improve and expand the array of environmental policy instruments available to ensure effective implementation of their INDCs and, in particular, gradual fulfilment of the goals set. Different international forums have shown a growing tendency to support carbon pricing mechanisms, whose potential is emphasized even in the Paris Agreement itself.

The purpose of carbon pricing is to ensure that the costs of harm to the environment are borne by those responsible for it, thereby giving them an incentive to find ways of reducing it. Instead of determining who must cut emissions and where and how, these mechanisms send out an economic signal, and polluters decide for themselves whether to cut emissions by reducing the scale of their polluting activity or to carry on polluting and pay the price. The environmental goal is thus achieved in the way that is most flexible and least costly for society, and technological and commercial innovation is stimulated, boosting new factors of low-carbon economic growth.

There are usually a number of alternatives available to countries wishing to set a carbon price. They all start with identification of negative externalities associated with carbon emissions (health problems in the population, damage to crops from heatwaves and droughts, or economic repercussions from flooding and a rising sea level) and seek to link these costs to their sources via the carbon price. However, two main mechanisms are recognized in this context: (i) systems of emission permits or tradable emission rights and (ii) taxes on emissions and energy consumption.

In the first case, a cap is placed on overall emissions of greenhouse gases, after which emission rights can be freely traded (for a financial consideration) between firms in industries with different levels of emissions. This favours the creation of supply and demand for emission rights and indirectly establishes a market price for greenhouse gas emissions. The cap helps ensure that polluting firms will make the emissions cuts needed to keep within their preallocated carbon budget.

Conversely, carbon taxes set a carbon price directly by determining a tax rate for greenhouse gas emissions or, more commonly, for the carbon content of fossil fuels. This sets them considerably apart from a system of tradable emission rights, as the polluting emissions reduction outcome is not predetermined, but the carbon price is.

While both instruments can be effective at reducing the level of emissions and can even coexist in the same jurisdiction, carbon taxes have a number of relative advantages over an emissions trading system that are of particular interest for the countries of Latin America. First, a carbon tax is less complex for governments and offers greater certainty about the cost to polluters. Furthermore, emissions cuts usually depend not only on the size of the tax but also on the price of fossil fuels, so that it adapts better to changes of context without relinquishing the aim of reducing emissions. To these major advantages may be added the general-purpose character of the revenues yielded by a tax that is usually integrated into the established tax system, making it a more attractive option for developing countries.

According to the World Bank (2016), some 40 countries and over 20 cities, states and provinces are now using carbon pricing mechanisms or planning to. These jurisdictions (which include Mexico and Chile) are responsible for over 22% of global CO₂ emissions, and if the systems now being considered or developed are included, such measures will cover almost half the global total in a not very distant future.

Furthermore, use of these mechanisms around the world has intensified in recent years. Where carbon taxes are concerned, Japan (2012), France and Mexico (2014) and Portugal (2015) have already implemented them, while Chile, South Africa and some provinces of Canada (Ontario and Alberta) are planning to do so in 2017. An emission permit trading regime was piloted in a number of Chinese provinces in 2013 and is expected to be rolled out countrywide from 2017, while the Republic of Korea introduced such a regime in 2015. A number of countries have also reviewed their existing instruments and plan to strengthen them. For example, carbon tax rates have been greatly increased by Finland (which pioneered carbon taxation in 1990), France and Switzerland, which plan to increase them further in future years,¹² while a number of countries and subnational states have expanded the scope of their tradable pollution rights systems and even moved towards cooperation and integration (e.g., China will implement a European Union system).¹³

For all the progress, much remains to be done. In fact, a recent document from OECD (2016b) shows that effective carbon tax rates (i.e., the price of CO₂ emissions after taxes and tradable permit systems have been applied) in 41 countries of OECD and the Group of 20 (G20) are zero for 60% of emissions, while 90% of the emissions that are taxed pay a price of less than 30 euros a ton, which is considered a very conservative monetary estimate of the environmental harm caused. Furthermore, these

¹² France increased the rate of this tax from US\$ 16 per ton of carbon dioxide equivalent (tCO₂e) to US\$ 24 per tCO₂e in 2016 and plans annual rises until it reaches US\$ 111 per tCO₂e in 2030. Switzerland has increased its rate from US\$ 62 per tCO₂e to US\$ 86 per tCO₂e this year and plans large increases from 2020, taking the rate to US\$ 246 per tCO₂e.

¹³ China, the world's largest emitter of greenhouse gases, has just passed a law establishing a new pollution tax that does not, however, include CO₂ emissions. The new environmental tax, aimed at firms and institutions, will come into force on 1 January 2018 and sets a payment of 1.2 yuan (US\$ 0.17) for each unit of polluting emissions, e.g., 850 grams of SO₂. The law includes taxes on water pollution (1.4 yuan) and noise pollution (between 350 and 11,200 yuan a month, depending on the decibel count), in addition to a tax on solid waste of between 5 and 1,000 yuan a ton.

effective rates are particularly low in a number of sectors other than road transport, examples being industry, power generation, the commercial and residential sectors, and agriculture and fisheries, which are responsible for 85% of CO₂ emissions deriving from energy consumption.

Like most environmental taxes, instruments of this type designed to reduce polluting CO₂ emissions into the atmosphere usually come up against a number of obstacles quite apart from the technical aspects of implementation. In this particular case, the main objections concern their potentially harmful impact on the competitiveness of the jurisdiction applying the carbon tax or emissions trading regime, and ultimately on the economic growth rate. However, recent evidence shows that while such effects do exist, they are not so great as to rule out these kinds of environmental protection options. However, it does highlight how important it is for them to be carefully designed in the light of the specific conditions in the place where they are implemented.

2. Recent experience in Latin America

In the region, as already mentioned, there are two cases that deserve to be highlighted as recent experiments that are no less ambitious than those in Europe.¹⁴

The first is in Mexico where, as part of the 2013 fiscal reform, the federal government established a new tax on the sale and import of fossil fuels by carbon content, with the twofold objective of encouraging adoption of cleaner technologies in the production of goods and services and discouraging emissions of greenhouse gases that cause climate change. The fossil fuels affected by the tax are propane, butane, gasoline, aviation fuel, jet fuel and other kerosenes, diesel, fuel oil, petroleum coke, coal coke, coal and other less used fuels, with tax rates varying by how potentially contaminating each fuel is.¹⁵

To begin with, in 2014, rates ranging from 0.0591 Mexican pesos (propane) to 0.1345 pesos (fuel oil) per litre were applied across the range of liquid fossil fuels, while for gasoline and diesel the rates were 0.1038 pesos and 0.1259 pesos per litre, respectively. Taxes on solid fossil fuels, meanwhile, were calculated in pesos per ton: 15.60 pesos for petroleum coke, 27.54 pesos for coal and 36.57 pesos for coal coke, while for all other fossil fuels a top rate of 39.80 pesos was set per ton of CO₂ they contained. A mechanism for periodically updating these rates was established at the time the tax was implemented, consisting in annual adjustments that tracked the national consumer price index. As a result, 2016 rates were slightly higher at 0.0629 pesos per litre for propane, 0.1105 pesos for gasoline and 0.1340 pesos for diesel, for example, while the rate for fuel oil was 0.1431 pesos. The same adjustment was applied to solid fossil fuels such as petroleum coke (16.60 pesos per ton), with a top rate of 42.37 pesos per ton of CO₂.

This tax on liquid and solid fossil fuels is estimated to cover 46% of total CO₂ emissions in Mexico, which is a noteworthy fact, even considering that the carbon price set is among the lowest in the world. In fact, when it began to be applied in 2014, the top rate was equivalent to US\$ 3.21 per ton of CO₂, meaning that it was already far lower than the rates applying in the developed countries that use instruments of this

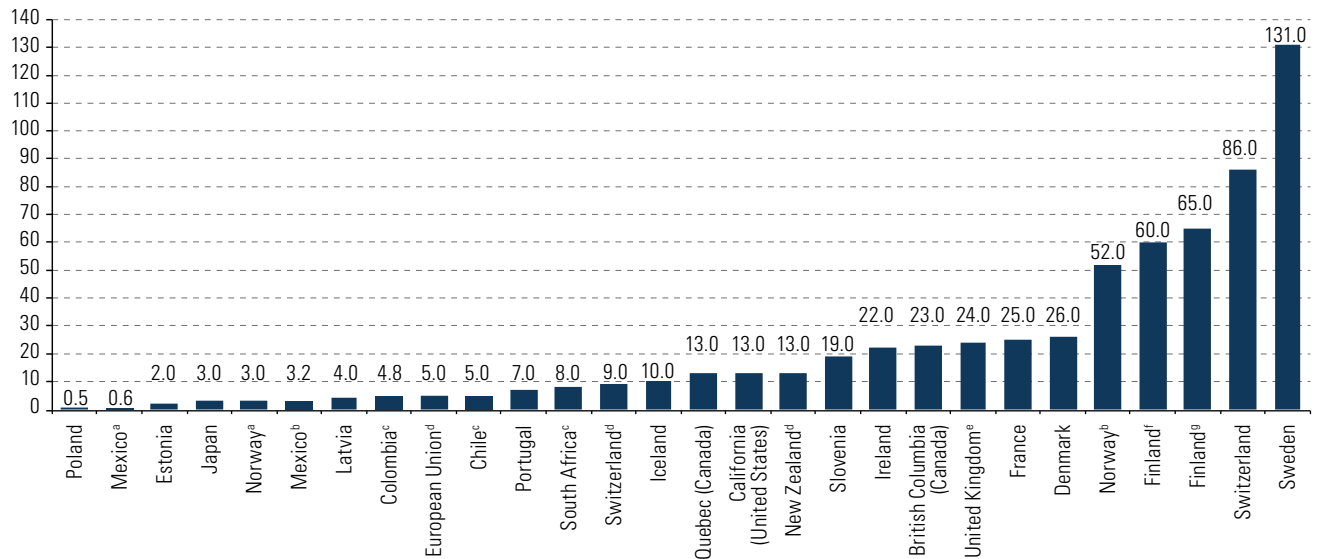
¹⁴ The story strictly begins with Costa Rica, where a single fuel tax unifying a number of fuel consumption taxes was created as early as 1997, with a percentage of the proceeds being earmarked for the National Forestry Financing Fund (FONAFIFO). That same year, the country implemented a pilot programme of payments for environmental services under which it sold carbon credits known as certified tradable offsets (CTO) to the Government of Norway for US\$ 2 million in exchange for absorbing 200 million tons of carbon, which allowed thousands of hectares of forest to be protected.

¹⁵ The least polluting option (natural gas, which is exempt from the tax) is taken as the baseline to calculate the tax rate applicable to each fuel, with a value being set on each ton of CO₂ on top of what would be generated if natural gas were the fuel.

type. Compounding the situation, and notwithstanding the mechanism designed to prevent the tax take declining in real terms, the fossil fuel tax rates applied in Mexico have been lagging by international standards, with an approximate minimum rate as of December 2016 of US\$ 0.003 per litre of propane consumed and a maximum rate of US\$ 2.10 for each ton of CO₂ in the solid fossil fuels consumed (see figure III.2).

Figure III.2

Selected countries: carbon tax rates, 2016
(Dollars per ton of CO₂)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of World Bank, *State and Trends of Carbon Pricing 2016*, Washington, D.C., 2016.

^a Bottom rate.

^b Top rate.

^c In force since 2017.

^d Emissions trading regime.

^e Floor price.

^f Other fuels.

^g Liquid fuels.

A very important point about the fossil fuel tax created in Mexico, and one that has been strongly questioned, is that no law has established that the proceeds of the tax should be spent on environmental clean-up or the like, which dilutes its effect. A salient fact, though, is that there is an administrative advantage to applying what is not a new tax but rather a new assumption or criterion incorporated into the base of an existing tax (the IEPS), as the tax authorities' accumulated experience can be drawn on to ensure effective compliance.

The carbon tax applied by Mexico has raised about US\$ 1 billion a year since it was implemented in 2014. The expectation, as with most environmental taxes, must be that the proceeds should tend to decline or stabilize as the signal it sends to the market alters environmentally harmful consumption or production patterns. The aim of this carbon tax and other complementary initiatives is to establish a carbon market by 2018. Indeed, the Government of Mexico is already developing a voluntary pilot emissions trading system in which manufacturers, producers and importers registered as taxpayers will be able to purchase carbon bonds or emissions reduction certificates and use them as a substitute for paying the fiscal obligation represented by the carbon tax.¹⁶

¹⁶ Alongside these measures, there has been an energy reform in Mexico that has totally altered the old model and opened up the market to private competitors, both foreign and Mexican. This is expected to result in the latest technology being introduced, providing a particular boost to power generation using natural gas, wind and natural light that reduces polluting gas emissions.

Chile is the other noteworthy case in the region where carbon pricing mechanisms are concerned. Also as part of a distinctive tax reform passed in 2014, the country decided to create a carbon tax whose scope and design are unprecedented in Latin America. This tax will apply to emissions produced by establishments whose fixed sources, comprising boilers or turbines, individually or in combination, have a thermal capacity of 50 thermal megawatts or more, specifically excluding those operating with unconventional renewable generating equipment whose primary energy source is biomass. The polluting compounds affected are particulate matter, nitrogen oxides (NO_x) and SO₂ (comprising the localized harm to health category) and CO₂ (as a global factor of damage via climate change).

This tax will only come into effect in 2017 and begin to be collected in 2018. However, it is already known that the tax for the first three pollutants (those associated with localized pollution) will be calculated from a formula established in the legislation that includes a pollutant dispersion coefficient, the per capita social cost of pollution (which varies by pollutant) and the population of each jurisdiction (commune). Meanwhile, the tax on CO₂ will be US\$ 5 for each ton emitted.

To administer these taxes, the Chilean Ministry of the Environment will publish an annual list of the establishments subject to it, which must install and certify a system of continuous emissions monitoring. Official estimates suggest that tax resources worth about US\$ 170 million will be generated in 2018, the bulk being associated with the CO₂ released by the use of coal as a fuel. According to the Centre for Global Change at the University of Chile, the estimated environmental impact of the carbon tax (that associated with other pollutants is still being studied) will be the equivalent of a reduction of up to 3 million tons of the gas by 2020 and 6 million by 2030.

These pioneering experiments have encouraged other countries in the region to explore the possibility of introducing carbon taxes. A good example is Colombia, which incorporated a nationwide tax on the carbon content of all fossil fuels, including oil derivatives used as energy sources, into the tax reform approved at the end of 2016.

The national carbon tax will apply to the sale, removal, import for self-consumption and import for sale of fossil fuels,¹⁷ and will have a specific tariff that takes account of the CO₂ emission factor for each fuel.¹⁸ The tariff will be 15,000 Colombian pesos (US\$ 4.80) per ton of CO₂ to start with (with different monetary values depending on how polluting the fuel is), adjusted annually for the previous year's inflation plus 1 percentage point until it is equivalent to one tax value unit (UVT), worth 29,753 pesos (about US\$ 9) as of 2016. Furthermore, to reinforce the environmental character of the tax, the proceeds from it will go specifically to the Fund for Environmental Sustainability and Sustainable Rural Development in Zones Affected by the Conflict ("Fund for a Sustainable Colombia") to finance environmental sustainability projects oriented, for example, towards managing coastal erosion, preserving water sources and protecting ecosystems in accordance with guidelines laid down by the Ministry of the Environment and Sustainable Development.

In other words, while most current carbon taxes are applied nationally, it would also be helpful to establish them subnationally, especially in jurisdictions with a heavy concentration of industry and people. In Brazil, in fact, this possibility is being analysed for the states of São Paulo and Rio de Janeiro (World Bank, 2016). It is important, then, to bring the possible use of mechanisms of this type in the region's countries into the discussion, in the awareness that the difficulty of implementing them may be

¹⁷ Fuel alcohol intended for mixing with gasoline and Colombian-produced biofuel of vegetable or animal origin intended for mixing with diesel are not subject to this tax.

¹⁸ The planned rates are 95 pesos per gallon for liquid petroleum gas, 135 pesos for gasoline, 148 pesos for kerosene and jet fuel, 152 pesos for diesel and 177 pesos for fuel oil.

amply compensated by their potential impact on taxpayers' environmentally harmful behaviour, as well as the additional tax revenue brought in by them, which could be used to enhance their effects by financing environmental protection programmes.

C. Reformulating motor vehicle taxes for environmental purposes

1. Vehicle taxes: multiple instruments for multiple goals

The range of options for setting a carbon price also includes other less direct (but not thereby less effective) ways of changing environmentally harmful behaviour. One of the most salient is the application of taxes and charges to motor vehicles as a way of setting an implicit price for carbon and other polluting gases.

Since it was developed at the beginning of the last century, vehicle taxation has reflected a variety of influences that go beyond the obvious need to generate tax resources. Geographical, industrial and social considerations have influenced the level and structure of these taxes over time. In more recent years, energy-related and environmental issues have led to these taxes being adjusted, particularly in developed countries.

Motor vehicle taxation, broadly defined, is a clear example of the application of the full spectrum of taxes to goods consumption, particularly in Latin America (Gómez Sabaini and Morán, 2013). In most countries, this type of taxation comprises a mix of recurrent taxes (on vehicle ownership or use) and non-recurrent or one-off taxes (on direct purchase, import or registration), plus the combined application of *ad valorem* and specific taxes. The latter are usually calculated on the basis of criteria that are not just economic but may be technical (cylinder capacity, age, weight), social (transport, medical assistance), commercial (number of axles, number of passengers, cargo capacity) or indeed environmental (fuel consumption, polluting emissions, catalytic converter fitted). A useful classification of motor vehicle taxes (OECD, 2010) encompasses the following:

- Taxes on motor vehicle imports, buying and selling and registration. These include import tariffs, value added tax (VAT) or sales taxes and selective taxes applied at the time vehicles are purchased or first brought into service, be they new or used, locally produced or imported.
- Taxes on motor vehicle ownership and possession, encompassing recurrent taxes applied throughout the period of ownership, usually in the form of an annual tax that may be levied at a standard rate or calculated on the basis of some indicator (engine size, fuel type, weight, number of axles, etc.).
- Taxes related to the operation and use of motor vehicles, including general and specific taxes on consumption of the fossil fuel they use to function as a means of transport. Although this type of taxation varies greatly between countries, in most developed countries it represents a total burden relative to the tax base that is much greater (taking selective taxes and VAT together) than the rates applied in the rest of the economy.¹⁹ There is also great diversity in the taxes applied to different types of fuel (gasoline, diesel, etc.).

The range of options for setting a carbon price also includes other less direct (but not thereby less effective) ways of changing environmentally harmful behaviour. One of the most salient is the application of taxes and charges to motor vehicles as a way of setting an implicit price for carbon and other polluting gases.

¹⁹ Where high-octane unleaded gasoline is concerned, the level of taxation is over 100% of the base price (and 40% of the final price) in two thirds of all OECD countries (OECD, 2016a).

The variety of instruments aside, the set of taxes (and other charges) on motor vehicles possesses certain peculiarities that distinguish them from other taxes of potential relevance to environmental protection.

The fact is that, although environmental pollution is usually deemed the most common and widely studied externality, the analysis becomes more complex in the case of automobiles and motorized land transport, as excessive production and consumption of these entails numerous externalities that can vary across time and by geographical location. According to Parry, Walls and Harrington (2007), the main external costs associated with them include not only local and global air pollution,²⁰ economic dependence on a scarce commodity like oil, traffic congestion and road accidents, but also the possibility of noise pollution and excessive road and highway maintenance costs.

Although a number of these phenomena are not strictly connected to the environment (for example, traffic congestion is the largest of these external costs in many cities),²¹ any environmental policy measure applied to motor vehicles ought to seek the best way of dealing with the multiple externalities that exist in each case. Countries have a wide range of instruments available for this, with taxes prominent among them.

By inducing a cut in consumption, a fuel tax could help to control environmental pollution and global warming while at the same time discouraging vehicle use (by implicitly increasing relative operating costs), thus reducing externalities such as congestion and road accidents. Because of the different nature of these externalities, however, the most efficient approach in cost terms, even after taking account of the substantial administrative expense involved, is to introduce multiple taxes based on the marginal cost of each negative externality (Goulder and Parry, 2008).

This has major implications for tax policy aimed at environmental protection. Depending on the specific tax system in each case, the vast array of taxes affecting the final price and running costs of motor vehicles may be related to a greater or lesser extent to environmental objectives, i.e., may be linked in differing degrees to the effects of the negative externality represented by environmental pollution. Given the multiplicity of externalities associated with motor vehicles, taxes on them may pursue different goals (apart from the fiscal one they share with any tax capable of generating revenue for the State) and apply to different taxable events (such as regular use, registration or possession).

In addition, it is important to attend to the potential for interaction between the different instruments that can apply to motor vehicles. For example, if purchase or import taxes and recurrent usage taxes are set on the basis of the emissions produced or the age of the vehicle, among other factors, then older or more polluting vehicles will pay a higher annual tax each year, but taxes on new vehicle purchases, conversely, will have a small impact (especially if they are lower for less polluting units). Nor should taxes on fossil fuels used for the transport of people and goods be considered in isolation, as they have a variable influence (which may strengthen, supplement or counteract the effect of other taxes) depending on how much vehicle users consume.

²⁰ The operation of motor vehicles (and most forms of motorized land transport) produces an array of different gases that are harmful to the environment, such as carbon monoxide (CO) and NO_x, besides a large amount of CO₂, the main cause of global warming, and particulate matter, which is very damaging to human health.

²¹ Fullerton, Leicester and Smith (2008) find this for the United Kingdom, highlighting the great geographical variability of this externality.

2. Current trends in developed countries

Notwithstanding the peculiarities noted, there seems to be a trend in developed countries towards strengthening the specific link between vehicle taxation and environmental policies. The governments of these countries have been adapting such taxes in recent years so that their design takes into account, for example, aspects such as engine fuel efficiency, emissions of CO₂ and other polluting gases, urban planning and transport policies.²² In parallel with this, a number of countries (mainly in Europe) have been increasing their regulatory efforts and working together with manufacturers to bring about concrete improvements in the technology of new motor vehicles and thereby reduce both fuel consumption and emissions per kilometre driven.

According to a recent report by OECD (2016a), 29 of the 35 OECD member countries applied differentiated taxes or tax reductions on environmental grounds in 2016, including both one-off registration taxes and annually recurring taxes. Of these, 22 directly used the level of polluting emissions (CO, CO₂, NO_x or particulate matter per kilometre driven) as a criterion for determining the applicable rate of tax or offered specific discounts, while 19 offered reimbursements or exemptions for electric or hybrid vehicles.

To cite some representative examples, the vehicle registration tax in Finland is set at a rate that ranges from 5% to 50% of the commercial value depending on CO₂ emissions (measured in grams per kilometre travelled), while the annual road tax ranges from 19.35 to 606.26 euros, depending on the emissions figures given in a vehicle register developed for this purpose. In Austria, the regulations on new vehicle registration provide for a bonus of 300 euros for vehicles emitting less than 120 grams of CO₂ per kilometre and for a stepped penalty of 25 euros for each gram emitted in excess of different emission ceilings for CO₂ (150, 170 and 210 g/km) and particulate matter (5 mg/km, for diesel vehicles only). This system of discounts and penalties also applies in Belgium and France (where the registration tax is calculated from CO₂ emissions as well as engine power). Ireland, Luxemburg, the Netherlands and Spain likewise use this environmental criterion to set their respective registration taxes, while in Iceland the selective motor vehicle tax is based on emissions produced, with rates of up to 65% of the market value. In Norway, NO_x emissions are taken into account in addition to CO₂ when calculating this tax, while in Portugal the environmental factor is present in the specific vehicle purchase tax in the form of tax rebates that penalize the most polluting units.

A number of developed countries also use CO₂ emissions to set recurrent taxes on vehicle ownership. In Germany, for example, the annual tax is composed of one part tied to cylinder capacity and another to emissions, with a rate for the latter of 2 euros per gram of CO₂ per kilometre, while Greece applies a road tax surcharge to vehicles registered since November 2010 that ranges from 0.90 to 3.72 euros per gram of CO₂ per kilometre (for private vehicles with an emissions level of 90 grams of CO₂ per kilometre and upward). In Ireland, emissions ceilings have been set and the annual tax ranges from 120 to 2,350 euros, with this maximum value applying from 225 grams of CO₂ per kilometre. The Netherlands, Portugal, Sweden and the United Kingdom apply similar instruments. Norway, meanwhile, incorporates a rather distinctive differentiating element, setting a higher annual tax for diesel cars that do not have a factory-fitted particulate matter filter.

²² This also includes tolls and road usage charges and taxes on motor vehicle insurance premiums, which usually pursue objectives other than safeguarding the environment.

Differentiating vehicle purchase taxes by engine fuel efficiency or polluting emission levels may give potential buyers an immediate incentive to purchase a less polluting vehicle. Incorporating these criteria into recurrent taxes on the use of these goods could also generate the right incentives for consumers, albeit less directly, while creating high taxes on motor vehicle purchase or registration could have the effect of limiting the number of new vehicles on the roads.

This could be counterproductive for environmental policy, however, since consumers might keep older vehicles (which are usually more polluting) on the roads because they are discouraged from replacing them in the normal way with technologically more advanced ones that are less harmful to the environment. For this reason, tax policy should not just be a good fit with environmental goals but should seek a degree of compatibility with innovation and technological change, insofar as these can help bring down pollution. This is why some European countries such as France have introduced programmes of tax exemptions, rebates and discounts to encourage the purchase of new motor vehicles and simultaneous scrapping of old ones.

Fuel taxes, although originally intended for purposes like generating fiscal resources or financing road infrastructure, have also been used to influence consumers' behaviour in the interests of environmental protection. Indeed, differentiated tax rates were one of the factors that led to traditional leaded gasoline being overtaken by unleaded gasoline (which is less polluting but was dearer to begin with) in developed countries. Something similar can be said of the use of compressed natural gas in vehicles, as it is much less polluting and usually taxed considerably more lightly than other fuels, although its development has been held back by a number of technical constraints, such as the difficulty of storing the fuel and the need for specially equipped filling stations.

However, tax differentiation between different liquid fossil fuels may also be environmentally counterproductive. The fact that the great majority of countries apply higher selective tax rates to gasoline than to diesel may be giving rise to incentives that are the reverse of those desired, exposing a recurrent conflict between policy goals.²³

This aspect is highlighted in a recent study by Harding (2014), who argues that this preferential treatment for diesel is environmentally unjustified since it is a more polluting fuel (with a higher rate of emissions per litre, especially of NO_x and particulate matter), and the fact that these taxes are generally set in relation to the amount of fuel used means that proper internalization of the environmental costs associated with this variable ought to reflect the greater damage per litre caused by diesel consumption.²⁴ Furthermore, the greater energy capacity or superior fuel efficiency of diesel (greater distance driven per litre of fuel than with gasoline) lends even more weight to this, as it is reflected in lower operating costs over time that are wholly captured by the vehicle owner, which may end up encouraging more intensive vehicle use to take advantage of the lower tax rates.

Parry, Walls and Harrington (2007) have stressed that the costs of other externalities associated with motor vehicle use, such as congestion, accidents and infrastructure wear and tear, are more a function of distance travelled than of the

²³ The exceptions among the OECD countries are Chile, Switzerland and the United States, which tax diesel more heavily than unleaded gasoline, and Australia and the United Kingdom, which tax them alike.

²⁴ The contribution of diesel vehicles to urban pollution has not only been thoroughly demonstrated with technical evidence but has led to concrete actions being taken in view of the growing severity of environmental problems in large cities. In the closing days of 2016, as part of the sixth Mayors Summit of the C40 Cities Climate Leadership Group held in Mexico City, the representatives of Paris, Madrid and the host city agreed to ban diesel vehicle traffic in their cities from 2025.

amount of fuel consumed, so that the greater efficiency of diesel engines would require a higher tax rate per litre of fuel to internalize these costs. However, it is known that fuel taxes are not set solely with environmental objectives in view: in both their specific design and their implementation, a variable influence is exerted by certain fiscal considerations (they are usually highly productive of tax revenue), the aspects of international competitiveness and economic growth that are common to environmentally related taxes, industrial and trade policy positions and the different distributive impacts on the population. This last aspect in particular usually furnishes one of the main arguments against environmental taxation, and as a result measures have to be gradual to allow households and firms to adapt to changes in relative fuel and other energy costs.

3. Recent experiences in Latin America

Well established in developed countries, these vehicle taxation trends have fortunately begun to be echoed, if only faintly as yet, in the countries of Latin America, where the problems noted are also found but require a logical adaptation of instruments to the different national contexts.

The pioneer was Ecuador with its environmental tax on vehicle pollution (IACV), created in November 2011, which applies to environmental pollution from the use of motor vehicles belonging to natural persons, a number of exemptions being stipulated for the public sector, public passenger transport, taxis and ambulances, among others. The IACV began to be applied gradually (to the oldest vehicles) in 2012 and will come fully into effect in 2017.

The rate of this tax is based on engine capacity (measured in cubic centimetres), with application of an adjustment factor determined by the age of the vehicle in years since manufacture. Although this adjustment factor is meant to ensure that the tax falls more heavily on potentially more polluting vehicles, it does nothing to penalize greater vehicle use. In other words, the tax creates incentives for decisions about the purchase of vehicles but not the intensity of their use.

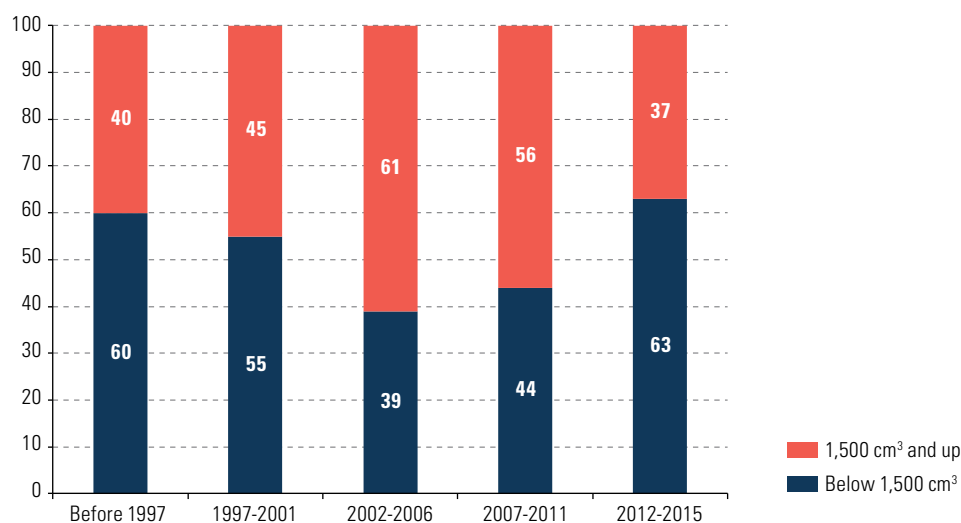
According to data from the Internal Revenue Service (SRI) of Ecuador, the IACV has collected an average of 0.11 % of GDP annually (US\$ 113.2 million in 2015) since it came into force in 2012, which represents less than 1 % of the country's total tax take on average but a substantial portion (over 20 %) of vehicle tax revenue.²⁵ Regardless, the IACV seems to be contributing to an alteration in patterns of consumption of new vehicles by engine capacity (figure III.3). The average engine capacity of the country's stock of vehicles rose strongly between 1997 and 2006, but this tendency has reversed dramatically over the last decade. Thus, whereas 56 % of vehicles were in the 1,500 to 2,000 cm³ bracket and 44 % were smaller than 1,500 cm³ in the period from 2007 to 2011, during 2012-2015 vehicles in the first segment accounted for just 37 % of the total and smaller vehicles (under 1,500 cm³) came to dominate at 63 % (Almeida, 2015).

In its determination to bring about real change in the behaviour of economic agents as motor vehicle users, the Government of Ecuador supplemented this initiative with two provisions to encourage the use of hybrid or electric vehicles and with regulations to improve fuel quality. In the first case, hybrid and electric vehicles costing up to US\$ 35,000 were exempted from VAT and the special consumption tax (ICE), with the aim of boosting demand for low-polluting vehicles. Policies of this

²⁵ Apart from the traditional selective tax, this subset of instruments includes the SRI-administered vehicle ownership tax plus the vehicle registration tax and municipal road tax, both of which are subnational.

type, which are matched in countries like Brazil, Colombia, Costa Rica and Uruguay, give countries a further option to supplement that of taxing vehicles with internal combustion engines by virtue of the negative externalities caused by their use. It should be noted, however, that this is not an option to be pursued in isolation: like any tax incentive, even if designed in the most efficient way possible (which is not usually the case in practice), it involves forfeiting public resources that governments are unwilling or unable to do without.

Figure III.3
Ecuador: structure of the vehicle stock by engine capacity (Percentages)



Source: M.D. Almeida, "Política fiscal ambiental en el Ecuador: avances y desafíos", *Project Documents* (LC/W.705), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC), 2015.

In November 2012, the authorities of the Dominican Republic introduced a tax on vehicles, new and used, that is calculated by their CO₂ emissions per kilometre and applied on top of the 17% charge on vehicles at first registration already established in 2005. The tax base in this case is the cost, insurance and freight (CIF) value declared at customs, on which rates ranging from 0% (up to 120g of CO₂ per kilometre) to 3% (over 380g of CO₂ per kilometre) are applied depending on each vehicle's potential emissions as shown by an emission values table prepared by the Bureau of Internal Revenue (DGII) for this purpose.²⁶

Although passenger transport and goods vehicles are specifically exempt from this tax, the amounts raised by the DGII have exceeded expectations. During 2015, it collected 515.2 million Dominican pesos (about US\$ 11.4 million), equivalent to 0.017% of GDP. Both here and in Ecuador, these instruments are examples of tax policy being adapted to reduce pollution via tax penalties whose aim is to discourage the purchase or use of particular vehicles deemed polluting, whether because they consume liquid fuels to excess or because their engines rely on obsolete technologies and emit unacceptable levels of gas into the atmosphere.

A more recent case is Chile, where a tax on polluting emissions from new vehicles was introduced as part of a major tax reform in 2014. Also known as the green tax on mobile sources, this has applied since 2015 as a one-off payment on

²⁶ If a vehicle is not listed in the table at the time it is brought into the country, the value indicated by the manufacturer is taken or, failing this, the top rate of the tax (3%) is applied.

purchases of new light and medium motor vehicles, with its amount being set by a formula that includes the vehicle's urban fuel economy (kilometres per litre of fuel), NO_x emissions (grams per kilometre) and final retail or import prices, including VAT or customs duties.

The tax has been implemented gradually since being passed into law, and its definitive formula will only come into full effect on 1 January 2017.²⁷ According to information from the Internal Revenue Service (SII), the tax raised 34.1 billion Chilean pesos (about US\$ 50 million) in 2015, the equivalent of 0.02% of GDP. While it is not yet feasible to examine its general impact on environmentally damaging consumption patterns, there are some indications of change in the desired direction, as the market share of low-emission vehicles is rising.

A recent study by ECLAC and OECD emphasizes that the exemption of commercial vehicles in Chile from this environmental tax (the situation is the same in the Dominican Republic and Ecuador) runs counter to the intention of making polluters pay for all the social and environmental costs they generate (ECLAC/OECD, 2016). The fact is that the emissions produced by combustion engines do the same environmental damage regardless of whether vehicles are driven on or off highways or for business or personal purposes.²⁸ Much the same can be said of the exemption for electric vehicles, since although they do not directly emit greenhouse gases or pollute the air locally, greater use of them could require increased production of electricity from coal-fired power stations, offsetting any environmental gain that might be secured relative to gasoline vehicles. This example serves to demonstrate the need to evaluate the effect of tax incentives from the perspective of their cost-effectiveness and interaction with other instruments being applied at the same time.

Lastly, as in the developed countries, of all the vast array of taxes that effectively impact motor vehicles (or their owners or users directly), taxation linked to their normal operation on the public roads is the type that theoretically offers the best potential relationship to environmental goals, since the level of pollution produced depends on the intensity with which vehicles are used or, ultimately, on their consumption of liquid fuels (gasoline and diesel).

While it is possible to identify some general features for the countries of Latin America (see box III.2), there is great heterogeneity across the region in this area too. The reasons for these differences, apart from specific tax designs and implementation criteria, have to do with the dissimilarities in physical endowments of hydrocarbons between exporting countries like the Bolivarian Republic of Venezuela, Ecuador and Mexico, importing countries like Argentina, Brazil and Uruguay and self-sufficient countries like Colombia and the Plurinational State of Bolivia, and with the differing degrees of State intervention in local fuel markets, since a number of countries have major State enterprises, examples being PDVSA in the Bolivarian Republic of Venezuela, Petrobras in Brazil, EP Petroecuador in Ecuador and PEMEX in Mexico.

These factors decisively influence the differences between the region's countries in effective tax rates (the sum of general and selective fuel taxes relative to the final retail price) and shape the conditions for any kind of specific tax reform, including those that are environmentally oriented.

²⁷ According to Law No. 20780, it is as follows: tax in monthly tax units (UTM) = $\{[(35 / \text{urban fuel economy (km/litre)}) + (120 \times \text{g/km of NO}_x)] \times (\text{selling price} \times 0.00000006)\}$. The value of the UTM as of December 2016 was 46,183 Chilean pesos, or about US\$ 70.

²⁸ One alternative would be to apply only the component of the tax that is calculated from potential engine emissions, retaining the exemption in respect of vehicle price.

Box III.2

Regional trends in fuel taxation in Latin America

Fuel prices in Latin America have traditionally been well below international ones. In past decades, the domestic prices of oil derivatives were governed not by conventional pricing criteria based on marginal costs or the opportunity cost, but rather by political considerations, income distribution targets and efforts to promote industrialization.

In the region's oil-exporting countries, and even in non-exporting ones with State oil firms, this has meant granting an implicit subsidy (because of the export revenue foregone by the central government) that has often generated the opposite effects to those originally sought and has usually run counter to environmental goals, as it favours excessive fuel consumption. In other countries such as Argentina and Brazil that also produce oil, conversely, gasoline and diesel prices are currently far higher than elsewhere in the region and close to those in the industrialized countries, this being largely due to higher general and specific taxes affecting fuels.

Nonetheless, the developed-country tendency to have lower effective taxes on diesel than gasoline is also seen in the great majority of the region's countries (Mexico being an exception). This peculiarity creates a conflict in environmental terms because diesel, which is still widely used in the region as a fuel for passenger and goods transportation, is more polluting.

In a number of the region's countries, furthermore, fuel taxes yield a substantial amount of revenue that usually serves to finance some of the running costs of public transport as well as the costs of maintaining road infrastructure. In line with international trends, though, there has been a substantial drop in the fiscal revenues raised from these taxes in recent years, especially relative to a decade ago, when they seem to have peaked in most of the countries. This may have been partially due to the greater fuel efficiency of new motor vehicles, but it has been aggravated by the widespread presence across the region of an array of exemptions and differential treatment associated with these taxes (e.g., for public transport) that have greatly limited their effective yield.

Source: J.C. Gómez Sabaini and D. Morán, "Política tributaria y protección del medio ambiente. Imposición sobre vehículos en América Latina", *Macroeconomía del Desarrollo series*, No. 141 (LC/L.3732), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC), 2013.

D. Using taxes to deal with other environmental problems

Power generation and the use of motor vehicles and other forms of transport are centre stage in discussions of environmental taxes. However, environmental problems are not limited to the global warming produced by the use of fossil fuels for different purposes, among other factors, but also encompass other aspects, most particularly soil and water pollution, waste of different kinds and natural resource extraction. There are economic instruments to deal with these challenges too, particularly taxes and charges that countries can use in their efforts to alter environmentally harmful behaviour.

Ever since the pioneering reforms of the 1990s, developed countries have been introducing environmental taxes that are not necessarily targeted at emissions from energy sources. Mention may be made of the system of taxes and tradable individual quotas applied to fishing resources in Iceland; the package of taxes on the extraction of natural resources (lime, cement, stone, earth, sand, gravel, etc.), the disposal of waste (including household, dangerous, industrial, construction and demolition waste) and water pollutants (oils, bacteria) and the emission of environmental pollutants (SO₂ and NO_x, among others) in Latvia; and the pesticide tax in Norway. Indeed, as extensively documented by Withana and others (2014), different taxes and charges relating to water use can be said to be applied in almost all developed countries, especially European ones, covering the supply and consumption of drinking water and the discharge of

wastewater and effluent. Also very common are air pollution charges, which cover a wide range of pollutants, particularly SO₂.

As can be deduced, tax bases with a potential bearing on the environment are numerous and diverse and admit of the application of different instruments for the same purpose. Some of these bases are particularly important for the countries of Latin America, examples being the generation of urban waste and, very particularly, the rational management of this as regards recycling options.

A case that may be singled out is plastic, which can take hundreds of years to degrade naturally. In Ecuador, besides the IACV already mentioned, the 2011 tax reform brought in the redeemable tax on non-returnable plastic bottles with the clear goal of promoting recycling of these.²⁹ The tax is levied on firms that package alcoholic, non-alcoholic, carbonated and non-carbonated drinks and water in non-returnable plastic bottles; i.e., it is charged at the point of production and not the point of sale (imported drinks are taxed when the product leaves customs).

A tariff of 2 cents is applied to each plastic bottle subject to the tax, and this is reimbursed in full to anyone collecting and returning these bottles.³⁰ It is up to those involved in the drinks marketing chain to create the necessary mechanisms for the return of bottles. From its implementation in February 2012 up to April 2015, more bottles were recovered than produced, while some US\$ 62 million of tax was collected. According to Almeida (2015), the sum reimbursed far exceeded the gross proceeds over this time, apparently because empty PET bottles were brought in from neighbouring countries.

As Lorenzo (2016), points out, the Latin American countries can show other important examples of taxes on the consumption and manufacture of products that generate environmental pollution. The most important cases concern water use, given the role of this resource in people's consumption and the economic importance of its productive use in agricultural activities.

To avoid water pollution, since 1991 Mexico has applied so-called wastewater discharge duties to the release of wastewater into any receiving body (land, rivers, the sea, etc.), with the amounts of these depending on the volume of wastewater discharged, the concentration of pollutants and the receiving body. Colombia has its water pollution compensation taxes, which apply to the direct or indirect use of the atmosphere, water or earth to release or dispose of agricultural, mining, industrial or household waste or refuse and any environmentally harmful substance produced by human beings.

In Brazil, there is a tax on the use of water resources applying to public or private bodies or firms that are responsible for the supply of water and the generation and distribution of electricity or that make use of protected water resources. In Costa Rica there is a water charge that is also meant to promote efficient use of water resources.

The chemical fertilizers and pesticides used in agriculture have been singled out as highly polluting. The environmental impact of these consists in their effects on species for which they were not designed. In addition, seepage can result in their entering the water and the wind can carry them to other fields, grazing areas, human settlements and undeveloped areas, where they can affect other species and, in particular, human health. Although this area has not been much explored by the region's countries, in 2014 Mexico brought in a tax on pesticides calibrated by their toxicity to human beings, using the values given in World Health Organization (WHO) regulations as a guide.

²⁹ Similarly, the reform just passed in Colombia introduces a tax on the use of plastic bags, at a rate of 50 pesos per bag. This supplements the decision to ban plastic bags smaller than 30 cm by 30 cm from 2017.

³⁰ According to the conversion factor set by the Internal Revenue Service (SRI) for the period from June to December 2016, a kilogram of polyethylene terephthalate (PET) plastic bottles is equivalent to 28 units, thus attracting a tax of US\$ 0.56.

While the least toxic pesticides are exempt from the tax, others are subject to rates of 6%, 7% or 9% in accordance with this indicator.

Lastly, despite the strategic value of natural resources, the region has little experience with taxes designed to protect them. Nonetheless, some countries have introduced taxes intended to ensure sustainable use of certain resources (Lorenzo, 2016). Since 2005, Chile has had a specific tax on mining activity that applies at a rate of between 0.5% and 4.5% to the net income of mining firms with sales of between 12,000 and 50,000 tons of fine copper a year and at a progressive rate of between 5% and 34.5% to firms with sales of over 50,000 tons. Colombia applies royalties to mineral extraction and a forestry tax when reforestation does not offset depletion of the resource. Mexico has implemented a number of environmental taxes, including payment of duties for the protection of reefs.

E. Conclusions and prospects for the countries of the region

The main initiatives for protecting the environment against harmful human actions have been under development for over 20 years. However, all the actions undertaken and committed to by the countries seem inadequate so far to prevent the environmental problems identified from worsening. Clearly new measures will have to be taken in future years to address the multiple dimensions of this situation.

This being so, the use of economic instruments based on market laws, and environmental taxes in particular, emerges as one of the most attractive options, not only because of the certain prospect of their influencing behaviour and activities that harm the environment, but also because of their potential to generate new tax resources for the countries implementing them. That is why the main focus of this study has been on discussing environmental taxation in Latin America, providing an up-to-date picture of the relevant international and regional experience.

If the pioneering reforms introduced in Europe in the early 1990s have shown anything, it is that environmental taxes can be powerful tools for environmental protection when their design is properly matched to each country's specific conditions and their implementation is gradual and predictable. Statistical identification of the array of environmentally related taxes like that carried out by OECD and the statistical office of the European Union (Eurostat) has expanded the range of options available for the countries' governments to work with, including the introduction of completely new taxes and the reformulation of existing ones on the basis of environmental criteria.

The paradigmatic example of the former are carbon taxes. In recent years, the United Nations has been multiplying its efforts to have countries commit themselves under the UNFCCC to reducing levels of greenhouse gas emissions and thereby preventing global warming. Along with emissions trading systems, the introduction of carbon taxes has been steadily encouraged because of their potential to fulfil the polluter pays principle and boost technological innovation leading to a cleaner growth and development model. Building on some relative advantages of these taxes that are especially applicable to developing countries, Chile, Mexico and now Colombia have resolutely set out in this direction, and their experiences look set to be useful models for the rest of the Latin American countries to follow.

The countries can complement this by reforming existing taxes to address environmental problems. Motor vehicles are a particularly important case, as they are subject to a large and varied range of different taxes. Taxes on the purchase and import or registration and ownership of motor vehicles calibrated in part by levels of CO₂, NO_x and particulate matter

emissions are already common in developed countries. Also widespread are tax exemptions or lower rates to encourage people to buy hybrid or electric vehicles. Although there is as yet no specific equivalent to these trends in Latin America, pioneering experiences such as those of Chile, the Dominican Republic and Ecuador (with taxes) and those of Brazil, Colombia, Costa Rica and Uruguay (with tax incentives) have already yielded some satisfactory initial results (though reforms will doubtless be needed in future to improve them) and shown the way for the other countries in the region.

Unfortunately, environmental problems are not confined to fossil fuel power generation or the rapid growth of motorized passenger and goods transportation. In fact, it is also feasible and often advisable to use taxes and charges to counteract the contamination of soil and water resources, the generation of waste of different kinds and the extraction of renewable and non-renewable natural resources. All that will be said on this issue is that the potential tax bases are varied, that the European experience in this area offers numerous precedents and lessons and that the experiments carried out in the region to date, while few, have been valuable. Of particular note are the taxes on plastic in Ecuador (bottles) and Columbia (bags) aimed at increasing the rate of recycling, the tax on pesticides in Mexico, which has the potential to be applied in a number of agroexporting countries, and a set of taxes and charges whose purpose is to ensure responsible management of water resources and protect them from pollution (Brazil, Colombia, Costa Rica and Mexico).

Clearly, much can still be done in the countries of Latin America where environmental taxation is concerned. This will obviously mean overcoming a number of institutional, social, political and economic obstacles. As a guide, OECD (2010) specifies a number of points to be considered on the basis of the experience reviewed:

- Taxes should be aimed at polluters and at polluting behaviour, with few exemptions.
- The tax should be similar in scope and scale to the environmental harm done.
- The tax must be credible and predictable if it is to affect behaviour.
- The resources generated should help with fiscal consolidation.
- Distributive aspects should be addressed with additional instruments.
- There needs to be coordination with other countries and support for competitiveness during the transition.
- Environmental tax policy needs to be communicated clearly to the public.
- It will often be necessary to combine environmental taxes with other policies.

A further aspect should be considered in the case of the region's countries, which is the need to adapt instruments that have proved successful in the developed countries to their own situations, options and constraints. This might involve to a greater degree the simultaneous use of different instruments affecting the same environmentally relevant tax base. For this reason, when new environmental taxes are introduced it is essential to make provision for the coordination of evaluation and monitoring mechanisms so that the effects can be followed up and, particularly, so that any counterproductive interactions between two or more instruments can be detected. Energy subsidies are the clearest example in the region, since in several countries they completely neutralize the potential effect of environmental taxes of this type.

In summary, there are numerous environmental tax bases that the region's governments could use to make progress in this area, particularly those that not only influence the behaviour of private sector agents but can be used to raise new fiscal revenues that contribute to fiscal consolidation in the countries, enabling them to expand public environmental protection programmes. Both the choice of instruments and their design and implementation are fundamental determinants of their potential for later success.

In summary, there are numerous environmental tax bases that the region's governments could use to make progress in this area, particularly those that not only influence the behaviour of private sector agents but can be used to raise new fiscal revenues that contribute to fiscal consolidation in the countries, enabling them to expand public environmental protection programmes. Both the choice of instruments and their design and implementation are fundamental determinants of their potential for later success.

Bibliography

- Almeida, M.D. (2015), "Política fiscal ambiental en el Ecuador: avances y desafíos," *Project Documents* (LC/W.705), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC).
- Barde, J.P. (2005), "Reformas tributarias ambientales en países de la Organización de Cooperación y Desarrollo Económicos (OCDE)," *Política fiscal y medio ambiente: bases para una agenda común*, Libros de la CEPAL, No. 85 (LC/G.2274-P), J. Acquatella and A. Bárcena, Santiago, Economic Commission for Latin America and the Caribbean (ECLAC)/German Agency for International Cooperation (GIZ).
- Coase, R. (1960), "The problem of social cost," *Journal of Law and Economics*, October.
- ECLAC/OECD (Economic Commission for Latin America and the Caribbean/Organization for Economic Cooperation and Development) (2016), *Evaluaciones del desempeño ambiental: Chile 2016* (LC/L.4195), Santiago.
- Fanelli, J.M., J.P. Jiménez and I. López Azcúnaga (2015), "La reforma fiscal ambiental en América Latina," *Project Documents* (LC/W.658), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC).
- Fullerton, D., A. Leicester and S. Smith (2008), "Environmental Taxes," *NBER Working Paper*, No. 14197, National Bureau of Economic Research.
- Gago, A. and X. Labandeira (2012), "Un nuevo modelo de reforma fiscal verde," *Economics for Energy*, WP 03/2012.
- Gómez Sabaini, J.C. and D. Morán (2014), "Tax policy in Latin America: assessment and guidelines for a second generation of reforms," *Macroeconomía del Desarrollo series*, No. 133 (LC/L.3632), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC).
- _____(2013), "Política tributaria y protección del medio ambiente. Imposición sobre vehículos en América Latina," *Macroeconomía del Desarrollo series*, No. 141 (LC/L.3732), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC).
- Goulder, L.H. (1995), "Environmental taxation and the double dividend: a reader's guide," *International Tax and Public Finance*, vol. 2, No. 2, August.
- Goulder, L.H. and I.W.H. Parry (2008), "Instrument choice in environmental policy," *Review of Environmental Economics and Policy*, vol. 2, No. 2.
- Harding, M. (2014), "The diesel differential: differences in the tax treatment of gasoline and diesel for road use," *OECD Taxation Working Papers*, No. 21, OECD Publishing.
- Heine, D., J. Norregaard and I. Parry (2012), "Environmental tax reform: principles from theory and practice to date," *Working Paper*, No. 12/180, Washington, D.C., International Monetary Fund (IMF).
- IMF (International Monetary Fund) (1986), *A Manual on Government Finance Statistics (GFSM 1986)*, Washington, D.C.
- Lorenzo, F. (2016), "Inventario de instrumentos fiscales verdes en América Latina: experiencias, efectos y alcances," *Project Documents* (LC/W.723), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC).
- Oates, W.E. (1995), "Green taxes: can we protect the environment and improve the tax system at the same time?," *Southern Economic Journal*, vol. 61, No. 4, April.
- OECD (Organization for Economic Cooperation and Development) (2016a), *Consumption Tax Trends 2016: VAT/GST and Excise Rates, Trends and Administration Issues*, Paris, OECD Publishing.
- _____(2016b), *Effective Carbon Rates. Pricing CO₂ through Taxes and Emissions Trading Systems*, Paris, OECD Publishing.
- _____(2010), *Taxation, Innovation and the Environment*, Paris, OECD Publishing.
- _____(2006), *The Political Economy of Environmentally Related Taxes*, Paris, OECD Publishing.
- Parry, I., M. Walls and W. Harrington (2007), "Automobile externalities and policies," *Journal of Economic Literature*, vol. 45, No. 2, American Economic Association, June.
- Pigou, A.C. (1920), *The Economics of Welfare*, London, Macmillan and Co.
- Vollebergh, H. (2012), *Environmental Taxes and Green Growth*, The Hague, PBL Netherlands Environmental Assessment Agency.
- Withana, S. and others (2014), *Environmental Tax Reform in Europe: Opportunities for the Future. Final Report*, Brussels, Institute for European Environmental Policy (IEEP).
- World Bank (2016), *State and Trends of Carbon Pricing 2016*, Washington, D.C.



CHAPTER

IV

The role of fiscal policy in reducing territorial inequalities: possibilities, limitations and challenges

Introduction

- A. Inequality takes the form of wide territorial gaps: place does matter
- B. Vertical and horizontal asymmetries in the availability of fiscal resources at the subnational level
- C. The most commonly used tax bases at the subnational level: immovable property and goods and services
- D. Intergovernmental transfer systems finance the gap between expenditure and own resources
- E. Access to credit broadens the subnational fiscal space, but can also worsen asymmetries

Bibliography

Introduction

In recent years, the debate over inequality and its economic and social impacts has erupted once more around the world, both in academic circles and in public policy discussions. New information and methodologies have made it possible to collect new data, which provide a clearer picture of the extent of the problem, its multiple dimensions and the limitations of previous analysis.

Among the multiple dimensions of inequality, two warrant particular consideration in fiscal policymaking: the personal distribution of income by household¹ and social and economic disparities among territories. Because of their magnitude and persistence, both dimensions of inequality are of particular concern for Latin America, in terms of analysis and public policy design. Nevertheless, and despite the clear significance of these issues, there is almost no literature on the nexus between personal income distribution and territorial inequality. With regard to territorial inequality, this chapter's central theme, the literature has focused primarily on the impact of intergovernmental relations within each country and of decentralization on GDP growth among regions and their possible convergence.²

Different policies have been chosen to address these two aspects of inequality. In connection with income distribution among households, central and subnational governments have adjusted their fiscal policies in an effort to influence income inequality by using taxes, public spending programmes and subsidies. In order to address territorial inequality, public sectors have adopted different sorts of intergovernmental fiscal arrangements, in some cases by distributing public goods equally among territories and in others by improving subnational governments' fiscal capacity.

This chapter analyses territorial inequalities and the fiscal policy instruments (revenue allocation, intergovernmental transfers and access to credit) used to address them. The main thrust is to explore territorial inequalities and the extent to which they influence the fiscal capacity of subnational governments, while analysing how this dynamic shapes institutional efforts to redress those inequalities through transfers from central governments.

The second section of the chapter analyses some of the indicators of territorial inequalities. The disparity among regions within a country is reflected in subnational jurisdictions' different needs and capacities, which represents a major challenge to the efficient and equitable provision of public goods and services among the different levels of government and to their financing.

The third and fourth parts of this chapter describe the territorial fiscal capacities in Latin America, focusing on the share of governments' own (tax and non-tax) resources, including analysis of the evolution of tax revenues, which tend to be poorly used by

¹ In recent years there has been a significant increase in analysis and publications (in Latin America and worldwide) on the impact of fiscal policy on personal income distribution. A number of studies, with methodological variations, examine the impact of fiscal policy on personal income distribution among households, through public spending and taxes, either at the level of the central government (Lustig, Pessino and Scott, 2013; Hanni, Martner and Podestá, 2015) or at different levels of government (Cont and Porto, 2016; Brosio, Jiménez and Ruelas, 2016).

² In several of its publications, the Economic Commission for Latin America and the Caribbean (ECLAC) has described this phenomenon as territorial heterogeneity, which takes the form of uneven settlement patterns and major disparities in the distribution of wealth and of opportunities for material well-being. This pattern has given rise to areas with successful development trajectories existing alongside a considerable number that remain mired in economic stagnation, with persistently high levels of poverty (ECLAC, 2016a). Feld, Zimmermann and Döring (2004) provide a comprehensive review of the literature that analyses the links between territorial development and fiscal decentralization. Recently, Brosio and Jiménez (2016) examined the relationship between territorial inequality in some countries of the region and the uneven allocation and distribution of rents from natural resources. Bartolini, Stossberg and Blöchliger (2016) analyse the different channels through which decentralization affects territorial disparities: taking 20 countries of the Organization for Economic Cooperation and Development (OECD) as a sample, the authors concluded that disparities were reduced when subnational governments used their own revenues to finance public spending.

Despite the backdrop of considerable territorial inequalities and clear vertical and horizontal asymmetries, equalization transfers are practically non-existent.

subnational governments in Latin America and make up a relatively small share of countries' total tax revenues. The resources collected by governments are not only low, they are also highly unequal: there are jurisdictions whose own resources make up more than 90% of total income and others in which the figure is less than 5%.

The fourth section examines the different intergovernmental fiscal transfer systems designed to compensate for the uneven allocation of expenditure and financing among different levels of government. Despite the backdrop of considerable territorial inequalities and clear vertical and horizontal asymmetries, equalization transfers are practically non-existent. The intergovernmental mechanisms for education financing are also examined in detail, given that education is now understood to be a multifaceted lever for development and equality (ECLAC, 2010), and that regional inequality is largely rooted in the unequal opportunities existing at the start of and throughout the education cycle.

Lastly, the chapter addresses subnational governments' access to credit, an additional instrument available to them for financing goods and services. It analyses recent changes and the specific issues faced by subnational governments that have access to credit. The findings indicate that variations in the size of the debt compared to total income received by governments are directly related to the taxable base and fiscal capacity of each government.

A. Inequality takes the form of wide territorial gaps: place does matter

For several decades, ECLAC has stressed the importance of the territorial aspect of development. It has been shown that yawning development gaps exist between rich and poor territories in Latin America, confirming that place of birth and residence are determining factors in the opportunities available to people and their quality of life.³

One of the most common indicators used to gauge the differences among territories of the same country is the ratio between the gross domestic product (GDP) per capita of the richest region and that of the poorest region (measured in most cases at the level of major administrative divisions). In Latin America and the Caribbean, the ratio between the regions with the highest and lowest per capita GDP in the countries generally exceeds 6:1 —with the exception of Uruguay and the Plurinational State of Bolivia—, while in developed countries it is rarely more than 3:1 (see figure IV.1).

These gaps can also be quantified by using the coefficient of variation.⁴ This indicator of territorial inequalities in per capita GDP in Latin America also reveals high levels of disparity that exceed the average of the countries of the Organization for Economic Cooperation and Development (OECD). The largest disparities are found in Argentina, with a coefficient of variation of 0.93, which means that the dispersion of territorial GDP is 93% with regard to the average national GDP. The country with the smallest disparity in the region is Uruguay (0.28). On average, the region's coefficient of variation is 0.64, almost twice the coefficient for the OECD countries (0.36) (see figure IV.2).

³ See Pinto (1965), Sunkel (1970), Di Filippo and Bravo (1976) and De Mattos (1982).

⁴ The coefficient of variation (CV) is a normalized version of standard deviation, calculated as follows:

$$CV = \frac{\sqrt{\frac{1}{N} \sum_{i=1}^N (g_i - \mu)^2}}{\mu} = \frac{\sigma}{\text{average}}$$

The coefficient of variation requires a distribution with a non-zero mean and all values positive, which is the case for per capita GDP. Its main advantage is that it is independent of the mean (unlike the Gini coefficient), enabling comparison of countries with different levels of per capita GDP. It is also unaffected by the number of territories within the same country. For further discussion of this methodology, see Bartolini, Stossberg and Blöchliger (2016).

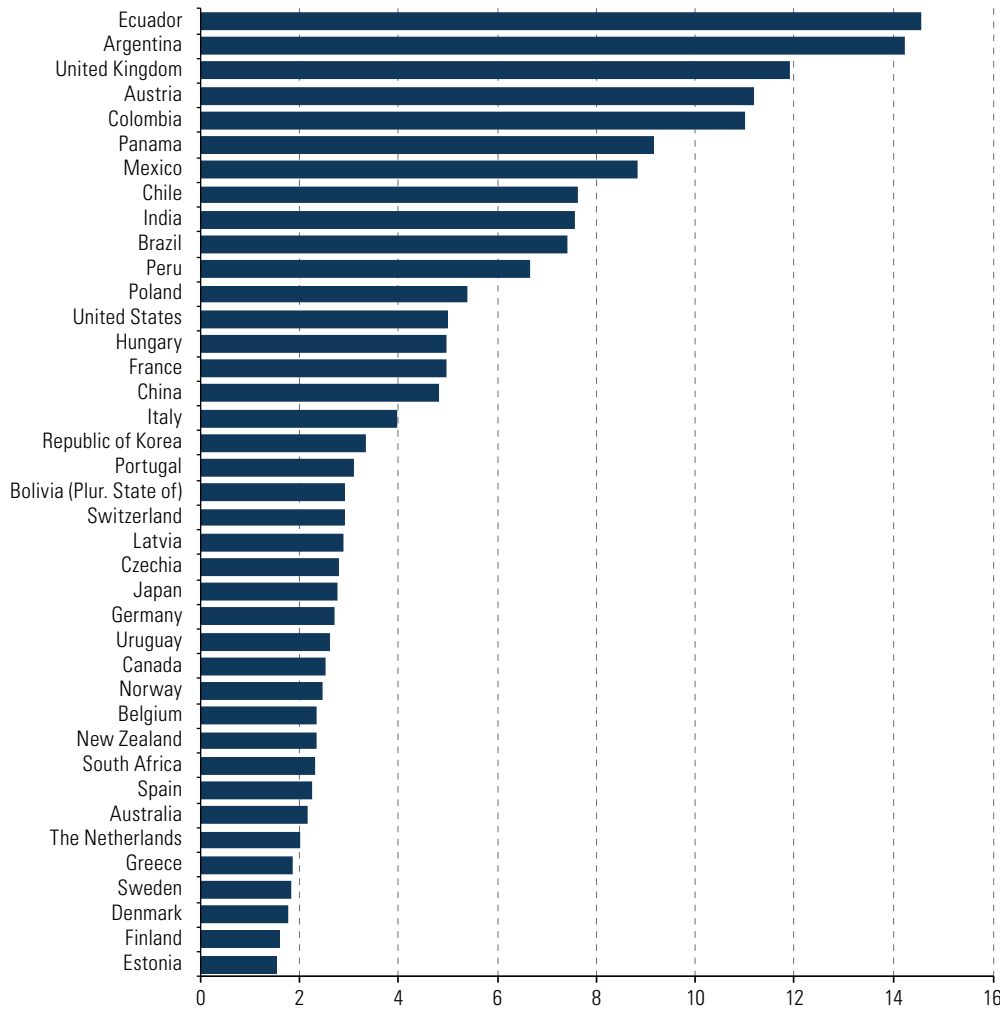


Figure IV.1
Latin America (10 countries) and selected countries: per capita GDP gap by country, 2012-2015
(Ratios between the per capita GDP of the richest and poorest regions)

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of Organization for Economic Cooperation and Development (OECD), OECDStat.

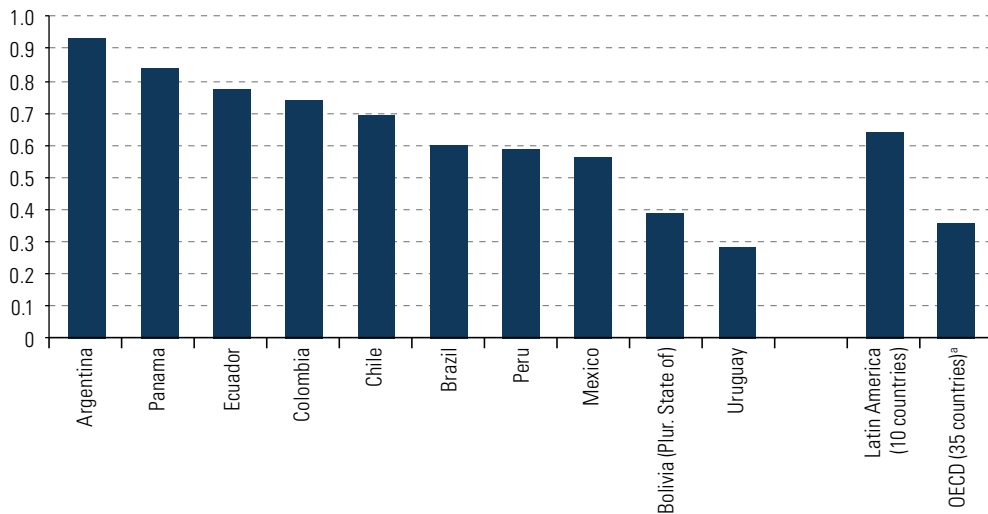


Figure IV.2
Latin America (10 countries) and Organization for Economic Cooperation and Development (OECD): coefficient of variation of per capita GDP, 2012-2015

Source: Economic Commission for Latin America and the Caribbean (ECLAC).

^a The value for the coefficient of variation for the GDP of the OECD countries was taken from Bartolini, Strossberg and Blöchliger (2016).

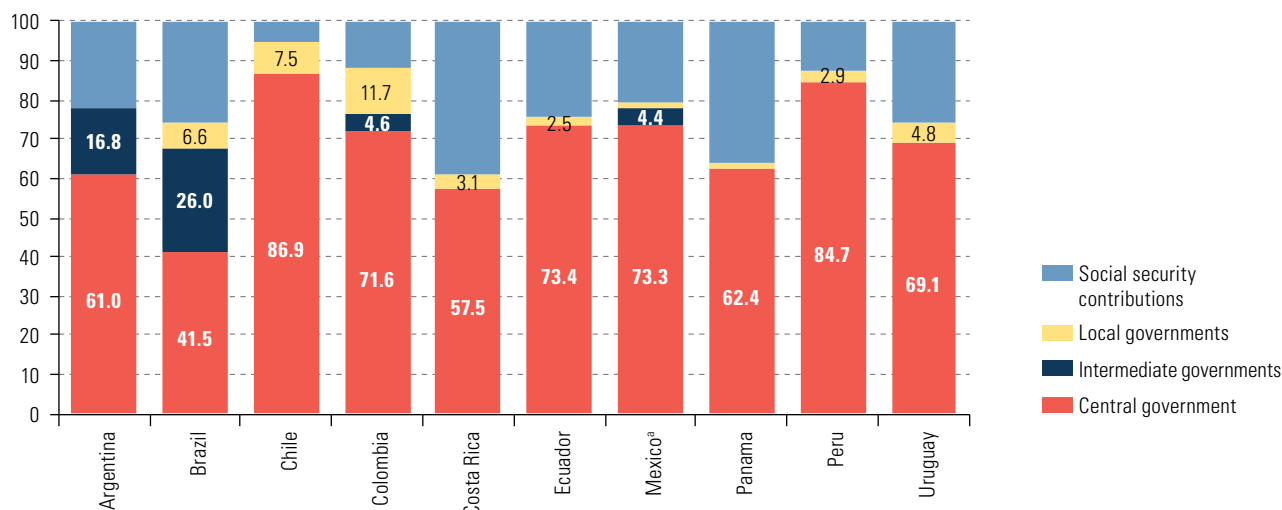
The distribution of poverty and public services provision is also uneven. In recent publications, ECLAC has shown significant differences (in some cases as much as 40 percentage points) among the territories with the highest and lowest percentages of people living below the poverty line within the same country. With regard to public services, while progress is being made—for example in the provision of drinking water and electricity—, this reflects an average that tends to conceal major differences among territories. Differences in the provision of electricity, drinking water and adequate housing and with regard to overcrowding are ongoing territorial challenges for the countries of the region.⁵

B. Vertical and horizontal asymmetries in the availability of fiscal resources at the subnational level

These territorial inequalities are inextricably linked to the regions' tax bases, which are determining factors in the differences in fiscal capacity between central governments and subnational governments, and among subnational governments.

Figure IV.3 shows that a disparate and generally small share of Latin American countries' total tax revenues goes to subnational governments. Brazil is the exception to the rule: states and municipalities together collect more than 30% of total tax revenues, which indicates that tax powers have been decentralized to those levels of government to a considerable degree and that subnational governments' fiscal capacities have increased significantly. Brazil is trailed by Argentina and Colombia, where subnational governments' own resources account for approximately 15% of total tax revenue.

Figure IV.3
Latin America (10 countries): tax revenues by level of government, 2015
(Percentages of the total)



Source: Organization for Economic Cooperation and Development (OECD), Revenue Statistics in Latin America and the Caribbean 1990-2014, Paris, OECD Publishing, 2016.
^a Data for Mexico are for 2014.

⁵ See ECLAC (2016a, chap. IV).

Strictly speaking, subnational governments' own resources are defined as those taxes over which they have jurisdiction, in terms of administration, tax rates and the tax base on which the tax burden will be established. However, a looser definition is used here: revenues are considered subnational when the subnational government is responsible for administering them and for disposing of the resources generated by the tax. Box IV.1 outlines an alternative measurement of tax autonomy by level of government⁶ that takes into account the degree of freedom subnational governments have to introduce or abolish local taxes, to define tax bases or even to grant tax exemptions to legal persons and businesses and to modify tax rates.

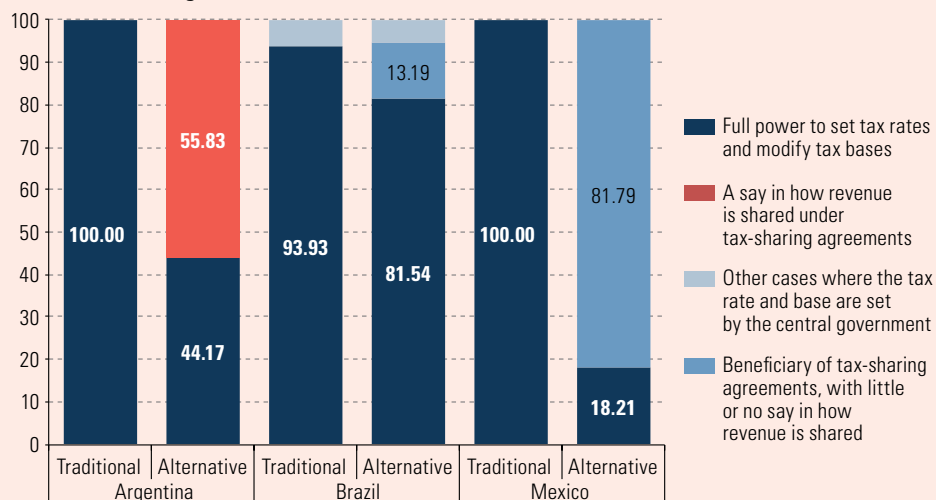
The typology applied to levels of fiscal autonomy ranges from full autonomy to instances in which all taxes are imposed by the central government (with subnational governments as mere beneficiaries). While this sort of classification is usually applied only to subnational governments' tax revenues, in the case of Latin American countries the analysis must cover the different tax-sharing and revenue-sharing arrangements that exist in the region, in the light of the vertical asymmetries they entail.

The provincial governments of Argentina, the state and local governments of Brazil, local governments of Chile, and the state and local governments of Mexico are analysed below. Two estimates are shown in the figures below: the traditional estimate, which takes into account tax revenue only and the alternative one, which considers tax revenue plus income from different tax-sharing and revenue-sharing agreements.

In short, intermediate governments have a relative level of fiscal autonomy, which derives from the power of governments —conferred by the Constitution of each of the countries— to set tax rates and modify tax bases within their jurisdiction, although, on the whole, with considerable vertical asymmetry. With regard to local governments, the main difference can be seen in Chile, where 57.92% of tax revenues are redistributed by law, while the Municipal Revenue Act establishes limits and restrictions on other income.

Latin America (4 countries): fiscal autonomy of intermediate and local governments, according to traditional^a and alternative^b estimates, 2014
(Percentages of the total)

A. Intermediate governments

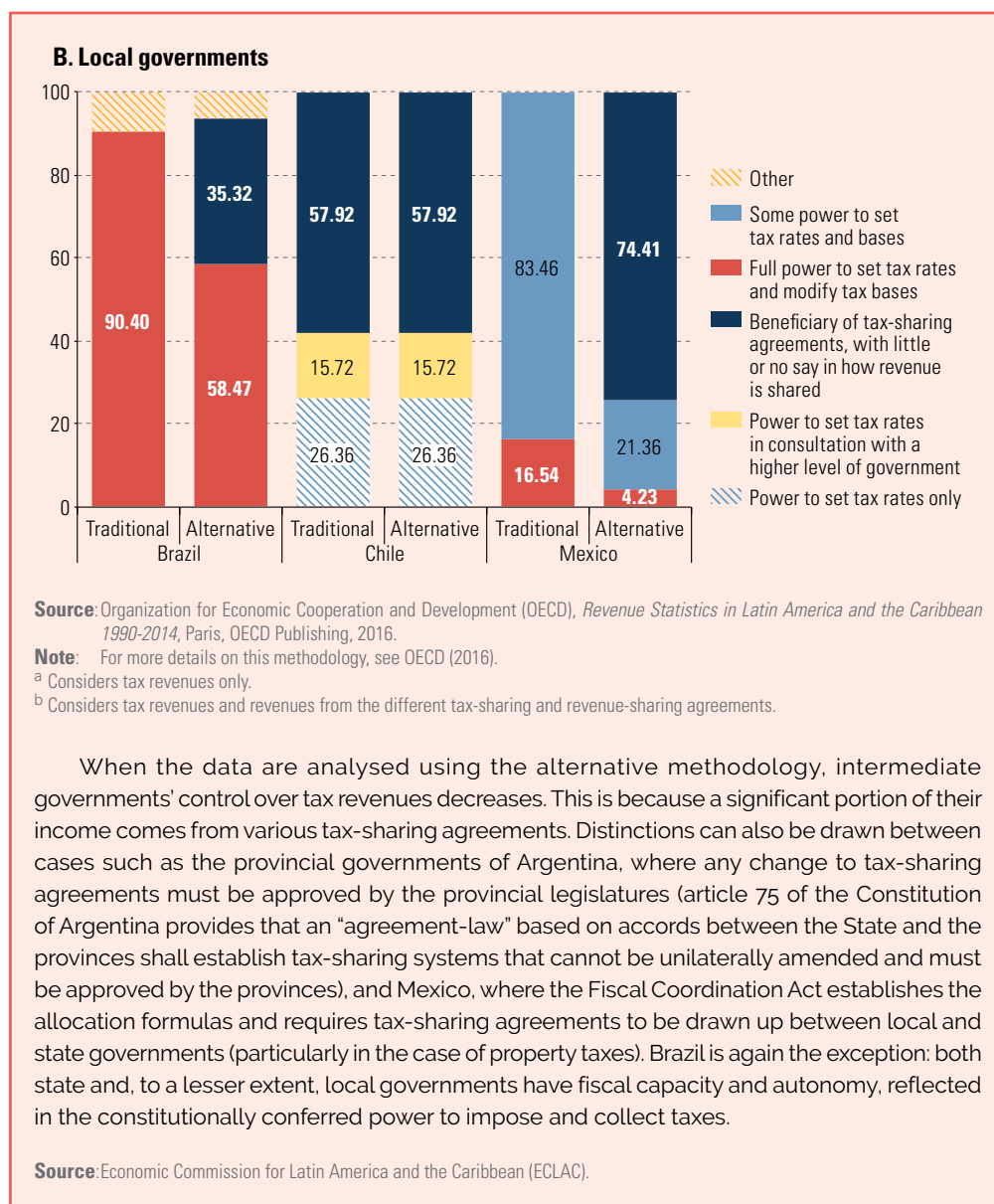


Box IV.1

Latin America: fiscal autonomy estimates

⁶ For further discussion and analysis of subnational tax autonomy, see box IV.1 and OECD (2017).

Box IV.1 (concluded)

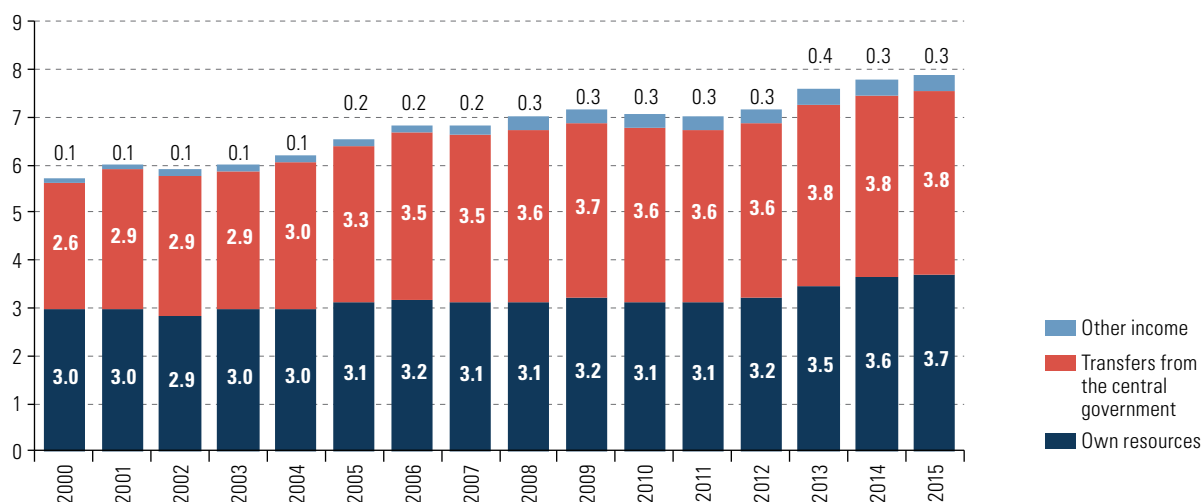


Unlike in Argentina, Brazil and Colombia, in the other countries, subnational governments' tax revenues are very low compared to those collected by the central government: on average, less than 10% of each country's total tax revenue (see figure IV.3).

Meanwhile, subnational governments' total fiscal resources have grown incrementally in the past 15 years. However, this is mainly the result of the steady increase in transfers from central governments. On average, total transfers increased from 2.6% of GDP in 2000 to 3.8% in 2015, while subnational governments' own resources increased from 3.0% of GDP to just 3.7% over the same period (see figure IV.4).

Figure IV.4

Latin America (selected countries)^a changes in the structure of subnational governments' total tax revenues, 2000-2015
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

^a Simple average for the following countries: Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Peru, the Plurinational State of Bolivia and Uruguay. The most recent data available for Colombia, Peru, the Plurinational State of Bolivia and Uruguay refer to 2014.

There are differences in the relative weight of own (tax and non-tax) resources within the total income received by subnational governments. Brazilian state and municipal governments' own resources account for more than half of their income (79.28%), which is equivalent to 10.7% of GDP (tax revenues account for more than 90% of their own resources). In Costa Rica, own resources, despite representing a small percentage of GDP, make up 99.91% of total revenues. The situation is similar in Uruguay, where own resources constitute more than 63% of local governments' total resources, and in Chile, where municipal governments' own resources make up 61.38% of their total income (see table IV.1).

Country	Own resources ^a		Transfers from the central government		Other income ^b		Total income
	(GDP)	(Total)	(GDP)	(Total)	(GDP)	(Total)	(GDP)
Argentina	6.38	42.04	8.80	57.96	0.0	0.00	15.2
Bolivia (Plurinational State of) ^c	4.84	37.02	8.23	62.98	0.0	0.00	13.1
Brazil	10.72	79.28	2.80	20.72	0.0	0.00	13.5
Chile	2.36	61.38	1.48	38.51	0.004	0.11	3.8
Colombia	6.72	57.17	5.03	42.83	0.0	0.00	11.8
Costa Rica	1.15	99.91	0.001	0.09	0.0	0.00	1.1
Ecuador ^d	1.00	31.48	2.28	68.52	0.0	0.00	3.3
Mexico	1.36	14.46	8.03	85.54	0.0	0.00	9.4
Peru	1.10	28.21	2.60	66.67	0.2	5.13	3.9
Uruguay	1.99	63.83	1.13	36.17	0.0	0.00	3.12

Table IV.1

Latin America (10 countries): breakdown of subnational governments' total revenues, around 2015 (Percentages of GDP and of total revenues)

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

^a "Own resources" includes tax and non-tax revenues.

^b "Other income" includes different types of debt, as well as investment, income from the sale of assets, loan recovery, capital transfers and other sources of income.

^c Data refer to 2014.

^d Data refer to 2013.

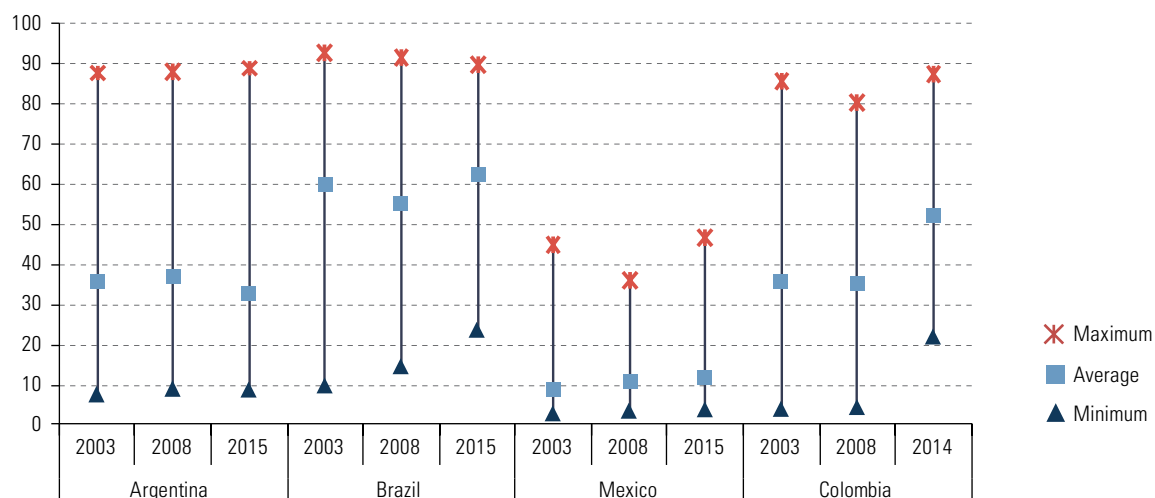
Unlike in Brazil, Costa Rica, Uruguay and Chile, subnational governments' main source of public revenues in other countries of the region is the system of transfers established by each central government to supplement the financing of subnational expenditures. Central government transfers to lower levels of government in Argentina, Mexico and the Plurinational State of Bolivia account for more than 8% of GDP.

The composition of subnational finances also differs within countries. The weight of subnational governments' own resources varies considerably in each country, depending on the distribution of the corresponding tax bases, the ownership of and appropriation mechanism for non-renewable natural resources, and the administrative capacities and tax effort of the different jurisdictions, among other factors.⁷

Figure IV.5 shows that own resources are highly disparate at the same level of government within countries: at the highest level, in some provinces and states in Argentina and Brazil own revenues account for nearly 90% of total income; yet the lowest level of own resources in Argentina is below 10% of total income, while in some Brazilian states it has increased from 10% in 2003 to more than 20% in 2015. In Colombia, where departments have managed to level up the relative share of their revenues, the lowest levels of own resources has increased from 4% of total income in 2003 to more than 20% in 2014. Mexican state governments' own revenues are less disparate and significantly lower (there are state governments whose own resources account for nearly 40% of total income, while for others the figure is closer to 5%) (see figure IV.5).

Figure IV.5

Latin America (4 countries): share of own resources in subnational governments' total revenues, by country (Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of Jiménez and Ter-Minassian "Política fiscal y ciclo en América Latina: el rol de los gobiernos subnacionales", *Macroeconomía del Desarrollo* series, No. 173 (LC/L.4192), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC), 2016.

⁷ Jiménez and Ter-Minassian (2016) examine this type of vertical asymmetry between levels of government in more detail, as well as analysing subnational governments' spending and debt levels.

In the last decade, tax receipts from non-renewable natural resources were a major source of public revenue, for both central and subnational governments (Brosio and Jiménez, 2012). This particular tax base has improved the fiscal position of several subnational governments, particularly in areas that produce this type of commodities. However the asymmetric allocation of these revenues between producer and non-producer governments, and the lack of equalization mechanisms, means that specialization in non-renewable natural resources is largely responsible for the high level of inequality in the availability of tax revenues at the same level of government (see box IV.2).

Another key factor in the configuration of subnational fiscal arrangements is the use and exploitation of renewable and non-renewable natural resources, the geographical concentration of their production and, given that their tax bases are assigned asymmetrically (producer jurisdictions raise more revenues), their impact on the tax bases of producer territories. Examples of this concentration can be seen in Argentina (in Neuquén, Chubut and Santa Cruz), Colombia (Casanare and Meta), Mexico (Campeche), Peru (Cusco) and the Plurinational State of Bolivia (Tarija).

To demonstrate this, indicators derived from the Gini coefficient are used to capture the extent to which the respective income source contributes to inequality of subnational tax receipts.

Lerman and Yitzhaki (1985) (adapted to the subnational income structure) show that there are three possible decompositions of the Gini coefficient of inequality: (i) the share of the income source, in this case non-renewable natural resources, in total income; (ii) the Gini correlation between income source —non-renewable natural resources— and total income; and (iii) the Gini coefficient of the income source (non-renewable natural resources). Thus, the product of these three decompositions is taken to be the absolute contribution to overall inequality made by income from non-renewable natural resources.

Latin America (5 countries): relative share of income sources in subnational fiscal income inequality

Country	Instrument	Own resources ^a		Non-renewable natural resources		Other income ^a (transfers, grants, and other sources)	
		(percentage of total income)	(relative share of the Gini coefficient)	(percentage of total income)	(relative share of the Gini coefficient)	(percentage of total income)	(relative share of the Gini coefficient)
Argentina	Royalties	36.39	24.71	5.65	16.05	57.96	59.24
Bolivia (Plurinational State of)	Mining, royalties, specific tax on hydrocarbons, direct tax on hydrocarbons	9.27	8.22	43.90	40.76	46.83	51.02
Colombia	Royalties	28.05	13.00	24.71	51.72	47.24	35.28
Mexico	Shares	14.13	40.19	33.10	30.43	52.78	50.59
Peru	Tax, surtax and royalties	24.08	20.89	47.65	76.65	28.27	2.46

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of G. Brosio and J.P. Jiménez, "Territorial inequality, equalization transfers and asymmetric sharing of non renewable natural resources in Latin America", unpublished, 2016.

Note: The data refer, in the case of Argentina, to provinces (2015); in the Plurinational State of Bolivia, to information from autonomous departmental governments and municipalities (disaggregated income data for 2012); in Colombia, to the income of departments and municipalities (2014); in Mexico, to state governments, municipalities and Mexico City (2015); and in Peru, to analysis of local governments' income (2015).

^a Own resources and transfers vary from those presented in table IV.1 owing to the decomposition of the data performed in this exercise to obtain income from non-renewable natural resources, which, depending on the country, in some cases is considered as "own resources" and in others as part of the system of transfers.

Box IV.2

Latin America: impact of concentrated non-renewable natural resource allocation on territorial disparities in subnational fiscal revenues

Box IV.2 (concluded)

As can be seen, tax revenues from non-renewable natural resources are responsible for a relatively large share of subnational income inequality. In Colombia, Peru and the Plurinational State of Bolivia, over 40% of the overall Gini coefficient is attributable to these revenues. In Argentina, where hydrocarbon royalties are allocated in full to the producer provinces under the Constitution, their aggregate weight within total income is low, but their relative share in fiscal income inequality among the provinces is substantial (16%).

In the light of the effect that the allocation of these resources among different levels of government can have on inequality, equalization transfers should be considered as an alternative to improve interjurisdictional equity (Searle, 2007), particularly in Latin America. Based on the theoretical principles of interregional fiscal equalization, Brosio and Jiménez (2016) examine the significant impact of natural resources exploitation on the territorial distribution of income and the effect that equalization systems covering fiscal revenues from natural resources would have on intermediate governments in Argentina, Peru and the Plurinational State of Bolivia. In all three countries, territorial inequality would be significantly reduced if that income were distributed through equalization mechanisms.

Source: Economic Commission for Latin America and the Caribbean (ECLAC).

C. The most commonly used tax bases at the subnational level: immovable property and goods and services

The tax receipts of the subnational governments in Latin America have barely increased over the past 10 years, unlike central governments' tax revenues. This reflects not only a lower tax effort, but also the weakness in the tax bases available to those levels of government.

More in-depth analysis by type of tax reveals that subnational revenues are generally raised from two types of taxes: taxes on immovable property, with receipts in the amount of approximately 0.5% of GDP, and taxes on the production, sale and transfer of goods and services, with receipts that exceed 1.5% of GDP⁸ (see figure IV.6).

1. Taxes on immovable property

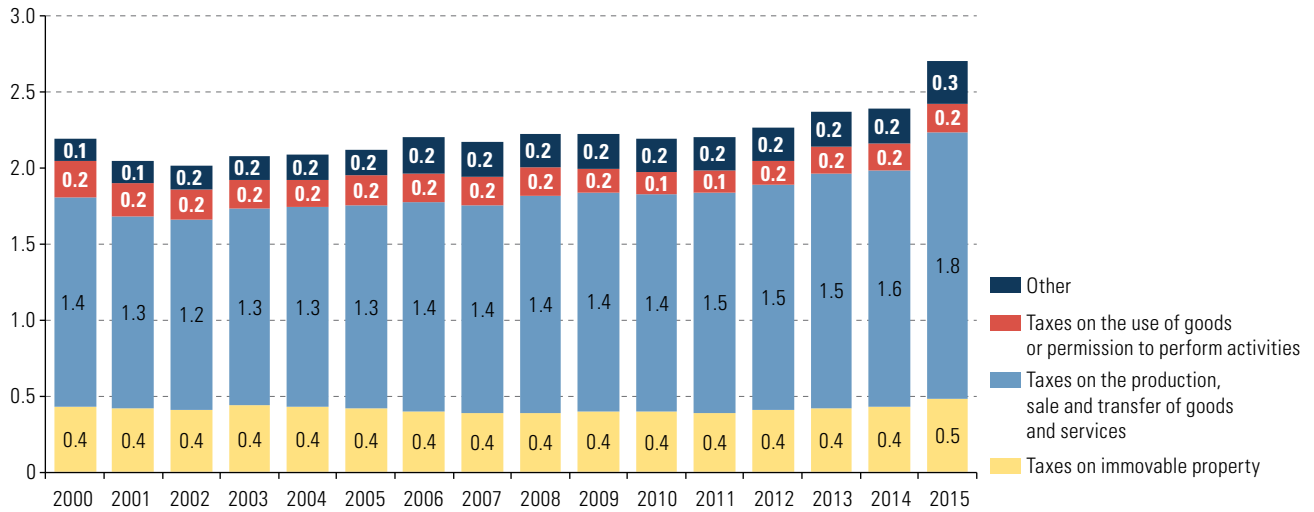
Within the wide range of taxes to which taxpayers' assets are usually subject, the property or real estate tax is the most widely accepted and used by lower levels of government as a source of fiscal revenue, even though it accounts for less than 20% of subnational tax revenues.

While the specifics of this tax differ from country to country, it is generally based on the value of the property (by total surface area and built surface area) and the rate is set by the national tax authority. In Chile, for example, the central government (the Internal Revenue Service (SII)) is responsible for setting the tax rate, updating the land registry and collecting the tax, while in Mexico the tax is chiefly administrated and collected by municipalities (under the Constitution). Nevertheless, Mexico has introduced incentives to establish agreements between municipalities and state governments in order to devolve property tax powers and administrative responsibilities to intermediate government agencies.

⁸ OECD (2016) provides in-depth analysis by country and type of subnational tax.

Figure IV.6

Latin America (selected countries)^a subnational governments' tax revenues by type of tax, 2000-2015
(Percentages of GDP)



Source: Organization for Economic Cooperation and Development (OECD), *Revenue Statistics in Latin America and the Caribbean 1990-2014*, Paris, OECD Publishing, 2016.

^a Simple average for the following countries, by level of government covered: Argentina, provincial governments; Brazil, state and local governments; Chile, local governments; Costa Rica, local governments; Colombia, departmental and local governments; Ecuador, local governments; Mexico, state and local governments; and Peru, local governments.

The revenue from these taxes tends to reflect disparities between subnational governments, as the tax bases vary depending on the zone (rural or urban) and the fiscal capacity of the subnational government to perform tasks such as updating the land registry and administrating and collecting the tax. For example, data for Colombia show that property tax receipts in 8 municipalities are 4.3 times greater than the amount collected by more than 900 small municipalities, which make up 86% of all municipalities nationwide. Likewise, in Brazil, 50% of revenues are concentrated in the hands of just 12 municipalities. Something similar can be seen in Argentina, as Buenos Aires and the provinces of Buenos Aires and Santa Fe collect more than 70% of all property tax income. In Costa Rica, 10% of municipalities raise 43% of the total (Bonet, Munoz and Pineda, 2014), while data for Mexico show that 90% of tax receipts go to just 12% of municipalities (Ruelas Ávila, 2015).

2. Taxes on the production, sale and transfer of goods and services

In general, countries tend to use two different types of sales tax or excise duties: (i) a single stage, non-cumulative tax, such as the general sales tax (which is borne by the end user) in many states in the United States, or targeted taxes on specific goods or services; and (ii) a multistage, non-cumulative tax, such as the value added taxes used in all Latin American countries. Cumulative or cascade taxes are used less frequently, but they do exist in the region at the subnational level. Such taxes are imposed on each stage of manufacturing, distribution and marketing, and are able to generate significant takings from a low tax rate by taxing the same tax base repeatedly. These types of taxes are widely used in Argentina and Brazil: in both countries, their receipts were 70% higher than subnational tax revenues (OECD, 2016).

Taxes on economic activity pose greater tax coordination risks, as the different rates applied in neighbouring regions can encourage taxpayers to export consumption, production or marketing to those areas with a lower tax burden within the same country. Lack of coordination can also lead subnational governments to encourage companies to locate their factories and stores in their jurisdictions by modifying tax rates or bases, leading to tax wars.

D. Intergovernmental transfer systems finance the gap between expenditure and own resources

In addition to the spending that they finance, transfers have a major impact on efficient and equitable public service delivery, because of their implications for the incentives and accountability of recipient governments.

In several countries, the combination of tax systems administered by the central government and greater decentralization of public spending to subnational governments has led to varying degrees of imbalance between spending and resources at each level of government. This can be seen in the gap between the resources and spending of different levels of government (vertical asymmetry) or in the gap between the fiscal capacities of various subnational governments at the same level (horizontal asymmetry).

Hence the importance of intergovernmental transfer systems aimed at redressing these imbalances and securing subnational governments' financing.

As discussed in the previous sections, tax collection is still largely concentrated in the hands of the central governments of the region. This means that intermediate and local governments are financially dependent on the central government, giving rise to different systems of intergovernmental transfers.

The widening gap between resources and spending at the subnational level conflicts with the traditional fiscal federalism approach, which contends that the benefits of decentralization increase when the costs of providing a particular service are covered locally, especially when the service is adapted to citizens' needs and preferences. In any case, this gap reflects the inevitable tension between the numerous demands for local spending and the lack of tax instruments by which to collect revenues locally.

The mix of taxes and transfers can have very different effects on the incentives for subnational governments to provide services efficiently and equitably and to exercise proper financial controls (Martinez-Vazquez and Sepúlveda, 2012). However, once a mix of taxes and transfers has been identified that is capable of financing service delivery by subnational governments, it is important to bear in mind the ultimate objectives of a transfer system, so that subnational governments can be offered the right incentives.

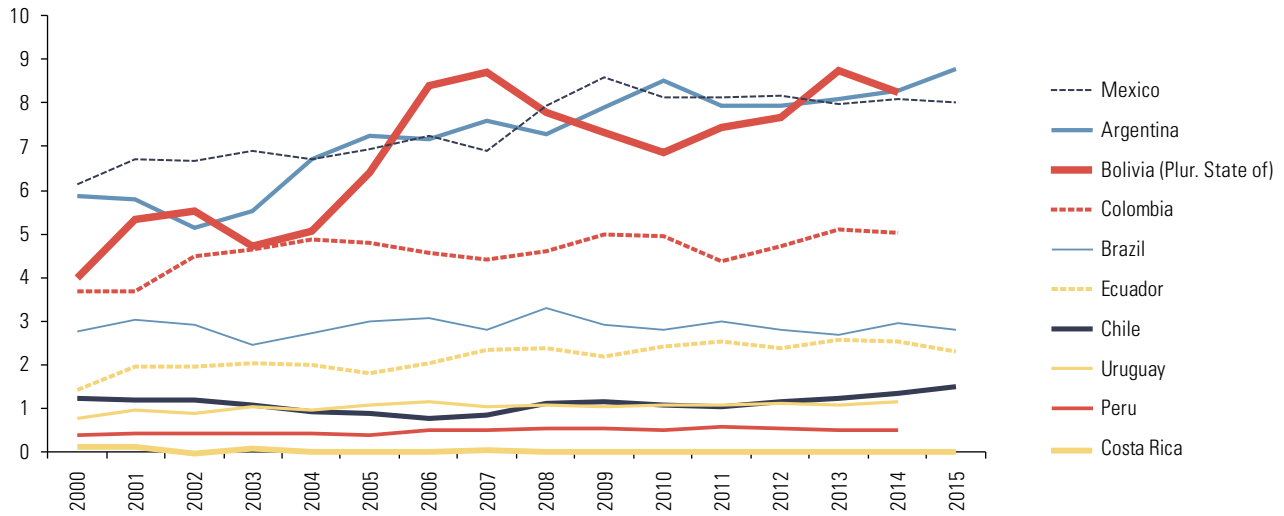
In addition to the spending that they finance, transfers have a major impact on efficient and equitable public service delivery, because of their implications for the incentives and accountability of recipient governments. In Latin American countries, asymmetries in the distribution of income and spending mean that intergovernmental transfers are very significant in terms of GDP—almost double the OECD average (Brosio and Jiménez, 2012).

Another notable feature of intergovernmental transfer systems is that, on the whole, they are revenue-sharing mechanisms; there are almost no examples of equalization transfer systems.

In recent years, transfers from central governments to subnational governments have risen in terms of GDP, with some variations (especially after the 2009 crisis) (see figure IV.7). A broader range of methods is now used to distribute resources among the levels of government, and in some cases conditions have been imposed on policy-funding transfers.

Figure IV.7

Latin America (10 countries): value of transfers from central governments to subnational governments, 2000-2015
(Percentages of GDP)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

With regard to the design of intergovernmental transfer systems, Argentina has run a system of fixed coefficients not determined by explicit criteria since 1988, although it has set criteria for earmarked funds. The system in Mexico, on the other hand, combines indicators related to population distribution and tax collection in different regions. Peru has a municipal compensation fund (FONCOMUN) that distributes monies from various taxes among municipal, provincial and district authorities using an extensive series of indicators and differentiating between rural and urban municipalities.

1. Education-related transfers are prominent among earmarked transfers

In recent decades, several countries have implemented reforms that include decentralizing education sector spending to varying degrees (Cetrángolo and Curcio, 2017). These reforms were undertaken to improve spending efficiency, and on the understanding that bringing service delivery closer to end users would align the supply of education with the needs of the population, at a lower cost. In other cases, the main idea was to bolster the system's legitimacy while supporting the democracies of the region. Regardless of whether reforms undertaken for these reasons were appropriate, education systems tend to be unequal, requiring central government financing in the form of intergovernmental transfers.

Several of the decentralization reforms have, to varying degrees, taken into account the demands imposed by the particular rationale of each sectoral policy, mainly with regard to the coverage and quality of the public goods and services provided. Often, these changes have been the result of transfer conditionalities. However, the fact of attaching a condition to a transfer does not per se strengthen sectoral policy: it is increasingly evident that, in order to craft more efficient public policies with a greater impact, lawmakers must reflect on the policy's specific operational logic, its different components and dimensions, and the optimal distribution of territorial competencies and responsibilities. Many important lessons have been drawn from the decentralization process in this regard.

In practice, however, distinctions must be drawn between different types and scopes of conditionalities. Some transfers have very general conditionalities attached, while others must be used in a specific sector. An example is Brazil's Fund for the Maintenance and Development of Primary Education and for Teacher Development (FUNDEF), which operated during the second half of 1990s and the early 2000s. In 2006, the Fund for the Maintenance and the Development of Primary Education and Valorization of Education Professionals (FUNDEB) was set up, financed by the federal government and state governments using earmarked resources. Argentina also operates a great variety of automatic transfers with conditions, such as the National Teacher Incentive Fund and, between 2006 and 2010, funds raised by penalties imposed under the Education Financing Act.

Lastly, there are financing systems for specific programmes. In Peru, there is the Glass of Milk transfer programme, run by local governments, and based on specific, relevant indicators (number of children, pregnant women, older persons and children with tuberculosis, and the poverty index).

Colombia is a special case within the region. Its general revenue-sharing system is regulated by Law No. 715 of 2001, which was amended in 2003 by Law No. 863. Under the Constitution, transfers fall into four main groups: (i) 58.5% of resources are earmarked for education; (ii) 24.5% for health; (iii) 5.4% for drinking water; and (iv) the remaining 11.6% for other purposes. The law establishes criteria for the distribution of the resources of each fund among municipalities and departments and the conditions for their use. Consequently, municipalities apparently cannot reallocate general-purpose resources to meet education or health needs should the need arise; local autonomy in this area is thus very limited, in particular when the availability of their own tax revenues are taken into account.

The Colombian system has much in common with Mexico's. While most Mexican municipalities' funding comes from unconditional federal transfers, they also receive resources from funds known as federal contribution funds. Since 1998, the main public goods and services in Mexico have been provided by state and municipal governments. There are eight federal contributions funds:

- (i) Contribution Fund for Educational Payroll and Operating Expenses (FONE)
- (ii) Contribution Fund for Health Services (FASSA)
- (iii) Contribution Fund for Social Infrastructure (FAIS)
- (iv) Contribution Fund for Strengthening Municipalities and the Territorial Demarcations of Mexico City (FORTAMUNDF)
- (v) Multiple Contribution Fund (FAM)
- (vi) Contribution Fund for Technological and Adult Education (FAETA)
- (vii) Contribution Fund for the Public Safety of the States and Mexico City
- (viii) Contribution Fund for Strengthening Federal Bodies (FAFEF)

The largest fund in budgetary terms is FONE, which received 58.8% of all contributions in 2015. If FAETA and the resources earmarked for education under FAM are included as well, the education sector's share of all contributions comes to 62.7%.

One type of transfer aimed at encouraging policy innovation is competitive funds. In Chile, such funds are national or regional in scope and are administered by sector, so they do not appear as allocations in municipal budgets. These resources are allocated

on the basis of centrally-defined criteria, by which municipalities are encouraged to submit proposals for new projects in order to receive financing. In Mexico, national funds are allocated to innovative education projects through this type of mechanism.

Decentralized public policies mean that intergovernmental financial transfers in line with sectoral policies are becoming increasingly important. The role of these transfers is especially relevant in view of the production and territorial inequalities in the countries of the region, the differences in each government's management and human resources capacities and the tensions among different public policy objectives that put pressure on fiscal accounts.

A good question is whether intergovernmental transfer systems in the education sector are based on any indicator directly or indirectly related to the costs of the education system itself. Some examples of directly related, but little-used, indicators include the number of pupils, the school-age population, evaluation test results or literacy rates by region. However, the countries tend to make more use of general indicators, such as population or population density—usually from censuses—, that are indirectly related to the differential costs of education services.

Meanwhile, the situation is very different when transfers are earmarked for education. Such conditional transfers will, in principle, produce the effects intended by their pre-allocation. This is the case the government transferring the funds (the central government, in the case of transfers to subnational governments, or the intermediate government, in the case of transfers to local governments) has a clear interest in the resources being used for purposes that meet the explicit priorities of its own education policy. This applies both to capital expenditures and to certain elements of payments to cover teachers' salaries or benefits, supplies, books or other priorities identified by central governments.

Sometimes, budget items may be transferred to finance expenditures that are not necessarily educational but are schools' responsibility (for example, the Glass of Milk programme or school meals for pupils from low-income families). These instances have a tremendous impact on the equity of the system, and the effects of these transfers on quality are consistent with their stated objectives.

In order to make more efficient use of conditional transfers for services that should be among the shared priorities of different levels of government, resources can be allocated in proportion to the funds earmarked for that service by the government receiving transfers.

Lastly, certain tax resources are allocated for a particular educational purpose by law or other regulatory instrument. Here, the impact on equity will depend on the type of tax whose proceeds are being allocated. For example, if wealth tax revenues are preassigned to public education, it could be argued that the contribution of the wealthiest members of society, who may send their children to private schools, is helping to increase the budget of public education.

That said, there are many examples of specific tax allocations in Latin America that are not the result of a financial policy designed to achieve specific objectives, but rather are the outcome of strenuous efforts to raise financial resources amid severe budget constraints. In these cases, specific allocations are far from the optimal solution and undermine proper budgetary management at the relevant level of government.

Debt is usually incurred to smooth out public expenditure cycles (thus avoiding procyclical fiscal policies) and to finance capital and infrastructure spending. On the other hand, excess borrowing at the subnational level could threaten macroeconomic and fiscal sustainability and directly affect the provision of public goods and services.

E. Access to credit broadens the subnational fiscal space, but can also worsen asymmetries

Public borrowing at the subnational level can be a significant issue, in view of the glaring territorial disparities and the vertical and horizontal asymmetries that exist within the countries of the region.

Analysis of this option, as well as its coordination mechanisms, is central to intergovernmental fiscal relationships. Debt is usually incurred to smooth out public expenditure cycles (thus avoiding procyclical fiscal policies) and to finance capital and infrastructure spending. On the other hand, excess borrowing at the subnational level could threaten macroeconomic and fiscal sustainability and directly affect the provision of public goods and services.

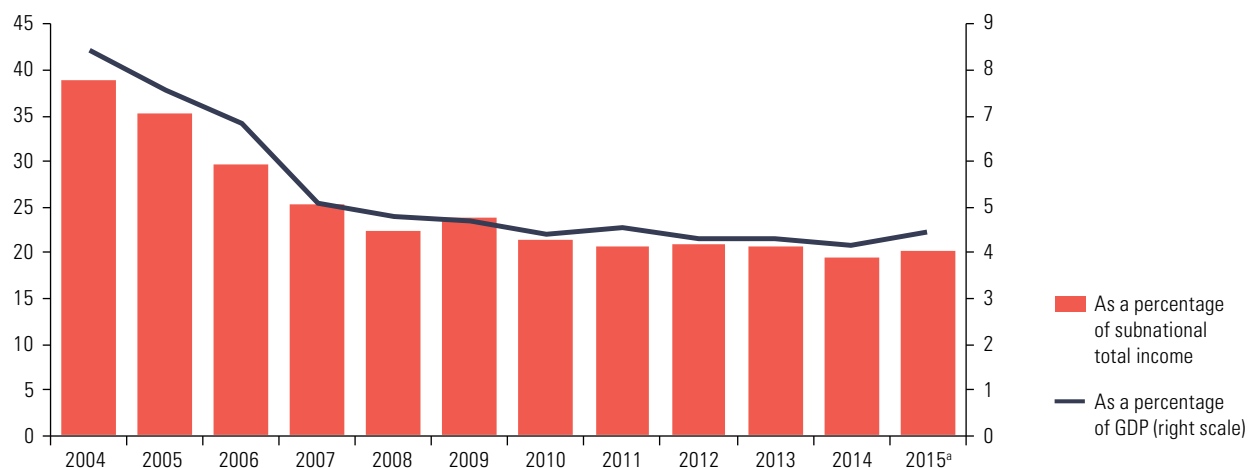
Episodes of subnational overindebtedness in the region's more decentralized countries (notably Argentina and Brazil), together with the recurrent financial bailouts by central governments, led to a growing consensus by the mid-1990s that subnational debt coordination and oversight mechanisms should be reviewed and strengthened.

Borrowing control has been the subject of much discussion. The mechanisms can range from leaving control of subnational government borrowing to the financial markets, to establishing legal or even constitutional standards to restrict or cap debt levels, with varying degrees of cooperation between subnational and central governments.⁹

As ECLAC¹⁰ has shown, average subnational debt has come down substantially over the last decade, from close to 9% of GDP in 2004 to close to 4% in 2015 (ECLAC, 2016b). The same is true of levels of debt compared to total income, although these remain above 20% (see figure IV.8)

Figure IV.8

Latin America (selected countries):^a subnational debt, 2004-2015^b
(Percentages of GDP and of total income)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

^a Simple average for the following countries, by level of government covered: Argentina, provincial governments; Brazil, state governments; Ecuador, departmental governments and local governments; Mexico, state governments; and Peru, regional governments and local governments.

^b Data for 2015 are preliminary.

⁹ These mechanisms are discussed in more depth in Ter-Minassian (2007), while Jiménez and Ruelas (2017) make an approximate comparison of what is happening in some Latin American countries.

¹⁰ *Fiscal Panorama of Latin America and the Caribbean, 2016* shows the same trend extending through to 2014 (ECLAC, 2016b).

Borrowing has played an important role in fiscal decentralization processes, particularly in Argentina and Brazil. The high levels of subnational debt incurred led both countries to undertake institutional changes to restructure the debt, reduce debt levels and cut fiscal deficits, as has been reflected in the clear fall in the debt burden as a percentage of GDP in recent years. In Mexico, the debt burden is not as onerous in aggregate terms as in Argentina and Brazil, but the debt of certain states has recently led to legal changes, mainly in an effort to control and restrict state and local governments' freedom to take out loans (see figure IV.9).

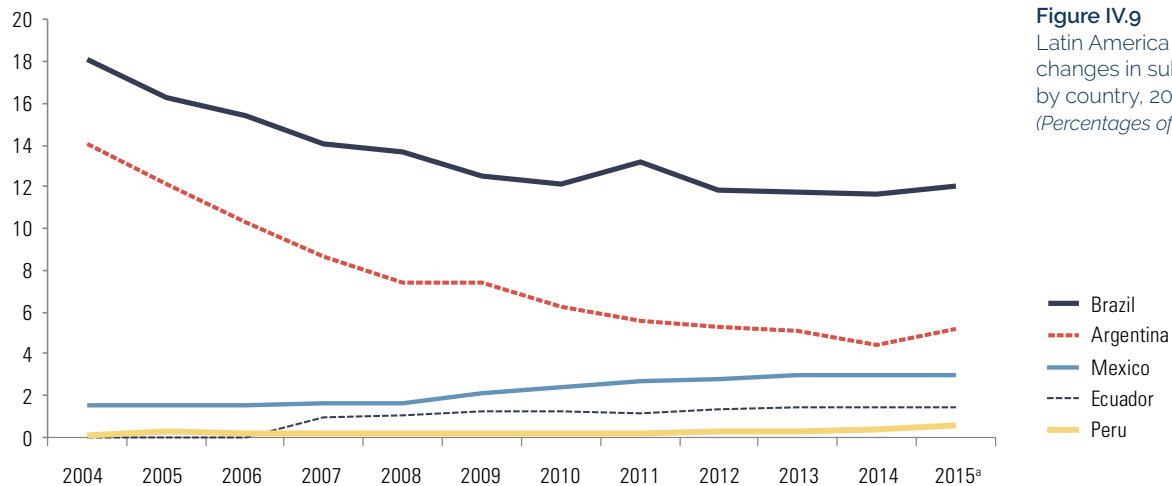


Figure IV.9
Latin America (5 countries):
changes in subnational debt
by country, 2004-2015^a
(Percentages of GDP)

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

^a Data for 2015 are preliminary.

With regard to the composition of subnational debt, in most cases liabilities are contracted with public entities, either directly with the central government or through the development bank. This is not the case in Mexico, where almost 60% of subnational debt is held by private banks and its repayment is largely guaranteed by federal government transfers (see figure IV.10).

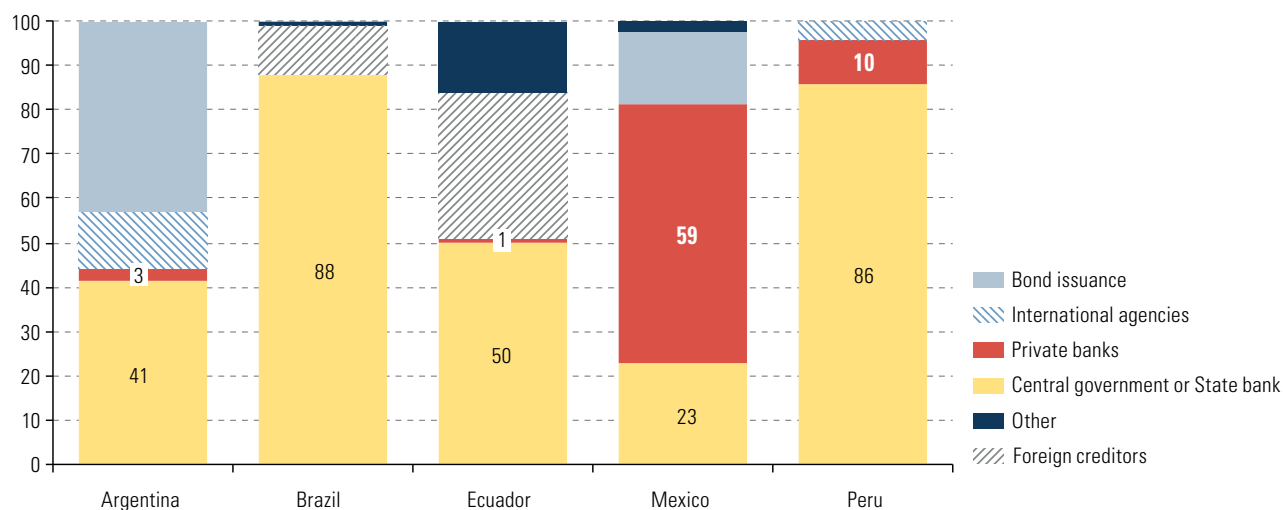
Measuring debt levels relative to total income not only reveals the fiscal constraint of subnational governments, but also allows comparison of the weight and sustainability of each subnational government's debt within the same country. The cases of Argentina, Brazil and Mexico are illustrative: as can be seen in figure IV.11, there are considerable differences among intermediate governments in the three countries.

In the case of Brazil, the subnational debt sustainability indicator most widely used by authorities (the ratio of debt to net current income) has varied significantly over time and between the different states. In 2003, 8 of the 27 states had debts that, at 200% of net current income, exceeded the ceiling allowed under the Fiscal Responsibility Act of 2000,¹¹ while only the state of Rio Grande do Sul was still in this position in 2015. In Mexico there are also considerable differences between states' debt levels in relation to their total income, which in 2015 ranged from less than 1% in Tlaxcala to more than 90% in Coahuila; although most states' debt remains below 40% of income, there are some examples of debt levels above 70% (Chihuahua, Nuevo León and Quintana Roo, in addition to Coahuila).

¹¹ Jiménez and Ter-Minassian (2016) analyse the differences between intermediate government debt levels and variations in sustainability indicators from 2003 to 2013. In the case of Mexico, they point out that, given that own resources account for a small proportion of Mexican states' total income, the debt to own income ratio exceeds 200% in most cases.

Figure IV.10

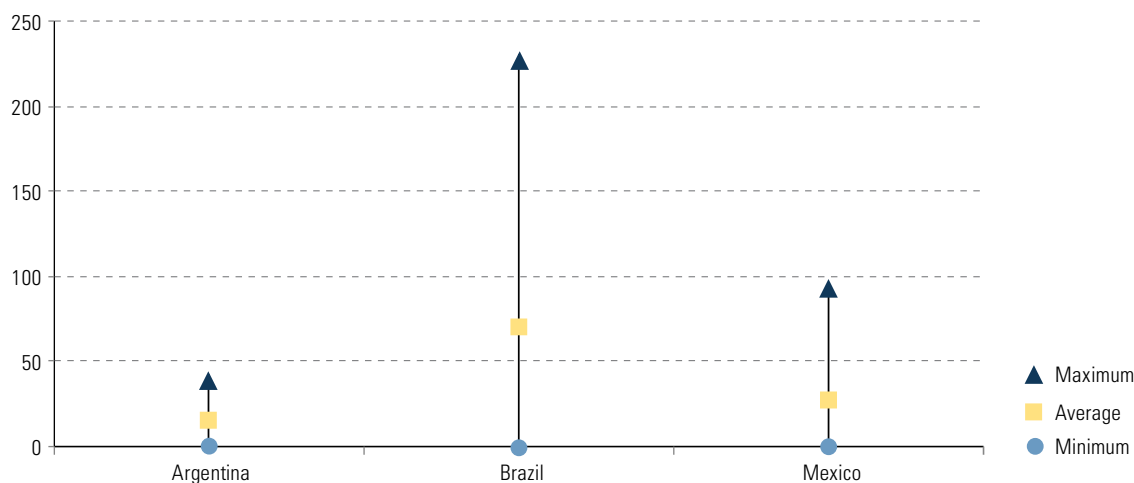
Latin America (5 countries): breakdown of subnational debt, around 2015
(Percentages of total debt)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

Figure IV.11

Argentina, Brazil and Mexico: subnational debt levels compared to total income, 2015
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

In general, subnational governments' indebtedness does not seem to jeopardize fiscal sustainability. Overall, the debt burden is low and has decreased gradually in recent years, rising slightly in the 2015-2016 biennium. However, it is important to consider the differences among subnational governments in terms of debt sustainability. In the same vein, access to credit can sharpen territorial disparities. For example, where financial markets play a major role in providing loans—as is the case in Mexico—, private institutions may be expected to extend credit more readily to entities with better fiscal capacities, which could have an impact on territorial equity.



Bibliography

- Bartolini, D., S. Stossberg and H. Blöchliger (2016), "Fiscal decentralisation and regional disparities," *OECD Economics Department Working Papers*, No. 1330, Paris, OECD Publishing.
- Bonet, J., A. Munoz and C. Pineda (2014), "Introducción," *El potencial oculto. Factores determinantes y oportunidades del impuesto a la propiedad inmobiliaria en América Latina*, J. Bonet, A. Munoz and C. Pineda Mannheim (eds.), Inter-American Development Bank (IDB).
- Brosio, G. and J.P. Jiménez (2016), "Territorial inequality, equalization transfers and asymmetric sharing of non renewable natural resources in Latin America," unpublished.
- (2012), *Decentralization and Reform in Latin America*, Cheltenham, Edward Elgar.
- Brosio, G., J.P. Jiménez and I. Ruelas (2016), "Looking at the nexus between personal income distribution and regional GDP inequality in decentralized systems," paper presented at the fifth Iberoamerican sessions on Local Finance, Santiago de Compostela.
- Cetrángolo, O. and J. Curcio (2017), "Financiamiento y gasto educativo en la región de América Latina y el Caribe, con especial referencia a su impacto en equidad," unpublished.
- Cont, W. and A. Porto (2014), "Personal and regional redistribution through public finance in a federal setting," *The Quarterly Review of Economics and Finance*, vol. 54, No. 4.
- Curcio, J., O. Cetrángolo and J.P. Jiménez (2009), "Fuentes de financiamiento educativo," *Políticas de financiación de la educación que favorecen la cohesión social*, J.P. Jiménez, A. Morduchowicz, A. Astorga (coords.), International Centre for Educational Studies (CIEP)/Agency for International Technical Cooperation of the Economic and Financial Ministries (ADETEF).
- Di Fillipo, A. and R. Bravo (1976), "Los centros nacionales de desarrollo y las migraciones internas en América Latina," *Documento B/20* [online] www.wure.cl/index.php/eure/article/viewFile/897/12.
- De Mattos, C. (1982), "The limits of the possible in regional planning," *CEPAL Review*, No. 18 (E/CEPAL/G.1221), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC).
- ECLAC (Economic Commission for Latin America and the Caribbean) (2016a), *The social inequality matrix in Latin America* (LC/G.2690(MDS.1/2)), Santiago.
- (2016b), *Fiscal Panorama of Latin America and the Caribbean 2016: Public finances and the challenge of reconciling austerity with growth and equality* (LC/L.4140), Santiago, March.
- (2010), *Time for Equality: Closing Gaps, Opening Trails* (LC/G.2432(SES.33/3)), Santiago.
- Feld, L., H. Zimmermann and T. Döring (2004), "Federalism, decentralization, and economic growth," *Marburg Working Papers on Economics*, No. 200430.
- Hanni, M., R. Martner and A. Podestá (2015), "The redistributive potential of taxation in Latin America," *ECLAC Review*, No. 116 (LC/G.2643-P), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC).
- Jiménez, J.P. and I. Ruelas (2017), "El endeudamiento de los gobiernos subnacionales en América Latina: evolución, institucionalidad y desafíos," Santiago, Economic Commission for Latin America and the Caribbean (ECLAC), unpublished.
- Jiménez, J.P. and T. Ter-Minassian (2016), "Política fiscal y ciclo en América Latina: el rol de los gobiernos subnacionales," *Macroeconomía del Desarrollo series*, No. 173 (LC/L.4192), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC).
- Lerman, R. and S. Yitzhaki (1985), "Inequality effects by income source: a new approach and applications to the United States," *The Review of Economics and Statistics*, vol. 67, No. 1, MIT Press.
- Lustig, N., C. Pessino and J. Scott (2013), "The impact of taxes and social spending on inequality and poverty in Argentina, Bolivia, Brazil, Mexico, Peru and Uruguay: an overview," *CEO Working Paper*, No. 13.
- Martínez-Vázquez, J. and C. Sepúlveda (2012), "Toward a more general theory of revenue assignments," *International Center for Public Policy Working Paper Series*, No. 71 [online] <http://scholarworks.gsu.edu/icepp/71>.
- OECD (Organization for Economic Cooperation and Development) (2016), *Revenue Statistics in Latin America and the Caribbean 1990-2014*, Paris, OECD Publishing.
- (1999), "Taxing powers of state and local government," *Tax Policy Studies*, No. 1, Paris.

- Pinto, A. (1975), "Heterogeneidad estructural y modelo de desarrollo reciente en América Latina," *Inflación: raíces estructurales*, Mexico City, Fondo de Cultura Económica.
- Ruelas Ávila, I. (2015), "Evaluación de las características del impuesto predial en México," *Revista Iberoamericana de Estudios Municipales* (RIEM), No. 12.
- Searle, B. (2007), "Revenue sharing, natural resources and fiscal equalization," *Fiscal Equalization: Challenges in the Design of Intergovernmental Transfers*, J. Martínez Vázquez and B. Searle (eds.), Springer.
- Sunkel, O. (1970), "Desarrollo, subdesarrollo, dependencia, marginación y desigualdades espaciales: hacia un enfoque totalizante," *Revista EURE*, Santiago.
- Ter-Minassian, T. (2007), "Fiscal rules for subnational governments: can they promote fiscal discipline?," *OECD Journal on Budgeting*, vol. 6, No. 3.

Fiscal developments differed significantly by subregion during 2016. The average fiscal deficit of Latin America and the Caribbean held steady at about 3.0% of GDP, but in the north of the region (the Central American isthmus, the Dominican Republic, Haiti and Mexico) the deficit declined to 2.2% of GDP in 2016 from 2.4% in 2015. In South America, conversely, the fiscal deficit widened from 3.6% of GDP in 2015 to 4.0% of GDP in 2016. A number of Caribbean countries experienced improvements that led to a (still modest) reduction in the heavy burden of public debt in the subregion.

The *Fiscal Panorama of Latin America and the Caribbean 2017* analyses the scope for mobilizing resources to fund sustainable development within the framework of the 2030 Agenda for Sustainable Development. It argues for the importance of moving towards progressive tax systems in which direct taxes play an important role, and of continuing the struggle against tax evasion, which significantly undermines revenues. Lastly, it reviews progress with environmental taxation, identifying lessons that may be of use in future tax reforms, and examines territorial disparities and their implications for the design and configuration of fiscal policy in the region's countries.



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