Tax Policy for Inclusive Growth in Latin America and the Caribbean[1]

Fiscal challenges in Latin American and the Caribbean (LAC) have been exacerbated by the COVID-19 pandemic, calling for a careful assessment of how to mobilize revenue in an inclusive and growth-friendly manner. This chapter provides an overview of taxation in LAC before the pandemic and compares it to OECD countries. LAC countries collect significantly lower tax revenue than OECD countries and have tax structures that rely more on corporate-income taxes (CIT), which might be hampering investment and growth. Conversely, personal-income taxes (PIT) play a minor role in LAC, a fact that does not appear to be fully aligned with the region's level of development. LAC countries could strengthen their PIT to mobilize revenue and improve tax progressivity by addressing critical design flaws (e.g., minimum/maximum rates and thresholds, and excessive deductions). Possible adverse growth effects could be mitigated by providing incentives to formalization and labor force participation, particularly of low-wage female workers (e.g., through earned-income tax credits), and by strengthening the taxation of non-labor income of high-income earners. CIT reforms would need to focus on setting statutory rates aligned with those of other regions—when assessed to be relatively high—to attract investment and alleviate profit shifting, and on broadening the corporate tax base—streamlining tax deductions and incentives while ensuring that they are uniform and rules-based for all investors. Implications of ongoing global corporate tax reforms would need to be evaluated on a country-by-country basis. Value-added taxes (VAT) could be improved by tackling exemptions and reduced rates, combined with well-targeted transfers that encourage the use of electronic payments to compensate vulnerable households. Immovable property, inheritance and environmental taxes could be also strengthened to mobilize revenue in an inclusive and growth-friendly manner.

Introduction and Key Results

The COVID-19 shock exacerbated pre-existing fiscal challenges faced by several countries in Latin America and the Caribbean (LAC), as demonstrated by public debt levels which were on the rise even before the pandemic struck (IMF 2021a). Such challenges are likely to remain sizable going forward. COVID-related expenses will likely continue (health, education and transfers to households affected by the pandemic), and so will additional fiscal costs arising from monetary policy normalization and/or the realization of contingent liabilities, alongside other structural expenditure outlays due to aging. Moreover, fiscal policy in LAC, one of the most unequal regions in the world, is not progressive enough given development levels and societal preferences (Cárdenas and others 2021).

This chapter presents a detailed assessment of tax structures in LAC and outlines reform options to improve collection in a growth-friendly and inclusive manner. It begins by providing an overview of taxation in the region before the pandemic,[2] comparing it to OECD countries, a natural benchmark given their desirable tax design features and the fact that several LAC countries are—or are likely to become—OECD members.[3] The chapter then explores how the value-added tax (VAT), the corporate-income tax (CIT) and the personal-income tax (PIT) are associated with income levels and long-term growth. Specific tax design features are then assessed, inspecting how the taxation of capital and labor can be improved by simplifying existing tax codes, to increase revenue and to provide a more equitable tax structure while safeguarding growth. The chapter's key findings are:

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[2]The sample includes a diverse set of countries ranging from the largest economies in LAC to small Caribbean economies. For details on the sample coverage see Annex 1.

[3]Currently four LAC countries are OECD members (Chile, Colombia, Costa Rica, and Mexico) while Brazil, the largest LAC economy, is reportedly at an advanced stage to become a member. This provides perspective about the relevance that OECD tax structures, as an aspirational benchmark, could have for the region. In this chapter, however, OECD will refer to all OECD member countries as of end-2019 excluding LAC countries.

- LAC exhibits a substantial gap relative to OECD countries in terms of *tax revenue collection*, and with a tax structure somewhat biased towards indirect taxes.

- Inspection of *direct taxes* shows that the low revenue yield in LAC is mostly explained by large gaps in PIT collection. In fact, LAC's collection of CIT significantly exceeds that of the average OECD country.

- Factors like *informality and weak state capacity* do not seem to fully account for observed trends in the region. Although LAC countries have experienced sizable reductions in labor informality and improvements in tax administration, moderate increases in PIT revenue have generally been observed. Conversely, VAT and CIT collection have trended upwards and robustly so in many LAC countries.

- Results show that the *VAT is more growth friendly* than the PIT in LAC. However, further analysis suggests that adverse growth effects of the PIT could be mitigated when this tax is properly designed and enforced. The analysis also shows that the CIT has detrimental growth effects, a result consistent with previous findings in the literature, suggesting that LAC's strong reliance on the CIT has likely affected growth adversely in the region.

The chapter also proposes the following reform options, which would need to be tailored to each country's circumstances and embedded in a broader agenda that internalizes tax administration capacity, reform sequencing and political economy constraints:

- Evidence for LA7 countries shows that better PIT design could bring significant gains in collection and equity. In fact, the analysis shows that changes in PIT design would leave largely unaffected the after-tax income of low- and middle-income individuals, since the analyzed policy exercises focus on simplifying the system by eliminating deductions, which disproportionally benefit richer households. Potential adverse growth impacts could be mitigated by providing well-targeted incentives to labor force participation of low-wage earners through an earned income tax credit (EITC)—which could help reduce the gender gap if properly designed. Such EITC, financed out of PIT collection gains, could also provide incentives for labor formalization by compensating social security contributions, which almost entirely explain the labor "costs" or tax wedge of the average worker among LA7 countries. Increasing the tax burden on certain non-labor income sources (e.g., capital gains) would also raise PIT revenue and improve equity, without affecting labor force participation decisions.

- Corporate taxation should be assessed carefully in the region since the significant reliance on the CIT have hampered investment and growth. Reforms would need to focus on broadening the base by streamlining tax benefits and deductions for horizontal equity and to help prevent further base erosion—such as limitations on interest deductibility and transfer pricing regulations—but keeping incentives that directly reduce the cost of investment, such as accelerated depreciation and investment expensing, to the extent these are allocated uniformly and on rules-based manner to all investors. Simultaneously, corporate statutory rates would need to be aligned with those observed in other regions—when assessed to be relatively high—to attract investment and alleviate profit shifting, while evaluating the country-specific implications of ongoing global corporate tax reforms.[4] Taxation of rents associated with natural resources could be tackled by designing special fiscal regimes as relevant.

- The VAT, LAC's main source of revenue, could be improved by tackling reduced rates and exemptions to make it a simpler and more efficient tax revenue source, particularly in countries with relatively high statutory rates. While informality and inequality remain key obstacles to broaden the tax base, the design of targeted transfers to compensate vulnerable households that encourage the use of electronic payment

[4]Final agreement on key parameters of ongoing BEPS OECD/G20 global corporate tax reform efforts has been reached in October 2021, but implementation details are still pending, leaving a precise assessment of the region's overall impact still tentative. However, such impact will likely depend on the extent of global adoption of reforms and country-specific circumstances—such as the level of statutory corporate tax rates.

methods (e.g., social card program in Uruguay), could help ease these challenges by fostering formalization. While estimates of additional revenue from levying the VAT on the digital economy appear modest, taxing this sector as others in the economy is critical to avoid tax base erosion.

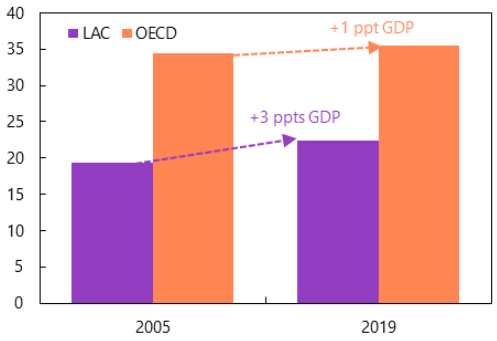
- Other untapped revenue sources should be considered more forcefully, including the taxation of immovable property, inheritance taxes and environmental taxes.

Overview of Tax Structures in LAC

Despite increasing over the past 15 years, from 19.4 to 22.4 percent of GDP between 2005 and 2019, revenue collection including social security contributions (SSCs) in LAC stands well below the levels of OECD countries, which have hovered around 35.5 percent of GDP during the same period (Figure 1).

Figure 1. Tax Collection and Tax Structures in LAC and the OECD

1. Total Tax Revenue Collection (Percent of GDP)



2. Tax Structures, 2019 (Percent of GDP)

	LAC	OECD
Value added taxes	6.3	7.2
Personal income taxes	2.3	8.8
Corporate income taxes	3.7	2.8
SSCs and payroll taxes	4.0	10.2
Other taxes	6.1	7.0
Total tax revenue	22.4	35.5

Sources: Organisation for Economic Co-operation and Development (OECD) Tax Revenue Statistics database; and IMF staff calculations.
Note: Group averages reflect simple country averages. OECD (members as of end-2019) average excludes Chile and Mexico. Total tax revenue includes SSCs. LAC = Latin America and the Caribbean; SSCs = social security contributions.

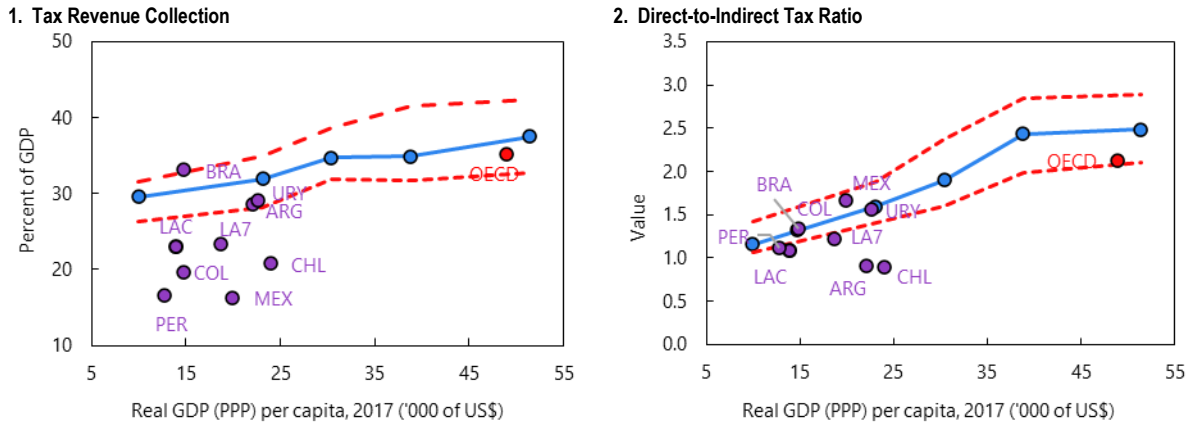
There are also noticeable differences in terms of tax structures. The OECD shows a significant reliance on PIT collection (8.8 percent of GDP in 2019), compared to only 2.3 percent of GDP in LAC (Figure 1, panel 2). By contrast, LAC shows a stronger reliance on the CIT, while in both country groups the VAT accounts for a sizable portion of tax collection—with some countries in the region exhibiting higher VAT collection levels than the average OECD country. Note, however, that cross-country comparisons of the CIT and PIT should be assessed carefully due to differences in the classification of taxable income as generated by either an individual or a corporate.[5] SSCs are also on average lower in the region, yet with countries like Brazil, Uruguay and Argentina hovering around OECD levels.[6]

Differences in tax collection and structures between LAC and OECD countries are partly associated with differences in income levels. The development process can reduce informality levels—notably higher in LAC relative to the OECD—while strengthening the state's capacity to tax, facilitating broad-based collection of income taxes (Benedek, Benítez, and Vellutini 2021).[7] It is thus likely that the level and the structure of taxes

[5] For instance, sole ownership of a company in LAC implies that such company would pay taxes under the CIT, whereas in the OECD the same company would pay taxes under the PIT (IDB 2013). OECD countries also apply imputation systems where the CIT is only an 'advance payment' of the PIT (fully or partially), an approach seldom used in LAC. See also Fuentes and Vergara (2021) for similar considerations when comparing personal income tax collection in Chile with that of other OECD countries.
[6]The level and evolution of SSCs mask country-specific institutional arrangements of social security systems that make cross-country comparisons difficult. In the case of Chile, for instance, reported contributions in Figure 1 do not include those channeled through individual private pension schemes, which are mandatory.
[7]Hard-to-tax informal sectors hamper governments' ability to increase the overall tax take, particularly of income taxes (Besley and Persson 2014; IDB 2013; ECLAC 2021).

endogenously *change* as countries develop, with progressive taxation playing a more significant role. In this regard, it is relevant to ask whether OECD countries had a very different tax level and structure in the past, for instance when their real income levels were comparable to those that LAC countries currently have. If this is the case, it would suggest that LAC countries may be following the development path OECD countries traced in the past.

Figure 2. Tax Revenue Collection and Income Levels



Sources: Methodology builds on Acosta-Ormaechea, Sola, and Yoo (2019); and IMF staff calculations.
Note: Sample of 16 LAC (period 1992–2019) and 33 OECD countries (period 1972–2019). See Annex 2 for details. Blue round markers: Median values for each income quintile according to the OECD countries sample, where the lowest income quintile is constructed by extrapolation of the relevant tax variable from the OECD sample to be consistent with LAC countries' income levels; dotted lines: 75th and 25th percentiles of the OECD distribution; country (purple) markers: Values in 2019. LAC = Latin America and the Caribbean (excluding LA7); LA7 = Argentina, Brazil, Chile, Colombia, Mexico, Peru, Uruguay. OECD (members as of end-2019) average excludes Chile, and Mexico.

An empirical assessment indicates that the development process—broadly defined as increases in countries' income levels—is associated with higher tax revenues and a structure tilted toward direct taxation (Figure 2).[8,9] The analysis does not establish a causal link between income levels and tax collection/structure. Rather, it suggests that through complex economic, institutional, and political economy mechanisms, which mutually interact, countries tend to rely *more* on direct taxes as their living standards rise, likely yielding a more progressive tax structure. In fact, unlike indirect taxes, direct taxes can be levied based on taxpayers' ability to pay, and therefore are better suited for a progressive tax structure (ECLAC 2021). Within direct taxes, the development process appears to be highly associated with more reliance on the PIT (Figure 3).

Nevertheless, many countries in LAC deviate from this pattern. The above exercise shows that several countries not only collect *less* revenue, but that some also have a structure that is more tilted towards indirect taxes relative to what their income levels would predict (Figure 2). Moreover, most of LAC's collection bias is explained by a clear over-reliance on the VAT (except for Mexico) and CIT, and a significant under-reliance on the PIT (except for Uruguay and Mexico, Figure 3).[10]

Moreover, despite increases in living standards and recent improvements in key structural factors typically associated with tax collection, LAC has improved revenue mobilization mildly and with limited progress in

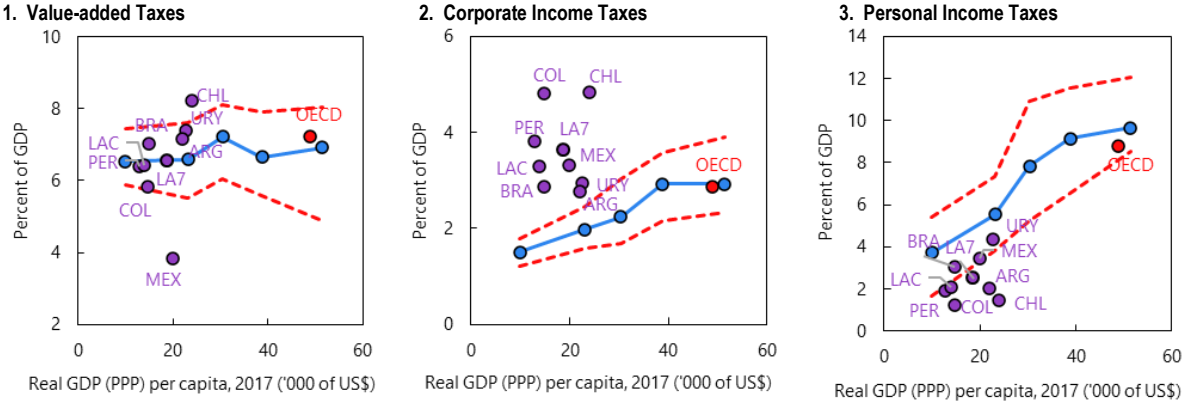
[8]To assess the link between development and taxation, we constructed a new dataset for LAC and OECD countries covering taxes and other relevant macro-fiscal variables starting in 1972 for 33 OECD countries and in 1992 for 16 LAC countries, going through 2019. The number of countries and years included depends on data availability (see Annex II for details). Using the evolution of real GDP (PPP) per capita (2017 prices) as a proxy for each country's development level and pooling the data, Figures 2 and 3 show how tax levels and structures change as countries' income levels increase.

[9]Another type of benchmarking for revenue performance would involve the estimation of tax frontiers, which has its merits but also potential pitfalls (see, e.g., IMF 2013).

[10]Interestingly, Uruguay and Mexico, the former with a low level and the latter with a high level of informality, are the two countries with the highest PIT collection in LA7. This suggests that, while informality can be an important constraint for PIT collection, design and enforcement features may help strengthen the yield of this tax.

PIT collection. Informality somewhat decreased over the last decades according to alternative definitions (IMF 2019a; WB 2021). Similarly, administrative and enforcement capacity, broadly referred to as 'state capacity', has arguably increased in LAC during 2005-19, particularly when analyzing the evolution of the VAT and other consumption taxes.[11] Despite this, the average LAC country still collects about one-quarter of what the average OECD country does in terms of the PIT.

Figure 3. Taxation and Income Levels: Value-added, Personal Income and Corporate Income Taxes



Sources: Methodology builds on Acosta-Ormaechea, Sola, and Yoo (2019); and IMF staff calculations.
Note: Sample of 16 LAC (period 1992-2019) and 33 OECD countries (period 1972–2019). See Annex 2 for details. Blue round markers: Median values for each income quintile according to the OECD countries sample, where the lowest income quintile is constructed by extrapolation of the relevant tax variable from the OECD sample to be consistent with LAC countries' income levels; dotted lines: 75th and 25th percentiles; country markers: Values in 2019. LAC = Latin America and the Caribbean (excluding LA7); LA7 = Argentina, Brazil, Chile, Colombia, Mexico, Peru, Uruguay. OECD (members as of end-2019) average excludes Chile, and Mexico.

If the development process and other structural factors do not fully account for LAC's low collection levels and its strong bias against the PIT, what could possibly explain them? Growth concerns, design flaws and political economy considerations are likely three factors behind LAC's tax take and structure. As noted by Tanzi (2000) decades ago, "with very few exceptions Latin American countries continue to be allergic to income taxes."

The rest of the chapter explores the extent to which these considerations may prevent LAC from raising more revenue in a growth friendly and inclusive manner. The next sub-section sheds light on the potential implications for growth of rebalancing the tax structures between consumption and income taxes in LAC and OECD countries. The chapter then studies the design of specific taxes in LAC and argues that, when properly designed, targeted, and enforced, personal income taxes could increase revenue while having desirable properties to strengthen equity (Abdel-Kader and de Mooij 2020). Finally, the chapter studies the redistributive properties of key taxes in LAC and discusses additional considerations that affect taxation (e.g., political economy factors).

Growth Effects of Consumption and Income Taxes

To assess the extent to which a larger reliance on direct taxation in LAC could lead to adverse growth effects, the analysis below studies the impact on growth of the VAT, the PIT and the CIT, which combined represent more than half of total tax collection in LAC and OECD countries as of 2019.[12] The empirical analysis focuses on *revenue-neutral* tax reallocations since the growth effect of an individual tax depends on whether

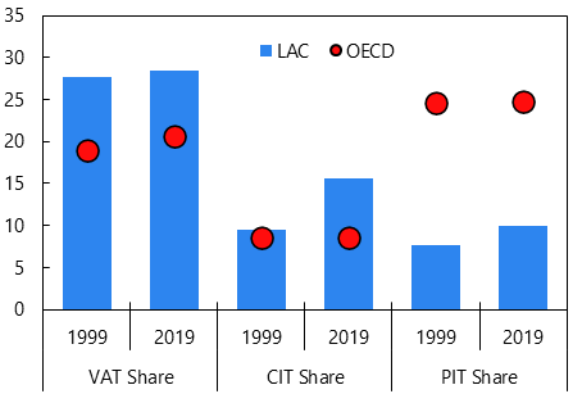
[11]"State capacity" is particularly relevant in the case of income taxes due to their inherently more complex structure relative to consumption and trade taxes (Cárdenas 2010; Besley and Persson 2014).
[12]The VAT is the main consumption tax in LAC and OECD countries, and largely popular elsewhere. In fact, as of November 1, 2020, 170 countries and territories worldwide have implemented the VAT, including all the OECD countries except for the US (OECD 2020a).

other tax or spending instruments are changed simultaneously.[13] Also, by considering a sample of LAC and OECD countries, the exercise sheds light on whether countries' level of development and their underlying capacity to design and enforce taxes affect the tax-growth nexus.

According to the literature, consumption taxes tend to be more growth-friendly than income taxes. In principle, *consumption taxes* could either be growth-neutral—since investment is excluded from the base of the tax—or have a negative growth impact depending on their effects on labor-education and labor-leisure tradeoffs (Mendoza, Milesi-Ferretti and Asea 1997). These implications would hold for the VAT to the extent that it is raised through a uniform rate and a broad base. Otherwise, negative efficiency considerations may arise through complex interactions from rate differentiation and exemptions.[14] *Income taxes,* can have growth-retarding effects by reducing the after-tax return of physical and human capital, which in turn lead to reductions in investment and labor supply. The capacity to design and enforce taxes is also critical for growth (Besley and Persson 2014).[15] For instance, a well-designed and enforced corporate income tax, with an allowance for corporate equity to avoid the debt bias created by the interest deductibility from taxable profits, might be better for growth than a poorly designed and implemented VAT (IMF, 2014). Also, narrow tax bases due to enforcement problems, exemptions, tax incentives and reduced rates are critical design flaws often present in LAC countries, which ultimately make the system more complex and reduce the efficiency of taxation.[16] This could lead to rent-seeking behavior, which further hampers long-term growth (Tanzi and Zee 1997).

Figure 4. VAT, CIT and PIT shares in LAC and OECD Countries

(Share of total tax revenue collection, percent)



Source: Organisation for Economic Co-operation and Development (OECD) Tax Revenue Statistics database; and IMF staff calculations.
Note: Sample averages of 16 and 33 LAC and OECD countries. See Annex 2 for details. Total tax revenue includes SSCs. LAC = Latin America and the Caribbean; OECD = Organisation for Economic Co-operation and Development. OECD (members as of end-2019) average excludes Chile, and Mexico.

The reliance on the CIT in LAC significantly increased over time. Figure 4 shows that both LAC and OECD countries collected similar CIT shares in 1999, but on the back of higher commodity prices, and in some cases higher statutory rates and/or base-broadening measures, it took much more prominence in LAC over time (IDB 2013). In the OECD the CIT share remained stable, despite significant reductions in corporate statutory rates. The figures also shows that the VAT's share has slightly increased in LAC and in the OECD between 1999 and 2019, and so did the PIT share in LAC but it remained stable in the OECD—but with very significant and persistent gaps remaining between the two country groups.

Empirical Results

The analysis below follows recent studies on the impact of revenue-neutral tax changes on growth using the pooled mean group (PMG) and mean group (MG) methodologies of Pesaran, Shin, and Smith (1999) and

[13]It is unfeasible to identify empirically the growth-effect of an individual tax or spending component in isolation—that is, only the *relative* growth-friendliness of tax instruments or spending items can be estimated holding other budget components unchanged.
[14]In the case of the VAT, exemptions imply that no tax is charged on sales, but a VAT charged on inputs is not refunded. These, in combination with reduced rates, distort agents' choices while creating an element of production taxation (Crawford, Keen and Smith 2010; Keen 2013; and Cnossen 2020), likely having an adverse growth effect. Zero-rate VAT goods and services have different implications, since VAT can be reclaimed on inputs.
[15]The selection of tax bases (e.g., consumption or income in a broad sense) likely depends on countries income levels and is highly correlated with tax design, administration and enforcement capacity, as reflected by the fact that tax structures are more biased towards direct taxes as income levels rise.
[16]Some tax incentives could be justified on equity grounds, however, such as tax credits for low-wage earners or tax incentives that directly reduce the cost of investment, as discussed below.

Pesaran and Smith (1995).[17] These estimation methods allow for some reallocations to have only a transitory short-run growth impact (i.e., level effects on output), while others to have permanent long-run growth effects.[18] Annual observations are used and the main results are presented in Table 1.

Results confirm the relative growth friendliness of the VAT for LAC, but the evidence is less clear for the OECD. Column 1 shows that tax-neutral reallocations from income taxes to the VAT boost growth in the LAC sample, as shown by the significant and positive coefficient on the VAT share, but not in the OECD sample, as indicated by the lack of significance of the same VAT coefficient in Column 4.[19,20] Columns 2 and 5 confirm the previous results through an inverse reallocation, namely from the VAT to income taxes. However, a disaggregation of income taxes between the PIT and the CIT highlights a distinctive growth impact: Column 3 shows that both the PIT and the CIT are significantly more distortive for growth than the VAT in LAC, with the CIT having a somewhat smaller point estimate.[21] But while the CIT still appears to be more growth retarding than the VAT in the OECD sample, results suggest that raising revenue through *either* the PIT or the VAT have a similar growth effect in the OECD sample according to Column 6.[22]

Why would the growth-impact of tax reallocations between LAC and OECD countries differ? As argued, besides lower informality levels and a better overall capacity to enforce income taxes in the OECD, *tax design* likely matters. To the extent that the PIT is adequately designed and enforced, as is likely in many OECD countries, its relative growth-friendliness appears to be similar to that of the VAT. Thus, the PIT could help raise additional revenue in LAC countries at low cost in terms of reducing growth if properly designed and implemented, with the additional benefits of more progressivity. To this end, it is thus critical to ensure that incentives for formal labor force participation are in place, particularly for low-wage and female workers, as discussed below. Regarding the CIT, evidence suggests that it has a negative growth impact relative to the VAT in both the LAC and OECD samples, indicating that the large reliance on this tax has likely hampered growth in the region, an aspect also discussed in more detail later in the chapter. The fact that the CIT appears to be the most harmful tax for growth in OECD countries is also consistent with previous findings using similar empirical models (e.g., Arnold and others 2011; Acosta-Ormaechea and Morozumi 2021).

As for the remaining variables, investment and employment growth have the expected positive signs, albeit significance is rather weak, particularly in the LAC sample. The coefficient for government consumption is negative and statistically significant for both the LAC and OECD samples, indicating that deficit-financed increases in government consumption (since total taxes are controlled for) are detrimental for long-term growth. The error-correction speed of adjustment parameter (ϕ) is negative in all regressions and lower than one in absolute value, suggesting convergence to the long-run equilibrium. The after-GFC dummy variable is

[17]See, for similar analyses, Arnold and others 2011; Acosta-Ormaechea, Sola, and Yoo 2019; Acosta-Ormaechea and Morozumi, 2021.
[18]In the MG method the long- and short-run coefficients are estimated separately for each country, and the cross-country simple average of each parameter is then calculated. In the PMG method short-run coefficients are also country-specific, but any long-run relationship is constrained to be equal across countries, making the PMG estimator relatively more efficient than the MG (if the long-run restriction is validated).
[19]Other consumption taxes, not considered in this exercise, include trade taxes and excises, which may have different growth impacts. In the case of trade taxes, extensively used in Argentina, Tanzi and Zee (1997) summarize channels through which they may hamper growth. As reported in Acosta-Ormaechea, Sola and Yoo (2019) empirical evidence suggests that trade taxes tend to be negatively associated with growth in emerging- and low-income countries.
[20]Results suggest that a 1 ppt of total taxes reallocated from income taxes to the VAT could boost long-term growth by 0.189 ppt over the long run in the LAC sample. This implies that average GDP per capita growth would go from about 2 percent to about 2.2 percent over the long run. This tax reform is sizable, since it would imply that 1 ppt of total tax revenue collection in LAC (about 0.21 percent of GDP) would be collected with the VAT instead of income taxes.
[21]The null hypothesis that the estimated coefficients on the PIT and CIT are the same, however, cannot be rejected through a Wald test.
[22]Column 6 shows that reallocations from the VAT to the PIT are non-significant, whereas such reallocations to the CIT have a negative and significant adverse effect on growth. These results hold considering different robustness checks (see footnote 23 and Annex 2 for details).

negative and highly significant, indicating that trend growth has decreased after the GFC. Box 1 further discusses possible channels through which taxes affect growth.[23]

We now proceed to discuss key design features of these main tax components alongside potential reform options.

Table 1. Tax Reallocations and Long-term Growth: VAT versus Income Taxes

Estimation method	Pooled Mean Group (PMG)					
Country group	LAC	LAC	LAC	OECD	OECD	OECD
Financing tax	Income taxes	Value added taxes	Value added taxes	Income taxes	Value added taxes	Value added taxes
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable: real GDP per capita growth						
Total taxes/GDP	0.238***	0.238***	0.226***	-0.108***	-0.108***	-0.102***
	(4.24)	(4.24)	(3.88)	(-5.28)	(-5.28)	(-4.82)
Other taxes to ensure tax neutrality/Total taxes	-0.00950	-0.199***	-0.173***	-0.0325*	-0.0583**	-0.0747***
	(-0.33)	(-5.64)	(-4.43)	(-1.88)	(-2.29)	(-2.78)
Value added taxes/Total taxes	**0.189*** **			**0.0259**		
	(4.69)			**(1.18)**		
Income taxes/Total taxes		**-0.189*** **			**-0.0259**	
		(-4.69)			**(-1.18)**	
Personal income taxes/Total taxes			**-0.230*** **			**-0.0198**
			(-3.68)			**(-0.88)**
Corporate income taxes/Total taxes			**-0.165*** **			**-0.0593***
			(-3.12)			**(-1.93)**
Investment rate	0.0218	0.0218	0.0239	0.0272	0.0272	0.0141
	(0.49)	(0.49)	(0.52)	(1.56)	(1.56)	(0.80)
Employment growth	0.0534	0.0534	0.0305	0.398***	0.398***	0.378***
	(1.21)	(1.21)	(0.78)	(11.55)	(11.55)	(10.50)
Govt consumption	-0.146**	-0.146**	-0.114*	-0.150***	-0.150***	-0.165***
	(-2.45)	(-2.45)	(-1.82)	(-3.93)	(-3.93)	(-4.14)
EC coefficient (ϕ)	-0.818***	-0.818***	-0.805***	-0.911***	-0.911***	-0.899***
	(-13.35)	(-13.35)	(-14.18)	(-22.12)	(-22.12)	(-21.71)
after-GFC dummy	-0.00618**	-0.00618**	-0.00340	-0.0127***	-0.0127***	-0.0121***
	(-2.04)	(-2.04)	(-1.00)	(-7.25)	(-7.25)	(-7.06)
Countries	16	16	16	33	33	33
Observations	376	376	376	1112	1112	1112
Hausman, p-value	0.776	0.776	0.869	0.855	0.855	0.992

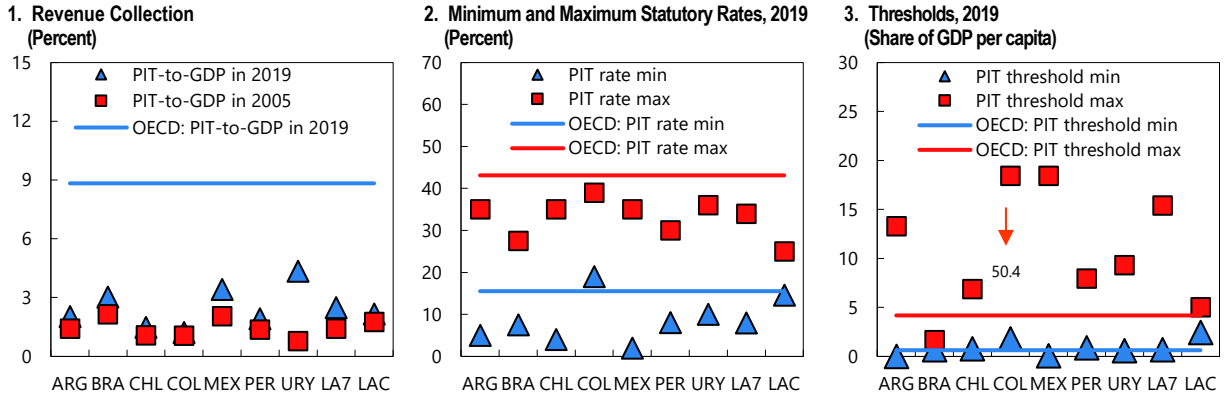
Source: IMF staff calculations.
Note: The table shows long-run coefficients based on the PMG method, since the cross-country homogeneity assumption on such coefficients, which compares the PMG and MG methods by the Hausman test, is not rejected (see high p-values on the tests). Total taxes are the sum of consumption taxes, personal income taxes, corporate income taxes, property taxes, and social security contributions (which includes taxes on payroll and workforce). In Column (1), (4) other taxes to ensure tax neutrality refer to the sum of all taxes except for income taxes. Likewise, in Columns (2), (3), (5) and (6) other taxes to ensure tax neutrality refer to the sum of all taxes apart from the VAT. Constants and short-run coefficients are not shown for brevity. t-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

The PIT in LAC: Big Gains from Better Design

The average PIT revenue-to-GDP ratio of 2.3 percent for LAC countries stands well below the 8.8 of the OECD average (Figure 5, panel 1). One key reason for the limited revenue yield of the PIT is that statutory tax rates in LAC are lower than those of the OECD (Figure 5, panel 2) and that the relative income levels at which the rates apply, particularly the maximum rate, are higher (Figure 5, panel 3), implying that overall a smaller fraction of households' income is subject to the tax.[24]

[23]Results presented here remain broadly unaffected when considering different robustness checks, including the removal of contemporaneous effects between tax variables and growth (to eliminate reverse causality concerns) as explained in Annex 2, the selection of different sub-samples (e.g., only countries with a longer- or shorter- time span relative to the baseline specification), and/or the elimination of certain control variables (e.g., as in Box 1 without investment and/or employment growth).
[24]As discussed in more detail below, the higher incidence of informal work in LAC compared to that of the OECD further limits the share of household income subject to PIT.

Figure 5. Personal Income Taxes: Collection, Minimum and Maximum Statutory Rates, and Collection Thresholds



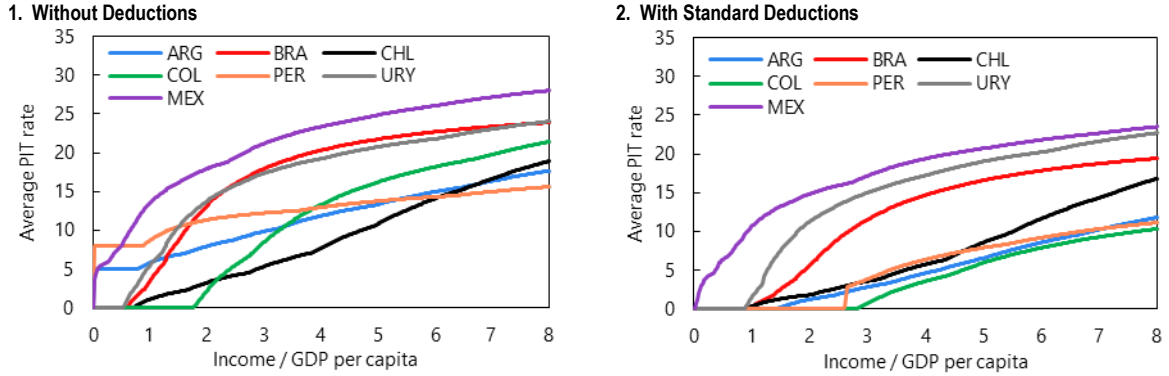
Sources: EYGM (2020); IMF, World Economic Outlook database; OECD Tax Revenue Statistics database; and IMF staff calculations.
Note: Group averages reflect simple country averages. Data labels use International Organization for Standardization (ISO) country codes. PIT = personal income tax. PIT = personal income tax; LAC = Latin-America and Caribbean (excluding LA7); LA7 = Argentina, Brazil, Chile, Colombia, Mexico, Peru, Uruguay; OECD = Organisation for Economic Co-operation and Development (members as of end-2019 excluding LAC countries).

In addition, tax codes in most LA7 countries include widespread allowances, exemptions and deductions for mandatory SSCs and dependents which further erode the PIT base. These provisions decrease the fraction of workers' gross income subject to the tax, ultimately resulting in a lower effective tax rate. While these provisions are common, their impact on the final tax liability crucially depends on their scope, which tends to be excessive in many countries in the region.[25] Figure 6 shows that in LA7 countries, apart from Mexico and Uruguay, standard deductions, exemptions, and credits substantially reduce the effective PIT rate, often lowering it to zero even for workers with a relatively high income (relative to their GDP per capita).[26]

Worker-level microdata indeed shows that in the largest countries in the region only a very small share of formal workers (from both the private and public sector) pay the PIT, and those who do so are subject to very low effective rates. To study the incidence of the PIT across the income distribution, we use microdata from household surveys for LA7 countries in 2019. For each formal worker, we apply their country's tax code, using their self-reported net labor income and personal characteristics (e.g., marital status, number of children, employment or self-employment status) to impute their effective PIT liabilities after applying a comparable set of deductions and exemptions, such as for SSCs and dependents (see Annex 3 for details).[27]

[25]As noted in De Mooij and others (2020), PIT deductions for expenses related to children, education, housing, health insurance, commuting, and charitable donations, erode the base and accrue disproportionately to the rich. This is especially the case in developing countries. The regressivity of these deductions is larger in settings where the choice between public and private provision of services such as healthcare and education is associated with income levels, as is likely the case in LAC countries.
[26]Figure 6 considers a single worker with two dependents for illustrative purposes, as this case comprises a comparable set of standard deduction across all countries (i.e., SSCs and dependents). In some countries like Mexico, the effective rates calculated in the analysis excludes some deductions in the tax code due to lack of information to properly impute them. Total deductions and exemptions in Mexico are estimated to account for a large share of GDP (see Hannan, Honjo and Raissi 2020).
[27]We thank Paolo Dudine for helpful discussions on the computation of effective PIT rates.

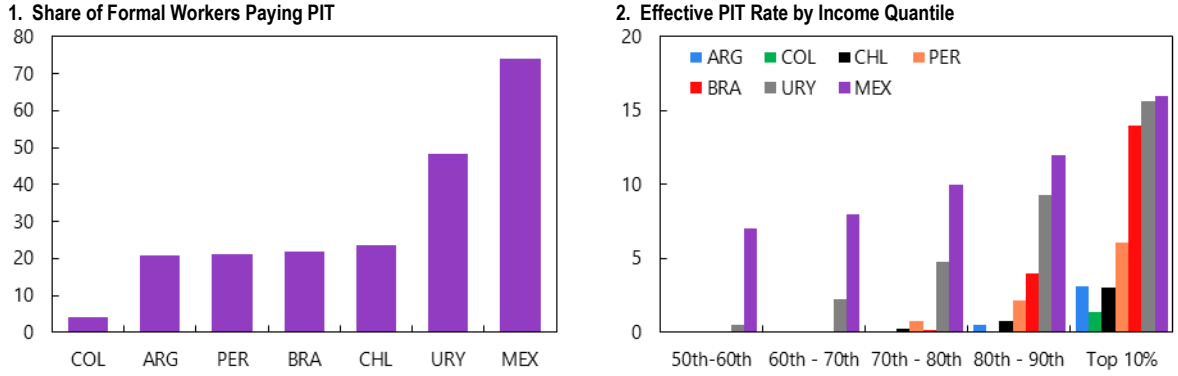
Figure 6. Average Effective PIT Rates With and Without Deductions
(Percent)



Sources: EYGM (2020); and IMF staff calculations.
Note: Effective rates with deductions are computed considering a single worker with two dependent children. Data labels use International Organization for Standardization (ISO) country codes. PIT = personal income tax.

Figure 7 shows that, except for Mexico and Uruguay, only a small share of formal workers are subject to any PIT in LA7 countries based on data from household surveys.[28] In Argentina, Brazil, Chile, and Peru only 20 percent of formal workers are subject to PIT payments, and in Colombia this share decreases to only 4 percent (Figure 7, panel 1). These shares would be even smaller when calculated over total employment (that is, regardless of formality status) affecting the relative relevance among LA7 countries.[29] Moreover, potential taxpayers in these countries are highly concentrated in the upper 20 percent of the distribution of gross labor income, and with average *effective* rates that overall remain significantly below the maximum statutory rates (Figure 7, panel 2). This suggests that there is significant scope to raise *effective* rates without affecting low- or even middle-income workers in the region.

Figure 7. Micro-simulations of Effective PIT for Formal Workers in LA7
(Percent)

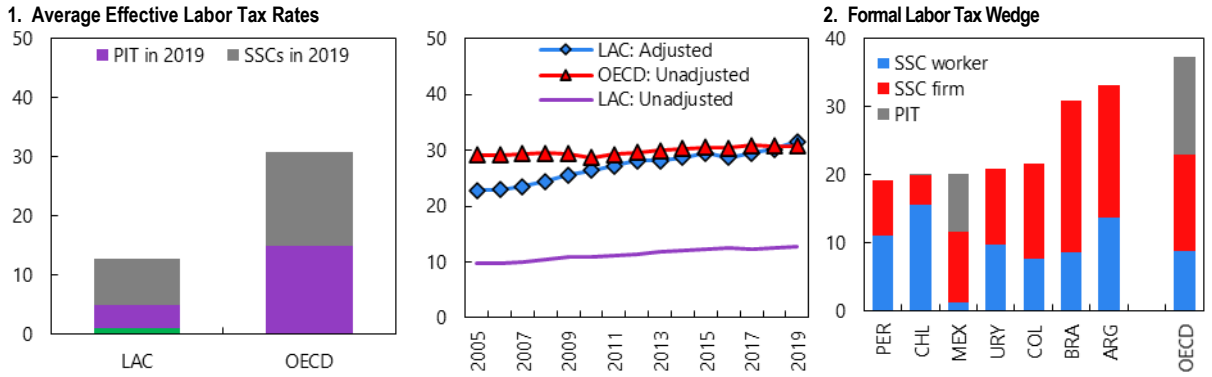


Sources: EYGM (2020); Inter-American Development Bank, Harmonized Household Surveys; national labor force microdata; and IMF staff calculations.
Note: Data labels use International Organization for Standardization (ISO) country codes. LA7 = Argentina, Brazil, Chile, Colombia, Mexico, Peru, Uruguay; PIT = personal income tax.

[28]Calculations assume full tax compliance and should be interpreted as an upper bound of the actual share of formal workers paying taxes. In addition, household surveys include sampling errors and may not be fully representative of the type of worker we are interested (formal workers in this case). Thus, the calculations presented in Figure 7 should be taken as approximations.
[29]For example, Mexico, which has a significantly larger share of informal workers, would rank below Uruguay if these shares were calculated over total employment. Such consideration would be critical at the time of comparing these indicators with those of the OECD.

Raising effective rates and broadening the base is key to improving PIT revenue, but reform options should consider their effects on equity and labor market formality.[30] As will be discussed in further detail, achieving a more progressive PIT system that does not impact middle-class workers appears to be possible. Moreover, the capacity to collect PIT revenue is likely affected by the high labor informality rates in the region (ranging from the 24 percent of Uruguay to the 68 percent Peru in 2019),[31] as income from informal activities more likely avoids direct taxation. Higher PIT rates may also erode the base by *raising* the relative costs of labor formality (IMF 2021b). However, the PIT is only one factor driving labor tax 'costs' in the formal sector, the others being SSCs for pensions, health coverage, and unemployment insurance—which may be collected via payroll taxes on employees or their employers.[32]

Figure 8. Effective Labor Taxes and Formal Labor Tax Wedges in LAC/LA7 and OECD
(Percent)



Sources: International Labour Organization; National household surveys and tax codes; OECD (2020b); OECD Tax Revenue Statistics database; and IMF staff calculations.
Note: Effective labor taxes are computed building on Mendoza, Razin and Tesar (1994). The tax wedge is computed for a single worker, without children, earning the mean formal wage, using the 2019 tax code. Staff estimates using OECD tax wedge methodology with the amendment that all mandatory SSCs are included regardless of whether they are collected into publicly or privately-run funds. Data labels use International Organization for Standardization (ISO) country codes. LAC = Latin-America and Caribbean; LA7 = Argentina, Brazil, Chile, Colombia, Mexico, Peru, Uruguay; OECD = Organisation for Economic Co-operation and Development; PIT = personal income tax; SSC = social security contributions.

The effective tax rate on formal employment is significantly higher than what the PIT alone would imply, once SSCs are included and corrections for labor informality are considered. This highlights the relative high burden on labor of the region's tax structure. Adjusting the incidence of PIT and SSCs for labor informality in LAC, it is apparent that the effective tax rate on labor has converged towards the OECD level between 2005 and 2019 (Figure 8, panel 1), and in the case of CAPDR it has surpassed it (Annex 1). Moreover, using the OECD's definition of the labor tax wedge,[33] in LA7 countries the costs of formal employment associated with SSCs are comparable or even higher than in the OECD (Figure 8, panel 2). It is only the low incidence of the PIT in LA7 that reduces formal labor costs relative to the OECD.[34] Thus, any attempt to increase PIT revenues has to internalize the interactions with SSCs and how both components affect formality levels and labor supply.[35] One possibility to offset the SSCs 'cost' for low-earning workers, who are those most likely to

[30]See Benedek, Benítez and Vellutini (2021) for a detailed discussion of PIT reforms in the context of low-income and high-informality countries.
[31]ILOSTAT, harmonized series for informal employment in total employment by sex and sector, https://www.ilo.org/ilostat-files/Documents/Excel/INDICATOR/SDG_0831_SEX_ECO_RT_A_EN.xlsx
[32]This implicitly assumes that workers perceive SSCs as a tax rather than a contribution to future income (retirement, unemployment) or services (heath). Informality is also affected by employment protection regulations, such as hiring and firing costs (see IMF 2019d).
[33]The tax wedge represents the contribution of taxation to employers' total labor costs. For a given value of the employee's gross labor earnings, the OECD measures it as: (PIT + SSCs paid by the employee + SSCs paid by the employer – cash benefits) / (employee's gross labor earnings + SSCs paid by the employer).
[34]Mexico is the only exception, as its tax wedge—although quantitatively in line with rest of the LA7—is more evenly distributed between SSCs and the PIT.
[35]Fernandez and Villar (2017), Kugler, Kugler and Prada (2017), and Morales and Medina (2017) all find that in 2012 a reform lowering SSCs paid by employers in Colombia significantly increased formal employment.

remain in the informal sector—particularly females—is to introduce earned-income tax credit (EITC) schemes, which are gradually phased out at higher income levels (Box 2).

In sum, viable options to increase PIT revenue in an equitable and efficient way in the region would require strengthening design features (rates and thresholds) and streamlining deductions and exemptions, while adding policy levers. These would involve, for example, the introduction of an EITC, to incentivize formalization and labor force participation, and to improve equity.[36] Reform proposals should be grounded in a notion of optimality, associated with the maximization of societal welfare. In the case of the PIT, the economic literature has developed a theoretical framework to calculate the 'optimal' shape of the PIT schedule. Yet, in the case of LAC, the application of such framework remains a complex, very idiosyncratic task (Box 3). Thus, instead of calculating the full shape of the optimal tax schedule for LAC countries, we use a static micro-simulation approach to study two 'reform' scenarios that aim to simplify the PIT code by broadening its base, while providing incentives for labor force participation of low-wage earners. The impact of such reforms on PIT revenue and inequality is then assessed (Box 3). The first scenario removes all deductions from the PIT code while leaving statutory rates and thresholds unchanged. The second scenario adds an EITC for low-income earners based on the US EITC scheme that replaces existing labor subsidy programs, but not other transfers. Clearly these are extreme scenarios since some deductions and exemptions could be justified from an equity standpoint, and some of the base-erosion impacts that they have can be addressed by revising the parameters under which these deductions are granted. Doing so, however, would require additional granular country-specific information. Thus, rather than being interpreted as a concrete reform proposal, the exercise presented below constitutes an illustration of some of the ingredients of a PIT reform that seeks to broaden the base and improve the redistributive properties of the tax.

We find that eliminating all deductions and adding an EITC substantially increases nominal PIT revenues while reducing inequality in a meaningful way (Table 2). While the impact of the two 'reforms' vary across countries, some general results emerge. Stripping down the PIT system to its statutory rates yields a substantial increase in revenues, ranging from 20 percent in Mexico to a 4.5-fold increase in Peru (with increases of around 50 percent in Brazil and Chile and 100 percent in Colombia). The EITC partially offsets this revenue increase, particularly in Chile and Colombia. The reform also increases the gap in the PIT rate faced by the average taxpayer relative to that paid by the top 10 percent of earners in comparison with the baseline, thus making the system more progressive.[37] Consequently, measures of inequality, such as the Gini coefficient, point to lower disparities in post-tax income, except in Mexico.[38] The elimination of deductions generally lowers the 90^{th} / 75^{th} percentile income ratio while leaving the 50^{th} /25^{th} ratio unaffected relative to the baseline, as the PIT incidence and its associated deductions are greater for higher incomes.[39] Meanwhile, the EITC tends to lower the 50^{th} / 25^{th} ratio by raising earnings on the lower tail of the distribution, highlighting the progressivity of the scheme. While the analysis focuses on workers already in the formal sector, the possible transition out of the informal sector to benefit from the EITC—a margin not explicitly modelled in this exercise—would likely reduce poverty rates by lifting the income of poorer households while

[36]A wider approach on effective labor taxation reforms would also consider reducing the costs of SSCs for low-income workers (e.g., through minimum thresholds or by a gradually increasing schedule). However, a discussion of SSCs reforms is outside the scope of this chapter, as it would require a broader analysis on the financing and distributional aspects of pension and health systems in the region. We instead focus on those reforms that fall within the narrower perimeter of a tax system, including an EITC, while considering the costs and potential distortions from the SSCs.

[37]In some cases where deductions are based on consumption items, the estimated impact on the effective rates paid by the top 10 percent are likely lower bounds. This is due to the fact that these households are likely underrepresented in household surveys and their consumption may be misreported. In Mexico, for example, data from household surveys result in estimates of tax expenditures from PIT deductions claimed by the richest households that are substantially lower than those reported by Mexico's tax agency.

[38]In the case of Mexico, the EITC only partially makes up for the eliminated *Subsidio al Empleo* because of the greater generosity of the latter. This, in turn, hampers the redistributive power the reform proposal presented here.

[39]Mexico is the only case where the 50^{th} / 25^{th} ratio *rises* compared to the baseline after the elimination of tax deductions because of its significant *Subsidio al Empleo*. This measure is a refundable tax credit that serves as income support for low-income workers (although with less targeting than the EITC) and thus reduces inequality in the lower tail of the distribution.

making them eligible to key social security benefits (e.g., pension and unemployment insurance).

Table 2. LA5: Micro-simulations of PIT System Reforms

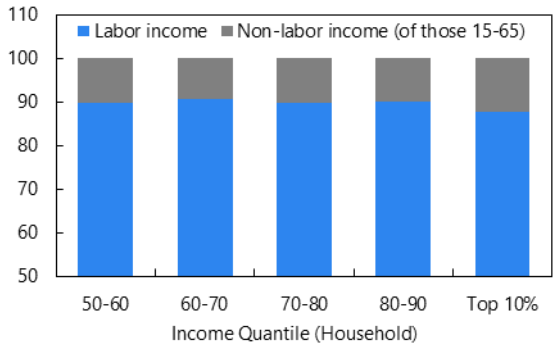
Country	Scenario	Δ% Revenue Relative to Baseline	Avg. PIT Rate		Post-Tax Income Percentile Ratios		Δ% Gini Relative to Baseline
			All tax payers	Top 10% of earners	50th / 25th	90th / 75th	
Brazil	Baseline	...	7.5	15.1	1.36	1.83	...
	No deductions	46	7.8	20.6	1.36	1.79	-3.4
	No deductions + EITC	38	8.5	20.6	1.37	1.79	-5.0
Chile	Baseline	...	2.4	4.2	1.49	1.65	...
	No deductions	47	2.6	6.4	1.49	1.64	-1.6
	No deductions + EITC	9	2.8	6.4	1.39	1.64	-4.1
Colombia	Baseline	...	0.3	5.4	1.21	1.67	...
	No deductions	118	0.9	13.6	1.21	1.65	-3.9
	No deductions + EITC	55	0.9	13.6	1.16	1.65	-6.6
Mexico	Baseline	...	8.6	16.8	1.43	1.53	...
	No deductions	20	9.8	18.6	1.50	1.54	1.4
	No deductions + EITC	17	10.0	18.6	1.48	1.54	0.5
Peru	Baseline	...	2.7	4.6	1.45	1.46	...
	No deductions	452	9.2	12.5	1.44	1.47	-0.3
	No deductions + EITC	412	9.0	12.5	1.38	1.47	-2.7

Sources: National household surveys; and IMF staff calculations.
Note: The Gini coefficient and the income percentiles are based on the distribution of labor earnings post-tax and credits among formal workers only. The percent increase in revenues is relative to the imputed nominal revenue in the baseline scenario. EITC = earned-income tax credit; PIT = personal income tax.

The introduction of an EITC is also likely to increase labor supply and formality, thus fostering growth. As noted in Box 2, the impact on labor supply and informality will ultimately depend on specific reform design features, but there would be a clear incentive to work in the formal sector given that the tax credit partially compensates for SSCs. Thus, if adequately calibrated, such PIT reforms would have positive effects on growth and equity, while simplifying the tax system and its administration.[40] Furthermore, they could also trigger (or be combined with) reforms to social safety nets and pension systems to strengthen labor formalization.[41]

Finally, LAC countries could also strengthen the design of taxation of *non-labor* income, which can raise revenue without hurting progressivity or discouraging labor formalization. In many LAC countries certain forms of capital income is afforded exemptions and is part of special regimes, which results in this type of income being taxed at lower rates than labor, or not taxed at all (see Barreix, Benitez and Pecho 2017; Hanni, Martner and Podestá 2015; and IDB 2013). According to household surveys, non-labor income accruing from

Figure 9. LA5: Non-labor Income by Household Income Decile
(Percent of total income)



Sources: National household surveys; and IMF staff calculations.
Note: LA5 = Brazil, Chile, Colombia, Mexico, Peru.

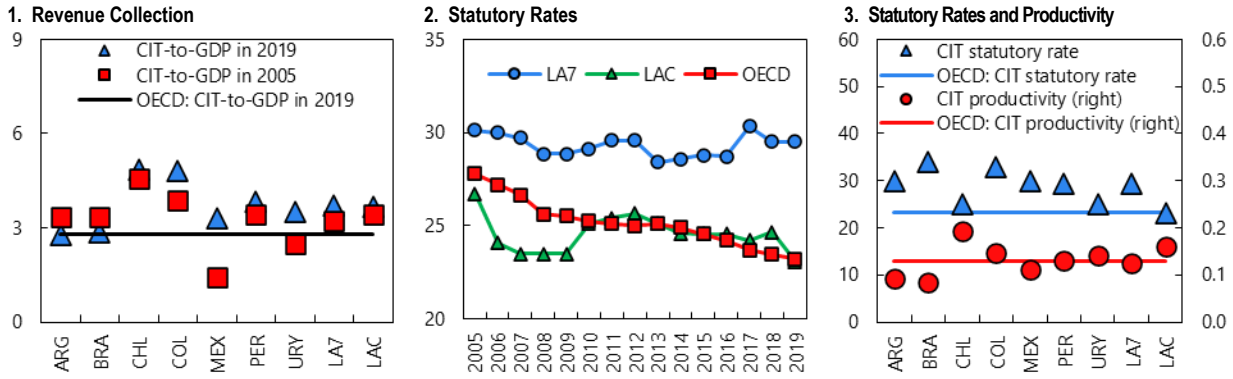
[40]Liebman (1998) also points out that, as a tool for redistribution in the US, the EITC has significantly lower administrative costs for the government than welfare programs, and lower time costs for tax filers compared to the application for other mean-tested tax benefits.
[41]Policies to ameliorate the impact of COVID-19 led to an increase in transfers to low-income households. Although some policies will likely be discontinued, some may become part of revamped social security systems.

rental, dividends and other capital income sources, accounts for over 10 percent of total household income in the top deciles of the income distribution in the average LAC country (Figure 9). This figure, which likely understates the true incidence of non-labor income due to misreporting and underrepresentation of top-income earners in household surveys, suggests that efforts to improve the taxation of these income sources (for example, by expanding the base) could increase revenues in a non-trivial way in the region. If well designed, taxing non-labor income could also achieve redistributive goals since capital income is more prominent in high-income households.[42] Moreover, since such taxation does not affect the tax wedge, incentives for labor force participation (intensive and extensive margins) would likely remain unaffected.[43]

The CIT in LAC: Internalizing Changes in Global Corporate Taxation

The CIT raises significant revenue in the region, yielding around 3.7 percent of GDP in LA7/LAC as of 2019, almost 1 ppt of GDP above OECD countries in that year (Figure 10). However, there is significant heterogeneity across LAC countries in terms of their reliance on corporate taxes, and the associated level of CIT statutory rates (Figure 10).

Figure 10. Corporate Income Taxes: Collection, Statutory Rates, and Productivity
(2019 figures unless otherwise indicated; percent)



Sources: IMF, World Economic Outlook database; OECD Tax Revenue Statistics database; Tax Foundation Corporate Tax Rates around the world; and IMF staff calculations.
Note: Group averages reflect simple country averages. Data labels use International Organization for Standardization (ISO) country codes. PIT = personal income tax. CIT = corporate income tax; LAC = Latin-America and Caribbean (excluding LA7); LA7 = Argentina, Brazil, Chile, Colombia, Mexico, Peru, Uruguay; OECD = Organisation for Economic Co-operation and Development (members as of end-2019 excluding LAC countries).

While tax competition has led to reductions in *statutory* rates worldwide as part of a process often called 'race-to-the-bottom'—driven by the attempt to attract investment and tax bases—in LA7 countries they have remained relatively stable over time and above the levels of other LAC countries and the OECD (Figure 10).[44] Moreover, several LA7 countries experienced an uptick in average CIT revenue collection

[42]For example, Hanni, Martner and Podestá (2015) show, through a policy simulation exercise, that a reduction in all major tax expenditures together with an increase in the tax rate applied to capital income (to bring it closer to that of labor income) results in a noticeable increase in the redistributive power of the PIT.
[43]To foster tax neutrality and efficiency and to avoid arbitrage opportunities between the PIT and the CIT, PIT rates would need to be harmonized with those of say the combined burden of the CIT and taxes on dividends. Moreover, dividends are often taxed at higher rates than capital gains—which are sometimes left untaxed—whereas interest payments tend to be deductible from the CIT base—but returns on equity are not. Hence, neutrality of capital income taxation would require higher taxes on interests and capital gains as compared to those on dividends (see Abdel-Kader and de Mooij 2020). Preferential treatment of other investment returns in the PIT—e.g., capital return on pension funds or on government bonds—may need to be rationalized or eliminated to strengthen the PIT while ensuring neutrality and efficiency.
[44]The higher rates in several countries in LAC may also reflect the use of the CIT to tax natural resource rents, absent other more targeted instruments (IMF 2011).

during 2005-19, on the back of higher commodity prices, increases in statutory rates (Colombia) and in some cases owing to base-broadening efforts. In this regard, some countries in the region have taken steps to rationalize tax incentives and managed to strengthen CIT collection. In Uruguay, for instance, CIT revenue increased despite the reduction of statutory rates from 30 percent in 2005 to 25 percent in 2019.

Several countries in LAC have been relying on special tax regimes and generous tax incentives and benefits to attract investment,[45] possibly to compensate for the relatively higher statutory rates in some cases.[46] But such tax expenditures are often found to be ineffective to guide investment decisions, draw down revenue, and lead to inefficiencies in resource allocation (Klemm and Van Parys 2012). They also make the tax system more complex and difficult to administer, compromising transparency and governance (IDB 2013). Countries could instead, relying on rules-based criteria rather than discretionary case-by-case measures, strengthen those incentives that directly reduce the cost of investment such as accelerated depreciation or investment expensing (De Mooij and others, 2020). Moreover, by allowing for investment that can be fully expensed immediately, the CIT would become a cash-flow tax that falls on rents, making it more growth-friendly (IMF 2020a).[47] Taxation of rents associated with natural resources can be tackled by designing special fiscal regimes as relevant (see, for instance, IMF 2012).

Higher rates could also undermine the corporate tax base since incentives for evasion and profit shifting are likely stronger, particularly if enforcement capacity is limited.[48] And to the extent that this leads to lower capital accumulation, the incidence of higher rates may fall on workers as well.[49] To compare CIT collection capacity across countries, including tax enforcement and the broadness of the tax base, it is useful to analyze the CIT *'productivity'* indicator, which measures revenue collection (in percent of GDP) per percentage point of the CIT statutory rate. Among LA7 countries this indicator is significantly above that of the OECD in Chile and Uruguay, while CIT productivity is more subdued in Argentina and Brazil, two countries with above-average statutory rates, suggesting a significant erosion of the corporate tax base in these cases.

Partly due to LAC's relatively higher statutory tax rates, the extent of revenue loss from international tax avoidance is greater in LAC than in other regions (Cobham and Jansky 2018). The corporate tax base has been also undermined by multinational companies' profit shifting, for example through transfer mispricing and debt shifting. This trend has taken place on the back of corporate tax territoriality, whereby profits are taxed only in the host or source countries where they are generated, exacerbating the incentives for companies to shift profits abroad (Langenmayr and Liu 2020). With the rise of the digital economy and intangible assets, it is becoming more difficult to track the source of corporate profits, adding challenges to the implementation of territoriality-based corporate taxation. This has affected particularly higher-tax countries, where source-based factors of tangible capital and workforce are often located, making it more difficult for countries to raise revenue.

[45]LAC stands out in the generosity of tax benefits offered to businesses relative to those of other regions since, for instance, tax holidays tend to last longer and rate reductions tend to be more generous (ECLAC/Oxfam 2020, p. 12).

[46]There is important heterogeneity within LAC in terms of the levels of CIT statutory rates, as shown in Annex Table 1.1. At the high end, the average CIT statutory rate in LA7 stood at 29.5 percent in 2019, whereas at the low end it stood at 20.1 percent in 2019 for the Caribbean.

[47]Interest deductibility would need to be eliminated for the CIT to become a neutral cash-flow tax that falls on rents. The normal return on capital could then be taxed through the PIT. A careful consideration to transitioning to a cash-flow tax is warranted, possibly as a medium-term objective, since full investment expensing may lead to significant revenue losses over the short-run relative to existing CIT systems in LAC.

[48]Evidence suggests that higher statutory rates are associated with lower corporate tax bases in a cross-country context, possibly due to profit shifting behavior (see Crivelli, de Mooij and Keen 2016; Cobham and Jansky 2018). Tax planning may also arise, since the location of debt could be manipulated by multinational enterprises, who may decide to locate external and internal debt (and associated interest payments) in higher rates countries to benefit from interest deductibility, which reduces their taxable income.

[49]Under perfect capital mobility, a higher statutory rate could lead to lower capital stock in equilibrium, reducing the marginal product of labor and thus wages. But if the higher statutory rate also falls on rents, the incidence could fall on capital owners (De Mooij and others 2020; De Mooij and Klemm 2021).

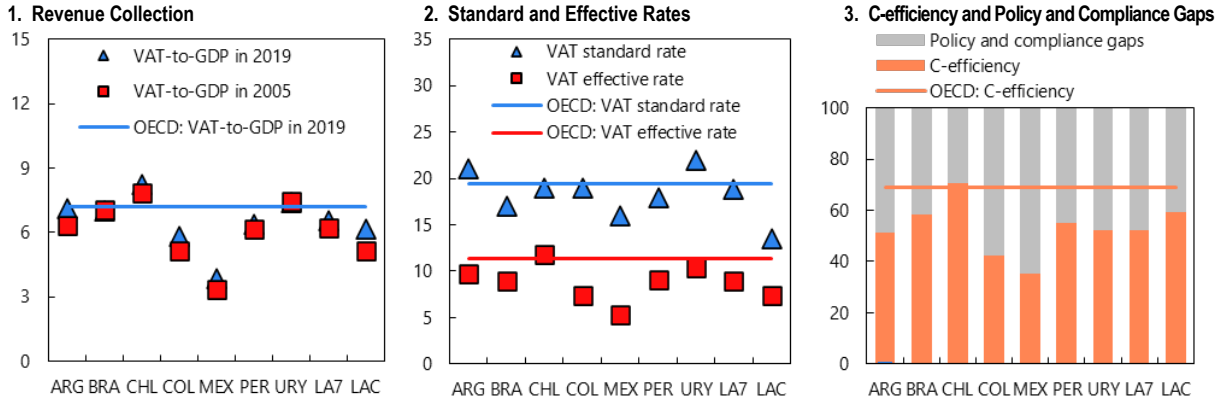
The erosion of the corporate tax base due to tax incentives and profit shifting has been a common concern beyond LAC, bringing the need to thoroughly revisit the laws governing corporate taxation at a global scale. In this context, the recent measures proposed in the OECD/G20 base erosion and profit shifting (BEPS) Pillar 1 and 2 initiatives may bring an opportunity to revisit design elements of corporate taxation in the region to help align it better with international standards. Box 4 summarizes key elements of the proposed BEPS two-pillar initiatives, outlining their plausible impact on LAC countries.[50]

The VAT in LAC: Challenges and Opportunities Brought by Digitalization

The VAT is the main tax revenue pillar in the region. Although VAT collection in LA7 and the OECD was broadly stable during 2005-19 (at around 6.6 and 7.2 percent of GDP, respectively), it increased significantly in other LAC countries during the period (by about 1 ppts of GDP) on the back of higher statutory rates and base broadening measures (Figure 11).

VAT *statutory* rates currently hover around 19 percent in LA7 and the OECD. However, reduced rates and exemptions (policy gap) in combination with widespread non-compliance issues (compliance gap), put VAT *effective* rates in LA7 (9 percent) significantly below those of the OECD (11.4 percent).[51] Reduced rates, zero-rate goods and exemptions designed for redistributive purposes tend to be relatively common among OECD countries, explaining their policy gap. However, significant evasion in the context of 'hard-to-tax' informal vendors largely explain the compliance gap in LA7. The remaining LAC countries have on average lower VAT standard rates (13.5 percent), but these are relatively closer to their effective rates (7.4 percent), due to a broader base in these countries. In this regard, the Caribbean appears to have one of the smallest gaps between statutory and effective VAT rates within LAC (see Annex Table 1.1).

Figure 11. Value-added Taxes: Collection, Standard and Effective Rates, and C-efficiency
(2019 figures unless otherwise indicated; percent)



Sources: IMF, World Economic Outlook database; OECD Tax Revenue Statistics database; and IMF staff calculations.
Note: Brazil's VAT statutory rate in 2019 is set at 17 following Inter-American Center of Tax Administration (CIAT). Group averages reflect simple country averages. Data labels use International Organization for Standardization (ISO) country codes. LAC = Latin-America and Caribbean (excluding LA7); LA7 = Argentina, Brazil, Chile, Colombia, Mexico, Peru, Uruguay; OECD = Organisation for Economic Co-operation and Development (members as of end-2019 excluding LAC countries); VAT = value-added tax.

For many countries in the region, taking steps to bring *C-efficiency* closer to OECD averages would yield additional revenue without the need for modifying statutory rates, i.e., by bringing effective VAT rates closer

[50]Notwithstanding the relevance of the proposed BEPS initiatives for the region as outlined in Box 4, several challenges may arise due to limited administrative capacity, possibly requiring additional regional and/or more-tailored solutions (Abdel-Kader and de Mooij 2020).
[51]VAT effective rates are calculated as total VAT revenue divided by total VAT-exclusive consumption (private and public) as reported in national accounts.

to statutory rates.[52,53] This becomes relevant since C-efficiency, which proxies the breadth of the VAT base and therefore subsumes many VAT design elements, shows average levels in the region below those of the OECD, with Chile standing out as an exception.[54]

Low *C-efficiency* levels in LAC also capture design features introduced to address equity concerns, namely to strengthen the progressivity of the tax. Notwithstanding this objective, evidence suggests that the richest households in the region are those that benefit the most from these tax expenditures in absolute terms (IDB 2013). Equity objectives could be better achieved by broadening the base—leaving a small number of basic products at a reduced rate—and by using any additional revenue for well-targeted transfers (IMF 2020a) and for improving the quality of public goods. Moreover, increasing C-efficiency by stripping down reduced rates and exemptions could also improve resource allocation, thereby fostering growth (Acosta-Ormaechea and Morozumi 2021). A key consideration to pursuing such reforms is associated with compensating vulnerable households that may suffer the incidence of such base-broadening measures. In fact, compensation mechanisms that target low-income households exist in the region,[55] but sometimes those that belong to the middle-class are left uncompensated, leading to social discontent—becoming a key political economy obstacle to broaden the base of the VAT.

Measures that increase the share of "formal" transactions that take place in the economy by leveraging on the use of electronic payment methods at VAT-compliant sellers could help broaden the VAT base while strengthening horizontal equity.[56] Informal transactions are often associated with a large share of final consumption that is paid in cash at non-VAT compliant vendors, but they tend to involve a relatively larger fraction of poorer households.[57] Thus, to preserve progressivity, base-broadening measures associated with the elimination of reduced rates and exemptions and the "formalization" of transactions through electronic payment methods could be combined with a compensating increase in well-targeted transfers redesigned to encourage purchases at compliant retailers, such as the social card program of Uruguay (see, for details, Fenochietto and Benítez, 2021).[58] Similar proposals to reap the benefits of digitalization in identifying and compensating households in developing countries in the context of the VAT are discussed in IMF (2019d).

The quest for a simpler VAT with a broad base is a guiding principle that is becoming more challenging to implement with the fast-paced changes associated with *digitalization*. Broadly speaking, *digitalization* is associated with the size of the information and communication sectors in the economy, which has grown steadily worldwide including in LAC, with a further boost resulting from the COVID-19 pandemic. E-commerce is closely related to digitalization and involves either facilitating the ordering of goods and services later delivered through conventional channels, or the ordering and delivering of goods and services completely electronically (ECLAC 2019). E-commerce could involve only businesses (B2B), businesses and end users (B2C) or only end users (C2C). Box 5 outlines key challenges associated with levying the VAT on the digital economy when more than one jurisdiction is involved, alongside a description of how such challenges could be addressed in the region.

[52]C-efficiency measures how much VAT is collected relative to what would ideally be collected if the VAT was imposed uniformly at the statutory rate on all final consumption.
[53]Averages considering *all* LAC (incl. LA7) for VAT statutory and effective rates stood at 15.5 and 8.0 percent in 2019, while those for C-efficiency, and the policy and compliance gaps together, were 56.8 and 43.2 percent in the same year (see Annex Table 1.1).
[54]Note that C-efficiency could take sometimes high-values notwithstanding important VAT design flaws such as the denial of export refunds, which is an issue oftentimes encountered in LAC countries.
[55]In some countries in the region, however, mechanisms to identify and compensate targeted individuals may need to be developed and/or strengthened.
[56]Some policies that encourage the use of electronic payments may have a potential regressive impact in the region, such as the experiences with the application of reduced VAT rates when using credit/debit cards (see Fenochietto and Benítez 2021).
[57]This form of *de facto* exemption provides progressivity to the VAT system in countries with high levels of informality, as noted in Bachas, Gadenne and Jensen 2021.
[58]More generally, the whole transfer system in LAC would be redesigned in a way that encourages VAT compliance.

Other Tax Revenue Sources in LAC: Immovable Property, Estate and Environmental Taxes

To further increase revenues, LAC countries could also consider other untapped revenue sources which, if properly designed, could be growth-friendly and progressive. Two such sources include property taxes—which broadly defined include immovable property taxes and wealth taxes—and environmental taxes—such as carbon taxes. The rationale for focusing on these taxes is twofold. First, each of these taxes can be a useful tool to tackle old and new challenges facing the region, from wealth inequality to climate change. Second, these taxes are currently at the forefront of global discussions on how to mobilize tax revenue while improving the design, growth-friendliness and progressivity of tax systems.[59] These taxes could also reduce LAC's reliance on more distortive sources of taxation (such as payroll taxes, SSCs and the CIT) and consequently help boost growth.

Cross country evidence on property taxes suggests that LAC lags the OECD in terms of its collection, leaving scope for improvement. Immovable property taxes, which account for roughly half of total property tax revenue, stood at 0.6 percent of GDP in 2019 for the average LA7 country, 0.4 ppt below the OECD average (Table 3). Notable exceptions include Chile, Colombia and Uruguay, whose collection levels are close to (Chile and Colombia) or above (Uruguay) those of the OECD. The collection gap with respect to the OECD is particularly large in Mexico and Peru, at about 0.7 ppt of GDP in 2019.

Immovable property taxes are generally collected at the local/municipal level as opposed to the central level. Hence, improving their collection would require a significant degree of coordination between central and subnational authorities. In addition, such taxes have significant upfront costs to update cadasters and to value properties. While these costs have likely decreased thanks to ongoing technological innovations (e.g., widely available zoning at relatively low cost through satellite imagery), alternative property tax design options have been proposed to overcome them. For example, Ahmad (2018, 2021) argues in favor of a simple residential property area- and location-based tax on occupancy linked to the cost of benefits and basic services (including basic education), which thereby could help increase the willingness to pay. Such a system could help governments ease political resistance and the complexities associated with developing adequate cadasters and systems to update property values.

Table 3. Property Tax Revenue, 2019
(Percent of GDP)

	ARG	BRA	CHL	COL	MEX	PER	URY	LA7	LAC	OECD
Recurrent taxes on property	2.6	1.5	1.1	1.7	0.3	0.4	2.2	1.4	0.7	1.9
o/w immovable property	0.4	0.7	0.8	0.8	0.2	0.3	1.1	0.6	0.3	1.0
o/w net wealth	0.2	0.0	0.0	0.1	0.0	0.0	1.0	0.2	0.0	0.2
o/w estate, inheritance and gift taxes	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
o/w financial and capital transactions	2.1	0.7	0.3	0.8	0.1	0.1	0.1	0.6	0.3	0.4
o/w other recurrent taxes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Non recurrent taxes on property	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total	2.6	1.5	1.1	1.8	0.3	0.4	2.2	1.4	0.7	1.9

Sources: IMF, World Economic Outlook database; OECD Tax Revenue Statistics database; and IMF staff calculations.
Note: Group averages reflect simple country averages. Data labels use International Organization for Standardization (ISO) country codes. LAC = Latin-America and Caribbean (excluding LA7); LA7 = Argentina, Brazil, Chile, Colombia, Mexico, Peru, Uruguay; OECD = Organization for Economic Co-operation and Development (members as of end-2019 excluding LAC countries).

[59]See, for example, IMF (2017b) for a discussion on progressivity and IMF (2019b, 2020b and 2021d) for a discussion on carbon taxes.

Revamping estate and gift taxes could be another avenue to improve collection without necessarily hampering growth. A granular inspection of other property tax items shows that those on financial and capital transactions are used extensively throughout LA7, accounting for roughly half the collection of property taxes in these countries.[60] They are also an important source of revenue in some non-LA7 countries, including those in the Caribbean, as illustrated in Annex Table 1.1. But these taxes tend to have a detrimental efficiency impact, as they distort investment/savings decisions. By contrast, estate, inheritance, and gift taxes are seldomly used in the region, where collection is generally negligible (see ECLAC 2021, and Table 3). These taxes are likely less distortive than other revenue sources, since they are not borne by the original agent undertaking saving/investment decisions. Furthermore, an important feature of these taxes is the fact that unrealized capital gains can be taxed at death, thus helping tackle an important source of wealth inequality.[61,62]

LAC countries could also increase their reliance on environmental taxes, which address an important externality and contribute to mitigate the damaging effects of climate change. For instance, carbon taxes are the most efficient instrument to reduce carbon emissions and would provide additional revenue. Carbon taxes can also be useful in tackling LAC's long-standing and pressing problem of high levels of informality and, as a result, in boosting efficiency. As shown in Bento, Jacobsen and Liu (2018), for instance, carbon taxes are difficult to avoid by the informal sector and could allow governments to reduce the burden of other more distortive taxes that create a wedge between formal and informal activities (e.g., labor taxes). The combination of both elements, in turn, can lead to a rise in incentives towards formalization, a more efficient use of resources, and thereby growth.

Additional Considerations

The chapter proposed elements of a tax reform agenda focused mostly on strengthening the design of direct taxes. The specific implementation features of such reforms, however, is subject to key considerations.

- The *timing* of implementation should reflect the state of the economy and fiscal needs. In the current juncture, supporting the livelihood of those affected by the pandemic and securing a robust recovery remain priorities IMF (2021a). Countries with tighter fiscal space may need to take early steps to secure tax revenue along the lines highlighted in this chapter, which may help boost confidence in their medium-term fiscal frameworks (David, Guajardo and Yepez 2019). As the pandemic recedes, reforms would find a more promising timing for implementation. Evidence suggests that the benefits of fiscal and key structural reforms tend to be larger in economic expansions.[63]

- Reform of different taxes may need to be *sequenced* to avoid negative effects on revenue collection that could compromise fiscal sustainability. For example, some countries may need to take a piecemeal approach to ensure that reforms in specific areas yield the expected revenue before proceeding further. Some of the proposed changes in key tax revenue items, such as in the CIT (e.g., incentives that directly reduce the cost of investment such as accelerated depreciation or investment expensing), may lead to a temporary decline in revenue that may cause short-term fiscal imbalances. Sequencing may also help

[60]The tax categories and definitions used in the analysis follow the OECD Tax Revenue Statistics Database classification.
[61]Batchelder and Kamin (2019) find that nearly 40 percent of the wealth of the top 1 percent in the US is in the form of accrued but unrealized capital gains.
[62]The implementation of estate, inheritance and gift taxes may present challenges, like other taxes on property, associated with the determination of the tax base, the valuation criteria—particularly in case of illiquid or not publicly traded assets—and its administration (see ECLAC 2021, for details). Owners of family businesses may suffer large losses when faced with inheritance tax obligations in countries with imperfect capital markets.
[63]For example, Auerbach and Gorodnichenko (2012) find that fiscal consolidations are less contractionary when implemented during economic booms, albeit in LAC fiscal multipliers appear to be less sensitive to the state of the economy (Carriere-Swallow, David and Leigh 2021). IMF (2019c) finds that the benefits of structural reforms in EMDEs are larger when implemented during economic expansions, evidence that is partly supported in David, Komatsuzaki, and Pienknagura (forthcoming).

develop the capacity needed to collect specific taxes (e.g., a broader base of personal income taxes with fewer deductions).

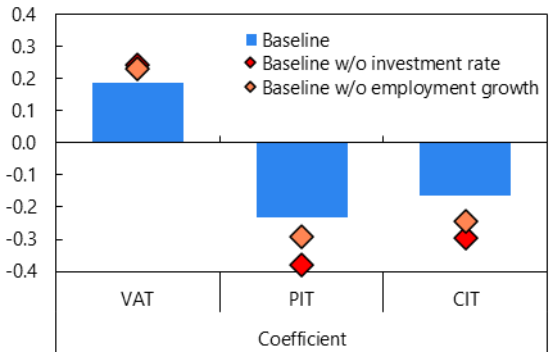
- To ensure its success and sustainability, the proposed reforms would need to garner broad *public support,* which appears to be shifting due to the pandemic, toward greater demand for inclusive policies and stronger safety nets (IMF 2021c). Notwithstanding differences in societal preferences (Cárdenas and others 2021), to gain such support this chapter's tax reforms would need to be accompanied by concomitant improvements in the quality and composition of public expenditure and in the overall fairness of fiscal policy. Alongside proper communication and participation of relevant stakeholders, the institutional and administrative capacity of tax authorities would also need to be improved for successful implementation. This way, the proposed reforms could build public support and social cohesion for implementation in a region where confidence that taxes are well spent is low (OECD 2007) and contribute to bring prosperity to the region.

Box 1. Understanding the Channels Through Which Tax-Neutral Reallocations Affect Growth

Results in Table 1 implicitly assume that tax reallocations between the VAT and income taxes affect growth mainly through total factor productivity (TFP), since regressions control for investment rate and employment growth. To understand how the accumulation of each factor affects growth *separately*, the figure below summarizes baseline results for the LAC sample and compares them with those obtained by the same specification but dropping either employment growth or the investment rate at a time.

Box Figure 1.1. Tax-Neutral Reallocations on Long-Term Growth

(Point estimates; LAC sample with different factor accumulation controls)



Source: IMF staff calculations.
Note: Regressions based on model and sample specified in Annex I. All coefficients are significant at 1 percent. LA5 = Brazil, Chile, Colombia, Mexico, Peru.

The main channel of transmission of tax policy to growth appears to be investment, and to a lesser extent, employment growth. Baseline point estimates of Table 1, Columns 1 and 3, are represented through blue bars in Box Figure 1.1. Red (black) markers refer to the same specification without investment rate (employment growth). The VAT still emerges as the most growth-friendly tax followed by the CIT and then the PIT across alternative specifications, but the effects are magnified when omitting either of the factors of accumulation. Although the basic message of the estimations remains unaffected, changes in investment emerge as a key channel through which taxes affects growth in LAC followed by employment growth.

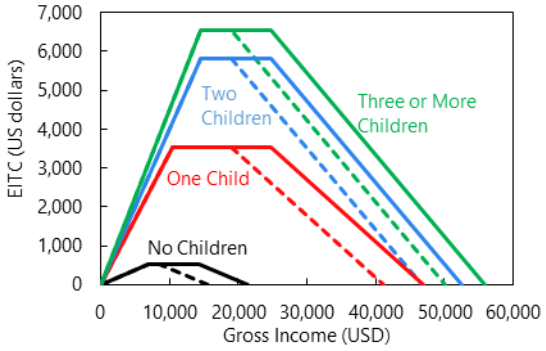
This box was prepared by Santiago Acosta-Ormaechea.

Box 2. The Earned Income Tax Credit: A Viable Option for LAC?

Several advanced economies have established refundable tax credits to reduce poverty by incentivizing labor force participation of low-income individuals and couples. Two examples are the earned-income tax credit (EITC) in the US and the working tax credit in the UK. Key features of these schemes include: 1) eligibility is conditional on working, 2) the credit amount varies with income, increasing until a threshold is reached, and phased out above a higher threshold, and 3) the amounts and thresholds vary with family composition, with higher generosity for single workers than for couples and for workers with children. Box Figure 2.1 shows the US EITC structure, using the 2019 tax code.

Box Figure 2.1. United States: EITC Structure, 2019

(Dashed line: single; Solid line: couple)



Sources: US Internal Revenue Service; and IMF staff calculations.
Note: EITC = earned income tax credit.

The EITC effectively functions as a cash transfer for low-income households, which often face zero or low effective PIT rates, and offsets the less progressive SSCs. Economic theory on optimal taxation supports the idea of a tax credit to incentivize labor force participation by providing individuals with low potential earnings who choose to work with a larger cash transfer than if they stay out of the labor force (Saez 2002). The phase-in region of the EITC provides incentives to increase labor supply on the intensive margin (i.e., longer hours), as the tax credit amount increases with higher gross earnings.[1] Moreover, the EITC functions as a means of 'consumption insurance' by providing a lower effective tax rate in case a worker experiences a negative income shock (Athreya, Rely and Simpson 2014; Froemel and Gottlieb 2021). However, the complex structure of the EITC and its interaction with the rest of the PIT system make its impact on labor supply highly dependent on its design and on households' characteristics, such as marital status and number of children (Brewer, Saez, and Shephard 2010; Eissa and Liebman 1998; Eissa and Williamson Hoynes 2004; Blundell and others 2016).

Introducing an EITC as part of the PIT system may bring several advantages to LAC countries.[2] As noted previously in this chapter, low-income formal workers in LA7 countries face very high SSCs despite effectively paying no PIT. The net cash transfer resulting from a positive EITC would thus function as an income support instrument that would offset SSCs and incentivize labor formality. Moreover, the EITC may foster female (formal) employment in a region where the gender gap is significantly larger than in the OECD. Females comprise a larger share of the poor, informal, and inactive populations in LAC, as their decisions are more sensitive to formality costs and the opportunity costs of labor supply (e.g., childcare and other household duties). Hence, potential EITC schemes in LAC should pay particular attention to design issues related to the tradeoffs and economic decisions faced by women. To this end, setting the eligibility thresholds based on individual income, rather than on joint household income, may incentivize female employment regardless of marital status, thus avoiding a ``marriage penalty". Resulting redistributive concerns arising from the fact that some EITC recipients have high-income spouses could be addressed through a steeper PIT rate profile.

This box was prepared by Carlo Pizzinelli.

[1]The phase-out region of the EITC in theory would discourage increasing work hours by imposing a high marginal effective tax rate on gross earnings. However, several studies found no evidence of a significant negative impact of the EITC on eligible workers' weekly hours (Liebman 1998; Eissa and Liebman 1996; Meyer 2002). Similarly, in LAC the risk that workers just above the threshold for the complete phase-out of the EITC would have strong incentives to switch to the informal sector are likely very limited.

[2]Pessino and others (2021) and IDB (2021) also discuss the benefits of a Negative Income Tax (NIT) for the largest LAC economies, whose principles are comparable to those of an EITC. Using a similar micro-simulation approach, they find that the tax credit would have limited fiscal impact while increasing formalization incentives for 50 to 70 percent of informal workers.

Box 2 *(continued)*

While no LA5 country currently has an EITC scheme, Chile and Colombia possess tax credits/subsidies that support low-income formal workers with dependents (children and some types of elders). These are the *Asignación Familiar* in Chile and the *Subsidio Familiar* in Colombia. Mexico features an income support scheme (*Subsidio al Empleo*) for low-income workers with more granular brackets that resemble more the phase-out component of the EITC. Overall, these schemes have similar objectives to the EITC (i.e., formality and redistribution) but they differ in design.

Box 3. Quantifying the Impact of a Simplified Tax Code

When thinking about PIT reform options, the economic literature has proposed theoretical foundations for optimal tax structures (Saez 2002; Brewer, Saez, and Shephard 2010). The calculation of such structures requires several ingredients. First, social welfare must be quantitatively defined based on the multiple economic objectives of taxes, while also incorporating relevant political economy constraints. Second, the optimal tax schedule must account for all margins over which the tax creates distortions and their relative salience across the country's empirical income distribution. In the context of LAC, the most relevant ones are the intensive and extensive margins of labor supply (the latter is especially relevant for women), the decision to work in the formal or informal sector, and earnings from non-labor income sources. Finally, the country's full tax structure matters for general-equilibrium effects (e.g., from firms' labor demand to households' consumption), which would ultimately determine the incidence and revenue yield of the tax. Setting such an economic problem can be complex for several LAC countries and goes beyond the scope of this chapter.

Instead, this chapter quantifies the impact of a simplification of the tax code whereby deductions are eliminated, combined with an EITC that seeks to encourage formalization and to increase progressivity. Deductions, exemptions, and tax credits are designed to improve the fairness of the tax system vis à vis households' composition (e.g., dependent-based deductions), to exclude from taxation income that is earmarked to mandatory expenditures (e.g., social security), or to incentivize socially beneficial behavior (e.g., education and homeownership-based deductions). However, in LAC these measures mostly dilute the already low effective PIT rates of high-earning workers. Further, the progressivity of the PIT system can be better addressed through an EITC (Box 2), and at a lower fiscal cost.

The exercise follows a static micro-simulation approach to compute a partial-equilibrium counterfactual exercise where, in each LA5 country, all reductions in PIT tax liabilities are eliminated. Hence, in this scenario, the countries' statutory PIT rates directly apply to formal workers' gross earnings. We then add an EITC for low-income earners based on the US scheme, whose generosity increases with the number of dependent children (see Annex 3 for details). This scheme reflects the spirit of the dependent-based deductions with an enhanced targeting towards low-earning workers (Box 2), particularly female workers, thus increasing the progressivity of the overall PIT system. Remaining agnostic about the 'optimality' of its specific design, the application of the US EITC schedule (normalized by each country's mean income) allows for an intuitive cross-country comparison of how this program interacts with the countries' PIT structures and income distributions.

Note that the exercise is static. It holds individuals' behavior constant across the scenarios, and thus it shuts off labor formality decisions. In other words, it does not account for potential changes in individuals' choices regarding whether to work in the formal or informal sectors. Factoring in the increase in the formal labor force would likely reduce PIT revenues, as most newly formalized workers would be low-earning and eligible for the EITC, but would also increase revenues from SSCs, which are paid by all workers.[1] Moreover, a cross-country analysis of the potential impact of the EITC on poverty is challenging due to the varying definition of poverty lines in each country and the modeling of the various transfer programs low-income households may receive. However, the EITC would likely reduce poverty rates by lifting the income of poorer households who are either already in the formal sector or moving into formality to benefit from the EITC.

This box was prepared by Samuel Pienknagura and Carlo Pizzinelli.

[1]From a macroeconomic standpoint this tradeoff effectively amounts to a partial financing of SSCs via the general tax system, along the lines suggested by Antón, Hernández and Levy (2013) with regards to raising VAT revenues to provide universal health and pension coverage.

Box 4. Potential Effects of the OECD/G20 BEPS Initiatives in LAC

The OECD/G20 Base Erosion and Profit Shifting (BEPS) Pillar 1 and 2 initiatives would help counteract some of the forces behind the 'race-to-the-bottom' behavior of statutory rates and multinationals' profit shifting. Final agreement on both pillars is expected by October 2021, with expected implementation from 2022.[1]

Pillar 1 moves toward destination-based taxation by taking a share (20-30 percent) of the largest multinational corporations' global book profits above a specific revenue margin (10 percent) and allocating them among market jurisdictions, namely where corporate sales and/or end users are located (Amount A). Extractives and Regulated Financial Services are excluded. Pillar 1 also includes a fixed return for baseline marketing and distribution activities by multinationals (Amount B) to determine the amount of profits subject to reallocation, simplifying the administration of transfer pricing rules while adding certainty to taxpayers and tax administrations. This pillar will be mandatory and implemented by a multilateral treaty.

Pillar 2 strengthens residence-based taxation by encouraging countries to adopt a minimum effective tax of at least 15 percent on the foreign earnings of resident corporations (with global turnover exceeding €750 million). Outstanding technical details are expected to be finalized by October 2021 (e.g., calculation of the minimum rate). This pillar, which is optional but jurisdictions should accept adoption by others, contains three broad interrelated tax rules: (i) an outbound rule that subjects profits of multinationals to a supplemental/top-up tax if they are taxed abroad *below* the minimum rate, and (ii) two inbound rules: an 'undertaxed payments rule,' which denies deductions with respect to low-taxed payments, and a 'subject to tax rule' permitting source countries under their tax treaties to impose taxes on certain related party payments. The retention of a substance-based carve-out—exempting income to calculate profits subject to reallocation, equivalent to a fixed percentage of payroll and tangible assets—preserves some scope for (potentially damaging) tax competition.

How would LAC be affected by the two-pillar initiatives? Most expected revenue would come from Pillar 2, which is about $150 billion with a 15 percent minimum rate (assuming global adoption),[2] likely more than 10 times the amount expected from Pillar 1 (see OECD 2020c).

Since most LAC countries are *source or host* countries, namely capital importers—as opposed to *resident* countries, namely capital exporters which are essentially advanced economies but with some exceptions in the region—the main benefit from Pillar 2 for LAC would come from the reduced pressures for tax competition, including through tax incentives. But design and multinational companies' responses would matter for the overall revenue yield. For instance, the substance-based carve-out would entail that *only* excess profits will be covered by the minimum tax, reducing tax collection mostly in *resident* countries while easing pressures to remove incentives in source countries. Also, given the high statutory tax rates in LA7 countries, a 15 percent global minimum rate would still preserve a positive tax differential in some countries in the region relative to the rest of world, leaving incentives for profit shifting out of countries with relatively higher rates. For instance, some third jurisdictions where FDI inflows typically pass through before reaching their final destination, as observed in Mexico and Brazil (Box Table 4.1), could still maintain or even expand their prominence.

Box Table 4.1. Top FDI Investing Countries, 2019
(Percent share of total inward FDI)

Mexico		Brazil	
United States	34	Netherlands	23
Netherlands	20	United States	18
Spain	17	Spain	10
Canada	7	Luxembourg	9
United Kingdom	4	France	6
Germany	3	United Kingdom	4
Switzerland	3	Japan	3
Luxembourg	2	British Virgin Islanc	2
Japan	2	Germany	2
France	1	Chile	2

Sources: IMF, Coordinated Direct Investment Survey; and IMF staff calculations.
Note: FDI = foreign direct investment.

This box was prepared by Santiago Acosta-Ormaechea and Li Liu (FAD).

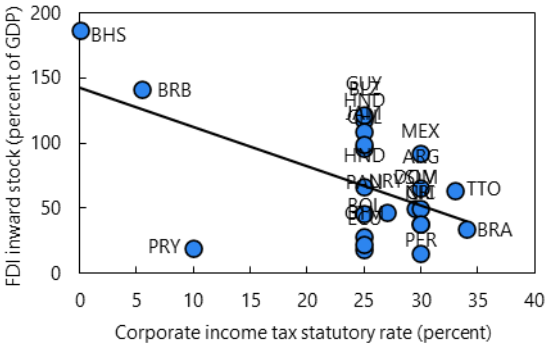
[1]Currently 136 out of 140 member countries of the Inclusive Framework on BEPS have agreed to this solution, including all in LAC.

[2]OECD/G20 "Statement on a Two-Pillar Solution to Address the Tax Challenges Arising From the Digitalisation of the Economy", 1 July 2021, https://www.oecd.org/tax/beps/statement-on-a-two-pillar-solution-to-address-the-tax-challenges-arising-from-the-digitalisation-of-the-economy-july-2021.pdf .

Box 4 *(continued)*

There are also are several low-tax countries in LAC which are popular destinations for FDI to pass through, including the Bahamas and Barbados, absorbing significant FDI inflows (Box Figure 4.1). These countries may have a strong incentive to raise their statutory tax rate up to the 15 percent minimum. Whether revenue will shift—out of residence countries—to these (former) low-tax countries depends on how corporates will change their investment flows.

Box Figure 4.1. LAC: FDI Inward Stock and Corporate Income Tax Rates, 2019



Sources: Tax Foundation Corporate Tax Rates around the World; UNCTAD; and IMF staff calculations.
Note: Data labels use International Organization for Standardization (ISO) country codes.

As for Pillar 1, the new taxing rights may bring modest revenue increases to many countries in the region. This would come at the expense of residence countries, such as the US, which is a key FDI provider in the region (among the top two FDI providers for Brazil and Mexico, Box Table 4.1). There are also some capital exporting countries within LAC, but with a relatively low incidence from a global perspective, suggesting that less than 0.5 percent of total allocable residual profit might affect the region. Finally, the rollback of some of the digital sales taxes applied in the region,[3] also under discussion as part of the initiatives, may imply that some of the associated revenue could be forgone.

[3]https://www.bizlatinhub.com/explaining-developments-digital-tax-latin-america/.

Box 5. Digitalization and VAT Challenges in LAC

In Latin America and the Caribbean, the income of the digital sector[1] is expected to grow by about 28 percent in 2021 (e-commerce of goods would reach about 1.7 percent of GDP and of services about 0.3 percent in 2020, see Jiménez and Podestá 2021). An important part of these transactions is associated with registered VAT taxpayers (B2B) which are usually taxed,[2] but there are also transactions with consumers (B2C), where the lack of appropriate legislation and administrative practices are especially problematic.

The digital sector should be taxed just as the rest of the economy. This implies gains in efficiency and neutrality (e.g., foreign suppliers will be treated in the same way as domestic suppliers), equity (e.g., as consumption of digital products increases with income), revenues, and control (e.g., by eliminating the incentive of domestic suppliers of offshoring services to avoid the VAT). Digital services, as well as the imports of low-value goods, should be taxed under the destination-base principle (the jurisdiction that will apply the VAT is that where consumers have their usual residence), which achieves trade neutrality and aligns with the standard VAT approach on traditionally traded goods.

VAT collection on cross-border digital transactions and imports of low-value goods face several challenges since providers may not have physical presence in the destination country and, in the case of digital services, no physical customs border is crossed. OECD (2015) guidelines have recommended two main rules:

- For B2B supplies, to apply the *reverse charge* rule—making use of the fact that importers are already registered for VAT and can be controlled domestically—whereby the resident recipient must pay the VAT on the imported services and claim an input tax credit in their tax returns.
- For B2C supplies, the best option is to follow the *vendor collection* approach (especially considering the high concentration observed among nonresident suppliers of services and intangibles). This requires the nonresident vendor, without physical presence in the jurisdiction of the consumer residence, to register, charge, collect, and remit the VAT to the jurisdiction where the consumer resides. This approach has been implemented as of 2021 by more than 60 countries for imported digital services (Brondolo and Konza 2021), and has been used in the European Union (EU) since 2005.[3]

From the administration side, it is important that jurisdictions establish simplified schemes for registration and filing and payment of tax returns, to avoid undue complexity and burden for nonresident suppliers and tax administrations. For simplification, a registration threshold to start paying VAT should be considered.[4] The process should be completely electronic, and no tax credit should be allowed to nonresident businesses. In addition, a comprehensive compliance strategy should be implemented to identify and deal with key compliance risks, including nonresident businesses failing to register, file, accurately report VAT liabilities and pay (Brondolo and Konza 2021).

This box was prepared by Ricardo Fenochietto (FAD).

[1]The digital sector comprises, among others, the e-commerce of goods; e-services (e.g., online advertising, data services, online marketplace, and platform services); digital media; and financial technology (e.g., digital banks).

[2]About 80 percent of the global e-commerce is carried out by B2B transactions, UNCTAD (2021).

[3]The EU oblige nonresident suppliers of digital services to register in one country of the community since 2005 (the tax administration of that country must transfer the collection to each jurisdiction where the nonresident provider declares the sale). Countries have reported a high degree of compliance in a market dominated by a few large taxpayers.

[4]There could be arguments for a lower threshold for nonresident suppliers (e.g., domestic suppliers pay input VAT if exempt and they must also compute other domestic sales to compare with the threshold, while nonresident suppliers would then not be charged any VAT on their inputs).

Box 5 *(continued)*

At least nine countries in Latin America have introduced legislation (and four more countries are currently preparing it)[5] to apply the VAT on imports of digital services[6] and low-value imported goods (KPMG, 2021). Four countries (Chile, Colombia, Mexico, and Uruguay) have followed the recommended vendor collection approach for B2C supplies (Chile and Colombia also apply a withholding in the case of no registration). In other countries in the region (Argentina, Brazil, Costa Rica, Ecuador, and Paraguay), the nonresident provider is not required to register, but a withholding should be applied by the financial institutions in payments to digital providers (in Costa Rica and Ecuador the provider can opt to register to avoid the withholding). This latter approach is: (a) complex (e.g., tax administrations must periodically update a list of providers to whom the withholding should be applied); (b) not easy to implement and monitor (e.g., services can be provided by a branch with a different name relative to that included in the list and the withholding would not apply); and (c) facilitates avoidance (e.g., credit cards issued by nonresident institutions will not be subject to the withholding).

[5]The four countries that have prepared legislation are Honduras, Panama, Peru, and the Dominican Republic.
[6]It is estimated that the region may initially collect between 0.02 and 0.04 percent of GDP per year from nonresident digital platforms (Jiménez and Podestá 2021), being the highest level reached by Chile (0.07 percent of GDP).

Annex 1. Selected Tax Indicators for Main LAC Country Groups

To assess cross-regional differences in taxation within LAC, Annex Table 1.1, below, summarizes the main indicators discussed in the chapter for different subregions and shows how they compare with those of the OECD.[1]

Annex Table 1.1. Selected Tax Indicators for Main LAC Country Groups

	LA7	South America	CAPDR	Caribbean	LAC excl. LA7	LAC	OECD
Tax and SSCs Collection, 2005 (percent of GDP)							
Value-added taxes	6.2	6.2	4.7	6.1	5.2	5.5	6.7
Personal income taxes	1.4	1.0	1.0	2.9	1.7	1.6	8.3
Corporate income taxes	3.2	3.2	2.2	4.5	3.2	3.2	3.2
SSCs and payroll taxes	3.5	3.5	3.3	2.1	2.7	3.0	9.5
Other taxes	7.1	6.8	5.2	6.4	5.7	6.1	6.6
Total	21.4	20.6	16.4	22.0	18.6	19.4	34.4
Tax and SSCs Collection, 2019 (percent of GDP)							
Value-added taxes	6.6	6.7	5.3	7.1	6.2	6.3	7.2
Personal income taxes	2.5	1.8	1.6	3.4	2.2	2.3	8.8
Corporate income taxes	3.6	3.5	3.1	4.5	3.7	3.7	2.8
SSCs and payroll taxes	4.4	4.8	4.4	2.8	3.9	4.0	10.2
Other taxes	6.4	6.1	4.5	8.0	6.0	6.1	6.4
Total	23.5	22.9	19.0	25.8	21.9	22.4	35.5
PIT Design Features, 2019							
PIT rate min (percent)	7.9	9.3	12.1	18.7	14.5	12.4	15.5
PIT rate max (percent)	33.9	28.2	22.4	32.5	25.0	27.8	43.1
PIT threshold min (share of GDP per capita)	0.7	1.1	2.3	2.4	2.4	1.8	0.6
PIT threshold max (share of GDP per capita)	15.4	13.8	5.4	4.1	5.0	8.5	4.2
Average Effective Labor Tax Rates, 2019							
Average effective PIT rate	5.8	4.6	4.4	6.1	4.6	5.0	14.9
Average effective SSCs rate	8.5	7.5	7.5	9.2	7.6	7.9	15.9
Total average effective labor taxes (unadjusted)	14.3	12.1	11.9	15.3	12.2	12.8	30.8
Total average effective labor taxes (adjusted for labor informality)	26.5	32.2	40.3	19.3	34.0	31.6	30.8
CIT Design Features, 2019							
CIT statutory rate (percent)	29.5	26.3	27.4	20.1	23.1	25.0	23.2
CIT productivity (percent of GDP)	0.1	0.1	0.1	0.2	0.2	0.2	0.1
VAT Design Features, 2019 (percent)							
VAT standard rate	18.9	17.4	13.3	15.5	13.5	15.5	19.4
VAT effective rate	9.0	9.2	6.4	9.5	7.4	8.0	11.4
C-efficiency	52.2	60.1	52.4	65.7	59.5	56.8	69.0
Policy and compliance gaps	47.8	39.9	47.6	34.3	40.5	43.2	40.5
Property Tax Revenue, 2019 (percent of GDP)							
Recurrent taxes on property	1.4	1.1	0.4	1.1	0.7	0.9	1.9
Of which: Immovable property	0.6	0.5	0.2	0.6	0.3	0.4	1.0
Net wealth	0.2	0.1	0.0	0.0	0.0	0.1	0.2
Estate, inheritance, and gift taxes	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Financial and capital transactions	0.6	0.5	0.2	0.6	0.3	0.4	0.4
Other recurrent taxes	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Non recurrent taxes on property	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	1.4	1.2	0.4	1.1	0.7	0.9	1.9

Sources: Organization for Economic Co-operation and Development (OECD) Tax Revenue Statistics database; IMF, World Economic Outlook database; International Labour Organization (ILO); Mendoza, Razin and Tesar (1994) for methodology to compute effective labor tax rates; and IMF staff calculations.
Note: Group averages reflect simple country averages. Regional/group coverage may differ for each indicator depending on data availability. LAC = Latin America and the Caribbean; CAPDR = Central America, Panama, and the Dominican Republic; OECD = Organisation for Economic Co-operation and Development CIT = corporate income tax; PIT = personal income tax; SSC = social security contribution; VAT = value-added tax.

[1]The groups and countries included are as follows. CAPDR = Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua, Panama; Caribbean = Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and Grenedines, Suriname, Trinidad and Tobago; LA7 = Argentina, Brazil, Chile, Colombia, Mexico, Peru, Uruguay; South America = Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay.

Annex 2. Estimating Empirically the Effects from VAT, PIT and CIT on Long-Term Growth

General Specification

To identify the effects of taxation on growth the chapter follows closely Acosta-Ormaechea and Morozumi (2021), by defining the following empirical model:

$$g_{i,t} = \boldsymbol{f}'_{i,t}\delta_{0i} + \boldsymbol{f}'_{i,t-1}\delta_{1i} + \sum_{j=1}^{n}\delta^{Z}_{0i,j}z_{i,j,t} + \sum_{j=1}^{n}\delta^{Z}_{1i,j}z_{i,j,t-1} + \lambda_i g_{i,t-1} + \zeta_i crisis_t + \epsilon_{i,t}, \quad (1)$$

where $g_{i,t}$ is the growth rate of annual real GDP per capita in country *i* in year *t*. $\boldsymbol{f}'_{i,t}$ is a vector of tax variables (to be clarified below); $z_{i,j,t}$ contains control variables (including investment rates and employment growth). The choice of these control variables is based on Gemmell, Kneller and Sanz (2011). The equation takes an ARDL structure, where both dependent and independent variables are included in the right-hand side with a lag of order 1. Finally, $crisis_t$ is a dummy variable that takes a value one for years after 2008 (inclusive) and zero otherwise.

Considering a tax reallocation from income taxes to the value-added tax (VAT), for a given level of total tax revenue, the vector of tax variables in Eq. (1) takes the following form:

$$\boldsymbol{f}'_{i,t}\delta_{0i} = \delta^{T\_tax}_{0i}t\_tax_{i,t} + \sum_{j=1}^{m}\delta^{S}_{0i,j}s_{i,j,t}, \quad (2)$$

where $t\_tax_{i,t}$ is the ratio of total tax revenue to GDP and $s_{i,j,t}$ is the share of tax component *j* in total tax revenue, which comprises *m* different tax types. However, since $\sum_{j=1}^{m} s_{i,j,t} = 1$ by construction, we omit one tax component to avoid perfect multicollinearity. Specifically, consider a case with three tax shares ($m = 3$): VAT ($s_{i,V,t}$), income taxes ($s_{i,I,t}$), and other taxes ($s_{i,O,t}$). Omitting the income tax share in Eq. (2), $s_{i,I,t}$, yields:

$$\boldsymbol{f}'_{i,t}\delta_{0i} = \delta^{T\_tax}_{0i}t\_tax_{i,t} + \left(\boldsymbol{\delta^{S}_{0i,V}} - \boldsymbol{\delta^{S}_{0i,I}}\right)s_{i,V,t} + \left(\delta^{S}_{0i,O} - \delta^{S}_{0i,I}\right)s_{i,O,t} + \delta^{S}_{0i,I}. \quad (3)$$

A coefficient on the VAT share, $s_{i,V,t}$, then measures the growth effect of a revenue-neutral increase in the VAT offset by income taxes, i.e., $\boldsymbol{\delta^{S}_{0i,V}} - \boldsymbol{\delta^{S}_{0i,I}}$. $\boldsymbol{f}'_{i,t-1}\delta_{1i}$ in Eq. (1) is similarly defined for period *t-1*.

When this specification is re-parameterized to the error-correction form, to accommodate the fact that some fiscal variables may have only a short-run growth impact (i.e., only a transitional or level effect on output) whereas other may have a long-run growth effect, the estimating equation takes the following form:

$$\Delta g_{i,t} = \phi_i\left(g_{i,t-1} - \theta^{T\_tax}_{i}t_{tax_{i,t-1}} - \left(\boldsymbol{\theta^{S}_{i,V}} - \boldsymbol{\theta^{S}_{i,I}}\right)\boldsymbol{s_{i,V,t-1}} - \left(\theta^{S}_{i,O} - \theta^{S}_{i,I}\right)s_{i,O,t-1} - \sum_{j=1}^{n}\theta^{Z}_{i,j}z_{i,j,t-1}\right) + \delta^{T\_tax}_{0i}\Delta t_{tax_{i,t}}$$
$$+ \left(\delta^{S}_{0i,V} - \delta^{S}_{0i,I}\right)\Delta s_{i,V,t} + \left(\delta^{S}_{0i,O} - \delta^{S}_{0i,I}\right)\Delta s_{i,O,t} + \sum_{j=1}^{n}\delta^{Z}_{0i,j}\Delta z_{i,j,t} + \zeta_i crisis_t + \delta^{S}_{0i,I} + \delta^{S}_{1i,I}$$
$$+ \epsilon_{i,t}, \quad (4)$$

where $\phi_i = -(1 - \lambda_i)$ represents the error-correction speed of adjustment, requiring $\phi_i < 0$ (or $\lambda_i < 1$) to ensure convergence to the long-run equilibrium. The coefficient on the VAT share now takes the form,

$s_{i,V,t-1}$: $\theta^S_{i,V} - \theta^S_{i,I}$, where $\theta^S_{i,V} = (\delta^S_{0i,V} + \delta^S_{1i,V})/(1-\lambda_i)$ and $\theta^S_{i,I} = (\delta^S_{0i,I} + \delta^S_{1i,I})/(1-\lambda_i)$. If this coefficient is positive, it means that a revenue-neutral increase in VAT revenue offset by income taxes is associated with higher long-run growth. The subsequent terms in first-differences (denoted by Δ in front of the relevant variables) capture the short-run dynamics towards the long-run equilibrium.

To address reverse causality concerns from growth to taxes, we disallow the contemporaneous relation between fiscal variables and growth as in Bleaney, Gemmell and Kneller (2001) and Gemmell, Kneller and Sanz (2011). This implies imposing $\delta_{0i} = 0$ in Eq. (1), to then re-parameterizing it in error correction form for estimation. When re-estimating the model, results confirm those of Table 1 in the main text, namely that revenue-neutral reallocations to the VAT offset by income taxes are positive and highly significant in the case of LAC, and that within income taxes the PIT appears to be more detrimental for growth than the CIT (albeit the significance of coefficients is slightly weaker in this case). Within the OECD sample, there is now an indication that the VAT is more growth friendly than income taxes, but this is driven by the CIT, which is not only negative and highly significant, but with a coefficient larger in absolute value. The PIT coefficient remains small in absolute value and non-significant, implying that its growth effect relative to that of the VAT is not statistically different.

Dataset: Data Sources and Descriptive Statistics

The empirical analysis uses a novel dataset covering 16 LAC and 33 OECD countries built from the OECD Tax Revenue Statistics Database. This is combined with macro-fiscal variables from WEO. Only countries with at least 15 years of continuous non-missing tax and macro-fiscal variables are used. The dataset includes information up to 2019, but the starting year and the number of observations depend on country-specific data availability and are specified in Annex Table 2.1, which summarizes the dataset.

Annex Table 2.1. Descriptive Statistics

Variables	Mean	Std deviation	Min	Max	Mean	Std deviation	Min	Max
	LAC: 16 countries / 376 obs				OECD: 33 countries / 1112 obs			
Growth rate of real GDP (PPP) per capita	0.02	0.03	-0.12	0.10	0.02	0.03	-0.14	0.24
Total taxes/GDP	0.21	0.06	0.11	0.34	0.35	0.07	0.13	0.51
Consumption taxes/Total taxes	0.50	0.10	0.29	0.83	0.32	0.07	0.14	0.63
Value added taxes/Total taxes	0.29	0.08	0.04	0.45	0.19	0.05	0.04	0.32
Personal income taxes/Total taxes	0.09	0.06	0.00	0.24	0.25	0.10	0.09	0.56
Corporate income taxes/Total taxes	0.14	0.05	0.02	0.32	0.08	0.04	0.01	0.30
Social security contribution/Total taxes	0.18	0.10	0.00	0.43	0.27	0.12	0.00	0.48
Property taxes/Total taxes	0.04	0.03	0.00	0.13	0.05	0.03	0.01	0.34
Other taxes/Total taxes	0.05	0.04	0.00	0.26	0.01	0.02	0.00	0.19
Investment/GDP	0.22	0.06	0.10	0.44	0.24	0.05	0.12	0.45
Employment growth	0.02	0.03	-0.06	0.35	0.01	0.02	-0.14	0.11
Government consumption/GDP	0.14	0.03	0.05	0.24	0.19	0.04	0.06	0.28

Sources: IMF, World Economic Outlook database; OECD Tax Revenue Statistics database; and IMF staff calculations.
Note: LAC sample includes (years covered in parenthesis): Argentina (25), Barbados (23), Bolivia (25), Brazil (28), Chile (28), Colombia (28), Costa Rica (16), Dominican Republic (18), El Salvador (17), Honduras (28), Jamaica (28), Mexico (17), Nicaragua (19), Panama (28), Peru (28), Uruguay (20). OECD sample includes: Australia (18), Austria (46), Belgium (48), Canada (28), Czech Republic (23), Denmark (41), Estonia (23), Finland (48), France (46), Germany (48), Greece (31), Hungary (27), Iceland (32), Ireland (29), Israel (23), Italy (40), Japan (30), Korea (42), Latvia (23), Lithuania (19), Luxemburg (48), Netherlands (38), New Zealand (33), Norway (48), Poland (26), Portugal (30), Slovak Republic (23), Slovenia (20), Spain (33), Sweden (39), Switzerland (29), Turkey (34), and United Kingdom (46).

[1]The remaining long-run coefficients are $\theta^{T\_tax}_i = (\delta^{T\_tax}_{0i} + \delta^{T\_tax}_{1i})/(1-\lambda_i)$, $\theta^S_{i,O} = (\delta^S_{0i,O} + \delta^S_{1i,O})/(1-\lambda_i)$, and $\theta^Z_{i,j} = (\delta^Z_{0i,j} + \delta^Z_{1i,j})/(1-\lambda_i)$.

Annex 3. Micro-simulations of Effective Labor Taxation in LA7

Data Sources

For the exercise we use worker-level microdata from either labor force or household surveys collected either in 2019 or in 2018. In the latter case, nominal monetary values are adjusted to 2019 prices using the respective country's CPI. The list of data sources used is as follows:

- Argentina: *Encuesta Nacional de Gastos de los Hogares* (ENGHO), 2018
- Brazil: *Pesquisa Nacional por Amostra de Domicilios* (PNAD) as harmonized by IDB, 2019
- Chile: *Encuesta Nacional de Empleo – Encuesta Suplementaria de Ingresos* (ENE-ESI), December 2019
- Colombia: *Gran Encuesta Integrada de Hogares* (GEIH), June 2019
- Mexico: *Encuesta Nacional de Ingresos y Gastos de los Hogares* (ENIGH) as harmonized by IDB, 2019
- Peru: *Encuesta Nacional de Hogares* (ENAHO) as harmonized by IDB, 2018.
- Uruguay: *Encuesta Continua de Hogares* (ECH) as harmonized by IDB, 2019

Framework

We follow the methodology of IMF (2017a). For each formal worker between the ages of 18 and 65 we use the following information: labor earnings, pension and health contributions (if available), number of children, marital status, whether the spouse is formally employed, and the formal income of the spouse. For comparability across countries, we use the ILO's definition of formality, which, unlike that of some national statistical offices, focuses on a worker's participation in the revenue and social security systems.

We assume that income is reported as net of taxes and SSCs. If income is reported as a per-month amount, we multiply it by 12 to obtain an approximate annual amount. Using the relevant variables, such as number of dependents and pension and health contributions, we then impute the deductions, exemptions, and tax credits a worker can claim based on the country's tax code. Finally, using this information and the country's PIT scale, we impute the gross earnings that would be consistent with the reported net wage and the deductions, exemptions, and credits. We take the information on the PIT scales, as well as on deductions, exemptions, and credits, from the specific country chapters of the Worldwide Personal Tax and Immigration Guide 2019-2020 by Ernst & Young (EYGM 2020).

While we attempt to use a consistent approach for all the countries, we need to make country-specific adjustments and assumptions due to the different availability of information in the microdata. When available, we use the variables reporting pension and health contributions paid by the worker to impute their SSCs. For instance, for Colombia the GEIH asks workers whether they pay SSCs entirely, split between the worker and the firm, or whether they are paid entirely by the firm. Consulting the country's tax code, these answers are reconcilable with specific percentages of gross earnings spent by workers on SSCs. For countries for which this information is unavailable, we assume that workers pay the full amount of the mandatory SSCs stated by the tax code. A similar adjustment is made for independent workers, as tax codes may specify that self-employed individuals must contribute a different proportion of their earnings to social security. In some countries, while there are no automatic deductions for dependents, there may be deductions or tax credits for education expenses (e.g., Mexico and Chile). In these cases, we use information from other sources to approximate a likely expenditure per child. For instance, for Chile we use information from the *Encuesta de Presupuestos Familiar* 2018 (INE, 2018) on the average education expenditure per households to derive an approximation of the average education expenditure per child as a fraction of workers' income.

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