Directors of the collection
Rafael de la Cruz · Osmel Manzano · Mario Loterszpil

IDB
Inter-American
Development Bank

HOW TO
ACCELERATE
**ECONOMIC
GROWTH**
AND STRENGTHEN THE
MIDDLE CLASS

LATIN AMERICA

How to Accelerate Economic Growth
and Strengthen the Middle Class
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Abbreviations and acronyms

AI	Artificial Intelligence
BDH	Human Development Bond ("Bono de Desarrollo Humano")
CCTs	Conditional Cash Transfers
CEDES	Center for the Study of State and Society
CIAT	Inter-American Center of Tax Administrations
CNSC	National Civil Service Commission
CPI	Consumer Price Index
DIAN	Directorate of National Taxes and Customs
DNP	National Planning Department
EAP	Economically Active Population
ECLAC	Economic Commission for Latin America and the Caribbean
EDEP	Independent evaluations of budget design and execution
ELCA	Longitudinal Survey of the Universidad de los Andes
EU	European Union
EUROMOD	Tax-benefit microsimulation model for the European Union
FDI	Foreign direct investment
GCR	Global Competitiveness Report
GDP	Gross domestic product
IDB	Inter-American Development Bank
IMF	International Monetary Fund
ITCs	Information and communications technologies
LAC	Latin America and the Caribbean
LOSEP	Organic Law on Public Service

MDBs	Multilateral development banks
MEF	Ministry of the Economy and Finance
MTFF	Medium-term fiscal framework
MTEF	Medium-term expenditure framework
NCP	Non-contributory pensions
OECD	Organization for Economic Cooperation and Development
OSCE	Supervisory Agency of State Procurement
PISA	Programme for International Student Assessment
PPI	Private Participation in Infrastructure Database
PPP	Public-private partnership
R&D	Research and development
SEACE	Electronic System of State Procurement
SECOP	Electronic System of Public Procurement
SERVIR	National Civil Service Authority
SICOES	State Procurement System
SIMS	Labor Markets and Social Security Information System
SINAFO	National Targeting System
SISBEN	System to Identify Potential Beneficiaries of Social Programs
SMEs	Small and medium enterprises
SNIP	National Public Investment System
TFP	Total factor productivity
UDAPE	Social and Economic Policy Analysis Unit
UGPP	Pensions and Parafiscal Management Unit
VAT	value added tax
WBES	World Bank Enterprise Surveys
WEF	World Economic Forum
WEO	*World Economic Outlook*
WHO	World Health Organization
YPFB	Yacimientos Petrolíferos Fiscales Bolivianos

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Introduction

L atin America can become a continent of developed countries. This seems a distant dream, even for Latin Americans themselves, but it could be achieved in a generation.

Presenting a book whose main goal is to propose strategies for accelerated economic and social growth in Latin America, especially in the Andean countries, might seem puzzling at a time when the world is beset by a pandemic that is having devastating effects on people and economies. On January 7, 2020, China announced that it had identified a new type of coronavirus, which would become popularly known as Covid-19. Within a few days the virus had entered Thailand and Japan, and a week later it arrived in the United States. Very soon it spread to Europe, with dramatic impacts in Italy and Spain. On February 26, only 50 days after it was known to exist, it reached Latin America. Never before in human history had an epidemic spread around the world so fast. Many countries took unprecedented steps in response to the pandemic, including the temporary closure of large sectors of production and commerce, shuttering schools and universities, closing airports and borders, prohibiting mass gatherings and public events, and mandating isolation at home.

The consequent impacts on the global economy, and on Latin America and the Caribbean in particular, have been very severe. Scenarios drawn up by IDB economists,[1] coinciding with the estimates of other international organizations, indicate that economic recession is inevitable in 2020. Expected growth of about 3 percent this year in Latin America and the Caribbean will be transformed into economic contraction of between -2 and -5 percent, depending on the economic effect of national quarantines and the countercyclical measures adopted by

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1   V. Nuguer and A. Powell (coord.). *Latin America and the Caribbean Macroeconomic Report. Policies to Fight the Pandemic.* IDB, 2020. See also O. Manzano, L. Andrián, J. Beverinotti, L. Castilleja and J. Díaz-Cassou. *Desafíos para la recuperación de la pandemia en los países andinos.* Mimeographed document (forthcoming).

governments. These economic estimates feature two main potential scenarios. The first envisages a rapid recovery in 2021. This assumes that the pandemic is brought under control in the northern hemisphere's summer of 2020. The second scenario would unfold if the pandemic were to persist to the end of the year, or if Covid-19 were to resurge in 2021 in the absence of an effective vaccine. In that scenario, the world could remain in recession and the recovery would be slower and longer-term.[2] The first chapter of this book discusses these scenarios and connects them with the purpose of resuming and accelerating growth in the coming years.

Even if the recovery is swift, the crisis wrought by this pandemic will widen income inequality. It is almost certain that the poorest households will be disproportionately hit by the Covid-19 crisis, and that informal workers will be more likely to lose their income for longer periods. Many businesses—especially micro, small and medium enterprises that create most jobs and account for more than 90 percent of businesses in Latin America—are at risk of permanent closure. Preliminary data show that the ratio of liquidity to operating expenses in the region is between one and three months. Generally, small and medium enterprises can remain closed for less time than the median in each country.

This situation threatens the middle class and imperils the significant poverty reduction that has been underway in Latin America since the late 1990s. In those 20 years, poverty declined from about 60 percent to about 25 percent—including extreme poverty, which fell to 10 percent or less in some countries. In counterpoint, the middle class grew from less than 25 percent to about 70 percent. The main engine of this phenomenal social change was economic growth, which accounts for more than 90 percent of the povery reduction. More investment, and the creation and growth of new businesses, produced more formal jobs, allowing the middle class to expand to the levels we see in Latin America today. The region's major pending challenge is to grow not only through capital accumulation and job creation, but to increase productivity permanently so as to grow more sustainably.

A substantial share of the middle class remains vulnerable, close to the poverty line. The impact of the current crisis on employment and income will affect this sector significantly. IDB economists calculate that, for the Andean area and in the short term, monetary poverty could rise from 26 percent of the population to an average of 29 percent, an increase of 11 percent. The consolidated sector of the middle class could shrink from 31 percent of the population to 27 percent,

2   International Monetary Fund (IMF). *World Economic Outlook*. Washington, D.C. 2020.

a decline of 13 percent. The vulnerable middle class would grow from 40 percent to 42 percent, after absorbing part of the consolidated sector and losing a contingent that relapsed into poverty. Even the upper-income sector could decline from 1.9 percent of the population to 1.6 percent.[3]

The growth of the middle class has yielded substantial improvements in quality of life for much of the population. The current crisis prompts the need to act decisively in order to maintain and advance the social gains of the past two decades. In the short term, governments have made it a priority to adopt life-saving measures, curbing the spread of the virus and preventing health services from being overwhelmed. Steps have also been taken to provide relief to the most vulnerable households that have lost their sources of income. And governments have adopted measures to support businesses and minimize layoffs, bankruptcies and liquidations, especially in the small and medium business sector.[4] The extraordinary fiscal and monetary measures taken by virtually all countries around the world reveal the grave difficulties posed by the pandemic. Countries with resources and economic depth, such as the United States and the members of the European Union, devoted at least 10 percent of GDP to dealing with the severe recession and ensuing unemployment, in addition to the extensive liquidity measures taken by central banks. By comparison, in the 2008 financial crisis these economic blocs devoted 2.5 percent of GDP to stimulating the economy and relaunching financial flows. In Latin America, with far fewer resources and greater economic fragility, the effects of the recession will undoubtedly be more acute.

Returning to normality after such immense adversity will take time, and will demand huge efforts to set right the economies and social fabric of each country. Recovery and reestablishing the economy will require close collaboration and interaction between the public sector and private enterprises. The countries of the region will have to reestablish proper financial and monetary conditions, gradually broaden their fiscal space, and reduce the debt they are currently incurring. Public investment in infrastructure and public goods will have to be accorded high priority. This will be essential, first to increase and sustain aggregate demand—with special emphasis on labor-intensive sectors—and second to boost productivity and achieve the goals proposed in this book. The crisis has revealed that it should be a public policy priority to reduce the current financing constraints on businesses in order to spur the growth of private investment, create jobs and,

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3   O. Manzano et al. *Ibid*.

4   See A. Blackman, A. M. Ibañez, A. Izquierdo, P. Keefer, M. Moreira, N. Schady and T. Serebrisky. L*a Política Pública frente al COVID-19. Recomendaciones para América Latina y el Caribe.* IDB, 2020.

in the medium and long term, increase productivity and reduce informality. The rise in poverty and the need to attend to the middle class should also involve reformulating anti-poverty programs and lead to the reconfiguration of social security systems.

On the other hand—and this is very probably the novelty, the best news that the coronavirus crisis will leave to us—there is the prospect that new opportunities will arise. It will be time to get back onto the path of growth with new paradigms, marked by technological innovations and the fresh advances pushed onward and stimulated by the digital revolution and the creativity of new entrepreneurs. Hand in hand with these new paradigms will come structural changes that herald a new stage in the interactions between individuals, companies, and countries. Major questions remain open about the kind of globalization and society we will experience in the coming years: as states grow in the scale and scope of their policies, how do we restore the balance between the public and the private, and efficiently strengthen the market? How will production centers and supply and marketing chains be redistributed worldwide? Are we moving towards greater diversification among producer countries? How will this affect Latin America and the Caribbean? Will the automation of production gather pace? Whatever the answers to these and other important questions, the growth and development agenda will remain a central priority for the region, and it is very likely that growth and development will center even more on the digital economy.

The great leap of economic development and greater popular well-being proposed in this book demands that normal conditions be reestablished first, with large-scale structural reforms in parallel. Areas that must undergo profound change if these countries are to make substantive progress include formalization of the economy and fiscal efficiency; universalizing social security and pensions systems, and making them more equitable; addressing the quality and financial sustainability of education and health care; expanding digital networks to sustain the economy of the future; and reforming institutions to make them more efficient. In the wake of the crisis these transformations, which once seemed difficult, can become more feasible because of the need to innovate and reinvent the future.

Achieving the goals of growth,equal opportunities and equity proposed in this book requires progress on broad national pacts allowing public action to focus on a set of measures that enjoy broad social and political support. This book presents ideas for moving forward with this optimistic, realistic, and achievable vision of Latin America's future.

Chapter 1
Accelerating growth and strengthening the middle class

We need a different way of looking at Latin America and the Caribbean, a perspective that emphasizes its strengths without neglecting its weaknesses, that focuses on opportunities without disregarding risks, that fosters long-term development."

Luis Alberto Moreno, President of the IDB[1]

The path to transformation and growth

The countries of Latin America and the Caribbean (LAC) have made significant economic and social progress in the past two decades, and many of them have attained middle-income status. Indeed, between 2000 and 2010 the region grew at rates close to 4 percent a year, and between 1990 and 2018 per capita income increased on average from US$7,200 to US$14,160.[2] In the 2000s, more than 50 million people were lifted out of poverty and entered the middle class (IDB, 2016b). That trend persisted, and by 2015 about 90 million people had joined the middle class.[3] Between 2000 and 2013, the percentage of the population in extreme poverty—living on less than US$2.5 per capita a day—fell from 28.8 percent to 15.9 percent, and the percentage of the population in moderate poverty—living on less than US$4 a day—fell from 46.3 per-

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1   Luis Alberto Moreno, *La década de América Latina y el Caribe, una oportunidad real* (Washington, D.C., IDB, 2011). See https://publications.iadb.org/es/publicacion/14220/la-decada-de-america-lati-na-y-el-caribe-una-oportunidad-real-2a-edicion-ampliada.

2   This document uses the purchasing power parity (PPP) measure of per capita income in constant 2011 US dollars (World Bank, 2019a).

3   IDB-Atlantic Council, Latin America and the Caribbean 2030. Future Scenarios (Washington, D.C., IDB-Atlantic Council, 2017); World Bank, Five Trends in the Fight against Extreme Poverty in Latin America and the Caribbean (Washington, D.C., World Bank, 2015).

cent to 29.7 percent.[4] During the same period, inequality declined in the region. The Gini coefficient, which measures inequality in income distribution, fell from 0.57 to 0.51.[5] This vigorous social mobility marks major progress for the region, and nearly 70 percent of it springs from economic growth.[6] In some countries, economic growth accounts for an even bigger percentage of poverty reduction. In Colombia, for example, growth helped reduce moderate poverty by 90 percent and extreme poverty by 80 percent between 2002 and 2013.[7] These figures capture the substantial transformation of the region, which also includes relatively less developed countries. From 2014 onwards, with the downturn in the world economy and the decline in raw materials prices, the region's growth rate began to fall. Despite this circumstantial setback, however, the pace of development resumed moderately from 2017 onwards.[8]

If LAC makes the right policy decisions, the countries of the region could further accelerate their economic growth and continue advancing to developed status. Dialogue within and among countries should be the foundation of far-reaching political and social pacts involving governments, the private sector, civil society and other social forces, geared to attaining the goal of development. With a medium- and long-term outlook, these pacts should enable achievement of the following objectives: i) doubling public investment in infrastructure, services, and logistics; ii) ensuring availability of the fiscal resources needed to address this massive increase in investment; iii) boosting productivity and competitiveness by improving workforce skills and hastening innovation; iv) fostering digital transformation and the Fourth Industrial Revolution in the countries of the region; v) increasing the effectiveness of institutions and ensuring their transparency; vi) decisively relaunching LAC integration so as to ensure the market size needed to achieve development; and vii) strengthening and expanding the middle class, and eradicating extreme poverty.

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4   M. Stampini, M. Sáenz, P. Ibarrarán and N. Medellí, Pobreza, vulnerabilidad y la clase media en América Latina, Working Paper 591 (Washington, D.C., IDB, 2015).

5   *Ibid*.

6   See G. Cruces and L. Gasparini, Políticas Sociales para la Reducción de la Desigualdad en América Latina y el Caribe. Diagnóstico, Propuesta y Proyecciones en Base a la Experiencia Reciente (La Plata, Centro de Estudios Distributivos, Laborales y Sociales, 2013). In middle-income countries such as Colombia, economic growth accounts for more than 90 percent of poverty reduction. See N. Obando and L. Andrián, Measuring Changes in Poverty in Colombia: The 2000s, Technical Note 1074 (Washington, D.C., IDB, 2016).

7   N. Obando and L. Andrián, Measuring Changes in Poverty in Colombia: The 2000s, Technical Note 1074 (Washington, D.C., IDB, 2016).

8   IMF, *World Economic Outlook* (WEO) (Washington, D.C., IMF, 2019).

These policy decisions are geared to supporting a process of inclusive growth and development over the next 20 years, with annual gross domestic product (GDP) growth rates of 6 to 7 percent. This can yield per capita income of US$30,000 a year, similar to the level of southern European countries, with a robust middle class accounting for about 70 percent of the population. The region's current per capita income levels cover a wide range, from US$4,800 to US$22,000,[9] with an average of US$12,700. Some countries, therefore, could reach developed status earlier than others. Continued progress towards these achievements requires the retention of robust macroeconomic policies, especially fiscal and monetary policies, and a growing share of private investment.

Public investment in infrastructure: the major vector of growth

Infrastructure investment[10] is a high-impact engine of economic growth and inclusive development. There is ample evidence of a direct relationship between infrastructure investment, productivity growth, and economic growth,[11] especially in countries with low infrastructure density. Latin America's paved road network of 2.5 kilometers per 100 square kilometers is 20 times less dense than the network of paved roads in the countries of Southeast Asia and the Pacific.[12] At the same time, the countries of Latin America score an average of 3.6 on the World Economic Forum's (WEF) infrastructure quality index, much lower than the developed countries' average of 5.5.[13] As regards access to services, in 2010 more than 38 million people were without electricity, 32 million lacked sources of drinking water, and 120 million had no sanitation services.[14] As the IDB's 2016 macroeconomic report points out, the quality of infrastructure in the region remains far

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9   These figures do not include extreme cases such as Haiti, with a per capita income of US$1,650, or Trinidad and Tobago, with a per capita income of US$31,300 (World Bank, World Development Indicators, 2017).

10 Public investment in infrastructure shall be understood as gross capital formation in the public accounts.

11 There is an extensive literature on the subject, starting with the classic work of D. A. Aschauer, Is public expenditure productive? *Journal of Monetary Economics* 23: 177–200, 1989.

12 T. Yépez, J. Ramírez, L. Villar and J. Aguilar, Infraestructura de transporte en Colombia, Cuadernos Fedesarrollo 46 (Bogotá, Fedesarrollo, 2013).

13 The minimum score is 1 and the maximum is 7. WEF Global Competitiveness Index (Geneva, WEF, 2016).

14 IDB, Sustainable Infrastructure for Competitiveness and Inclusive Growth (Washington, D.C., IDB, 2013).

below that of the advanced economies or the Asian economies, and surpasses only that of sub-Saharan Africa.[15]

Climate change affects the region's infrastructure. Climate conditions impose high costs on the building of infrastructure and can hasten the depreciation of existing capital. According to recent estimates,[16] the economic cost of climate change in LAC could reach US$100 billion a year by 2050. In that light, it is advisable that infrastructure construction should make use of resilient technologies and materials that will extend the lifespan of the investments.

LAC is marked by infrastructure investment gaps in both quality and quantity. Between 1992 and 2003, average annual public investment in the region amounted to 2.4 percent of GDP, while in China it stood at 8.5 percent, in Japan and India at 5 percent, and in other industrial economies (Australia, Canada, New Zealand and South Korea, among others) it was about 4 percent.[17] Between 2007 and 2014, total public spending in LAC increased by 3.7 percent of GDP, but more than 90 percent was allocated to current spending and only 8 percent went to public investment.[18] After the fall in commodities prices between 2014 and 2018, and a result of the fiscal consolidation that many countries undertook in that period, spending contracted to 0.7 percent of GDP and public investment fell to 1.3 percent of GDP.[19] Inter-American Development Bank (IDB) studies indicate that closing the quantitative gaps in the main public infrastructure sectors would require investment to more than double relative to historical averages. This means adding between 2 percent and 2.5 percent of regional GDP to the resources currently allocated for that purpose, which is equivalent to US$120–150 billion a year.[20] The Organization for Economic Cooperation and Development (OECD) estimates that, in order to close the infrastructure gap between LAC and the most developed

15 IDB, *Time to Act: Latin America and the Caribbean Facing Strong Challenges.* (Washington, D.C.: IDB, 2016). *Ibid*.

16 IDB, ECLAC and WWF, The Climate and Development Challenges for Latin America and the Caribbean (Washington, D.C., IDB, ECLAC and WWF, 2015).

17 Bolivia, Colombia, Costa Rica, Honduras, Nicaragua, Panama, and Paraguay surpassed the regional average. See Serebrisky, Suárez-Alemán, Margot and Ramírez, Financing Infrastructure in Latin America and the Caribbean: How, How Much and By Whom (Washington, D.C., IDB, 2013).

18 E. Cavallo and T. Serebrisky (eds.), *Saving for Development: How Latin America and the Caribbean Can Save More and Better, Development in the Americas Series* (Washington, D.C., IDB, 2016).

19 World Bank, World Development Indicators. *Ibid*.

20 Serebrisky et al. Ibid. This estimate also coincides with the IDB calculation for Colombia presented in de la Cruz, Andrián and Loterszpil, *Colombia: hacia un país de altos ingresos con movilidad social* (Bogotá, IDB, 2016).

countries, total annual public investment would have to rise to 6.2 percent of GDP.[21] That amount would be in addition to private investment, especially through public-private partnerships (PPPs), and to investment in digital infrastructure.

This increase in public investment would raise the region's economic growth rate from historical averages of about 3 percent of GDP a year to annual rates of 6 percent. The goal of a public investment program of this magnitude is to help the private sector raise its productivity and increase employment, and at the same time to boost its investments and generate a virtuous cycle of growth and well-being. Figure 1.1 presents alternative growth scenarios depending on the level of annual investment. ***Scenario 1, inertial growth,*** is based on the region's historical average investment of about 2.8 percent of GDP. ***Scenario 2, ideal accelerated growth,*** on the basis of the average of IDB and OECD estimates, assumes a 6 percent increase in the investment rate from the first year (3.2 percent above the historical average). ***Scenario 3, realistic accelerated growth,*** takes into account the technical and political constraints on an across-the-board increase in investment from the base year. In this latter scenario, investment increases gradually from 2.8 percent to 6 percent of GDP over the first seven years. The investment level is thereafter maintained at 6 percent of GDP until the end of the 20-year projection horizon.

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21 OECD, *Promoting Productivity for Inclusive Growth in Latin America,* Better Policies Series (Paris, OECD, 2016). The IDB, similarly, has estimated a boost to economic growth of 2 percent of GDP in the event of an increase in the level of infrastructure.

Figure 1. 1: Growth Scenarios for Latin America and the Caribbean
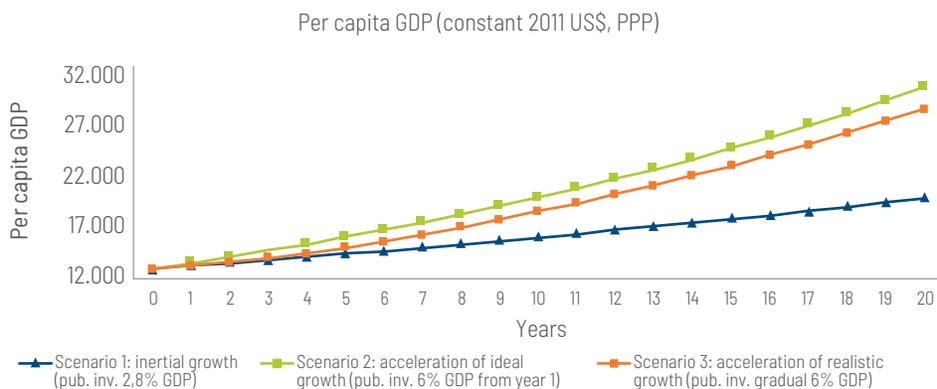
Per capita GDP (constant 2011 US$, PPP)

Scenario 1: inertial growth (pub. inv. 2,8% GDP)
Scenario 2: acceleration of ideal growth (pub. inv. 6% GDP from year 1)
Scenario 3: acceleration of realistic growth (pub. inv. gradual 6% GDP)

Source: authors' calculations.

Note: to calculate the effect of public investment on GDP growth, we used the value of the fiscal multiplier estimated by Ilzetzki et al., How Big (Small?) Are Fiscal Multipliers? *Journal of Monetary Economics* 60 (2), Rochester, 2013. For 2015–35 we assume an average population growth rate for the region as calculated by ECLAC (data and statistics, www.cepal.org). Year zero is 2018.

As Scenario 1 shows, maintaining the historical rate of investment could take these countries from US$13,000 per capita to about US$20,000 per capita on average over the next 20 years. This is a significant outcome, but it is far below the region's growth potential and the ceiling of middle-income countries. Scenario 2, with investment of 6 percent of GDP from the first year onwards, yields US$31,000 per capita over two decades. The political economy, however, which is complex in any country, makes such a significant increase in fiscal resources for public investment unlikely in the short term. In view of the foregoing, the more realistic Scenario 3 envisages a gradual increase in public investment from the first to the seventh year. In this case the region could reach an average of US$29,000 per capita, putting it in the range of high-income countries.

Even assuming that the various countries of the region were to allocate 6 percent of GDP to public investment from year 7 to the end of the 20-year period, the different starting points of each country's per capita income would yield distinct results. In countries like Argentina, starting from US$19,000 per capita, stepping up economic growth could take the country to US$39,000 per capita. Colombia and Peru, starting at US$13,000 and US$12,000 per capita respectively, could reach US$33,000 and US$26,000 per capita. Relatively less developed countries such as Belize, Honduras and Jamaica, with per capita incomes of between US$5,000 and US$8,000, could double these figures (see Figure 1.2).

Because of the region's diversity, some countries will escape the middle-income trap sooner than others. Nonetheless, the growth boost attendant on massive increases in public investment that leverage productivity, stronger institutions, and a relaunched LAC integration will open up extraordinary development opportunities for the whole region. These approaches will bear fruit, most particularly, in countries with prudent macroeconomic policies that are friendly to private investment and that fully respect property rights.

Figure 1. 2: Growth Scenarios for Selected Countries
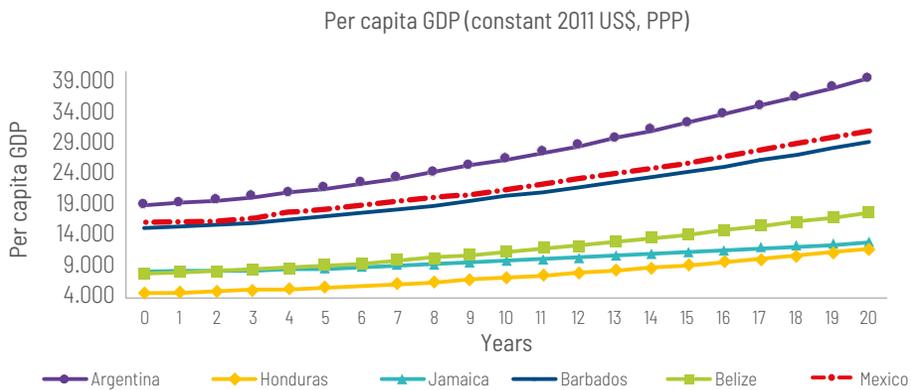
Per capita GDP (constant 2011 US$, PPP)

Source: authors' calculations.

Note: to calculate the effect of public investment on GDP growth, we used the value of the fiscal multiplier estimated by Ilzetzki et al. (2013) for a set of developing countries. For 2015–35 we assume an average population growth rate for each country as calculated by ECLAC. Year zero is 2018.

As regards the Andean region, the effect of public investment on economic growth is similar to that in the LAC countries, although the results are mixed. If they follow a strategy of raising public investment (see Figure 1.3), the Andean countries have high growth potential. They benefit significantly from the increased investment, though in different ways. Assuming public investment of 5–6 percent of GDP a year over 20 years, Bolivia's economy would grow by 117 percent from US$7,000 to US$15,000 per capita. Over 25 years, absorbing the productivity growth, Bolivia would reach US$18,000 per capita. If the country did not make this investment effort, however, it would grow more modestly and would stand at US$12,000 per capita in year 25. As to Colombia, without the additional investment effort, the country's per capita income would rise from the current US$13,000 to US$22,000 in 20 years. This is undoubtedly significant growth. By making the proposed investment effort, however, Colombia would reach US$29,000 per capita and, in 25 years, US$35,000. In Ecuador, the additional investment effort could

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more than double the GDP growth rate of the last 20 years, from 1.2 percent a year to 2.6 percent. The current US$10,000 per capita would thereby become US$17,000 in 20 years, and US$20,000 in 25 years. Peru, without an additional investment effort, could grow from US$13,000 per capita to US$24,000. With an additional investment effort, Peru would reach US$31,000 per capita in 20 years and US$39,000 in 25 years. It is apparent that Colombia and Peru would cross the threshold of developed countries while Ecuador and Bolivia would enter the ranks of the middle-income countries, with the prospect of continuing to grow and eventually catching up with high-income countries.

Figure 1. 3: 25-Year Growth Scenarios for the Andean Countries

Per capita GDP (constant 2011 US$, PPP)
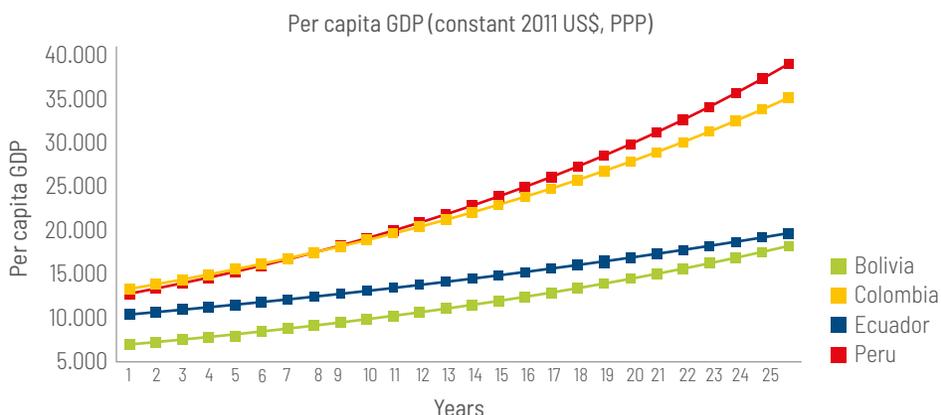
Source: authors' calculations.

Note: we used a calibrated endogenous growth model for each country to calculate the scenarios, and added average per capita GDP growth for the years 2000–18. Year 1 is 2019.

Fostering public–private partnerships (PPPs). According to the OECD, about a third of infrastructure investment in developing countries is effected through PPP schemes.[22] Between 2008 and 2013, on average, infrastructure investment involving private capital in LAC accounted for 43 percent of total investment.[23] This

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22 OECD, Official Development Finance for Infrastructure: With a Special Focus on Multilateral Development Banks (Paris, OECD, 2016). These figures may contain both active projects and commitments yet be implemented.

23 Infralatam database (http://infralatam.info). Average weighted by the countries' GDP. The simple average is 32 percent. Brazil's significance in the region's GDP (46 percent) raises the weighted average of the private-sector share.

share exceeds the world average. The leading countries in the region that most use this scheme include Brazil and Chile, where the private share is 53 percent and 46 percent, respectively. If the private share were to rise to an average 60 percent of the estimated infrastructure gap, it would provide additional investment equivalent to about US$25 billion. This means that increasing the private share to twice the world average would narrow the gap by 20–25 percent.

Even if significant efforts were made to increase private participation, the LAC countries would still need between US$110 billion and US$120 billion of additional public investment in infrastructure each year. Properly implemented, PPP schemes not only facilitate private financing but also significantly boost efficiency. Many of these projects, however, require public guarantees or are ineligible for financing. Revenues from user fees and other commercial sources of income associated with the projects are therefore insufficient to cover capital and operating costs. Hence the need to explore the full potential of private participation, and at the same time open up fiscal space to expand public investment. Without such investment it is not feasible to raise total infrastructure spending to levels compatible with the region's growth potential.

Fiscal agreements are needed to increase public investment

In most countries of the region there is room for an additional revenue effort to increase public investment in the order of 3 percent of GDP, thereby accelerating economic growth. On average, tax revenues in developed countries amount to 35 percent of GDP,[24] compared with an average of about 20 percent in LAC[25] (see Figure 1.4). The formula for achieving the desired increase in revenue is not the same for all countries of the region. Tax revenues have already reached developed-country levels in Argentina (30.8 percent), Brazil (32.7 percent) and Uruguay (31 percent) (average for 2011–2014).[26] These three cases show that the countries of Latin America can significantly increase tax revenue through a joint effort by national and subnational governments. In Argentina, the fastest increase in revenue (equivalent to 5.5 percent of GDP) occurred in just two years between 1991 and 1993, when the figures rose from 17.1 percent to 22.7 percent of GDP. The next increase was achieved in seven years, between 2007 and 2014, when revenue

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24   OECD, Tax Revenue Database (Paris, OECD, 2017; see www.oecd.org).

25   See CIAT (2017), available at www.ciat.org. These figures include social security contributions.

26   *Ibid.*

grew by 9 points of GDP from 23.7 percent to current levels.[27] Between 2006 and 2015, however, the level of public investment was similar to that of the countries with lower revenue, at about 2.1 percent of GDP in Brazil and 3.6 percent of GDP in Argentina.[28] Public investment in Uruguay during the same period was slightly higher at around 4.4 percent of GDP, although this figure is still below the required level of investment. In these three countries, accelerating economic growth to the levels proposed here for the region as a whole requires public spending to be restructured in order to reduce current spending and increase investment spending: a little more than 3 percent of GDP in Brazil, about 2 percent in Argentina, and 1.5 percent in Uruguay.

Figure 1.4: Tax Revenues in Selected Countries, 2014
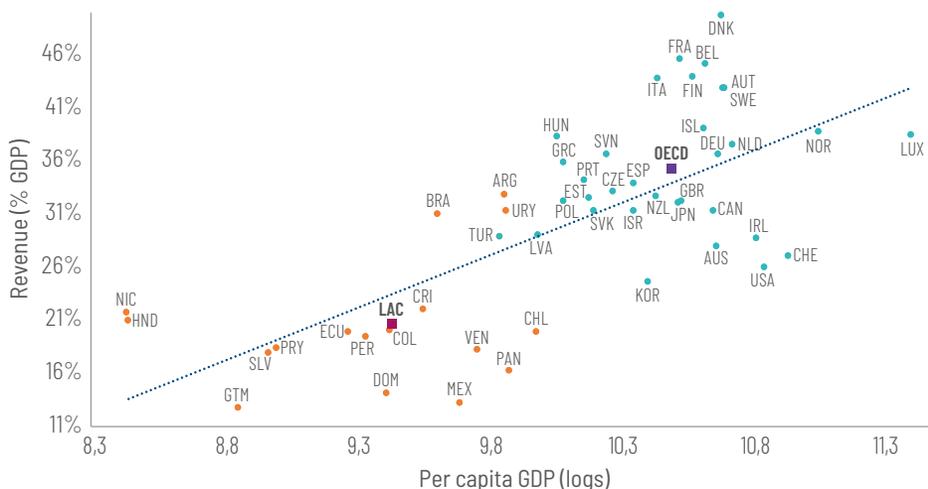
Source: OECD (2017b); IDB and CIAT (2017); World Bank (2017) for per capita GDP. Note: includes central government, subnational governments, and social security.

Other countries, where tax revenues are close to the region's average of 20 percent of GDP, require fiscal reforms and/or a broadening of the tax base to increase the take. This is the case for Barbados, Chile, Colombia, Costa Rica, Ecuador, Honduras, Nicaragua, Panama, Peru, and Suriname. Public investment in these countries is between 2 and 4 percent of GDP.[29] Because tax revenues vary among these countries, a similar increase in the tax burden cannot be prescribed

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27   *Ibid.*

28   IMF, *World Economic Outlook* (WEO) (Washington, D.C., IMF, 2016).

29   ECLAC, Statistics and Indicators (Santiago, Chile, ECLAC, 2017; available at www.estadisticas.cepal.org).

for all of them. On average, however, as in Colombia,[30] the increase should be between 5 and 6 percent of GDP, so that more than half of the increase in revenue can be allocated to public investment and the rest to current spending in sectors such as education, health and pensions, and others.

Finally, there is a group of countries in which the low level of revenue makes it difficult to mobilize resources for public investment in infrastructure. In cases like these, average tax revenues stand at about around 14 percent of GDP. This is the case in The Bahamas, the Dominican Republic, Guatemala, and Venezuela.[31] Generally, in these countries the investment level is less than 2 percent of GDP. A major effort is therefore required to increase the tax take gradually. This can be done, for example, by using digital tools such as electronic invoicing, so as to increase the resources available for investment, as well as by maintaining or implementing sustainable macroeconomic policies.

Once hydrocarbons revenue is deducted, tax revenues behave similarly among the Andean countries. Average revenue is about 16 percent, excepting Peru where the figure is slightly lower at around 13 percent (see Table 1.1). These countries are part of the intermediate category described above. The limited revenue prevents them from significantly increasing public investment.

Table 1.1: Tax Revenues in the Andean Countries, 2017 (% of GDP)

Category	Bolivia	Colombia	Ecuador	Peru
Tax revenues	19.7	17.3	14.7	13.3
Hydrocarbon tax revenues	3.6	0.2	0.0	0.4
Tax revenues net of hydrocarbons	16.1	17.1	14.7	12.9

Source: prepared by the authors on the basis of data from the IDB, CIAT, ECLAC, and OECD (2019); IMF Art. IV (2018) for Bolivia.

Note: with respect to hydrocarbon tax revenues, dividend income from companies in which the state has a share are not included. In Ecuador, hydrocarbons revenue is reported as non-tax income. Excludes social security contributions.

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30   R. de la Cruz, L. Andrián and M. Loterszpil. *Ibid.*

31   CIAT, (2017), available at www.ciat.org.

All the Andean countries need to expand their tax bases and reduce evasion.
Expanding the tax base requires, among other things, greater formalization of
the economies. The Andean region has a high degree of informality: 79.7 percent
in Bolivia, 61.1 percent in Colombia, 58.4 percent in Ecuador, and 78.2 percent in
Peru. These figures contrast with levels in countries such as Uruguay and Costa
Rica, where the informality rates are 22.8 percent and 28 percent, respectively.[32]
Tax evasion is closely correlated to the size of the informal economy, and there-
fore efforts at formalization should help increase revenue. At the same time, eva-
sion also stems from the weakness of the agencies responsible for tax collection
in each country. In the case of value added tax (VAT), evasion is estimated at 32
percent in Bolivia, 24 percent in Colombia, 21 percent in Ecuador, and 36 percent
in Peru. In the European Union (EU), by contrast, the evasion rate is 12 percent.
Hence the importance of modernizing the tax agencies. Good design and the use
of electronic invoicing, as well improved taxpayer databases, are key to increasing
the efficiency of tax collection. Reducing evasion, in turn, has a direct impact on
lowering the level of informality.

**Pressures on public spending will remain high in the region because of demands
for a better provision of public goods.** The demographic bonus persists because
there are so many young people, but gradual ageing will add a new source of pres-
sure on spending, especially on the pension and healthcare systems.[33] Moreover,
as fiscal deficits have increased in recent years, indebtedness has grown. In the
future, therefore, fiscal policy will be marked by the need for fiscal consolidation
measures by means of higher revenues, where required, and rationalizing spend-
ing to direct it towards higher investment.

**If we take account of all taxes on business activity (profits, turnover, finan-
cial transactions, payroll), the tax burden for a typical formal company in Lat-
in America is about 51 percent of earnings, compared to only 28 percent in
emerging Asia and about 41 percent in advanced economies.[34]** Labor taxes as
a percentage of profits, including social charges, are high: they amount to 40.3
percent in Brazil, 32.2 percent in Costa Rica, 31 percent in Colombia, and 29.3
percent in Argentina. In the high-income countries of the OECD, by contrast, they
are around 24 percent. These circumstances negatively affect production costs

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32   Informality is measured by employees' social security contributions for retirement (IDB, Labor Market
     and Social Security Information System, Washington, D.C., IDB, 2019).

33   IDB, *Pensions at a Glance: Latin America and the Caribbean* (Washington, D.C., IDB, 2016).

34   E. Cavallo and T. Serebrisky. *Ibid*.

and competitiveness.[35] Better targeting of subsidies and transfers could reduce public spending by between 0.5 and 2 percent of GDP without affecting growth, ensuring that the benefits go to those who need them most.[36]

As in the Andean countries, measures to strengthen national and local tax administrations in the other countries of the region should be a priority in efforts to improve tax revenue. According to estimates from the Economic Commission for Latin America and the Caribbean (ECLAC), evasion of VAT and personal and corporate income taxes cost the region more than US$213 billion in 2013 (6.3 percent of regional GDP),[37] a figure similar to the region's total public investment spending needs. To make tax collection more effective, countries could use the tools offered by information and communication technology (ICT), such as blockchain, big data, and artificial intelligence (AI). With regard to transparency and reducing evasion, the LAC countries should join current trends in the exchange of tax and banking information, led by OECD and the G20.[38]

Countries need to pursue fiscal pacts and comprehensive tax reforms that provide incentives for efficiency and equity, that gradually eliminate distortionary taxes, and that remove highly inequitable tax concessions and exceptions that discourage fiscal discipline. These agreements would make it possible to improve fiscal sustainability and create public investment resources that could underpin economic growth, improve the population's quality of life, and help to gradually raise the countries of the region to the rank of developed economies within a generation.

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35 World Bank, *Doing Business* (Washington, D.C., World Bank, 2015).

36 IDB, *Time to Act. Ibid.*

37 ECLAC, Tributación para el crecimiento inclusivo (Santiago, Chile, ECLAC, 2016).

38 OECD, Standard for Automatic Exchange of Financial Information on Tax Matters (Paris, OECD, 2017; available at www.oecd.org).

Boosting productivity and competitiveness

LAC's growth between 1995 and 2018, which averaged 2.6 percent a year, continues to lag behind that of Asia, which grew at 7.5 percent.[39]A significant part of this gap stems from productivity differences between the two regions. The variation in productivity[40] in LAC countries was negative (-0.5 percent in the past 20 years), which is a marked disadvantage relative to more than 2.5 percent in China (see Figure 1.5). This means that China's productivity accounts for 27 percent of its growth over the past 20 years, while productivity's contribution to growth in LAC has been almost zero.

Figure 1.5: Total Factor Productivity and GDP Growth, Average 1995–2008

Source: The Conference Board, Total Economy Database (2019).

Most countries are in the central cluster. According to a report by the World Economic Forum (WEF), global competitiveness indicators show that most countries of the region are in the central cluster, between positions 50 and 100 in the ranking, with Argentina slightly outside this range at 106. In the lead are Chile (35),

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39   IMF, *World Economic Outlook* (WEO). *Ibid.*

40   Measured by total factor productivity (TFP). The Conference Board, Total Economy Database (New York, The Conference Board, 2017).

followed by Panama (50) and Costa Rica (52), while Venezuela (132) and Haiti (134) are trailing in the region's indicators.[41]

The region's growth is driven mainly by the accumulation of factors, including investment and employment.[42] In particular, total factor accumulation accounted for more than 80 percent of annual GDP growth between 2003 and 2012.[43] The region's productivity has declined as a proportion of productivity in the United States. In 1960, productivity was equivalent to 73 percent of the US level but in 2013 it stood at only 51 percent,[44] with the exception of mining. The widest productivity gaps are in high technology. In most productive sectors, the region's productivity is equivalent to less than 40 percent of the US level.[45] LAC is not realizing its productive potential; what we see it achieving is about half of what it could actually achieve.[46]

In these circumstances, the private sector must play a leading role if the region is to achieve its productive potential. Business must seize the opportunity to increase productivity through infrastructure improvements, mobilizing investment resources and absorbing new technologies and innovation into the production of goods and services.

Low productivity is also rooted in the nature of the two-speed growth that moves in opposite directions in several countries. In Mexico, for example, the biggest firms are increasing productivity by 5.8 percent a year, while small firms' productivity is falling by 6.5 percent.[47] The agricultural sector has recorded productivity increases that exceed even the growth of countries outside the region, including both developed and emerging economies. Except for a few countries,

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41   WEF, Global Competitiveness Report 2015–2016 (Geneva, WEF, 2016).

42   For more details about the factors underlying productivity differences between Latin America and Asia, see IDB, *Time to Act. Ibid.*

43   S. Sosa, T. Evridiki and S. Hye, Is the Growth Momentum in Latin America Sustainable? (Washington, D.C., IMF, 2013).

44   C. Petrobelli and M. Grazzi. "El desempeño de las empresas en América Latina y el Caribe: factores microeconómicos y el rol de la innovación"; in: J. C. Navarro and J. Olivari (eds.), *La política de innovación en América Latina y el Caribe. Nuevos caminos* (Washington, D.C., IDB, 2016).

45   C. Petrobelli and M. Grazzi. *Ibid.*

46   E. Fernández Arias and S. Rodríguez-Apolinar, *The Productivity Gap in Latin America: Lessons from 50 Years of Development* (Washington, D.C., IDB and IMF, 2016).

47   E. Bolio, J. Romes, T. Lajous, J. Manyka, M. Rossé and E. Ramírez, A Tale of Two Mexicos: Growth and Prosperity in a Two-Speed Economy (Mexico City, McKinsey Global Institute, 2014).

such as Peru, the industrial, construction, and service sectors have continued to lag behind global averages.[48]

Another reason for this lag is related to the marked degree of informal employment.[49] Economic growth is the best way to reduce informality.[50] It is crucial, however, to devise public policies that can actively stimulate formality and lessen dysfunctions in labor markets. In this regard, greater flexibility in employment systems would drive changes in average productivity by reallocating jobs to more productive activities. But these policies should be applied with caution, because they could cause problems for lower-skilled workers and negatively affect inequality.[51]

Boosting future growth will require, in addition to greater investment in capital goods, an increase in the skills of the workforce.[52] The region has a high level of primary education coverage, but there are still significant deficits in quality and supply at the middle and tertiary levels. The results of the latest tests in the Programme for International Student Assessment (PISA) reveal a marked gap in knowledge acquisition. According to a study by the Center for the Study of State and Society (CEDES),[53] the countries of the region ranked in the bottom third in all subjects tested, and less than 3 percent of students ranked among the best performers. The results of the 2019 PISA tests were similar. The average number of years of education in Latin America has increased significantly, but it has not increased at the same pace in all countries. Argentina and Chile have the highest average level of schooling at 11 years, while in Guatemala, Honduras, and Nicaragua the average is less than six years.[54] In the more developed countries, years of schooling for the population aged 15 and above stood at 14.5 in 2010.[55]

48   J. C. Navarro and J. Olivari, J. Ibid.

49   C. Pagés (ed.), *La era de la productividad: cómo transformar las economías desde sus cimientos* (Washington, D.C., IDB, 2010).

50   R. La Porta and A. Schleifer, Informality and Development, Working Paper 20205 (Cambridge, NBER, 2014).

51   E. Dabla-Norris, K. Kochhar, S. Suphaphiphat, F. Ricka and T. Evridiki, Causes and Consequences of Income Inequality: A Global Perspective (Washington, D.C., IMF, 2015).

52   F. Cerina and F. Manca, Catch Me If You Learn: Development-Specific Education and Economic Growth (Cagliari, CRENOS, 2012).

53   García de Fanelli, Training the 21st Century Knowledge Workers: Higher Education and Workforce Development in Latin America (Buenos Aires, CEDES, 2013).

54   A. Garcia de Fanelli. *Ibid*.

55   R. Barro and J. Lee, A New Data Set of Educational Attainment in the World, 1950–2010, Working Paper 15902 (Cambridge, MA, NBER, 2018). See A. Fanelli. *Ibid*.

Moreover, there is a wide gap between the average number of years of education (6.5 years) for adults in the highest quintile and those in the lowest.[56] This affects those entering the labor market with low levels of education, who are mostly employed in the informal sector.[57] There are also gaps in preparing children to meet the challenges of the digital economy. Digital data from the PISA test, for example, reveal that more than half of 15-year-old students in Colombia perform poorly in digital reading.[58] By contrast, the proportion of 15-year-old students in South Korea who performed poorly in this area was below 5 percent in 2012.[59]

The countries of the region urgently need to gear their education and training systems to preparing a mostly young population to acquire new proficiencies and skills. There is a huge mismatch between the skills of the labor force and the skills required by the productive sector. In 2013, for example, on average the region had only 2.4 engineers per 10,000 inhabitants, whereas in North America and Western Europe the average was 9.1.[60] A skills shortage translates into poor productivity performance. One of every two formal firms in the region fails to find workers with the necessary skills.[61] This entails significant hiring costs: Latin America is the region in which firms take the most time to fill vacancies.[62]

Improving access to quality education is essential. The Fourth Industrial Revolution, which includes developments in previously unrelated fields such as AI, robotics, 3D printing, genetics, and biotechnology, will cause widespread disruption in labor markets.[63] Today, from a very early age, children acquire remarkable skills in using computers, tablets, and cell phones. Reorienting education to take full advantage of these skills would accelerate the acquisition of aptitudes for this

56 A. Garcia de Fanelli. *Ibid*.

57   According to the OECD, more than half of Latin American 15-year-olds have not acquired the basic level of skills necessary to function in the labor market, and less than 2 percent perform well in mathematics, compared to an average of 13 percent in OECD countries. OECD, Promoting Productivity for Inclusive Growth in Latin America. *Ibid*.

58 Reading that is done through interactive electronic media.

59 OECD, Innovating Education and Education for Innovation. The Power of Digital Technologies and Skills (Paris, OECD, 2016).

60 R. Katz, El Ecosistema y la Economía Digital en América Latina; Fundación Telefónica (Madrid, Editorial Ariel and ECLAC, 2015).

61 Manpower Group, Talent Shortage Survey (Mexico City Manpower Group, 2015).

62 I. Aedo and C. Walker, Skills for the 21st Century in Latin America and the Caribbean (Washington, D.C., World Bank, 2012).

63   WEF, Bridging the Skills and Innovation Gap to Boost Productivity in Latin America (Geneva, WEF, 2014).

new era of world-wide change. People of all ages are using global digital platforms to study and improve their skills and abilities, find jobs, join social networks, and build personal networks for professional and scientific collaboration. For both traditional employment and self-employment, moreover, global digital platforms have begun to create a more international labor market.[64] In this regard it is essential that governments, educational institutions, and job training agencies play an active role in these transformations through retraining and by creating a skilled workforce.

The region must not remain detached from these new conditions driving innovation, fresh ventures, and innovative companies. In 2011, investment in research and development (R&D) in LAC amounted to 0.8 percent of GDP, compared to 2.4 percent in the OECD countries. The region's public sector provided 58 percent of such investment, compared to 35 percent in the OECD countries.[65] These data suggest the need not only to increase total investment in R&D but also to foster the incentives required to increase private investment in this area. Such investment should target technology creation and transfer, and the public-private allocation of resources should be comparable to that in countries at the knowledge frontier (Finland, Israel, South Korea).[66] International experience points to successful models of appropriate financial incentives and instruments for funding innovations, with the risks shared between the public and private sectors. The region has experiences of using credit lines and venture capital to finance innovative enterprises and activities. These should be expanded and strengthened.[67]

Technology and the internet allow citizens, as well as small and medium enterprises (SMEs), to have a global presence that traditional businesses could not attain, spurring economic development and social progress. At the same time, platforms for digital collaboration enable SMEs to scale up to international levels, something that could not be achieved through traditional forms of offline business. Companies in emerging countries can export their products through

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64 Some 900 million people have international connections on social networks, and 360 million are involved in cross-border e-commerce. See J. Manyika, S. Lund, J. Bughin, J. Woetzel, K. Kalin Stamenov and D. Dhingra, *Digital Globalization: The New Era of Global Flows* (New York, McKinsey Global Institute, 2016).

65 G. Casaburi, C. Suaznábar and J. Llisterri. Extensión tecnológica para PyME; in: J. C. Navarro and J. Olivari, J. *Ibid*.

66 *Ibid*.

67 M. Mazzucato, The Entrepreneurial State: Debunking Public vs. Private Sector Myths (New York, Anthem Press, 2013). E. Phelps and L. Tilman, Wanted: A First National Bank for Innovation, *Harvard Business Review* (Cambridge, 2010). D. Rodrik, *From Welfare State to Innovation State* (at http://www.project-syndicate.org, 2015).

platforms like eBay, thereby opening up new markets. In similar vein, 50 million SMEs use Facebook to find customers, and 30 percent of their followers are from other countries. The biggest internet platforms are enabling millions of SMEs and other kinds of companies to expand their businesses and find new market opportunities.

ICTs also provide effective tools to help reduce poverty. For example, the expansion of health services to remote areas through telemedicine can improve service coverage at very low marginal costs. Virtual education can be used to improve the coverage, quantity, and quality of educational programs, so as to reach people who otherwise would never have been able to access them.

The region's governments and businesses face the challenge of fostering a digital transformation that could become an engine of inclusion, economic development, and social progress. Efforts to hasten digital transformation in the region must be coordinated, and should take account of the following strategic themes: i) investing in digital infrastructure; ii) promoting efficient and transparent e-government; iii) creating local innovation ecosystems; iv) fostering e-commerce; and v) stimulating the regional digital market.

Improving the quality of institutions and strengthening transparency

Political and economic institutions have a decisive influence on investments in physical and human capital, technology, production, and the distribution of income and wealth.[68] On the WEF's ranking of public institutions, which measures institutional quality, the countries of the region (apart from Barbados, Chile, Costa Rica, and Uruguay) are placed between 70 and 140. They are therefore at a considerable distance from the more developed countries[69] (see Figure 1.6). The Quality of Governance Index indicates that the region ranked at the world average in terms of government effectiveness, quality of regulation, and control of corruption, and even fell slightly in the overall global ranking.[70] In this context it is worth recalling that the efficiency of public management is an important area in which the region currently lags far behind other parts of the world. According

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68   D. Acemoglu, *Introduction to Modern Economic Growth* (Princeton, Princeton University Press, 2009).

69   The ranking includes protection of property rights, ethics and corruption, undue influence, public sector performance, and security. WEF, Global Competitiveness Index (Geneva, WEF, 2017).

70   World Bank, World Governance Indicators (Washington, D.C., World Bank, 2019).

to IDB estimates, the average efficiency of public management in the countries of the region is a little less than 30 percent of the level in the OECD countries.[71] Using other indicators for Colombia it is apparent that, between 1996 and 2011, efficiency in the use of available physical and human capital was at 74 percent of average efficiency in the OECD countries, and less than 50 percent of efficiency in the relatively more developed countries in this regard. More than 50 percent of inefficiency in the use of productive factors is explained by inefficiencies in the public sector.[72]

Figure 1.6: Institutional Quality and Per Capita Income, 2018
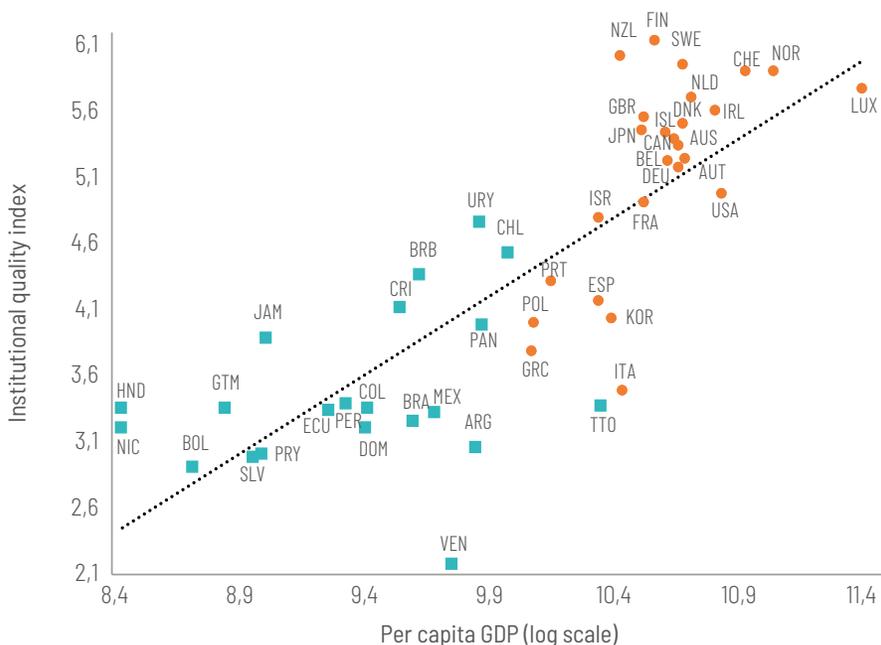
Source: World Economic Forum (WEF) and World Development Indicators (World Bank, 2019).

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71   V. Giménez, O. Prieto, D. Prior and E. Tortosa, *Obstáculos institucionales para incrementar la eficiencia, eficacia y transparencia de la gestión de la inversión pública en Colombia* (Washington, D.C., IDB, 2016).

72   *Ibid*.

Citizens and businesses have little confidence in governments. The 2018 Latinobarómetro surveys indicate that citizens' confidence in government stands at 22 percent, while private companies' confidence in government is at 36 percent. Some 65 percent of those polled believe that corruption has increased in the past year.[73] Of the countries of the region, only Chile, Costa Rica, and Uruguay scored more than 50 out of 100 on the Global Corruption Perceptions Index in 2018; below 50 indicates that governments are not tackling corruption. These perceptions affect the credibility of institutions.

Only three Latin American countries—Argentina, Chile, and Uruguay—are among the 50 countries with the most developed forms of e-government, according to the 2016 UN e-Government Survey. The other 33 countries in the region included in the survey are ranked below 100.[74] ITC use is judged to improve the efficiency of public administration. According to the survey, however, South America scores 0.57 out of 1, Central America scores 0.47/1, and the Caribbean scores 0.46/1. This is in contrast to the United States (0.83/1) and Europe (0.72/1). It should be a priority for the region's governments to provide services through an efficient and transparent e-government agenda.

Quality differences between institutions also partly explain progress in the areas of technology and productivity. Estimates of the effects of institutional quality at the level of innovative firms indicate that if a LAC country is one percentile higher in the world ranking with respect to the law, the performance and returns of innovative firms grow by 12.7 percent, sales per worker rise by 11.4 percent, and profits from innovation are 3.9 percent higher.[75] Protection of intellectual property rights also has positive returns. If a country is a percentile higher on the ranking, sales per worker increase by 7.37 percent.[76] A fundamental aspect of institutional quality is related to the need to guarantee citizen security. Between 2011 and 2018, the perception that it is increasingly unsafe to live in the region rose from 55 percent to 67 percent.[77] Crime and violence are disincentives to investment and create serious distortions in resource allocation. The importance attached to political risk has increased over the past 15 years: recent research

73   Latinobarómetro, Encuestas 2018 (Santiago, Chile, Latinobarómetro, 2018).

74   The ranking in the index includes 193 United Nations member states.

75   H. Nguyen and P. Jaramillo, Institutions and Returns to Firm Innovation: Focus on Latin America; in: J. Thompson Araujo, E. Vostroknutova, K. Wacker and M. Clavijo, Understanding the Income and Efficiency Gap in Latin America and the Caribbean (Washington, D.C., World Bank, 2016).

76   *Ibid.*

77   Latinobarómetro. *Ibid.*

suggests that almost 50 percent of companies position themselves to avoid, rather than simply reduce, foreign direct investment (FDI) because of such risk.[78]

The region's substantial economic growth in the 2000s was the main driving force behind the rise of the middle class and the sharp fall in poverty.

These and similar indicators are evidence of significant institutional problems in the region. It is in the interest of all sectors of society to improve institutional quality. Ensuring the stability and effectiveness of regulatory frameworks would allow firms to engage in medium- and long-term planning and investment, and would increase the return on capital. Greater productivity would lead to higher wages and income for workers. In general, society as a whole would benefit from well-established property rights and improvements in contract compliance. Meeting these goals requires broad social agreements, so as to obviate the incentives for short-term rent-seeking and replace them with medium- and long-term goals that favor society as a whole.

Strengthening the middle class and eliminating extreme poverty

The region's substantial economic growth in the 2000s was the main driving force behind the rise of the middle class and the sharp fall in poverty (see Figure 1.7). This stemmed from job creation and higher incomes.[79] Average unemployment fell from 10.3 percent in 2003 to 7.8 percent in 2010, and the proportion of informal workers fell from 46 percent to 39 percent between 2003 and 2011. At the same time, wage income increased on average by 15.3 percent between 2003 and 2013. Despite the slowdown in growth since 2014, the expansion of the middle class and the fall in the poverty level continue in most countries of the region, albeit more slowly. Average GDP growth, which was about 6 percent in 2013, fell to 4.3 percent in 2014 and to 3.2 percent in 2015, 2016 and 2017.

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78 E. Giambona, J. Graham and C. Harvey, The Management of Political Risk, Duke I&E Research Paper 2016

79 See Cruces and Gasparini (2013); Obando and Andrián (2016) for the case of Colombia.

Poverty continued to fall, but went from -6 percent a year in 2013 and 2014 to -2.5 percent a year in 2015, and to less than -2 percent in 2016 and 2017.[80]

Figure 1.7: Fall in Poverty and Growth, 2003 versus 2014

Source: World Development Indicators (World Bank, 2019) and *World Economic Outlook* (WEO) (IMF, 2016).
Note: poverty rates are calculated on the basis of national measures.

In the coming years, as the economy resumes growth, the region will again experience significant momentum in consolidating the middle class. The quality of this growth will have a decisive influence on the strengthening of this great social transformation. Boosting growth through massive increases in public investment in infrastructure, logistics, and other public goods will lead to greater private investment and productivity, which will underpin the sustainable expansion and consolidation of the middle class. By contrast, growth driven mainly by commodity price cycles causes fragility in sustainability and the size of the middle class. That kind of growth enabled the expansion of the middle class but left about 37 percent of it close to the poverty line—in a word, vulnerable.[81]

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80   Averages for the group of selected countries with official information on poverty available in 2015 (Bolivia, Colombia, Costa Rica, Dominican Republic, Ecuador, Paraguay, Peru, and Uruguay), according to the World Bank's World Development Indicators (2019). *World Economic Outlook* (IMF, 2016) was used for GDP growth rate.

81   F. Herrera, J. Messina, J. Rigolini, L. López Calva, M. Lugo and R. Vakis, La movilidad económica y el crecimiento de la clase media en América Latina (Washington, D.C., World Bank, 2013).

Despite progress in the growth of the middle class, LAC remains one of the most unequal regions in the world.[82] It is crucial to distribute the benefits of growth in order to guarantee the goals of social justice and equity, as well as to build democratic and inclusive societies. In this respect there is a need to develop and expand a supporting safety net for this sector. That will include effective pension and retirement systems, formal and efficient labor markets, unemployment insurance, public services, and quality healthcare and education.

LAC's social security systems cover only a fraction of the workforce, and more than half of workers are not covered. On average, only 45 in every 100 employees in the region are contributing to or are enrolled in a retirement or pension plan, and only 20 to 40 percent of middle-income workers make such contributions, leaving them particularly vulnerable to the risks of poverty in old age.[83] There are now eight people of working age for every retiree or pensioner. This ratio is expected to fall to 2.5 by 2050, which is close to the average for the OECD countries. In the absence of reforms and efforts to increase formal-sector employment, 63–83 million people might not receive an adequate pension by 2050.[84] Only seven Latin American countries have an unemployment insurance system. In Europe, 80 percent of workers have such insurance, whereas only 38 percent of workers can receive it in LAC.[85] A third of urban workers, moreover, are completely outside the shelter of formal social protection systems. The countries of the region must make progress towards universal pension coverage, while at the same time ensuring the financing of social security systems as the number of people able to enter those systems increases.

The best and most effective way of reducing poverty and inequality is to continue growing, but public policies to reduce poverty will still be necessary.[86] These policies have not only raised the income of the poorest households, but have also increased school enrolment and access to health services for many

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82   WEF, *América Latina es la región más desigual del mundo. ¿Cómo solucionarlo?* (Geneva, WEF, 2016).

83   IDB, *Pensions at a Glance: Latin America and the Caribbean* (Washington, D.C., IDB, 2016). For Colombia, see Obando and Andrián (2016).

84   *Ibid*.

85   H. Schwarzer, P. Casalí and F. Bertranou, *El Papel de los Pisos de Protección Social en América Latina y el Caribe* (Geneva, ILO, 2014).

86   IDB, *Time to Act. Ibid.*

families.[87] Today, LAC governments directly transfer between 0.5 and 1 percent of GDP to the poorest two or three deciles of the income distribution.[88] Conditional transfers account for between 15 and 21 percent of the reduction in inequality in Brazil, Mexico, and Chile.[89] Despite the success of these programs, however, countries must make further progress by concentrating on correcting exclusion errors and inefficiency (poor families that do not receive the subsidies, and families that are above the poverty line but continue to receive them), and by improving program quality in terms of their impact on human capital, especially in rural areas.[90] In practical terms, the gradual reduction of poverty and the elimination of extreme poverty entails continuing to support transfer programs but improving their targeting.[91] Extreme poverty is not a permanent condition in a society experiencing growth. In these circumstances, countries need to focus on those who receive government assistance, and must assess the impact of that assistance on reducing poverty, increasing job opportunities, and permanently improving the recipients' quality of life.

The Covid-19 pandemic poses a new challenge but makes this agenda more important

The crisis the world is undergoing at the time of writing as a result of the Covid-19 pandemic is worse than the financial crisis of 2009. Although this book is being written just as the effects of the pandemic are beginning to be felt, it is clear that they will be significant. In January 2020 the International Monetary Fund (IMF) was expecting world growth of between 3.3 and 3.4 percent in 2021, and by its April update it was expecting a contraction of 3 percent in 2020, with a rapid recovery of the world economy in 2021 and growth of 5.8 percent. This scenario assumes that the pandemic is under control by the second half of 2020.

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87 Spending on social security and social assistance rose from 5 percent of GDP in 1990–94 to 8.2 percent in 2011–12. ECLAC and IEF, *Los efectos de la política fiscal sobre la redistribución en América Latina y la Unión Europea* (Madrid, ECLAC and IEF, 2014).

88 *Ibid.*

89 T. Evridiki and I. Anayochukwu, What Is Behind Latin America's Declining Income Inequality? Working Paper 14/124 (Washington, D.C., IMF, 2014). S. Soares, R. Guerrero, F. Veras, M. Medeiros and E. Zepeda, Conditional Cash Transfers in Brazil, Chile and Mexico: Impacts upon Inequality, Working Paper 35 (Brasilia, International Poverty Center, 2007).

90 S. Levy, Where Do We Come From, Where Are We Going? (Washington, D.C., Brookings, 2016).

91 Better targeting of current spending in areas such as social assistance, tax expenditures, and subsidies to the energy sector could yield average savings of close to 2 percent of GDP. This would be achieved by ensuring that spending only reaches its intended beneficiaries. See Cavallo and Serebrisky (2016); *Ibid.*

Nonetheless, the IMF stresses that if the pandemic spreads in 2020, the economic contraction would be even greater, surpassing 5 percent of GDP. If the virus resurfaces in 2021, moreover, there would be a longer global recession because there would be no growth that year.[92] This harsher scenario would entail a slower and longer economic recovery.

Even in the event of a rapid recovery, the Covid-19 crisis could reverse the gains the region has made. For Latin America, this means that the expectation of 2 percent growth in 2020 and 2.4 percent in 2021 shifts to an expectation of a 5.2 percent drop in output in 2020 and a 3.4 percent recovery in 2021. If the rapid-recovery scenario is correct, then LAC's GDP in late-2021 would be 98 percent of its output in late-2019, or similar to its output in late-2016.

With regard to infrastructure, the crisis has highlighted the backwardness of the region's networks and digital capacity. The prospect of lessening the economic impact of quarantine is related to the ability to implement telework effectively. Only 8 percent of the region's population has access to fixed broadband lines, which is below the Latin American average and a quarter of OECD levels.[93] This affects not just productivity. Distance education is only possible if there is digital infrastructure for schools: school connectivity, digital platforms, virtual tutoring, digital repositories, and digital resource packages. Only Colombia has developed such packages, and Colombia and Peru have set up central content repositories. The region is lagging in other respects, notably in connectivity.[94] On the agenda set out in this book, therefore, the digital infrastructure proposed here should be prioritized.

On the fiscal side, the crisis highlights the need for a comprehensive reform agenda for the region. When editing began on this book, many of the LAC countries were in difficult but sustainable fiscal positions. In the Andean region, three of the four countries had a sustainable fiscal position—that is, they did not have to adjust their fiscal positions to keep the debt stable. The crisis will worsen fiscal balances. The impacts on growth and on the fall in commodities prices will reduce fiscal revenues. At the same time, at significant fiscal cost, governments have opted to implement programs to support the population and the business sector in the midst of the crisis. According to the IMF, in January 2020 the countries of the region were expected to have an average deficit of 2.7 percent of GDP. In April

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92   IMF (2020a) and IMF (2020b).

93   IDB (2020a).

94   IDB estimates based on Arias et al. (2019).

the deficit was estimated at 6.0 percent, an average deterioration of 3.3 percent of GDP.[95] Although the deficit is expected to narrow to 3.8 percent by 2021, it would still be 1.6 percent higher than the January projection. Public debts will thus increase. Once the economy resumes growth, therefore, an adjustment will be inevitable given the higher debt stock and structural changes in the fiscal position. Nonetheless, as shown below, this book offers a menu of options for fiscal measures that provide more than double the resources needed for investment. In other words there are options for regaining fiscal sustainability and embarking on a growth agenda.

The crisis also heightens the need to address the problems of access to credit that are apparent in the region. In particular, the quarantines needed to prevent the collapse of healthcare services and to spread the effects of the pandemic over time have an impact on the business sector. Without an adequate credit market, businesses have to resort to their own liquidity to deal with income shortfalls and meet their commitments. In Peru, for example, the median ratio of liquidity to operating expenses is three months; in Ecuador it is 36 days. If we look at the quartile with the least liquidity, however, in Peru it is 27 days and in Ecuador 26. As regards the affected sectors, in Peru, for example, 25 percent of the most vulnerable companies in the food, construction, lodging, restaurant, and other manufacturing sectors would have even less than 27 days. Small businesses, obviously, will be the most affected. In Ecuador, analyzing by size, 25 percent of SMEs have less than 16 days of liquidity.[96] The agenda set out in this book has already touched on the problems of access to credit. This crisis makes it even more important for the region.

Finally, the crisis gives greater urgency to the need for a social insurance policy. The combination of a health crisis with temporary effects on the labor market—according to the expectations described above—highlights the lack of effective insurance systems for health and employment. The quarantines alone—that is, the lack of income caused by staying at home, even given the various support programs announced in the region—can increase poverty by between 8 and 14 percent. This would involve a contraction of the middle class, especially the consolidated middle class, which would shrink by between 8 and 17 percent.[97] Clearly, unemployment insurance would have cushioned the impact. Similarly, the lack of

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95 IMF (2020a) and IMF (2020b).

96 Authors' calculations using the companies' financial statements as reported to Ecuador's Superintendency of Companies and Peru's Annual Economic Survey, 2018.

97 Authors' calculations on the basis of IDB (2020b).

health insurance will affect the authorities' ability to handle the health emergency, by making greater demands on public services and hospital emergency rooms. This is why the agenda of establishing a broad insurance scheme, as proposed in this book, is key for the future.

Despite the crisis that the region is undergoing at the time of writing, the proposals contained in this book will be even more valid in the years to come. It is possible to expect a greater impetus to expand the middle class so that it includes more than 70 percent of the population; to reduce poverty yet further, to less than 10 percent; and to eliminate extreme poverty once and for all. Achieving this great social transformation in LAC requires major social pacts on public policies that foster high rates of inclusive and sustainable growth, so that in 20 years the countries of the region, one after the other, can become developed economies.

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Chapter 2
Infrastructure for growth

As we argued in the preceding chapter, increasing the region's growth requires an increase in investment. Most particularly, as that chapter argued and as we expand on in this one, infrastructure investment is key for the region in view of the current gaps and their potential impact on productivity. After resuming that discussion in this chapter, we will begin here by reviewing the region's main challenges in infrastructure provision. The second part of the chapter will discuss the main problems that prompt these challenges. Finally, the third part will present policy proposals to address the problems. The chapter also includes an annex that details the investment programs suggested herein; another that describes specific projects that could be included in those plans; and a third that discusses the challenges of statistical data on infrastructure.

Investment in infrastructure is the major vector of growth. Infrastructure investment is one of the two main areas of concern for middle-income countries seeking to increase their per capita income and reach development levels similar to those of advanced countries. Capital market development is the second most important area for growth policies driven by public investment.[1] Investing in infrastructure entails mobilizing a large volume of financial resources, which has significant repercussions for governments' institutional structures. Public-sector participation is essential in infrastructure-related interventions and policy decisions, not only because infrastructure is a public good that is important for countries' growth, but also because it generates externalities. The costs associated with risk insurance make it difficult for the private sector to invest in infrastructure on its own initiative, without government participation.[2]

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1 Izquierdo, J. Llopis, U. Muratori and J. J. Ruíz, In Search of Large Per Capita Incomes: How to Prioritize across Productivity Determinants? IDB Working Paper Series IDB-WP-680 (Washington, D.C., IDB, 2016).

2 Izquierdo, F. Navajas and R. Steiner, Designing a Methodology for Growth based on Infrastructure for LAC Countries (Washington, D.C., IDB, 2018). Mimeographed document.

There are two caveats that, without altering the importance of the impacts, require clarification: i) infrastructure investments' specific contribution to growth may be conditioned not only by the sector in which these investments are concentrated, but also by the development stage of the countries involved; and ii) we must also consider the role of other factors affecting growth, such as financial development, even though the biggest impact stems from the infrastructure investment itself.[3] A broader approach, such as the one developed in this book, also calls for an examination of the complementarities associated with infrastructure investment—most particularly, increasing overall productivity in the economy, developing institutional capacity, investing in human resources (including health and education), and reducing social exclusion and inequality.

Increasing investment in infrastructure has important macroeconomic effects. The countries of the Andean region must invest more in infrastructure and reach the level of countries such as China and South Korea, which have achieved sustained gross domestic product (GDP) growth rates of 6–10 percent a year over the past two decades. China is illustrative in this respect, since infrastructure investment in the country reached sustained historical levels of 8.5 percent of GDP per year in the first decade of this century. On the other hand, as noted in Izquierdo et al. (2019: 43), "for most Latin American and Caribbean countries, the multipliers associated with public investment are typically larger than one, pointing to deficiencies in the current stock of public capital and an opportunity to foster economic activity."[4] The decision about which sectors to target for investment amplifies such investment's growth effects when it is steered towards sectors with the greatest potential for raising productivity. At the same time, public investment resources must be allocated optimally. Significant efficiency gains can be made in infrastructure services, which potentially drive growth, without incurring greater fiscal commitments. For example, IDB efficiency analyses indicate that the efficiency of infrastructure investment in Colombia could be increased by 49 percent, with the same level of investment.[5] Additionally, lack of maintenance

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3   Izquierdo et al. *Ibid*. A. Estache and G. Garsous, The Impact of Infrastructure on Growth in Developing Countries, *IFC Economics Notes*.

4   See also A. Izquierdo, C. Pessino and G. Vuletin, *Better Spending for Better Lives How Latin America and the Caribbean Can Do More with Less.* Development in the Americas Series (Washington, D.C., IDB, 2018): "Think about the large impact of building a paved road connecting a productive area with a port in a developing country with only a few paved roads (e.g., in the Democratic Republic of the Congo) vis-à-vis the impact of the same paved road in a country with a large and outstanding highway network (e.g., Sweden). The impact could be expected to be much greater in the first country than in the second."

5   Authors' calculations on the basis of de la Cruz, R., L. G. Andrián y M. Loterszpil (eds.). 2016.

and the poor quality of infrastructure are major obstacles to economic growth based on greater competitiveness. It should be noted, as pointed out by Cavallo and Serebrisky (2016),[6] that increasing public investment calls for rules and fiscal targets that allocate a greater share of total spending to such investment, while reducing incentives that tilt the balance in favor of current spending.[7]

Levels of access to infrastructure services

The Andean countries must substantially improve access to infrastructure services. With regard to infrastructure development and access, the countries of the Andean region are far removed from the most developed economies. The World Economic Forum's (WEF) Global Competitiveness Report 2018–19 ranks 140 countries according to their degree of competitiveness: in the "infrastructure pillar"[8] Ecuador is ranked at 59, Colombia at 83, Bolivia at 102, and Venezuela at 118. These countries are behind Chile and Mexico, which are ranked at 41 and 49 respectively, and are remote from countries that take the lead in infrastructure, such as Singapore, Hong Kong, and Switzerland, the first three in the ranking. The region's infrastructure indicators reflect the range of problems in each sector, as well as the Andean countries' diversity in terms of the quality of and access to their infrastructure and related public services. This is why it is helpful to note the access levels and the main shortcomings in this regard at the regional level.

Improving access to water and sanitation outside the cities. Local governments have jurisdiction over the provision of water and sanitation services. In general, these services are of poor quality, especially in rural areas, because of institutional deficiencies. The presence of multiple actors and functional competencies, as well as various levels of authority at both the central and local levels, under a decentralized scheme for service delivery, demands clear and common sectoral

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6   E. Cavallo and T. Serebrisky (eds), *Saving for Development. How Latin America and the Caribbean Can Save More and Better*. Development in the Americas Series (Washington, D.C., IDB, 2016).

7   The incentives for secular growth in current spending arise from asymmetries in the behavior of current and capital spending in most developing countries. Current spending *increases* in good times but does not decline in bad times. Capital spending, on the other hand, *falls* in bad times and does not rise in good times. M. Ardanaz and A. Izquierdo, Current Expenditure Upswings in Good Times and Capital Expenditure Downswings in Bad Times? New Evidence from Developing Countries, Working Paper 838 (Washington, D.C., IDB, 2017).

8   The infrastructure pillar is used to assess the quality and connectivity of transport infrastructure, as well as the quality of and access to public services in each country. Elements assessed in the infrastructure pillar include the connectivity and quality of, as well as access to, a country's roads, airports, seaports, railways, water system, and electricity system.

policies, as well as a high degree of interinstitutional coordination. These policies must reconcile the interests and expectations of the various agents with their financial, environmental and technical objectives, as well as with their goals for coverage, quality of service, autonomy, and business sustainability, among others. As Figure 2.1 shows, by 2000 the Andean countries were behind not only the members of the Organization for Economic Cooperation and Development (OECD) in access to drinking water services, but also behind the countries of Asia and the Pacific Alliance. In Bolivia, half the rural population lacks access to water and sanitation services. In Colombia, about 1.5 million rural households lack access to water, and the drinking water supply covers only 50 percent of connections.[9] This pattern is repeated in the rest of the region. Additionally, there are issues related to resource management and supply deficits. The Pacific area, for example, has a deficit of 4 cubic meters per second. There are also institutional challenges to be overcome. Hence, in Ecuador, the decentralization of spending without proper coverage of service cost recovery has led to significant investment shortfalls in the water sector. As regards sanitation, the problem is not only rural but also extends to major cities and urban centers. In Colombia, for example, 5 million urban households either have no sewage system or have very poor access to it.

The region faces the common challenge of mobilizing the resources needed to ensure universal access to water and sanitation services.

The region faces the common challenge of mobilizing the resources needed to ensure universal access to water and sanitation services, guaranteeing for that purpose a system of cost recovery and self-sufficient tariff tables that simultaneously ensure coverage of the lower-income population. In general, the financing for investment in the water and sanitation sector is derived from public sources, and from users themselves, through the tariff systems. These have to be improved to guarantee the financial self-sufficiency of the services. With respect to environmental management, there are significant problems with the sustainable

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9   R. de la Cruz, L. G. Andrián and M. Loterszpil (eds.), *Colombia: Hacia un país de altos ingresos con movilidad social* (Bogotá, IDB, 2016).

management of basins, especially those related to urban rivers in the case of Bogotá in Colombia, Rimac in Peru, and Rocha in Bolivia. The countries of the region incur high social and economic costs whenever there are extreme geo-hydro-meteorological events. That circumstance underlines the need to implement coherent and sustainable public policies over the long term in order to foster the development of urban drainage infrastructure, linking it to the provisional regulation capacity offered by the available urban bodies of water. Given the experiences in the region, it is crucial to support the introduction of watershed conservation programs using mechanisms that can attract private investment capital. We should complete this description by adding that gaps in access to infrastructure services have significant effects on human health. In the countries of the region, for example, the mortality rate from diseases related to lack of access to drinking water is 1.4 per 100,000 inhabitants; this exceeds the figure for upper middle-income countries (1.16) and the OECD (0.38).[10]

Figure 2.1: Access to Drinking Water Service in the Andean Countries
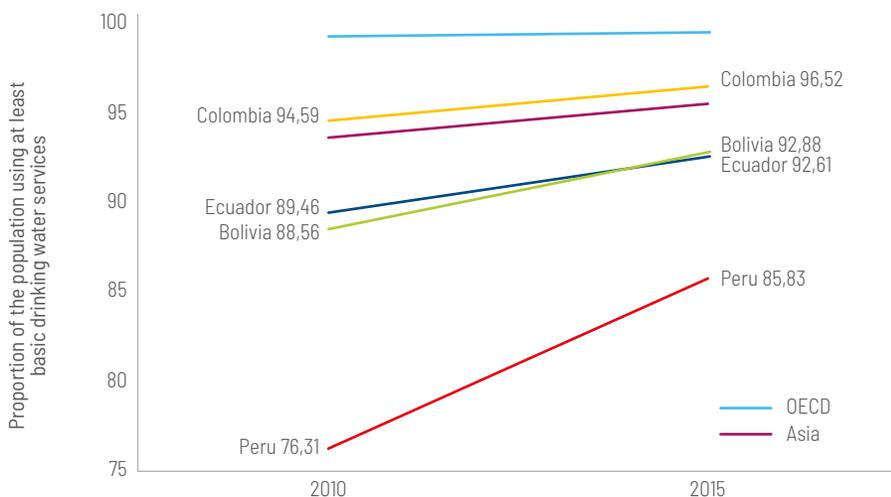
Source: WHO and UNICEF, Joint Monitoring Program for Water Supply and Sanitation (JMP): 2015 Update (May 8). Available at https://www.unwater.org/publications/whounicef-joint-monitoring-program-water-supply-sanitation-jmp-2015-update/.

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10   World Bank, World Development Indicators (Washington, D.C., World Bank, 2019; available at http://datatopics.worldbank.org/world-development-indicators/).

Figure 2.2: Access to Sanitation in the Andean Countries
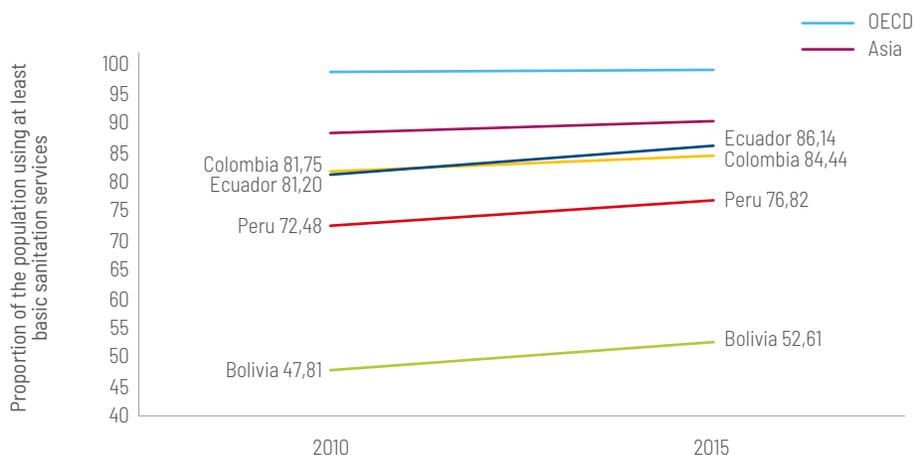
Source: WHO and UNICEF (2015).

Ensuring a sustainable energy supply. In the past two decades, the countries of the region have made investments to close the gaps in access to electricity. Much progress has been made, but there is still work to be done: i) completely closing the rural gap; ii) moving to a more efficient energy generation matrix, with particular attention to the use of "clean" energy; and iii) strengthening and developing the integration of electricity markets among the countries of the region and with extraregional countries. In 2010, Colombia and Ecuador's levels of access to electricity were very similar to levels in the countries of emerging Asia. There was a gap with the OECD, however, mainly because of limited rural supply. Over the past decade, the growth of the energy supply in Bolivia and Peru has brought those two countries closer to the coverage and access levels of Colombia and Ecuador. With regard to energy generation, the Andean region's generation capacity per 100 people is slightly above the average for Latin America and the Caribbean (LAC). Note, moreover, that although the region's energy matrix is relatively "clean" because of the use of water resources, further progress can be made by including other renewable and low-carbon energy sources. As regards efficiency gains, in the Colombian Caribbean alone, the introduction of more efficient technologies and processes, as well as the use of unconventional renewable energy sources, could yield savings of about US$1.22 billion and reduce CO_2 emissions by about 2.7 million tons. Finally, the countries should attach greater importance to the benefits of energy integration. Among other important effects, this would make it possible to offset the harmful effects of the El Niño and La Niña phenomena on

their hydrological cycles, and consequently on energy supply.[11] Similarly, access to international electricity exchanges makes it possible to diversify the sources of supply in the matrix (by exploiting the natural advantage of complementary basins between countries) and lessens the risks of shortages. Considering the advantages of international interconnections, it will be necessary to formalize the operational and institutional frameworks allowing for greater use of regional electricity interconnections.

Figure 2.3: Access to Electricity in the Andean Countries (%)
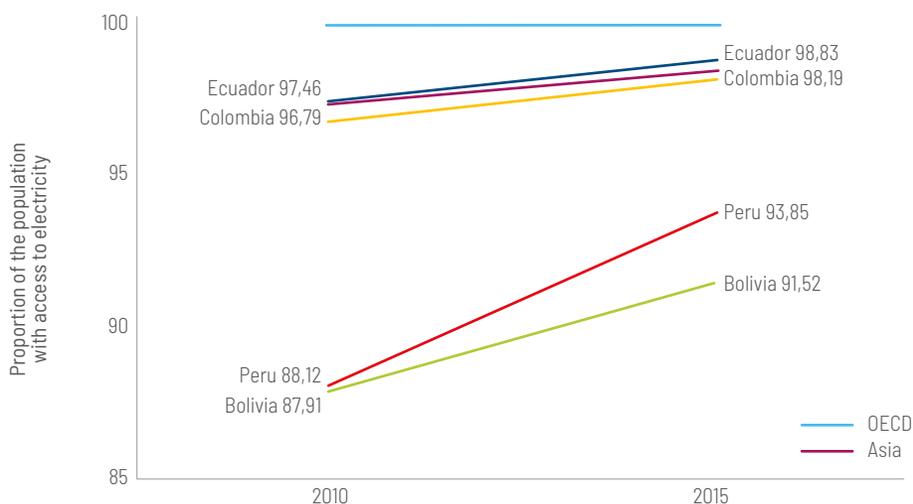
Source: IEA (2014).

11   L. Martín, ¡Es Niño! Impacto Económico en la Región Andina, Technical Note IDB-TN-951 (Washington, D.C., IDB, 2016).

The challenge of logistics and transportation. The Andean countries have made great progress on transportation infrastructure, but the region remains far from the level of emerging and advanced countries[12] (see Figure 2.4). The quality of roads is poor, rail and port infrastructure requires significant investment, and logistics costs are high compared to developed countries. Peru's road network covers 5,819.1 kilometers of highways; the departmental road network, which is the responsibility of the regional governments, consists of 24,992.3 kilometers, of which only 10.1 percent is paved; and the countryside road network, which is the responsibility of the local governments, is 106,794 kilometers long, of which only 1,933 kilometers are paved (1.8 percent).[13] In Colombia, too, the density of the paved road network is low at 530 kilometers per million inhabitants. This is less than countries like Brazil (1,066 kilometers) and Mexico (1,188 kilometers), and markedly less than France (15,945 kilometers).[14] Colombia has a road network of 213,000 kilometers, of which only 25,000 kilometers are paved. There are also substantial inefficiencies in the provision of freight transport services. For example, in 2011 the average annual distance travelled by truck in the United States was about 106,000 kilometers, while in Colombia it was 56,000 kilometers.[15] Moreover, the cost per export container in Colombia is more than US$2,300, compared to the OECD figure of US$1,080.[16] As regards regional road interconnections, the Andean region has a major north-south axis in the form of the Pan-American Highway, but there are few east-west connections. The possibilities of interoceanic links are therefore limited. This not only causes congestion on the Pan-American Highway but also constrains the region's prospect of connecting with other potential export markets. Finally, with regard to policies to increase investment in the sector, the effects of the projects on environmental sustainability have to be considered, as does the need to strengthen efficient maintenance systems to conserve existing and future assets.

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12 M. E. Rivas, A. Suárez-Alemán and T. Serebrisky, Hechos estilizados de transporte urbano en América Latina y el Caribe, Technical Note IDB-TN-1640 (Washington, D.C., IDB, 2019); A. Taddia, Lecciones aprendidas de los avances y retrocesos de los servicios de transporte público en América Latina, moviliblog (Washington, D.C., IDB, 27 March 2018; available at https://blogs.iadb.org/transporte/es/lecciones-aprendendidos-de-los-avances-y-retrocesos-de-los-servicios-de-transporte-publico-en-america-latina/); M. Nevo, A. P. Taddia, R. A. Ríos Flores, J. E. Pérez Fiaño, P. Brennan and P. Ortiz, *Evolución de los sistemas de transporte urbano en América Latina* (Washington, D.C., IDB, 2017).

13 Consultancy for the Evaluation of Budgetary Design and Execution (EDEP) for maintenance and activities to guarantee road safety in transport: final report (Lima, Ministry of Economy and Finance of Peru, 2018).

14 de la Cruz, Andrián and Loterszpil (2016).

15 *Ibid.*

16 *Ibid.*

Figure 2.4: Quality of Transport Infrastructure
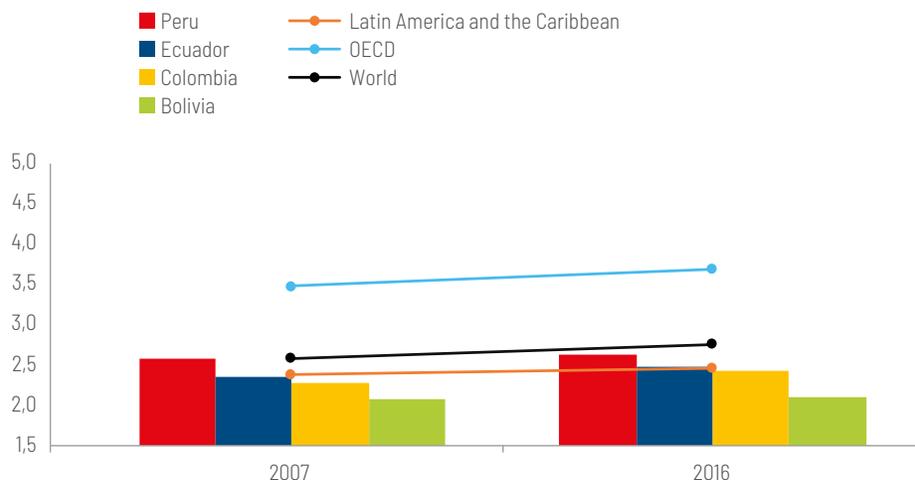
Source: World Bank, World Development Indicators (2019).

Information and communication technologies (ICTs) for the new industrial revolution. The Andean countries have had similar growth patterns, and they need to engage in the digital economy and in technological transformations as a matter of urgency. At present, the region lags significantly in the use and adoption of ICTs, which are vital for joining the Fourth Industrial Revolution and engaging with the new digital disruption. The 2016 Network Readiness Index analyses from the Global Readiness Index reveal differences in the level of progress among the various Andean economies.[17] Colombia is notable for its greater relative digital development;[18] Peru and Ecuador are less developed in this regard and, in most aspects of the index, they are positioned between the third and final quartile worldwide. Bolivia and Venezuela are mainly in the final quartile worldwide. In Colombia the number of fixed broadband subscriptions with a minimum speed of between 256 kbit/s and 2 mbit/s per 100 inhabitants is less than half that in Asia, and almost a quarter that in the OECD countries. Furthermore, the Andean region is below the average of Latin American countries (which are already far below OECD levels) in indicators such as the percentage of

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17 S. Baller, S. Dutta and B. Lanvin (eds.), *The Global Information Technology Report 2016. Innovating in the Digital Economy* (Geneva, WEF, 2016).

18 According to the Large ICT Survey 2017 from the Ministry of Information and Communication Technologies, despite Colombia's relative progress, internet use is related mainly to communication, entertainment, and information search, and less to productive uses, knowledge creation or innovation.

the population covered by fourth generation (4G) mobile broadband networks, or the percentage of households with internet access.[19] These services, moreover, are comparatively more expensive in the region and are therefore less accessible. Countries have to extend the coverage and connectivity of telecommunication infrastructure, and create incentives and mechanisms for the geographic expansion of broadband service coverage. In recent years significant steps have been taken to strengthen the sector's legal, institutional and policy framework, but persistent structural constraints could be hampering ICT penetration and limiting the population's access opportunities. Hence the importance of the complementarities between public and private investment, and the regulation and oversight of monopolistic practices in service provision. By 2030 there should be no digital divides in the region. To that end, investment in digital infrastructure must continue to rise, and appropriate regulatory frameworks must be devised to develop data centers, improve the capillarity[20] of high-speed networks (fiber optics), and improve traffic-exchange infrastructure.

Figure 2.5: Fixed Broadband Subscriptions with a Minimum Speed between 256 kbit/s and 2 mbit/s, per 100 Inhabitants
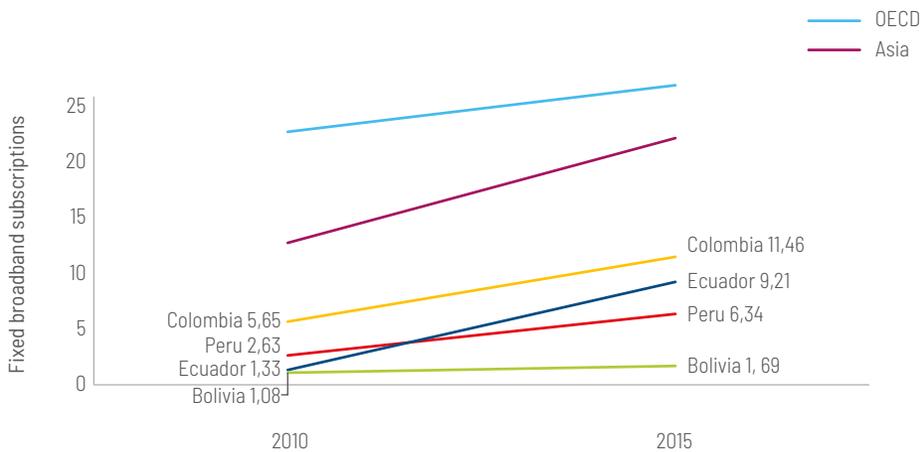
Source: World Bank, World Development Indicators (2019).

19   E. F. Rojas and L. Poveda, *Estado de la banda ancha en América Latina y el Caribe 2016* (Santiago, Chile, ECLAC, 2017).

20   Refers to a network's penetration capacity.

Institutional gaps: ex-ante prioritization and planning of infrastructure investment projects[21]

One cause of the limited impact that public investment can have on growth is the lack of ex-ante prioritization and planning. Warner (2014) estimates that public investment has a limited impact on growth. The bulk of his policy recommendations for public investment to have an impact on long-term growth are grounded in the prioritization and planning stages: taking analytical issues seriously and safeguarding the decision-making process against particular interests that can distort public investment decisions.

A previous study has identified the planning and prioritization stages as weak points in the public investment cycle in the Andean countries. Armendáriz et al. (2016)[22] point out that the Andean countries have shortcomings in some respects, such as "strategic guidelines" (as an approximation for planning), "methodologies for preparing and evaluating projects/social prices," "project evaluation" and "project selection" (the latter three as an approximation for prioritization). Colombia stands out for planning among the Andean countries. This seems to stem partly from the governance of the National Public Investment System (SNIP). The latter's governing body is located in the National Planning Department (DNP). Peru's performance in prioritization (especially as regards project evaluation) is better than the other countries, but with some room for improvement. Except in Peru, project planning seems to be stronger than prioritization. All of the above appears to be consistent with the findings of previous studies (for further details, see Armendáriz et al., 2016).

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21 This section is based on the report by E. Contreras et al., Planificación y priorización del gasto de inversión pública en los países andinos (IDB, 2020). Mimeographed document.

22 Measuring the efficiency of public investment management is a relatively recent development in the literature; Dabla-Norris et. al. (2011) is one of the first studies on the subject. That study estimates a public investment efficiency index across four stages that make up a national public investment system. The study, however, does not consider most Latin American countries. The work of Armendáriz et al. (2016) has filled this knowledge gap for LAC.

Except for government coverage, the regulatory framework of the region's SNIPs is adequate for planning and prioritization. In practice, however, there are shortcomings. According to a recent study,[23] in general the regulations of the countries analyzed stipulate that investment projects must be consistent with national development plans. There is also a legal and regulatory framework underpinning responsibilities, procedures, and instruments in the SNIP. All projects, moreover, regardless of the source of financing, must be submitted to the SNIP for approval, and public-private partnerships (PPPs) are governed by a law. Bolivia, however, does not currently have a PPP law. Ecuador, Peru, and Colombia do have such laws but projects involving this kind of partnership do not necessarily go through the SNIP in all countries.[24] Finally, except in Peru, where all levels of government are covered (general, state enterprises, and projects financed by third parties [multilaterals and grants]), the scope of the SNIPs in Colombia and Ecuador is confined to the central government.

Certain fiscal principles govern planning in the Andean countries, but they are incomplete. Figure 2.6 presents the values of the index in its different subdimensions. As Chapter 3 shows, the countries analyzed have fiscal rules but only Peru has a rule that (implicitly) protects investment.[25] Similarly, only Peru and Colombia have medium-term fiscal frameworks that can provide an aggregate projection and planning of investment spending. The authorities of Ecuador and Peru have said there are constraints on coordination between those responsible for planning and budgeting. Finally, Peru does not carry out a costing of sectoral and/or local strategies or plans.

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23   Armendáriz, Andrián and Contreras (2020). The evaluation was conducted by means of data collection, a literature review, and building an index from a survey and validating it in face-to-face settings. The information collected relates to two stages of the project cycle: planning and prioritization.

24   In Peru, if the PPP involves public cofinancing, the investment project is evaluated under the investment system.

25   Ecuadoran authorities say their fiscal rule protects investment. According to the authorities, however, Ecuador's fiscal rule only dictates the source and destination of public resources. In this regard, although Ecuador does not have a floor on public investment growth (or a ceiling on current spending growth, as in Peru), the rule is more restrictive than the Colombian rule in terms of spending adjustment. The Colombian rule only puts a limit on total central government spending, without distinguishing by project or spending category (current versus capital).

Figure 2.6: Planning: Results by Subdimensions
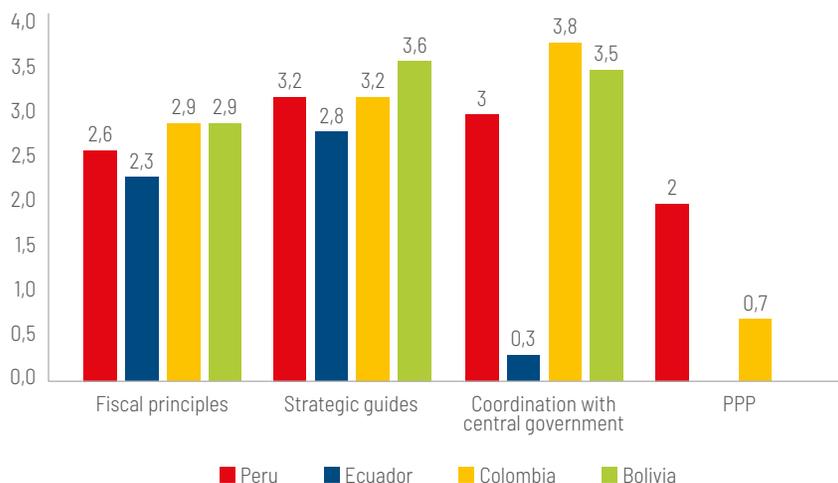
Source: prepared by the authors on the basis of Armendáriz, Andrián and Contreras (2020).

Note: the indices range from 0 to 4, where 4 is the maximum score.

Strategic guidelines are used widely, but there is room to improve their scope and upgrade their links with the rest of the investment cycle. For example, Colombia does not analyze the investment efficiency of the entire project portfolio for each sector or local territory, only project-by-project. Ecuador and Peru do not make extensive use of measurable goals in investment projects. In Ecuador, the authorities also maintain that there are few links between ex-ante planning and evaluation. Colombia and Peru, on the other hand, say that such links cover more than 85 percent of the projects.

Except for Ecuador, the Andean countries have a regulatory framework and some degree of coordination with subnational governments. Aside from the legal regulations limiting subnational indebtedness and transfers for capital spending, the other countries say there is a certain degree of coordination with subnational governments on investment, the most solid cases being Colombia and Bolivia. There are also opportunities for improvement. In Colombia: i) there are no linkages among the sources of project financing; and ii) there is consistency between the national and subnational project portfolios only when there is cofinancing with national resources. Peru has no formal mechanism to coordinate complex projects among the different institutions, a fundamental feature of many transformational projects. In Ecuador there is little coordination for investment by subnational governments through the central offices, depending on the needs to be covered.

Finally, the SNIPs have partial coverage of PPP planning. The SNIPs are partly responsible for analyzing PPP projects. In Ecuador the SNIP is in charge of analyzing these projects, while in Colombia the DNP is entrusted with analyzing their viability and making a cost comparison between the PPP option and what the same project might cost with public resources alone. Bolivia does not have a PPP law. Nonetheless, Bolivia's Vice-Ministry of Strategic Planning is responsible for promoting and attracting private investment in various public investment projects that can be carried out under a strategic partnership contract for joint ventures. In Peru, the investment project is assessed in the SNIP, which issues an opinion during the process of private investment promotion. The private investment promotion agency does the financial structuring, which is assessed by the general directorate for private investment in the Ministry of the Economy and Finance. Note that only Peru systematically records and controls the accumulation of explicit and/or contingent liabilities by PPPs.

Figure 2.7: Prioritization: Results by Subdimensions
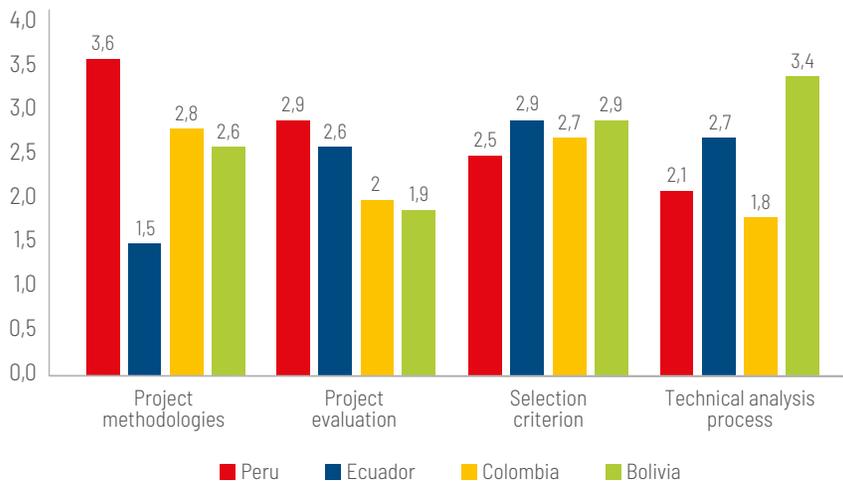
Source: prepared by the authors on the basis of Armendáriz, Andrián and Contreras (2020).

Note: the indices range from 0 to 4, where 4 is the maximum score.

The SNIPs have methodologies for devising and developing projects, although these have shortcomings. Figure 2.7 shows the prioritization index in the various subdimensions. The countries analyzed have general methodological guides for formulating and preparing investment projects, but only Peru has sector-specific

methodologies. Colombia and Peru use different social price indicators,[26] while Ecuador uses only the social discount rate. Finally, as regards the availability of staff for this undertaking, Ecuador has the most needs inasmuch as it lacks the necessary personnel. Only 32 percent of the staff are trained in the socioeconomic evaluation of projects, and there are no training courses.[27]

There are also shortcomings in project evaluation. Colombia and Peru use a combination of consultants and staff from the executing agencies for preinvestment studies. Only Colombia, however, judges the quality of such studies to be "good," while Peru and Ecuador judge them to be "acceptable." Peru and Ecuador have more rigorous analyses for complex projects. In line with the planning stage, more than 75 percent of projects in Peru and Colombia are subject to ex-ante cost-efficiency assessments or similar scrutiny.[28] Ecuador estimates that between 26 and 50 percent of projects are subject to this kind of analysis. Finally, it is striking that none of the projects assessed by the SNIPs has been rejected in recent years in the three countries.

The countries analyzed use ex-ante evaluations to try to prioritize investment. They also use other criteria, such as local development (Ecuador and Colombia), strategic priority or consistency with the development plan (Colombia and Peru), equity (Colombia), and investment gaps (Colombia, Ecuador, and Peru). In Bolivia, the basic regulation on preinvestment, which is mandatory for all public bodies, establishes a link between ex-ante evaluation and planning. In Bolivia, moreover, ex-ante evaluations are carried out at the preinvestment stage and are the responsibility of each spending unit. Although risk analyses are carried out, only Colombia[29] and Peru do so at the evaluation stage, while Ecuador only does so at the implementation stage. Notwithstanding previous statements by the authorities, a large proportion of projects are admitted without the approval or endorsement of the oversight body in Peru (100 percent), or are regarded as exceptional projects (10 percent). In Ecuador, only 15 percent are admitted without SNIP approval, while in Colombia the figure is 0 percent because of the DNP's role.

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26 Colombia uses the social discount rate, social price of labor, and social value of time. Peru uses all three, plus the social cost of foreign exchange, the long-term social discount rate, and the social price of carbon.

27 Colombia judges the staff to be adequate, since 50 percent of them are trained in socioeconomic project assessment and the country has trained about 100 people in the past four years. Peru also believes its staffing is adequate: 100 percent of the staff are trained for the task, and about 100 people have been trained in the past four years.

28 Other criteria may be minimal cost and cost-benefit.

29 Colombia carries out risk analysis at all stages.

The problems: underinvestment and access gaps

The Andean countries are not investing enough. Below, we use gross fixed capital formation (GFCF) to measure investment. GFCF includes urban upgrading, purchases of industrial machinery and equipment, and construction of roads, railways, schools, offices, hospitals, private residential housing, and commercial and industrial buildings. Figure 2.8 reveals the declining stock of public capital in the Andean countries, measured as a percentage of GDP; this reflects the general decline in the investment rate in the region. To achieve investment rates similar to those in Asian countries, the Andean nations will have to raise their current levels significantly. More importantly, the public investment effort should strive for significant improvements in the quality of current infrastructure, as well as its proper maintenance.[30] Lack of infrastructure investment creates costly bottlenecks to growth. Recent evidence obtained by the IDB indicates that Peru's GDP could be 42 percent higher than it is today if infrastructure investment in the country grew by 3.6 percent a year over 10 years. In a counterfactual scenario, with less infrastructure investment and zero growth in capital stocks in the infrastructure sectors, average annual GDP growth would fall to 1.2 percent. In that case, after 10 years GDP would be only 13 percent higher than it is today.[31]

Figure 2.8: Public Capital Stock in Bolivia, Colombia, Ecuador and Peru
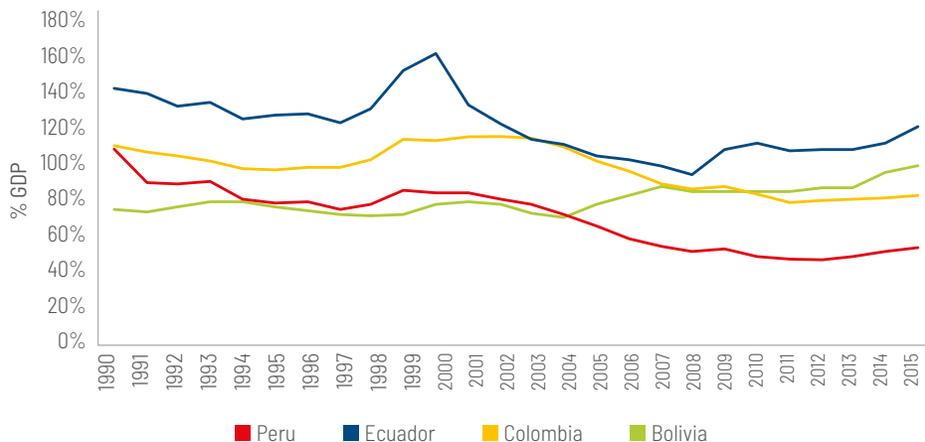
Source: Infralatam (2019).

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30   The growth projections below reveal the scale of the investment effort and the significance of the effects on revenue growth over 20 years.

31   E. Cavallo and A. Powell (coords.), *Latin American and Caribbean Macroeconomic Report. Building Opportunities for Growth in a Challenging World* (Washington, D.C., IDB, 2019).

Estimating the gaps to achieve service levels similar to those of the OECD countries, and composition by service. Gaps in access to services indicate shortfalls in the provision and level of infrastructure coverage relative to other countries, as well as to movements in supply and demand. This assumes scenarios of GDP and population growth, and values of elasticities for each service relative to the independent variables. The estimates carried out for this study indicate that, if we assume targets for service levels similar to the average for the OECD countries, the horizontal gap would amount to US$868 billion (or 123.5 percent of the Andean region's GDP in 2018 at current prices). The goals proposed for covering the gaps may vary, depending on what the policy targets are and the timeframes in which coverage is feasible. Taking other groups of upper-income and upper middle-income countries as benchmarks for gaps in railways, roads, and ports, the horizontal infrastructure gap would amount to US$272 billion.[32] Figure 2.9, covering various sectors, shows that the road deficit is the most significant in the region, accounting for 40 percent of the gap. If the analysis includes the railway system plus seaports and airports, the transport sectors are responsible for much of the gap in access to infrastructure services in the Andean countries, since together they account for 64 percent of that gap. The remaining 36 percent comprise sanitation (23 percent), drinking water (8 percent), and electricity, broadband, and mobile (2 percent each).[33]

Figure 2.9: Composition of the Infrastructure Gap in the Andean Countries by Sector

🟡 Drinking water	**8%**	
🟠 Sanitation	**23%**	
🔴 Electricity	**2%**	
🟣 Mobile	**2%**	
🟪 Broadband	**2%**	
🔵 Airports	**1%**	
🔵 Railways	**20%**	
🟦 Ports	**2%**	
🟢 Roads	**40%**	
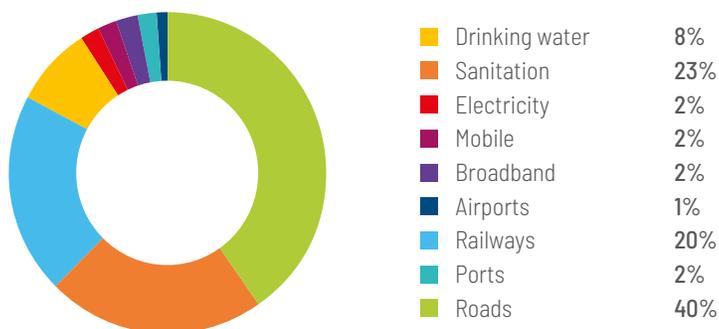
Source: prepared by the authors on the basis of consultancy studies.

Note: this figure takes as a reference the horizontal gap adjusted in line with the criteria detailed in this section and the associated footnote.

32 Authors' estimates. It is important to note that in drawing up the investment paths presented below, we decided not to use the OECD benchmark in all cases because that would have yielded a total value that was unfeasible in the timeframe for the proposed growth agenda. Specifically, we chose alternative targets in following sectors: i) railways—we used the Pacific Alliance average, excluding Chile; ii) roads—we used the average of a selected group of lower high-income countries; and iii) ports—we used the average of a group of high-growth Asian emerging markets.

33 Quality gaps were not estimated, although they are deemed equally significant.

Quality deficits are equally important. According to Powell (2016), the problem is not only the quantity of infrastructure but also the quality. Gap-estimation exercises refer only to the level of access to basic infrastructure, and it should be made clear that not all countries have enough data to include the quality dimension systematically. Nonetheless, there is evidence that the quality of infrastructure in the Andean countries is far below the quality of the advanced economies or the Asian economies, and is on a par with that of sub-Saharan Africa. Indeed, on a scale of 1 to 7, LAC infrastructure scored 3.5, which is scarcely higher than that of sub-Saharan Africa (3.2) and much lower than that of advanced economies (5.5) and Asian countries (4.9).[34] The evidence from the Andean countries is no different. A recent IDB study of Peru illustrates the impact of deficient quality on the physical infrastructure lag and gap. The study analyzes five sectors (water and sanitation, mobile telephony, broadband, roads, and health and education) and shows that the infrastructure quality gap in Peru is more than double the access gap in monetary terms. In Colombia, between 1996 and 2011, efficiency in the use of available physical and human capital stood at 74 percent of the average efficiency achieved by the OECD countries, and less than 50 percent of the efficiency of the relatively more developed countries in this matter. More than 50 percent of the inefficiency in the use of production factors stems from inefficiencies in the public sector.[35] The institutional obstacles that are common to the Andean countries—causing inefficiencies in the execution of investment and constraining attainment of high quality standards—include the proliferation of regulations and permits for project implementation, and controls and decisions that multiply and overlap without proper coordination. This leads to delays in project execution, higher costs than initially planned, designs and building works that are not subject to adequate quality control, deficiencies in oversight systems, construction defects, little public information on investment, and constant complaints from citizens.

Improving the efficiency and impact of public investment in the Andean region requires reforms to strengthen the planning and prioritization stages of its SNIPs. In planning, the countries of the region need to integrate the analysis they currently conduct at the central level with the projects of the subnational governments. They also have to make progress on integrating project information and analysis, so that the analysis does not focus solely on projects that

34   Powell (coord.), *Latin American and Caribbean Macroeconomic Report 2016. Time to Act: Latin America and the Caribbean Facing Strong Challenges* (Washington, D.C., IDB, 2016).

35   V. Giménez, O. Prieto, D. Prior and E. Tortosa, Obstáculos institucionales para incrementar la eficiencia, eficacia y transparencia de la gestión de la inversión pública en Colombia (Bogotá, IDB, 2015).

depend on the central budget but also considers those financed from other sources (transfers, royalties, the subnational governments' own budgets). The projects carried out by state-owned enterprises should also be included. This would provide a basic tool for effective planning, one that takes account of possible complementarities and duplications among all projects, not only those financed from the central budget. As for prioritization, the countries must also take steps to develop sector-specific methodologies and update social prices. To fulfil the SNIPs' central role in project selection and quality assurance by rejecting poor projects (this is a crosscutting challenge in the four countries studied), the countries have to strengthen the specialization of SNIP staff in the social evaluation of projects. This is also a requirement for project analysis if the number of projects to be reviewed increases because of the integration of all financing channels and all levels of government. In the phase of preselecting project ideas, the countries also need methodologies to identify gaps that allow for effective prioritization, and to create ex-ante methodologies to devise and assess projects, taking account of differences in each one's size, complexity and/or risk.

Improving the efficiency and impact of public investment in the Andean region requires reforms to strengthen the planning and prioritization stages of its SNIPs.

Policy proposals: spurring growth through more and better infrastructure investment

Increasing public investment in infrastructure and ensuring service quality. Chapter 1 pointed out that the countries of the region can engage in an infrastructure investment effort to attain per capita income levels similar to those of developed countries within 20 years. With this strategic goal of raising infrastructure investment over the next two decades, investment levels should approach and even surpass the region's historical rates, bringing them close to levels in the Asian countries. Resilient infrastructure must also be developed to lower the impacts and costs of climate change, using designs adapted to the changing conditions of landscapes, water courses, and climate. The aim of a public investment program on this scale is also related to giving the private sector support to increase productivity

and employment. Greater private-sector investment must also be encouraged, creating a virtuous cycle of growth and well-being.

A gradual increase in public investment in the Andean countries would allow them to raise their income levels, even to levels close to those of the developed economies. If they maintain their historical investment rates, the Andean countries with the highest per capita incomes could raise those income levels from US$13,000 to about US$20,000 per capita over the next two decades. This is a significant outcome, but it is far below the region's growth potential. A progressive increase in public investment, consistent with the attendant need for a gradual rise in public resources, could bring Colombia and Peru to the levels of developed countries, and could bring the relatively less developed nations, such as Bolivia and Ecuador, to the level of middle-income countries. Bolivia's economy would grow by 117 percent, from US$7,000 per capita to US$15,000 per capita. Including the productivity increase, it would reach US$18,000 per capita in 25 years. If Bolivia did not make this investment effort, by contrast, it would grow more modestly to US$12,000 per capita in 25 years. As to Colombia, without the additional investment effort the country would go from its current US$13,000 per capita to US$22,000 per capita in 20 years; undoubtedly, this is significant growth. By making the proposed investment effort, however, Colombia would reach US$29,000 per capita and, in 25 years, US$35,000 per capita. In Ecuador, with the additional investment effort, the GDP growth rate of the past 20 years could more than double, from 1.2 percent a year to 2.6 percent. This would allow the country's per capita income to rise from the current US$10,000 to US$17,000 in 20 years, and to US$20,000 in 25 years. Peru, without an additional investment effort, could grow from US$13,000 per capita to US$24,000 per capita. As in the previous cases, however, with an additional investment effort, the country would reach US$31,000 per capita in 20 years and US$39,000 in 25 years.[36]

Improving the quality of spending and increasing capacity to manage public investment. Efficiency gaps in investment, relative to investment in developed countries, reflect institutional lags in management capacity. Institutional quality is closely linked to such capacity. Improvements in the functioning of institutions and their coordination with different levels of the state can have significant impacts. If infrastructure development is not properly planned, the services provided by the assets will be of limited efficiency. There is empirical evidence

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36 Authors' calculations. To determine the effect of public investment on GDP growth, we used the value of the fiscal multiplier estimated by E. Ilzetzki, E. G. Mendoza and C. A. Vegh, How Big (Small?) Are Fiscal Multipliers? *Journal of Monetary Economics* 60, No 2: 239–254.

that information mechanisms for accountability and transparency in the area of project management are weak and need to be improved. The countries need unified and standardized systems containing information to underpin clear analysis that is consistent with real-world circumstances—that is, systems that are adjusted to the results obtained, as well as to the problems that arise in project implementation. These systems must be linked to mechanisms that facilitate access, monitoring, and evaluation of projects by integrating and systematizing information, and by updating the technological support infrastructure used to generate and communicate information.[37] Dissemination of these government endeavors will also have positive effects on public policies to tackle corruption.

Prioritizing climate change. The climate change agenda cannot be absent from the Andean countries' priorities. Just a few examples suffice to convey the scale of the problem. According to Greenpeace, an area of ice equivalent to the surface of Madrid's Santiago Bernabéu stadium melts in the Arctic every three minutes,[38] and Greenland lost 1 billion tons of ice between 2011 and 2014.[39] In that context the contributions that the Andean countries can make, and their own public policies on environmental protection, are a responsibility whose impact transcends the region.[40] Consistent with the climate change agenda, the region's main priorities will be investments in sustainable infrastructure, renewable energy, transport, and water and sewage systems.[41] Urban areas are responsible for 70 percent of energy consumption and emissions-related greenhouse gases (GHGs), and will account for more than 80 percent of the global cost of adaptation

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37 With IDB support, Colombia has developed a detailed project information platform called MapaInversiones. This offers data on public investment at a glance, including the physical and financial progress of each project, in a simple and intuitive way. To date, MapaInversiones has been implemented successfully in Costa Rica, Paraguay and Peru, and is being developed in Argentina, Bahamas, Jamaica, and Trinidad and Tobago.

38 See www.greenpeace.es.

39 R. Gómez, "El Ártico lanza una llamada de socorro," *El País*, August 7, 2016.

40 The emissions structure in Latin America and the Caribbean (LAC) shows that the leading sources are the energy sector (electricity and heating, manufacturing and construction, transportation, other burning of fossil fuels, and fugitive emissions), which accounts for 42 percent of the region's total. This is followed by agriculture (28 percent), and land use change and forestry (21 percent). ECLAC, The Economics of Climate Change in Latin America and the Caribbean. Paradoxes and Challenges of Sustainable Development (Santiago, Chile, ECLAC, 2014).

41 In renewable energy alone, the investment in new generation required to meet the Paris Agreement's 2-degree Celsius targets is expected to reach US$6.9 billion over 25 years. Bloomberg New Energy Finance, "Mapping the Gap: The Road from Paris," January 27, 2016; available at https://about.bnef.com/blog/mapping-the-gap-the-road-from-paris/.

to climate change.**⁴²** The development of cities is also raising threats to mobility in terms of transportation and traffic congestion because this leads to poor air quality, which in turn affects people's lives in ways unseen to date. Now, in cities like Bogotá and Lima, it takes more than two hours to get to and from work; still unknown are the effects of these long trips on people's health, their interaction with their families, and their quality of life. The challenges are manifold, from including the climate change dimension in projects, to leveraging the private sector, and promoting a secondary market for sustainable infrastructure-related securities, such as "green bonds."

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42   Several countries in the region have begun to implement mitigation measures. About 45 Latin American cities have opted to introduce bus rapid transit systems, and have begun to levy taxes on vehicle use and fuels. These taxes yield extra revenues and have positive environmental effects. ECLAC, The Economics of Climate Change in Latin America and the Caribbean. Paradoxes and Challenges of Sustainable Development (Santiago, Chile, ECLAC, 2014).

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Annex 2.1
An infrastructure investment program in the countries of the Andean region to close long-term gaps

The countries of the Andean region are in a position to increase infrastructure investment. Such an endeavor, depending on the scale of the access gaps and production costs, could set them on the path towards incomes close to those of developed countries in the cases of Colombia and Peru, and of middle-income countries in the cases of Bolivia and Ecuador. The figures below illustrate this additional effort, which might vary from country to country but would generally have a significant impact on the well-being of the beneficiary populations.

Investment from 2019 onwards was determined in line with the basic economic concept of gross investment: net investment or change in the capital stock at the end of the period relative to the beginning of the period, plus capital depreciation from the start of the period. The former was approximated using investment to close the gap, since it refers to new capital stock. It was assumed that this grows by 2.5 percent a year. As for the latter, we used the depreciation rate according to IMF's methodology,[43] equivalent to 3.55 percent for Peru, Colombia, and Ecuador, and 2.5 percent for Bolivia. It was further assumed that the depreciation is fully restored. The capital stock needed to estimate the restored depreciation was also calculated using the IMF methodology, which in turn follows the stipulations of Gupta et al. (2014)[44] and Kamps (2006).[45] The figures show projected infrastructure investment to 2038 for Peru, Colombia, Ecuador, and Bolivia. For Colombia and Ecuador it is clear that closing the gap requires a significant leap in the 2019 level of investment. This reflects the need in these two countries to give a huge initial push that entails a gradual increase above the rates needed to close the gap. Once that increase has been achieved, the two countries could continue to sustain high investment rates. It should also be made clear that the gap calculated for these estimates only covers basic access on the part of the population. Its measurement neither considers nor includes the question of infrastructure quality. This matter

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43   Methodology used in preparing the IMF Investment and Capital Stock Dataset.

44   S. Gupta, A. Kangur, C. Papageorgiou and A. Wan (2014), "Efficiency-Adjusted Public Capital and Growth," *World Economic Development* 57, C: 164–178.

45   C. Kamps, New Estimates of Government Net Capital Stocks for 22 OECD Countries, 1960–2001. IMF Staff Papers 53, No 1:120–150 (Washington, D.C., IMF, 2006).

would very probably raise the cost of the gap for all the countries, and would require an additional investment effort.[46]

Figure A2.1.1: Bolivia's Investment Path to Closing the Long-Term Basic-Access Infrastructure Gap (% of GDP)
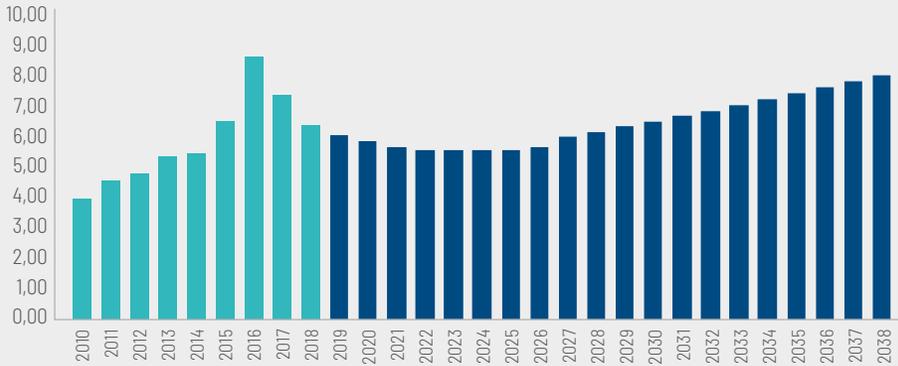
Source: prepared by the authors on the basis of data from IMF, Infralatam; World Bank, World Development Indicators (2019).

Figure A2.1.2: Ecuador's Investment Path to Closing the Long-Term Basic-Access Infrastructure Gap, 2019–38 (% of GDP)
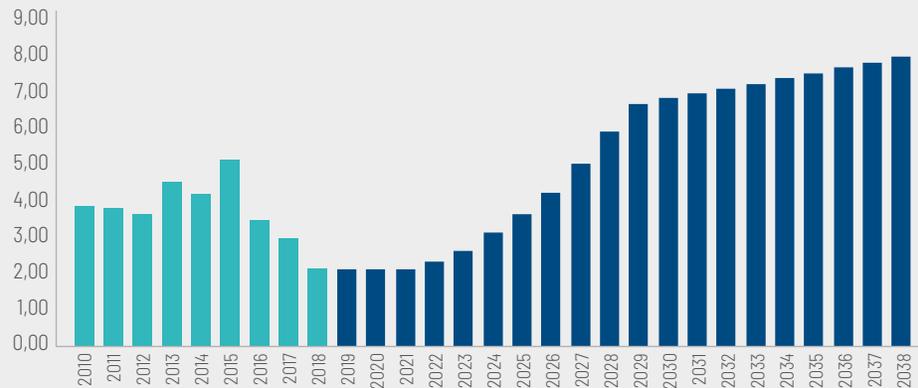
Source: prepared by the authors on the basis of data from IMF, Infralatam; World Bank, World Development Indicators (2019).

Note: constant investment in infrastructure was assumed for the period 2019–21 because Ecuador is following a fiscal restraint program with the IMF in that period.

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46 Authors' estimates. Given the difficulty of estimating the monetary value of the infrastructure stock in each country, this amount is approximated using the public capital stock, a variable provided by the IMF. In the next 20 years, the Andean countries will also have to make a disbursement for infrastructure maintenance. This expenditure should include both new and existing infrastructure. The average impact of these expenditures on GDP has been 3.89 percent for Peru, 3.06 percent for Colombia, 3.10 percent for Ecuador, and 4.39 percent for Bolivia.

Figure A2.1.3: Colombia's Investment Path to Closing the Long-Term Basic-Access Infrastructure Gap, 2019–38 (% of GDP)
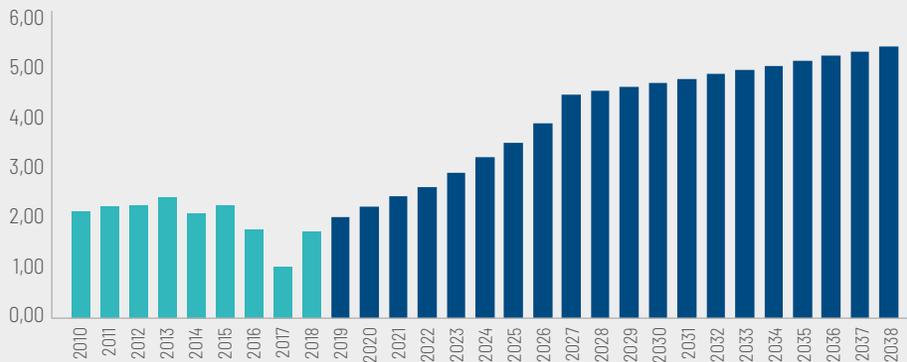
Source: prepared by the authors on the basis of data from IMF, Infralatam; World Bank, World Development Indicators (2019).

Figure A2.1.4: Peru's Investment Path to Closing the Long-Term Basic-Access Infrastructure Gap, 2019–38 (% of GDP)
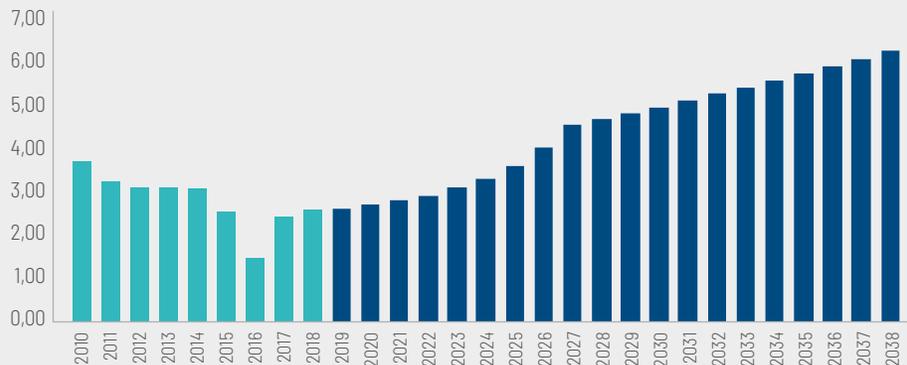
Source: prepared by the authors on the basis of data from IMF, Infralatam; World Bank, World Development Indicators (2019).

Annex 2.2
Transformational projects

The gaps must be closed by investing in high-impact projects that address the most pressing needs in the various infrastructure sectors, thereby boosting the economy and improving the population's quality of life. In this regard the IDB has identified a set of potentially transformational projects that would give value to the existing infrastructure stock, improve the integration of the Andean countries' various subregions with the rest of the world, heighten efficiency in service provision, help raise the productivity of the economy, and bring about improvements in citizens' quality of life, including greater social equity. These programs entail an investment of at least US$63 billion. It should be noted, however, that these projects are in addition to the effort that must continue to be made, for example, in national generation and distribution, progress on national river networks, and so on.

Water and sanitation

Universal coverage is a priority in the water sector, with a view to bringing the countryside into the service. This would make it possible to improve public health and reduce diseases (infectious, respiratory, gastrointestinal), as well as infant mortality, thereby improving the population's quality of life and increasing its productivity. It would also foster new spaces for real estate ventures with an economic and social impact, and would reduce labor costs. Investments in this area include the Todos Somos Pacífico Plan in Colombia, the Rural Water and Sanitation Program in Ecuador, and integrated rural intervention programs (which go beyond access to water and sanitation) in Bolivia, Colombia, and Peru.

A second area of action would encompass better resource management, with the handling of traffic from the mountains and the ocean to the city. This would make it possible to narrow the deficit in drinking water and optimize regional water security. Countries could therefore lower the fixed costs of service provision, reduce the water supply volatility caused by atmospheric conditions, and use technology to increase the availability of drinking water. Projects in these areas are connected to the plan for the adaptation and modernization of water resource management in Peru, the Program to Improve the Quality and Control of Water Resources in the Rimac River Basin, and the program for alternative water sources on Peru's Pacific Coast.

In parallel, it is important to work on cleaning and decontaminating the basins. This would make it possible to increase the efficiency of the productive sectors and services using water resources, expand green spaces, encourage the orderly growth of land use, improve public health, and increase biodiversity. Interventions in this area include the integrated program to improve the quality of water resources in the Bogotá River basin, the comprehensive development of urban water supply and sewerage companies in Colombia, the program to decontaminate the Quito rivers (Vindobona) in Ecuador, the program to improve the quality of water and sanitation services among Peru's service providers, and the Rocha River basin integrated cleanup program in Bolivia.

Finally, the region needs to invest in solid waste management. This would make it possible to reduce GHG emissions (mainly methane), air and aquifer pollution, and soil contamination around open-air dumps, as well as to improve public health by reducing or eliminating vectors of disease. That in turn would enable countries to integrate neglected areas for the purpose of building houses, generating power with methane gas, and providing incentives to nurture the recycling industry. In this regard it is worth mentioning Ecuador's Integrated Solid Waste Management Program.

Logistics and transportation

In the transportation sector it is a priority to improve regional connectivity to link the coast and the mountains. This would be key to improving the region's competitiveness, increasing connectivity and accessibility, and reducing logistics costs and travel times. Export capacity would be increased, and new production and service enterprises would be created. The projects identified in this area are associated with the rail connection between Buenaventura Port and Santa Marta Port in Colombia, the section between Quito and Santo Domingo and the logistics corridors project in Ecuador, and the upgrading and maintenance of the East-West Logistics Corridor in Bolivia.

In parallel, the region must work on regional river integration with a view to improving interoceanic connectivity and increasing accessibility to the Atlantic and Pacific oceans. As in the previous case, this would make it possible to reduce logistics costs and increase export capacity. It would also help develop areas adjacent to waterways. The main project in this area is the intermodal rail-river connection (Roboré-Puerto Carmelo-Rosario) between Bolivia, Paraguay, and Argentina.

Finally, it is essential for the region to move towards sustainable urban mobility. These investments would alter urban development patterns, increase traffic speed, and lessen congestion, which at the same time would reduce pollution and fatal accidents. In this respect one strategy is to encourage the efficient use of multimodal transport, promote the use of technology (in vehicle operation, fleet control, pricing, and supply and demand management, among other areas), and reduce GHG emissions. Representative projects identified in this area are: the country program for fleet renewal in Bolivia, strengthening the integrated regulation of urban and regional transportation in Colombia, the Quito rapid transit bus service, and complementary public transport projects in Quito and other cities in Ecuador. In Peru, it is worth noting the railway on Lima's outskirts, further development of the metro network in Metropolitan Lima and Callao, the upgrading of interurban road connections for access to the capital, and integrated systems for sustainable urban mobility.

Energy

In the energy sector it will be a priority to deepen energy integration. This will make it possible to exploit sectoral economies of scale and the strategic positioning of certain resources in the region. It would also facilitate the opening of new regional markets, contribute to greater energy security, and enable the exploitation of regional hydrological complementarity. Consequently, efforts would be made to optimize the use of energy resources for national production and to reduce the marginal cost of electricity. Opportunities would also arise from greater interest in the development of productive projects, thanks to the reduction or stabilization of energy costs and to greater service reliability and quality. In Colombia, the projects identified include universal access and regulatory reform of the wholesale energy market, regional energy integration, and digitization. Worth noting in Ecuador is regional electrical integration using renewable energy and universal access to energy. In Peru, it is worth mentioning the 500kV Peru–Ecuador electrical interconnection and the southern gas pipeline. Finally, note the electrical interconnection between Bolivia and Brazil.

A second area is clean energy—that is, zero carbon dioxide (CO_2) emissions. This strategy would allow for the efficient use of available renewable resources, the reduction of pollution caused by GHGs, an improvement in energy security, and wider coverage in remote areas. That would open the door to the prospect of clean electricity exchanges between regions, and would facilitate urban decentralization. Notable in this respect are the Colombian Caribbean energy

efficiency program, the zero fossil fuel programs in the Galapagos Islands, the mass use of efficient electricity in Ecuador, and electrification of Iquitos with renewable sources.

A final matter in the field of energy is the exploitation of lithium. This would boost foreign direct investment (FDI) and could be the first step towards industrial development in the sector. Moreover, the region could take advantage of this resource to create a cluster around the sector. This includes the sustainable exploitation of lithium in Bolivia and Peru.

Information and communication technologies

In the digital field, the fundamental step is to adopt a national strategy or agenda on this issue. The agenda begins with a review of the institutional, legal, regulatory, and policy framework. This could be expected to boost the demand for broadcast frequencies and thereby yield resources through bidding. These resources could help finance the investment requirements, which are estimated at US$4.2 billion in public investment, complemented by US$11.7 billion in private capital (of which US$6.6 billion would be related to acquisitions in the broadcast spectrum). The institutional reforms required depend on conditions in each country.

This initiative must neither replace nor displace the efforts needed in social infrastructure. This chapter has focused on production infrastructure. Nonetheless, as de la Cruz, Andrián and Loterszpil (2016) have shown for Colombia, upgrading social infrastructure is one of the essential aspects of improving the population's quality of life and helping consolidate the vulnerable middle class. The development of adequate health and education services in Colombia, therefore, is also a highly important tool of social infrastructure. In the health sector, the investment needed to improve access to and the quality of services is estimated at 0.075 percent of GDP a year over 20 years, while the investment required in education would be around 1.3 percent of GDP over the same period.

Annex 2.3
Statistical information on infrastructure investment

As Serebrisky et al. (2018) argue, reliable information is not always available, even for public investment. Data provided by the system of national accounts and information from the general state budget both have their advantages and disadvantages. This is because the criteria used for investment accounting are not uniform, since the quality of the institutions entrusted with devising them is variable. Information is scarcer in the case of private investment (mainly PPP projects), because usually the only option is to compile data on a transaction-by-transaction basis, with little margin for determining whether the sources are fully reliable.

The International Monetary Fund's (IMF) Investment and Capital Stock Database estimates the evolution of public and private capital stock in 170 countries based on their GFCF statistics. The Fund's estimates are grounded on a series of assumptions about countries' initial capital stock, which is assumed to be equal to 0 in 1960. Capital series are built from that year onwards, with annual investment amounts that grow nominally at a rate of 4 percent a year until they reach the first observed value of the series for each country. The IMF database makes several assumptions about the rate of asset depreciation, establishing distinct scenarios for different groups of countries. For middle-income countries (a group to which all the Andean economies belong), the rate of depreciation of public capital is assumed to increase steadily from 2.5 percent in 1960 to 3.55 percent in 2015. For private capital, by contrast, the IMF series uses a depreciation rate that increases uniformly from 4.25 percent in 1960 to 8.3 percent in 2015.

The IMF database also includes a series on capital stock in the form of PPPs. In the case of middle-income countries, this is compiled on the basis of information in the PPI database (see below). The methodology used to devise this series is also based on a series of assumptions about the initial capital stock under PPPs, which takes a value of 0 in the year immediately before the first observation included in the PPI database. This series assumes the same rate of depreciation of public capital stock. It is worth mentioning that, for the purposes of this study, a limitation of the IMF database is that it does not have a series on capital stock in infrastructure because it does not disaggregate the different components of GFCF on which it is built. See https://www.imf.org/external/np/fad/publicinvestment/data/info122216.pdf.

The Private Participation in Infrastructure Database (PPI), compiled by the World Bank, provides information on nearly 8,000 infrastructure projects implemented in 139 low- and middle-income countries in all regions from 1984 to the first half of 2018 (the version available for October 2018 was downloaded). This database records investment in the year in which financing was completed. The projects included have been classified in the transportation, energy, telecommunications, water and sewerage sectors, so most of the amounts recorded in the database can be deemed to be infrastructure investment. The projects included are those in which: a) the private sector assumes a significant share of the operating risk; b) the private sector has at least a 20 percent share in the investment contract; c) the project serves the general public, directly or indirectly; and d) the project was financially closed after 1983. The PPI is the most comprehensive source of statistical information available, but it should be acknowledged that it might be underestimating private investment: not all PPP projects disclose the same information (especially smaller projects), and commitments arising from renegotiations are not always made public (Serebrisky et al., 2018). For more information, see https://ppi.worldbank.org/en/methodology/ppi-methodology.

The Infralatam initiative is an effort to use uniform criteria to calculate the amount of investment in economic infrastructure (water, energy, telecommunications, and transportation) in LAC economies. To that end it uses data from the state budgets of 20 countries in the region: Argentina, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Trinidad and Tobago, and Uruguay. Infralatam includes the following types of investment: a) new projects or upgrade and expansion projects; b) replacement projects; c) preinvestment expenditures; d) maintenance expenditures. Infralatam's added value is mainly that it excludes current spending from the calculation (some countries in the region count this as investment when it is related to an infrastructure project) and it subtracts the amounts allocated to social infrastructure from the national statistics (education, health, housing, and so on). Infralatam is complemented with data from the PPI database so as to include information on private investment in infrastructure (not projects that are cancelled, in dispute, or that involve payments to governments, among others). For more information, see http://www.infralatam.info/.

Chapter 3
Infrastructure financing:
the need for public impetus and
where to find it

The preceding chapter made the case for increased investment in infrastructure as the main vector of accelerated growth in the region. In this chapter we show how that increase can be financed. We begin by detailing the main fiscal challenges facing the countries of the region. The second part of the chapter analyzes the main problems underlying those challenges. Finally, the third part makes a series of policy recommendations to address the problems.

The countries of the region need a strategy to create fiscal space in order to meet their growth targets. The nature of tax policies affects the quality of economic growth. The sources of public revenues, as well as their use for different purposes, have different effects on efficiency and equity, incentives to save, the targets of both public and private investment, and the growth of economic activity and employment.[1] For example, shifting tax burdens from indirect to direct taxation could not only improve equity but could also help reduce economic inefficiencies. High taxes on natural resources could have the harmful effects of fiscal laziness, inefficient tax administrations, excessive tax concessions, and scant concern with reform. To date, rather than using tax systems to improve equity and income distribution, the countries of the region have relied on transfers and subsidies for that purpose, to dubious effect.

The Andean countries must identify the main reasons for inefficiencies in taxation. This entails increasing the revenue capacity of those sources that account for the widest structural differences relative to developed economies and to their

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1   On the academic approaches to these impacts, see J. Mirrless, An Exploration in the Theory of Optimum Income Taxation, *The Review of Economic Studies 38*, No. 2: 175–208, 1971; D. Foley, K. Shell and M. Sidrauski, Optimal Fiscal and Monetary Policy and Economic Growth, *Journal of Political Economy 77*, No. 4, Part 2: Symposium on the Theory of Economic Growth, 698–719, 1969; M. Golosov, A. Tsyvinski and I. Werning, New Dynamic Public Finance: A User's Guide, in: D. Acemoglu, K. Rogoff and M. Woodford (eds.), NBER Macroeconomics Annual 2006, Vol. 21 (available at http://www.nber.org/chapters/c11181).

own revenue potential (such as personal income tax and subnational revenues), combatting tax evasion, and tackling evasion that stems from the extent of informal business activity. All of this aims to secure a progressive, neutral, and simple tax system. Fiscal policies geared to improving public revenues, including those from social security contributions, must address the increasingly strong pressures of demands on health and pensions systems arising from the gradual ageing of the population, and the waning of the demographic bonus.[2] The most recent tax reforms in the Andean countries have not tackled these matters, nor have they spurred significant increases in public revenues (see Box 3.1).

There is a need to consider a new direction for tax systems and revenue policies. The impacts of globalization, as well as the high degree to which tax revenues depend on the prices of natural-resource exports, make it necessary to review tax regimes and policies on public revenues. Responses to globalization have been associated with lower corporate income taxes, significant tariff cuts, and lower tax rates to attract foreign investors. Governments thus began to rely increasingly on consumption taxes, particularly value added tax (VAT). The latter can have regressive and adverse distributional effects, especially for poorer households and among the more vulnerable middle classes. In the future, tax regimes should be geared towards greater progressivity, which has been held back by the distribution of income through transfers and subsidies. Improving tax systems to foster investment and employment means, first of all, reducing taxes on labor and investment. Second, this goal entails implementing policies that increase equity in income distribution and achieve greater social inclusion. The problem of limited efficiency in public spending must also be addressed. Countries should use more transparent decision-making systems that ensure certainty and appropriateness in employment and government procurement.

The countries of the Andean region collect little and do so badly. According to a report on taxes in the Development in the Americas series,[3] "collection is very low, taxes are barely progressive, tax evasion is rampant, and tax administrations are very weak: these four features are usually used to describe the tax structure in Latin American countries" (p. 3). Levels of tax collection in the Andean countries, as in other LAC countries, are below their revenue potential. The gaps between current and potential revenues could be narrowed, fostering an increase in investment. A

2   World Bank, OECD and IDB, *Pensions at a Glance: Latin America and the Caribbean,* Washington, D.C.: IDB, 2016.

3   A. Corbacho, V. Fretes Cibils and E. Lora (eds.), *More than Revenue: Taxation as a Development Tool,* Washington, D.C., IDB, 2012.

pro-growth fiscal strategy in the region necessarily involves a substantial increase in collection through wider coverage, as well as greater technical efficiency in the main taxes, so as to boost their revenue capacity. This strategy must also empha-size tax fairness and the reduction of inequality. At the same time, each country could make significant savings by improving the efficiency of public spending. There are wide gaps between potential and current levels of revenue. The coun-tries should introduce appropriate policies to increase collection, with margins that are consistent with investment needs, as well as to push the region's growth above its historical rates. Growth in the collection of public revenues over the medium and long term could yield gains in fiscal space of between 5 and 6 percent of GDP. These gains could be made simply by improving the collection of personal income tax, reducing evasion and avoidance, and increasing local tax revenues.

Efficient public spending[4] is crucial in promoting long–term economic growth and improving equity. Efficiency in public spending can be divided into i) technical efficiency,[5] which deals with inefficiencies in each spending component; and ii) al-locative efficiency, which aims to prioritize among alternative spending items on the basis of evidence, and to allocate spending to programs with higher rates of return.[6] Using the methodology of Izquierdo, Pessino and Vuletin (2018), we will analyze tech-nical efficiency in three key components that make up the government's production costs in providing goods and services to citizens: procurement expenditures, pub-lic-sector wages, and the costs of subsidies and transfers. This analysis of technical efficiency assumes a reasonable allocation of spending by function, and therefore provides estimates of the direct waste of resources reflecting a cost overrun or the overuse of resources for a given outcome. The issue of allocative efficiency in centralized and decentralized spending will be addressed later in this chapter.

Tax reforms must rest on efficient tax administrations. A priority issue for tax sys-tems is enforcing compliance with tax obligations. Weak tax administrations, which abound in the countries of the region, greatly facilitate tax evasion and avoidance. They also place severe constraints on tax revenues that could be used to increase public investment and reduce social inequalities. Hence it is crucial to ensure inde-pendent and modern tax and customs administrations staffed by qualified personnel.

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4   Efficiency is a way of doing more with less: hence the need to maximize the products, minimize the cost of inputs, and maintain or improve the quality of the end result.

5   Technical efficiency in public spending considers how many more inputs than necessary are used to obtain a result, or how much it costs to carry out a program while maintaining a certain level of quality, relative to other years or countries.

6   A. Izquierdo, C. Pessino and G. Vuletin (eds.), 2018.

The staff should be adequately paid, and there should be a system of public financial management that guarantees transparency and accountability. Ensuring greater coverage and procedural transparency will also have very positive effects on public confidence and the behavior of economic agents (for example, on incentives to work in the formal sector, to save or to invest), social equity, and income distribution. With the same aim of encouraging fiscal transparency and reducing evasion, the countries of the Andean region should join current trends on the exchange of tax and banking information led by the Organization for Economic Cooperation and Development (OECD) and the G20.[7]

Strong fiscal institutions are needed to manage spending and revenue properly. In macro terms, medium-term fiscal frameworks, fiscal rules that protect investment spending, and independent fiscal councils are needed to ensure fiscal sustainability over the medium term, but they are also necessary to monitor key public policies, the quality of spending, and consistency of policy objectives between revenues and expenditures. At the micro level, improving management systems for the main expenditure items, medium-term spending frameworks, and offices to oversee the quality of spending are essential to improving the efficiency of spending and thus its impact on fiscal policy objectives.

Fiscal pacts for collection and growth. Growth is the best way of increasing revenue and creating productive jobs, and of responding to demands for better services. In this context, and given the importance of these issues, countries will have to pursue fiscal pacts that support and sustain tax reforms capable of encouraging efficiency and equity. Distortionary taxes should be eliminated gradually, and highly inequitable tax exemptions and deductions that discourage fiscal discipline should be ended. It will be essential to show that an effort is being made to increase revenue, instituting tax systems based on broader taxation, a progressive reduction of burdens for those who already pay taxes, and greater equity as a result of a more effective redistribution of the tax burden in favor of the most vulnerable and those with fewer resources. Once there is agreement on their basic characteristics, these pacts would make it possible to improve fiscal sustainability, create public investment resources that consolidate economic growth, enhance the population's quality of life, and place the Andean countries among the ranks of developed economies within a generation. In general, fiscal pacts should form part of broad social agreements and covenants that extend beyond a term of government and underpin confidence in public institutions.

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7   OECD, *Standard for Automatic Exchange of Financial Information in Tax Matters*, Paris, OECD, 2017 (available at www.oecd.org).

Box 3.1: Tax Reforms in the Countries of the Andean Region

The tax measures and reforms of recent years have not increased revenues significantly. Since 2010, most LAC countries, and particularly those in the Andean region, have engaged mainly in tax modifications but with few reforms. Ecuador has implemented the most modifications and reforms. It undertook modifications in several years (2010, 2012, 2013, 2014, and 2015) but implemented only one tax reform (2011). Bolivia also implemented several tax modifications (2010, 2011, 2013, 2014, and 2015) but no reforms. In Colombia, the changes implemented in 2013, 2015, and 2018 were tax modifications, and those in 2010 and 2014 were reforms. Peru has made the fewest changes to its tax regulations: it implemented modifications in 2011, 2014, and 2015, and only one reform in 2012. In most cases, the measures have focused on altering the design of corporate income tax, VAT and excise taxes, or on creating new taxes, tax benefits or special regimes. In Ecuador, administrative data show that medium and large companies, and those that are mainly in the mining and hydrocarbons sectors, carry out intensive planning that allows them to pay a wide range of effective rates, which are not evident in smaller companies or in the commerce and services sectors. If these distortions were corrected, the gains in fiscal space could amount to 1.2 percent of GDP. Bolivia has various taxes on company earnings, or that place firms in certain sectors at a disadvantage, such as the hydrocarbons or financial sectors. Financial intermediation companies, for example, must pay an additional 25 percent of their profits in taxes. The mining companies have paid an additional charge of 12.5 percent of their profits in taxes since 2008. Moreover, Bolivia taxes the profits of firms that remit funds abroad at a rate of 50 percent of the total remitted. This provides just 0.4 percent of GDP in revenue.

Main characteristics of the Andean region's tax systems

The countries of the Andean region share a tradition of limited tax collection. Tax revenues in the Andean countries, including from domestic taxes, remain below the OECD average and those of the other LAC countries (see Figure 3.1). At the end of 2017, their tax revenues amounted to 16 percent of GDP,[8] which is below the average for the rest of LAC (18 percent of GDP in 2017), and far below the average for the OECD countries (26 percent of GDP in 2017). The reasons why the tax burden is lower in the countries of the Andean region than in the more developed countries include the limited role of direct taxes, the narrow bases of the various taxes, numerous exemptions, and a high level of evasion.[9] An OECD country collects about 6 percent of GDP in personal income taxes,[10] whereas the Andean region collects 1 percent.[11] Rates of nominal corporate income tax have remained stable at between 22 and 33

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8   General government coverage (central government plus subnational governments).

9   ECLAC, *Reforma fiscal en América Latina:¿qué fiscalidad para qué desarrollo?* Santiago, Chile, ECLAC, 2012.

10   Refers to central government coverage.

11   Worldwide, few poor countries manage to raise more than 3–4 percent of GDP through income taxes on individuals and businesses. In contrast, governments in rich countries often raise more than 15 percent of GDP from these sources. See Corbacho, Brito and Osorio Rivas (2012).

percent of taxable income, and most of the revenue comes from earnings on mining.[12] Because of this, and because the design of personal taxation affects sources of investment financing, it is estimated here that average effective rates[13] rose from 21.5 percent in 2007 to 26 percent in 2019. As Table 3.1 shows, the minimum and maximum marginal rates of personal taxes in the Andean countries are below those in the OECD countries. At the same time, in countries with incomes similar to the OECD, the annual income required to reach the minimum tax rate is equivalent to between 20 and 50 percent of per capita income. In the Andean region, the threshold is more than 90 percent of per capita income and can be twice as much, as in Colombia. In Colombia and Ecuador the minimum rate is 0 percent, and in Bolivia most of the income can be deducted with purchases subject to VAT.[14] The income required to reach the maximum marginal rate is between seven and 19 times per capita income in the Andean countries, while in the OECD it is a maximum of four times.[15] Few taxpayers, therefore, are subject to the maximum rate, and individuals with very high incomes are often not taxed at general rates because their income is in the form of exempt or lower-rate capital income. Benefits and deductions on certain personal expenses comprise another factor leading to a significant reduction in revenue from personal income tax. This happens even when there is an exempt minimum or a zero-rated bracket that supposedly performs this function. It is also common for pensions to be exempt, leading to a duplication of tax benefits.[16]

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12 Bolivia, Colombia, Ecuador, and Peru, with tax burdens close to or higher than the regional average, supplement their tax revenues with non-tax resources from the exploitation of hydrocarbons or minerals. In Bolivia and Ecuador, about 30 percent or more of total tax revenues come from the exploitation of gas in the former and oil production in the latter three. This kind of fiscal revenue is less important in Colombia and Peru, but in those countries 11.5 percent and 7.1 percent of government expenditures, respectively, are financed with such resources. We should mention Bolivia's direct tax on hydrocarbons, which was approved in 2005, and nationalization of hydrocarbons in 2006. For Ecuador, note the reform of the Hydrocarbons Law in 2010. This stipulated that oil contracts should be renegotiated so that the government could capture 100 percent of any increases in oil prices. See Instituto de Estudios Fiscales and Agencia Española de Cooperación Internacional para el Desarrollo (2017).

13 Simple average of the average rates of all assets and financing sources for the Andean countries. Surcharges or special regimes for specific sectors are not considered.

14 Bolivia does not have a personal income tax in the standard sense, but it does have a tax on the income of dependent workers, known as the Complementary Regime to the Value Added Tax. This applies to employees in the public or private sectors who receive a monthly salary and is levied at a rate of 13 percent of the net salary—that is, free of social benefits and other standard deductions. The regulation for this tax states that incomes below Bs.9,440 (about US$1,350), as well as discounts for social security contributions, shall be exempt from the monthly discharge of this tax. Those earning above that threshold must settle with accounts from the last four months, pay the tax, or have it withheld by their employer.

15 Consequently, an unmarried person with no dependents who earns the average wage pays no income tax in the Andean region, whereas in the OECD that person would pay between 8 and 20 percent of gross income.

16 A. Corbacho, V. Fretes Cibils and E. Lora, 2012.

Figure 3.1: Tax Revenues of Andean Countries versus Latin America and the Caribbean, and OECD Countries, 1990–2017 (% of GDP)
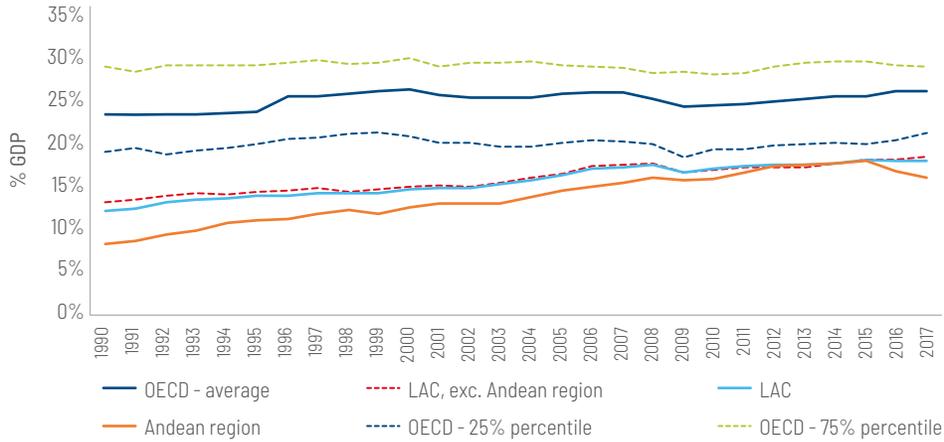
Source: OECD.Stats.

Note: simple average of the countries in each group. Sum of central government and subnational government tax revenues. Excludes social security contributions. LAC and the Andean region exclude Venezuela. The OECD average is simple and excludes Chile and Mexico. Figures are net of refunds.

Figure 3.2: Nominal Corporate Income Tax Rates in the Andean Countries and Other Regions
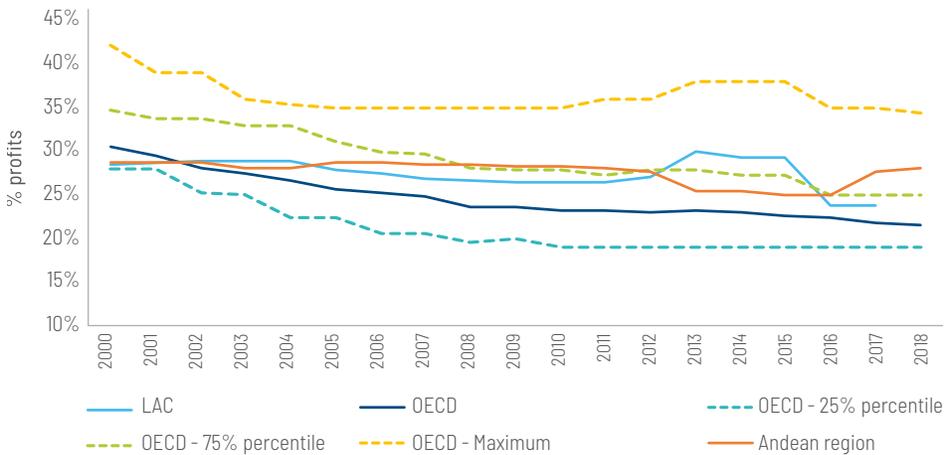
Source: prepared by the authors on the basis of data from CIAT (2018) and OECD.Stats.

Notes: OECD is the simple average of the countries in the group. The OECD average excludes Chile and Mexico. LAC and the Andean region exclude Venezuela. If the system is progressive, refers to maximum rates. Excludes surcharges (in the case of Colombia this does not include CREE, which had a rate of 9 percent). Data are for the central government.

Table 3.1: Parameters and Indicators of Personal Income Tax in the Andean Countries and Selected OECD Countries, 2017

	Country	1	2	3	4	5	6	7	8	9	No. of times per capita income to reach minimum rate	No. of times per capita income to reach maximum rate	Average income tax rate, unmarried individual with no children earning average wage (% of gross income)*	Revenue (% of GDP, 2017)
Second OECD quartile	Italy	23%	27%	38%	41%	43%					0.5	2.6	20%	9,2%
	Israel	10,0%	14,0%	20,0%	31,0%	35,0%	47,0%	50,0%			0.5	4.4	10%	6,8%
	New Zealand	10,5%	17,5%	30,0%	33,0%						0.2	1.2	18%	12,1%
	Spain	9,5%	12,0%	15,0%	18,5%	22,5%					0.5	2.4	8%	3,4%
First OECD quartile	Slovakia	19,0%	25,0%								n.d.	2.3	11%	3,4%
	Turkey	15,0%	20,0%	27,0%	35,0%						0.3	2.9	13%	3,2%
	Portugal	14,5%	28,5%	37,0%	45,0%	48,0%					0.4	4.3	16%	6,1%
	Estonia	20,0%												
	Peru	8,0%	14,0%	17,0%	20,0%	30,0%					0.9	8.3	0%	1,9%
	Ecuador	0,0%	5,0%	10,0%	12,0%	15,0%	20,0%	25,0%	30,0%	35,0%	1.8	18.5	0%	0,9%
	Colombia	0,0%	19,0%	28,0%	33,0%						1.9	7.0	0%	1,2%
	Bolivia	13%									n.d.	n.d.	0%	0,2%
Indicators						Brackets								

Source: authors' calculations on the basis of information from CIAT (2018), WEO (IMF), OECD.stats and OECD (2016).

Notes: considers only the rates, thresholds, and average rates for the central government.

* Data for 2013 (Andean region) and 2017 (sample of OECD countries).

The tax systems are not conducive to equity, but rather to narrow tax bases. Tax revenue in the Andean countries originates mainly in indirect taxes; more than half of revenue comes from consumption taxes and other indirect levies. This suggests that the tax burden is biased towards taxes that are not necessarily progressive, such as VAT, which are the most important source of revenue.[17] The most significant differences between the region and the more developed countries are in the area of income taxes and social security contributions, which are much less prominent in the Andean region (see Figure 3.3). The Andean economies collect an average of 9.6 percent of GDP in indirect taxes, which is fairly similar to the OECD average (11 percent). Average revenue from personal income taxes amounts to 8.6 percent of GDP in the OECD, and an average of 1 percent of GDP in the Andean region Tax structures are biased against labor income because all nominal rates on labor (that is, social security and personal tax) are higher than nominal rates on capital, and because *the effective* rates of tax on labor are higher than those on capital in most countries of the region.[18] Hence it can be said that, excluding social security contributions, gaps in revenues from personal income tax (especially for individuals) and the bias in favor of capital income explain most of the differences in tax revenues between the Andean countries and the developed economies.[19]

The tax systems are not conducive to equity but rather to narrow tax bases.

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17   It should be recalled that, in order to assess the degree of equity, it is also important to consider the redistribution effected through spending. VAT may be regressive, but if the social spending financed by the revenue is channeled to those sectors of the population in the first deciles of the income distribution, the net effect could eventually be favorable in terms of income redistribution. See L. Villela, A. Lemgruber and M. Jorratt, Los presupuestos de gastos tributarios: conceptos y desafíos de implementación, Working Paper IDB-WP-131, Washington, D.C., IDB, 2009.

18   A. Corbacho, V. Fretes Cibils and E. Lora, 2012.

19   *Ibid.*

The high degree of informality is an important ingredient in the narrowness of tax bases. In Colombia, 54 percent of microenterprises do not pay taxes, and more than 50 percent do not keep accounting records or have a business registration.[20] In Peru, more than 50 percent of microenterprises were informal from a tax standpoint in 2016.[21] The reasons for this are complex: worker informality responds to disincentives related to both the supply of and demand for formal-sector labor. Labor and tax regulations favor business informality. In general, a situation has arisen in which there are various tax burdens on formal labor, creating incentives for firms and workers to continue in the informal sector with low-productivity activities.[22] According to information from the IDB's Labor Markets and Social Security (SIMS) database and on the basis of Bosch, Melguizo and Pagés (2013), employers' social security contributions, bonuses, vacation pay, and dismissal costs[23] account for 16 percent of worker productivity in Bolivia, 10 percent in Colombia, 9 percent in Ecuador, and 14 percent in Peru. High labor costs can also affect the formal labor supply if workers do not properly appreciate the benefits of having social security schemes—that is, if the "formality tax" is regarded as higher than the benefits.[24] The policy solutions to encourage the formal registration of business and payment of taxes foster formality, but also limit firms' growth and productivity.[25]

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20   Ministry of Commerce, Industry and Tourism of Colombia (undated).

21   Ministry of Production of Peru (2017).

22   V. Alaimo, M. Bosch, D. S. Kaplan, C. Pagés and L. Ripani, *Jobs for Growth*, Washington, D.C., IDB, 2015.

23   Includes only severance. Excludes costs for notice of dismissal.

24   If employees do not value the benefits obtained (for example, if the health care provided is poor), they might think that they would be better off with a higher informal salary and stop receiving the services they get by working in the formal market. See E. Cavallo and A. Powell (eds.), *2018 Latin American and the Caribbean Macroeconomic Report*, Washington, D.C., IDB, 2018.

25   In particular, simplified tax regimes to encourage the formalization of micro and small enterprises determine business growth and productivity. See E. Cavallo and A. Powell (2018).

Figure 3.3: Composition of Tax Revenues in the Andean Countries, Latin America and the Caribbean, and OECD Countries, 2017
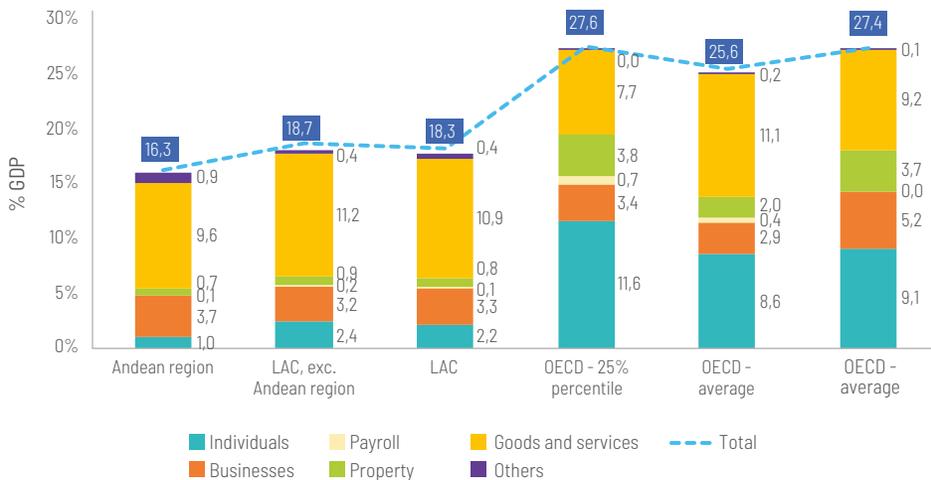
Source: OECD.Stats.

Notes: simple average of the countries in each group. Sum of central government and subnational government tax revenues. Excludes social security contributions. LAC and the Andean region exclude Venezuela. The OECD average is simple and excludes Chile and Mexico. Figures are net of refunds.

Tax expenditures, in addition to reducing public revenues, introduce distortions into resource-allocation and are not conducive to equity. In theory, tax exemptions aim to pursue certain economic policy objectives, such as encouraging savings, stimulating employment, or protecting industry through total or partial tax waivers. Tax expenditure is thereby established and the principles of efficiency, equity, and simplicity in the tax structure are affected.[26] According to CIAT,[27] for the governments of the region, tax benefits granted to companies in the form of tax deductions and exemptions have amounted to a sacrifice of 0.12 percent of GDP in Bolivia, 0.65 percent in Colombia, 1.2 percent in Ecuador, and

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26 Tax incentives refer to tax benefits in the form of taxes and levies that take different forms, such as exempt income, additional deductions, accelerated depreciation, preferential rates, tax credits, deferrals, and others, which apply to certain types of investments, economic sectors or geographic areas.

27 CIAT, Tax expenditure database, Panama City, CIAT, 2018 (available at https://www.ciat.org/tax-expenditures/?lang=en).

0.15 percent in Peru.[28] Understood as a spending policy applied through the tax system and outside the regular budget process,[29] tax expenditures as a proportion of central government budgetary spending stand at 3 percent in Bolivia, 7 percent in Colombia, 10 percent in Peru, and 20 percent in Ecuador.[30] Tax expenditures have a negative impact on horizontal and vertical equity because they favor specific groups of taxpayers, sectors or activities over the general tax regime. They also impair the transparency of tax monitoring and enforcement mechanisms.[31] Tax expenditures also account for a significant proportion of potential revenue lost in the case of indirect taxes, and they are vulnerable to deductions that favor higher-income strata. For example, it is estimated that households in Colombia's richest decile devote 31 percent of their total spending to tax-exempt goods, and more than 60 percent of it to goods that are taxed at the lowest rate. Similarly, in Colombia and Peru, 90 percent of tax expenditure on VAT (on food, beverages, and medicines) leaks to non-poor households, while the richest 60 percent are allotted 80 percent and 74 percent, respectively, of the expenditure in those countries (see Figure 3.4). These leakages are equivalent to fiscal resource losses of about 1 percent of GDP in Colombia and 0.1 percent in Peru.

28 These take different forms, including: preferential rates for certain activities (such as 15 percent for agricultural activities in Peru), sources of financing (such as the 10 percentage-point reduction in the nominal rate for reinvestment of profits in Ecuador), and more general benefits such as the refund of certain taxes, for example, in Peru, or special depreciation for investments and so on.

29 L. Villela, A. Lemgruber and M. Jorratt, Los presupuestos de gastos tributarios: conceptos y desafíos de implementación, Working Paper IDB-WP-131, Washington, D.C., IDB, 2009.

30 ECLAC, Reforma fiscal en América Latina:¿qué fiscalidad para qué desarrollo? Santiago, Chile, ECLAC, 2012.

31 As serious as the lack of progressivity is that individuals or companies with similar income levels or earnings pay very different effective tax rates. It is possible to collect more with lower nominal rates, since this makes it possible to eliminate exemptions and special schemes that not only erode revenues but also distort investment and production decisions yet further. See A. Corbacho, V. Fretes Cibils and E. Lora (2012).

Figure 3.4: VAT Tax Expenditures Leakages (%)

Colombia

- Non-poor
- Poor

- 60% richest
- Remainder

Peru

- Non-poor
- Poor

- 60% richest
- Remainder
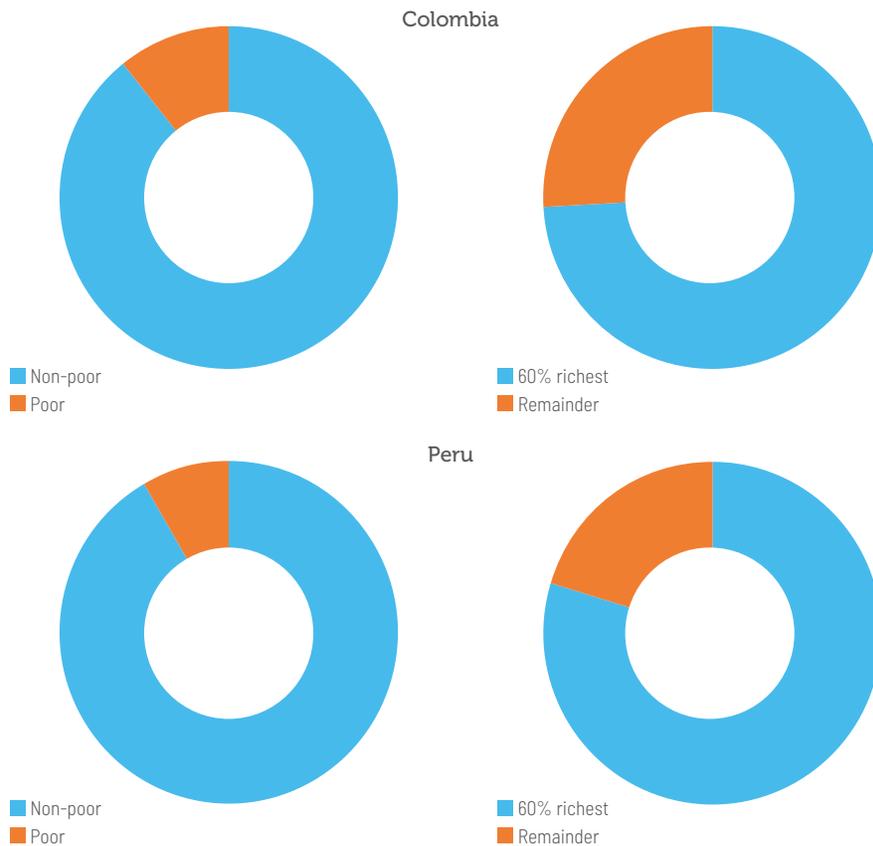
Source: prepared by the authors on the basis of information from Izquierdo, Pessino and Vuletin (2018).

Subnational revenues can grow significantly. Decentralization processes have gathered pace in the Andean region since 2000, and with them the widening imbalances between spending and revenues.[32] Local governments in the region are highly dependent on central government transfers, which are usually unrelated to revenue performance. These governments, moreover, have very little autonomy to determine their taxes, and they do not create proper incentives to improve their own take. At the same time, subnational governments have been assigned important responsibilities in the provision of education, healthcare, water and

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32 In Bolivia, Ecuador, and Peru, the gap between subnational governments' spending and revenues doubled between the start and end of the decade. See A. Corbacho, V. Fretes Cibils and E. Lora (2012).

sanitation services, and public investment, among other matters.[33] In 2017, tax collected by subnational governments in the Andean countries[34] averaged about 1.5 percent of GDP, which is higher than the LAC average (excluding Brazil, where it was 9.8 percent of GDP, and Argentina, with 5.5 percent of GDP). Subnational governments in Bolivia and Colombia have the highest take (1.2 percent and 3.3 percent of GDP, respectively), while Ecuador and Peru are lagging, collecting about 0.5 percent of GDP at the subnational level. Additionally, because of the unequal distribution of the tax base in the Andean region, subnational receipts are concentrated in a few cities and territories. For example, four cities in Bolivia (La Paz, Santa Cruz, Cochabamba, and El Alto) raise almost three-quarters of total municipal revenues. Similarly, five cities in Colombia (Bogotá, Medellín, Cali, Barranquilla, and Cartagena) collect almost two-thirds of total municipal revenues. In Ecuador, two cities (Quito and Guayaquil) receive about half of municipal tax revenues.[35] As regards tax burdens by tax type, property tax provides the most resources to local governments. This tax also has great potential to increase revenue. Receipts from this tax, however, account for just 0.8 percent in Colombia, 0.25 percent in Ecuador, and 0.3 percent in Peru. The modest take stems from the limited productivity of the tax,[36] which in turn is a result of low coverage rates, outdated land registries, and obsolete assessment methods that do not capture the market values of real estate. In Colombia, for example, 50 percent of rural properties are not registered, properties are undervalued by an average of 40 to 50 percent, and between 25 and 39 percent of property registrations are outdated.[37] Other issues that erode the municipal tax base are the failure to capture the revaluation of land arising from urbanization, and limited management capacity in the offices of municipal tax administrations. In Bolivia, for example, the tax administration offices in many towns and urban centers have only one director.

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33 In Bolivia, subnational spending stands at about 32 percent, although more than 60 percent of general government procurement is by subnational governments. Spending on state-level procurement in Peru and Colombia is close to 42 percent. In Bolivia, during 2016, the aggregate level of capital spending was close to 8 percent of the regional governments' GDP. In Colombia's departments, this spending accounted for 9 percent of GDP. As regards local governments, Peru is a notable case inasmuch as the aggregate figure for capital spending amounts to almost 2 percent of GDP. See A. Izquierdo, C. Pessino and G. Vuletin (2018) and ECLAC (2018).

34 Regional/state and local governments, 2017 figures (OECD.Stats 2017; available at: https://stats.oecd.org/).

35 Corbacho, V. Fretes Cibils and E. Lora (2012).

36 In Colombia, for example, the current average efficiency of the property tax is estimated at 46 percent of its revenue potential. R. de la Cruz, L. G. Andrián and M. Loterszpil (eds.), *Colombia: hacia un país de altos ingresos con movilidad social* (Washington D.C., IDB, 2016).

37 R. de la Cruz, L. G. Andrián and M. Loterszpil (2016).

Oversight is a challenge. The tax administrations' management indicators reveal shortcomings of development and efficiency in their tax management and collection. Oversight difficulties compound the problem of evasion and the poor productivity of tax collection. The Andean region collects half of what potentially could be collected through VAT (see Figure 3.5). Potential VAT revenue in the region is estimated to average about 11 percent of GDP. Some 57 percent of this is actually collected, 15 percent is diluted in tax expenditures, and evasion accounts for the remaining 28 percent. It is worth noting the region's diversity as regards collection of VAT. Bolivia and Ecuador collect between 60 and 65 percent of potential VAT revenues, while Colombia and Peru collect about 50 percent. Non-compliance is still high in Peru, and in Bolivia VAT evasion has been growing in recent years.[38] In Colombia and Ecuador the rates are lower, but still above 20 percent. Non-payment of this tax stems mainly from the lack of a tax culture, the high level of informality, and the limited capacity of tax administrations to scrutinize and control evasion. There is a high density of users of tax administrations in the Andean region. In Colombia, for example, the economically active population per tax administration employee is 7,700, much higher than the regional average, followed by Ecuador (4,100), Bolivia (3,900), and Peru (2,800). There is minimal likelihood of being subject to a tax audit in the region. Few people are registered taxpayers: only 10.1 percent of the population in Ecuador and 17 percent in Peru. In Colombia, in 2010, 17.3 percent of the population were registered taxpayers. This is lower than the average for Latin American countries (23 percent) and the average for OECD countries (59 percent).[39] Only 0.1 percent of registered taxpayers are subject to in-depth audits, and the actual yield from these audits accounts for 0.5 percent of tax revenue in Peru and 0.8 percent in Bolivia. Colombia's Directorate of National Taxes and Customs (DIAN) is present in just 43 of the country's 1,121 municipalities, and the ratio of tax officials to inhabitants is 1 to 10,000, half the regional average. Only 0.1 percent of active taxpayers face inspections, a figure substantially lower than the regional average of 3.1 percent. The bureaucratic organization of tax recovery determines the efficiency of collection. The rates and rules under which tax returns are made, and those applied when fraud is detected, are also important in identifying the underlying reasons for tax evasion and avoidance. In the Andean countries, the presence of a large informal sector (in terms of the number of merchants and microenterprises) raises questions about

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38   In Bolivia there has been a trend towards greater VAT evasion, perhaps because taxpayers feel less at risk from oversight by the National Tax Service (SIN). This happened as a result of the ruling of unconstitutionality that ended measures such as definitive closure for issuing invoices, and penalties for those who make and sell false invoices (Ministry of Economy and Public Finance, 2017).

39   R. de la Cruz, L. G. Andrián and M. Loterszpil (2016).

the impact that audits would have on income in the sector, where it is extremely difficult to turn informal enterprises into formal ones.[40]

Corporate tax criteria should be simplified, and tax monitoring and enforcement mechanisms should be strengthened. Tax systems in more developed countries feature many presumptive elements, such as standard arbitrary depreciation schedules, standard deductions, and capital gains taxes, which give an idea of the taxation of corporate income. These or similar criteria are applied to corporate income taxes in the countries of the region. But levying an income tax on small businesses should not depend on a complicated calculation of potential taxpayers' profits, which can be difficult to verify. Instead, it should be based on variables that are easier to measure—in the case of restaurants, for example, the number of tables.[41] Moreover, new forms of tax fraud, money laundering, and organized crime require that staff training be brought up to date, and that monitoring capacity be strengthened in coordination with the agencies and services of the police and state surveillance. Tax fraud, be it evasion or avoidance, is used by taxpayers who face large tax demands on personal income or business profits. An example is the frauds revealed by the Panama Papers, in which tax agencies did not discharge their monitoring duties and allowed very high levels of evasion, generally originating in corrupt practices by politicians, senior government officials, and high-income evaders.

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40 J. Slemrod, Tax Systems in Developing Countries: Notes for the Keynote Lecture at the Inaugural Conference of the Zurich Center for Economic Development, December 12, 2016 (available at https://www.econ.uzh.ch/dam/jcr:79e9554f-e7ac-4068-93e6-1921226ac68c/Slemrod_Speech.pdf).

41 J. Slemrod (2016). *Ibíd*.

Figure 3.5: Breakdown of Potential VAT Revenue in Latin America and the Caribbean (%)
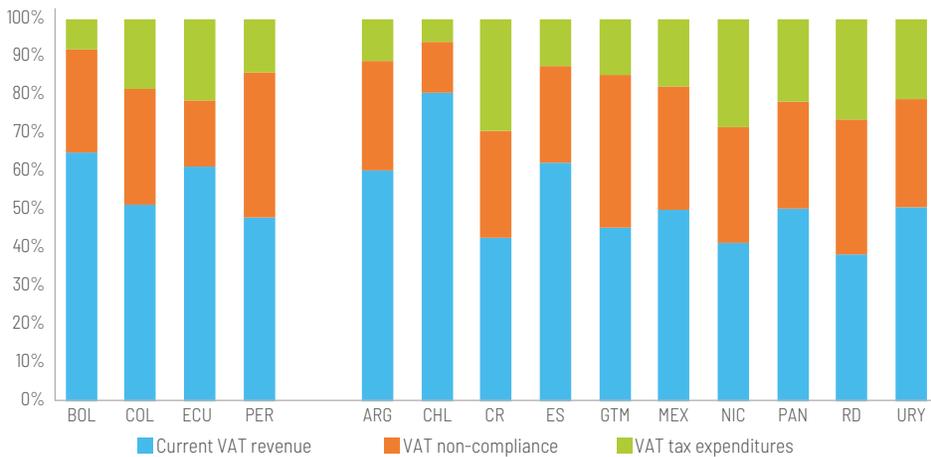
Source: authors' calculations on the basis of information from CIAT (2018), WEO (IMF), OECD.Stats and official sources.

Main spending features in the Andean countries

Public spending has grown, marked by procyclical bias and more than proportional increases in current spending. In the Andean region, as in other LAC countries, the growth in public spending originated in the increased resources created by commodities exports. During the commodities price boom, total spending by Andean governments grew significantly, especially after 2010 when they began to diverge from the trend in the other LAC countries, where public spending increased at a much slower rate (see Figure 3.6).[42] This spending growth has varied among the Andean countries: in the commodities super-cycle of 2006–2014, spending as a share of GDP grew substantially in Bolivia and Ecuador. In Colombia and Peru, on the other hand, the increase was moderate. Apart from Peru, spending increases were mainly in current spending rather than in investment growth (see Figure 3.7). As Cavallo and Powell (2018: 53) point out, "current expenditure increases in good times but does not fall in bad times, while the opposite holds for real capital expenditure: it falls in bad times but does not

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42 For LAC countries, empirical evidence based on a sample of 18 countries has shown that between 1990 and 2010, public spending had a positive impact on per capita growth. If the effect of spending is disaggregated, the same study shows that education spending and the government's gross fixed capital formation (GFCF) strongly influence the growth of per capita GDP. ECLAC, *Reforma fiscal en América Latina:¿qué fiscalidad para qué desarrollo?* Santiago, Chile: ECLAC, 2012.

increase in good times."[43] Public employment, for its part, grew significantly. Bolivia has the highest payroll in the region, committing 12 percent of GDP. In Peru, public employment grew by an annual average of 2.5 percent, which is higher than the country's annual average population growth of 1.3 percent. In Colombia, spending on wages grew. This is because several labor regimes coexist and there is a high rate of directly contracting professional services. Additionally, the pay scale that sets minimum and maximum wages for different categories of employment is not uniformly applied. Furthermore, resource losses stemming from public procurement inefficiencies in the Andean countries amount to 2.3 percent of GDP.[44] The greatest inefficiencies are in Ecuador and Bolivia, where they amount to almost 3 percent of GDP; in Colombia and Peru they are somewhat lower at 2 percent of GDP.

Figure 3.6: Total General Government Spending in the Andean Countries and Other Regions, 2000–17 (% of GDP)
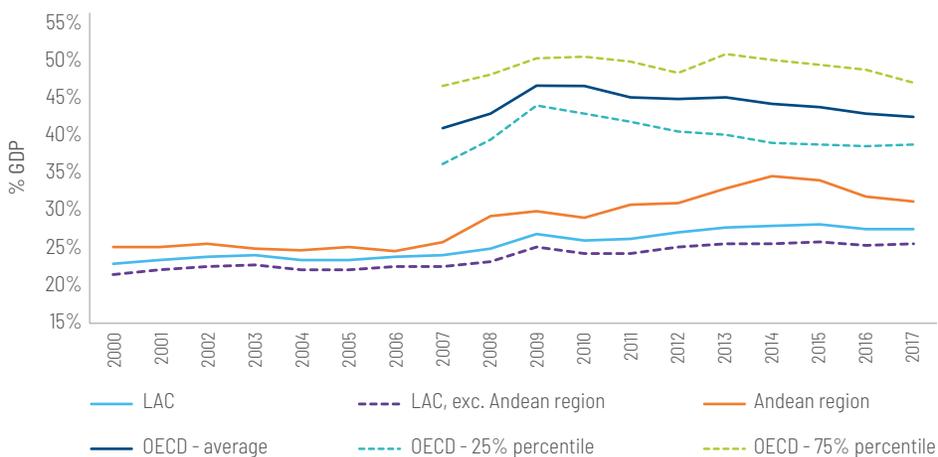
Source: prepared by the authors on the basis of OECD.Stats and WEO (IMF).

Notes: simple average of the countries in each group. Data are the sum of central government, subnational government, and social security expenditures. LAC and the Andean region exclude Venezuela. The OECD average is simple and excludes Chile, Mexico and Turkey.

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43 E. Cavallo and A. Powell (eds.), *2018 Latin American and the Caribbean Macroeconomic Report*, Washington, D.C., IDB, 2018.

44 The estimate was in the study by A. Izquierdo, C. Pessino and G. Vuletin, *Better Spending for Better Lives: How Latin America and the Caribbean Can Do More with Less,* Washington, D.C., IDB, 2018. Inefficiency and corruption data are extrapolated from the lowest threshold of European Union (EU) countries and corrected on a straight-line basis for the intensity of corruption in each country.

Figure 3.7: Composition of General Government Spending in the Andean Countries and Latin America and the Caribbean, 2006–17 (% of GDP)
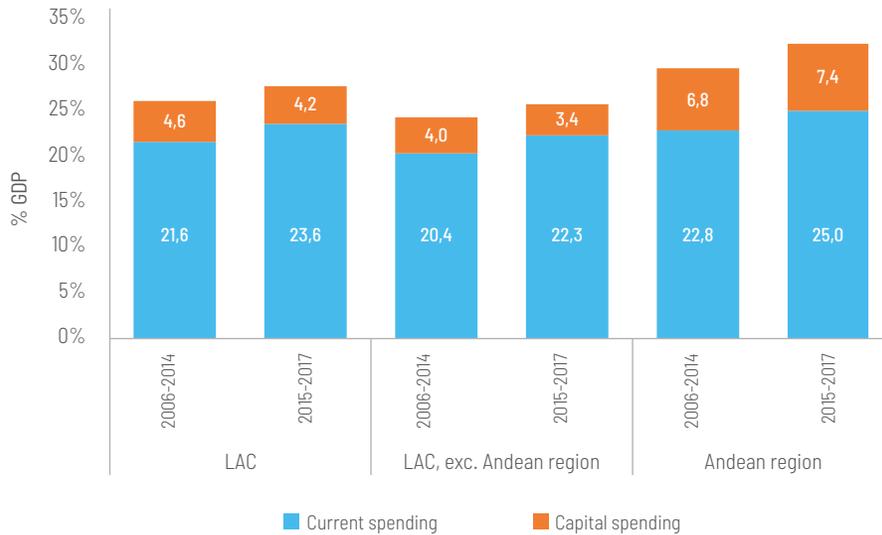
Source: prepared by the authors on the basis of *WEO* (IMF).

Note: simple average of the countries in each group. Data are the sum of central and subnational government spending and social security. LAC and the Andean region exclude Venezuela.

The scale and distribution of public spending in the Andean countries is diverse.
In 2017, total consolidated general government spending averaged 30.8 percent of GDP, while the consolidated average for LAC and the OECD was 29.4 percent and 43.5 percent of GDP, respectively. The countries of the region vary widely in the scale of public spending. Hence Peru (21.5 percent of GDP) is one of the countries with the lowest levels of public spending, while spending levels in Ecuador, Bolivia, and Colombia are above 30 percent of GDP. Similarly, the composition of spending in the Andean region differs from the average in LAC and the OECD. First, total purchases comprise 41.3 percent of total expenditure, which is much higher than the average for LAC and the OECD (27.8 percent and 32.1 percent of the total). Second, expenditure on transfers in the OECD and LAC accounts for more than 30 percent of total expenditure, compared to 18.6 percent of the total in the Andean region. Finally, the proportion of expenditure devoted to salaries in the Andean countries (26.6 percent) is similar to the average for LAC and OECD.

Figure 3.8: Distribution of Consolidated General Government Spending, 2017
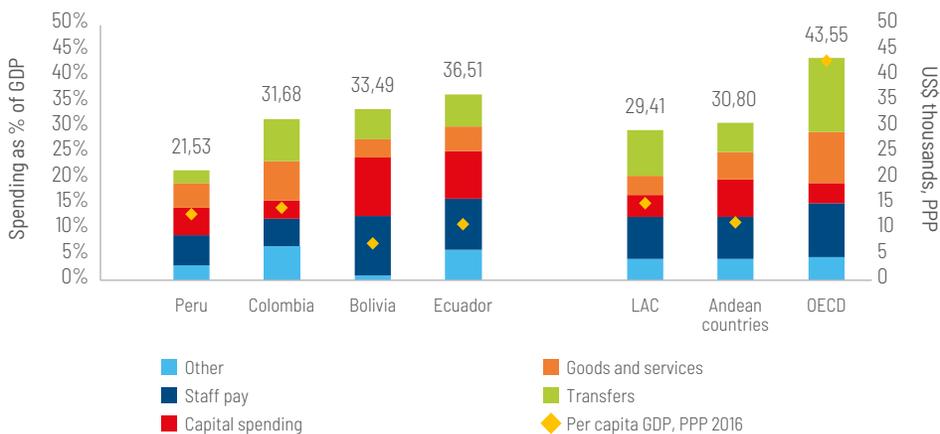
Source: update of Izquierdo, Pessino and Vuletin (2018).

Note: data for Bolivia, Colombia and Ecuador are for 2017; data for Colombia are for 2016. For the purposes of analyzing the technical efficiency of capital expenditure, includes expenditures related to public investment in items other than infrastructure, but which are contracted under the public works mechanism. This is especially significant in Bolivia and Ecuador. For Ecuador, coverage is the non-financial public sector (NFPS).

In 2017, public purchases of goods, services, and works in the Andean countries accounted for 41.8 percent of general government spending, and comprised the main spending line. Public procurement spending varies among countries (see Figure 3.9), amounting to more than 45 percent of total expenditure in Bolivia and Peru. In Peru, this higher share is explained by the prevalence of capital expenditure in total spending.[45] Ecuador and Bolivia also have a strong capital expenditure component in total spending, amounting to 25.4 percent and 33.9 percent, respectively. This raises questions about causes of inefficiencies in this spending line. In Bolivia, the increase in public investment spending is a result of an economic growth program that involves the development of large-scale investments.[46] In Colombia the goods and services component is large (24.1 percent of total spending) compared to capital spending, which accounts for 11.8 percent of the total. On average for the region, 41 percent of this spending on goods, services, and public works is at the subnational level (provincial and municipal). The share is notable in Bolivia, Colombia, and Peru, where 54 percent, 49.2 percent, and 43.8 percent of public procurement is at the regional level; in Ecuador the figure is 17.3 percent.

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45 Peru's total spending on public procurement is divided equally between capital spending (24.9 percent of total spending), and spending on goods and services (22.7 percent of total spending).

46 IMF, Article IV Consultation for Bolivia, Washington, D.C., IMF, 2017.

Figure 3.9: Public Procurement Spending, 2017 (% of GDP and Public Spending)
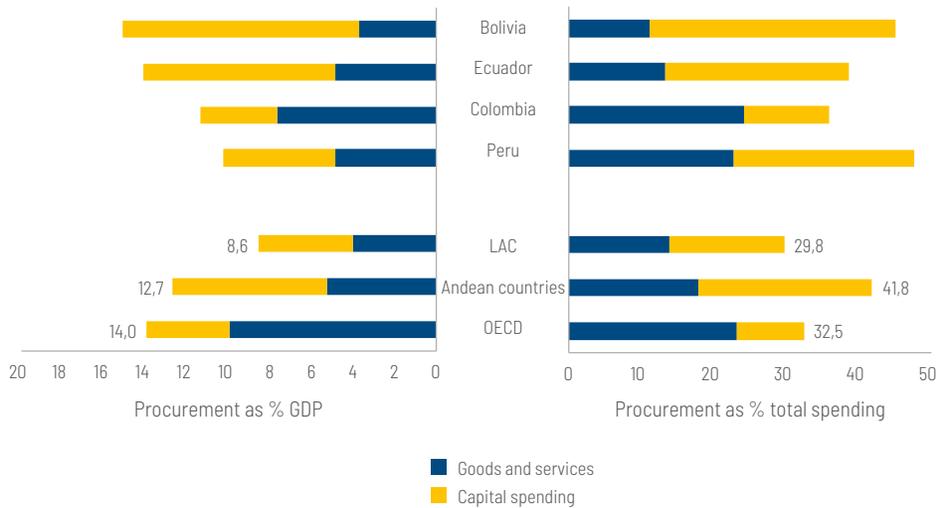
Source: update of Izquierdo, Pessino and Vuletin (2018).

The scale and structure of public employment in each country varies significantly. Bolivia is one of the Andean countries with the highest spending on public payroll, which accounts for 34.7 percent of total spending. Bolivia is followed by Ecuador and Peru, where it accounts for nearly 27 percent of the total (see Figure 3.10). Colombia, for its part, is one of the countries that allocates the smallest share of spending to the public payroll in LAC: 17 percent of the total. The share assigned to local governments is significant in Colombia and Peru: nearly 44 percent of salary spending is provincial and municipal spending. In Bolivia and Ecuador the corresponding figure is nearly 11 percent.

Figure 3.10: Staff Pay, 2017 (% of GDP and Public Spending)
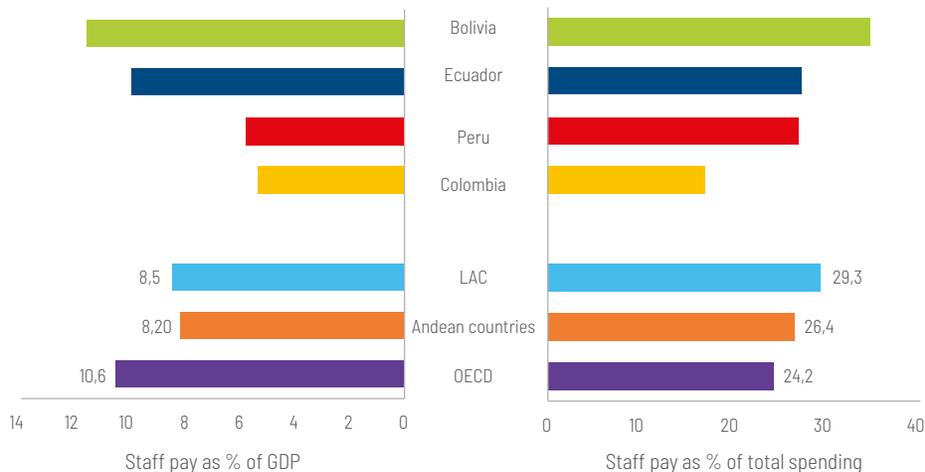
Source: update of Izquierdo, Pessino and Vuletin (2018).

The Andean countries devote an average of 18.6 percent of total spending to transfers. Transfers include social programs (conditional cash transfers, CCTs) and non-contributory pensions (NCPs), subsidies to enterprises (especially energy subsidies), and contributory pensions. Among the Andean countries, Colombia spends the most in this area: transfers in Colombia account for 26.2 percent of total spending (8.3 percent of GDP). Bolivia and Ecuador spend similar proportions on transfers at 17 percent of total spending. For its part, Peru is the country that allocates the least to this item (11.6 percent of the total).

Spending efficiency in the Andean region

Taking into account the combined effect of technical inefficiencies in procurement, staff pay, and transfer leakages, the countries of the Andean region would have been able to save an average of 5.1 percent of GDP, which is about 16 percent of total spending. According to the estimates presented in Izquierdo, Pessino and Vuletin (2018), Ecuador and Bolivia have the highest levels of technical inefficiency in the Andean region (see Figure 3.11), amounting to 18.7 percent and 17.9 percent of total spending, respectively. Ecuador's greatest inefficiency is in public procurement (7.2 percent of total expenditure), followed

by staff remuneration (6 percent). In Bolivia, public procurement inefficiencies are the main area for improvement (8.3 percent of total expenditure), along with transfer leakages (7.2 percent of GDP). In Colombia, technical inefficiency in spending stood at 5 percent of GDP, almost 16 percent of total spending. The main sources of inefficiency in Colombia are public procurement (6.2 percent of total expenditure) and leakages in transfers (5.9 percent of total expenditure). Peru, by contrast, with an inefficiency of 2.5 percent of GDP, has one of the lowest levels of inefficiency in LAC. This is equivalent to 11.6 percent of total expenditure. A breakdown of Peru's inefficiency by category shows that public procurement accounts for 8.3 percent of spending. This is followed by transfer leakages and staff pay, which amount to 1.8 percent and 1.6 percent of the total.

Figure 3.11: Estimates of Technical Inefficiency in Targeted Transfers, Public Procurement and Staff Pay, 2017 (% of GDP)
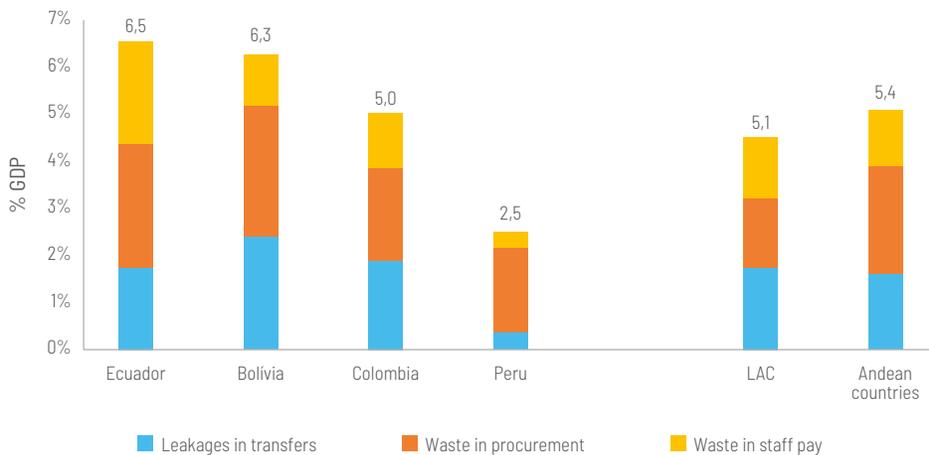
Source: update of Izquierdo, Pessino and Vuletin (2018).

Note: the LAC average is used to calculate transfer leakages in Ecuador.

Technical efficiency in public procurement

Infrastructure cost overruns are common. In certain cases they can be reduced or eliminated to generate savings and efficiency in public procurement. Cost over-runs account for 48 percent of the total cost of infrastructure investment in Latin America (28 percent in the rest of the world) (Flyvbjerg, 2016). Such overruns are higher in bigger and more complex projects (dams and railways) than in simpler

ones.[47] Izquierdo, Pessino and Vuletin (2018) estimate that the cost overruns of projects in LAC financed by multilateral development banks (MDBs)[48] average between 17 and 22 percent. The estimated cost overrun is 19.79 percent in the countries of the Andean region. Assuming that the cost overruns of MDB-financed projects are a lower limit, the potential for securing a reduction is in the order of 26–31 percent. Given that public spending on infrastructure accounts for about 2.5 percent of regional GDP, cutting cost overruns to the lower limit could yield cost savings of more than 0.65 percent of regional GDP.

Contracts for large-scale investment projects in the infrastructure sector in the Andean countries have been subject to several renegotiations that have created inefficiencies in public spending. Izquierdo, Pessino and Vuletin (2018) estimate that the waste of public funds amounts to about 26 percent of project costs.[49] In the projects for which Odebrecht paid bribes, contract renegotiations accounted for 71.3 percent of the initial investments, compared to 6.5 percent for projects in which Odebrecht did not pay bribes. Bitrán et al. (2013) examine the causes and costs of renegotiating road concession contracts in Colombia and Peru between 1994 and 2010. The contracts underwent a total of 430 changes, entailing a fiscal cost of US$5.6 billion (+86 percent of the original amount) and an additional 131 years in the concession terms.[50] On average, each concession contract was modified about twice a year. In the road sector, the the lack of registered land rights is a major factor in non-compliance with construction schedules and in cost overruns.[51] In Peru, road concession contracts totaled US$2.3 billion and covered 5,500 kilometers of roads, but 11 of the 15 contracts were renegotiated at least once a year, totaling 53 modifications. These changes had

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47   Cost overruns are not always necessarily bad, nor are they the result of inexperience, ineptitude or corruption. Investment in infrastructure is large, irregular (in type, frequency, and size of projects), and involves considerable risks in construction, mostly related to the inability to anticipate contingencies.

48   Such as the Inter-American Development Bank (IDB) and the World Bank.

49   The US Department of Justice discovered bribes paid to Latin American officials by Brazilian construction mega-company Odebrecht in an effort to secure public contracts with Petrobras. This is the most extensive corruption investigation in Latin America's history, and covers a total of 14 countries. The company acknowledged it paid US$737 million in bribes between 2011 and 2016 to win contracts worth US$2.8 billion, spread over about 100 projects in 10 different countries. According to detailed information on the corruption cases recorded between 2001 and 2016 by Odebrecht, in the Andean region in particular some 38 infrastructure sector projects worth US$20.767 billion were affected, distributed as follows: 24 in Peru, 10 in Ecuador, and four in Colombia (Campos et al., 2019).

50   These authors have determined that in Colombia the 25 contracts totaled US$6.5 billion and covered 4,800 kilometers of roads; all of them were renegotiated at least once. The renegotiations added 1,000 kilometers of roads to the existing contracts.

51   R. de la Cruz, L. G. Andrián and M. Loterszpil (2016).

a fiscal cost of more than US$300 million and added nine years to the terms of the concession. On average, each concession contract was modified almost once a year. For Bolivia, Ortiz (2018) analyzes 94 supreme decrees that, exceptionally, enabled direct contracting in projects that should have been carried out through bidding or public tenders; only 31 of them had amount limits of US$1.5 billion.[52]

The large volume of transactions involving the procurement of goods and services, unlike public works, often generates inefficiencies in terms of unit costs. In Peru, many procurement processes are carried out for a small range of product groups that the government acquires periodically (such as passenger vehicles, cement, and oil). The public procurement system is in the hands of more than 3,200 bodies, revealing a high degree of fragmentation. That circumstance, together with the lack of coordination among institutions, hampers planning and more extensive procurement processes.[53] According to the World Bank (2017), more efficient procurement strategies could yield fiscal savings of up to 0.4 percent of GDP.[54] Perú Compras (2019) has estimated that a series of improvements in public procurement management since its creation in 2008 have yielded savings equivalent to 6 percent of public purchases of goods and services (0.2 percent of GDP).[55] In Ecuador, public procurement is concentrated in a few provinces and a few product groups, a circumstance that can aid implementation of efficient public procurement strategies. The World Bank (2019) estimates that a reduction in the number of transactions involving the procurement of certain families of goods (foodstuffs, metals and machinery) could have yielded efficiency savings of 7.3 percent of total purchases in the period 2013–17. This is equivalent to 0.7 percent of GDP.

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52 The health sector had the highest percentage of direct contracting, as the five supreme decrees with the highest amounts were related to this sector. Of the remaining 63 processes promulgated without a limit on direct contracting, purchases were mainly for the Ministry of Health (18), the Ministry of Public Works, Services and Housing (16), the Ministry of Defense, and the Ministry of Rural Development and Land (14), as well as public companies, including Yacimientos Petrolíferos Fiscales Bolivianos (YPFB) (13).

53 Problems in procurement planning cause low levels of procurement execution, both in the national government and in regional and local governments.

54 Equivalent to 22 percent of the public procurement waste estimated by the IDB (2018).

55 These include the use of electronic catalogues since 2017 for 21 product families (24,360 products), which according to their estimates has yielded savings of 0.05 percent of GDP; the use of corporate purchases and on-demand contracting since 2016, with standardization tools (homologation and reverse auction), and electronic purchases (electronic catalogue) that create traceability; the electronic quote system to invigorate pre-purchase actions using the electronic catalogue; and standardization of procedures with requirement standardization sheets and reverse auction technical sheets. See https://www.perucompras.gob.pe/informacion/ presentaciones.php.

Technical efficiency in the public administration

As regards the size of the government workforce relative to total employment, the countries of the Andean region are below the LAC average (12.7 percent). In Peru and Ecuador, about 9 percent of all employees are in public employment. In Colombia, public employment accounts for 4 percent of total employment,[56] and in Bolivia for 13 percent. The largest number of public employees in the Andean countries work mainly in education, healthcare, and the armed forces.[57]

The public sector pays higher wages than the private sector, controlling for observable differences in productivity and skills, and this wage premium is higher for the less skilled. For the same levels of human capital, public-sector wages in the Andean countries in 2014 were, on average, 35 percent higher than those in the private sector. This percentage is above the observed average for LAC at the time, which was 26 percent (see Figure 3.12). For Ecuador, Guerrero (2013) analyzes wage differentials between the public and private sectors in 2011, and finds that there is a differential in the order of 50 percent in favor of public employees. Moreover, Carrillo Maldonado and Vasconez (2015) find that in Ecuador the constitutional institutions of control and with the greatest political power[58] have the widest positive wage gaps relative to the public-sector median (50 to 120 percent more); the wage gap is negative by 62 percent for parish councils[59] and for basic and secondary schools, among other bodies. According to the calculations of the National Civil Service Authority (SERVIR),[60] there is an average wage premium of about 11 percent in favor of Peruvian public-sector workers.[61] The less skilled the worker, the wider this gap is. Civil servants with secondary education receive higher salaries than their counterparts in the formal private sector (+39 percent).[62] People with higher education have lower salaries than those of their

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56 A. Izquierdo, C. Pessino and G. Vuletin (2018).

57 The information for Bolivia stems from the authors' estimates based on public employment data from Bolivia's Ministry of Finance and labor market data from the World Bank database. Data on the concentration of employees in education and the armed forces for Bolivia is obtained from the report of Bolivia's Ministry of Finance; for Colombia, it is from Bernal et al. (2018), based on national accounts; for Peru, it is from SERVIR; for Ecuador, it is from the Ministry of Finance.

58 The Attorney General's Office, the Office of the Comptroller General, the Superintendency of Telecommunications, the Superintendency of Companies, the Public Prosecutor's Office, among others.

59 Parish boards play a democratic role in rural areas where there are no municipalities.

60 The data were prepared on the basis of the 2017 National Household Survey (Enaho) conducted by the National Institute of Statistics and Information (INEI).

61 Refers to monthly take-home pay. No data are available by sector or level of government.

62 Considering only the respondent's main monthly income.

counterparts in the formal private sector (-3 percent). The IDB (2016) estimates that, by 2014, the average pay gap for public-sector teachers, teaching assistants, and doctors in Peru relative to the private sector was in the order of 28 percent, 63 percent, and 4 percent, respectively. In Colombia, according to Izquierdo, Pessino, and Vuletin (2018), the pay gap between public-sector and private-sector employees with the same qualifications stood at 47 percent, the gap being wider for the lower levels. Once again, according to calculations by the IDB (2016), the average salary of public-sector teachers is two to three times that of their private-sector counterparts at both the primary and secondary levels. The more work experience a teacher has, the wider the gap. The pay gap between the two sectors is twice as wide for teachers with less than five years of experience, and more than three times as wide for those with more than 20 years of experience.[63] There do not seem to be significant differences in doctors' pay in the public and private sectors. For nursing staff, however, who are less qualified, there is a gap of about 34 percent in favor of the public sector. In Bolivia, according to Gindling et al. (2019), the public-sector wage premium is higher for women and less skilled workers. The pay of the most skilled public-sector workers is similar to or less than that of their counterparts in the formal private sector. In this regard, the public-sector wage premium is higher for workers with lower levels of education, and for workers in occupations in the lower wage ranges. Given movements in the public-sector wage index, real wages in Bolivia have accelerated in recent years: from a fall of 23 percent between 2004 and 2011 to growth of 17 percent between 2011 and 2017. During that period, wages grew for less skilled staff (services, laborers, and casual workers) and fell for skilled staff (managers, professionals, and technical personnel).[64]

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63 This is partly because the salary of the longest-serving public teachers is governed by a more generous statute (Decree 2277 of 1979) than that applying to teachers who joined the profession after 2001 (entry into force of the new statute, Law 715 of 2001).

64 The wages of managers, professionals and technicians, and administrators fell in real terms by 40.1 percent, 10.8 percent and 9.8 percent between 2004 and 2017; the real wages of temporary staff, service personnel, and laborers increased by 62.6 percent, 20.5 percent, and 32.8 percent in the period analyzed.

Figure 3.12: Pay Gap by Country in Latin America and the Caribbean, 2014
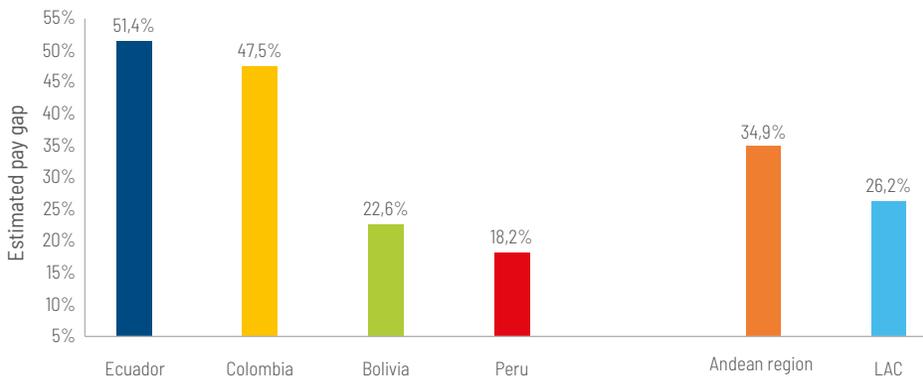
Source: Cerda and Pessino (2019).

Technical efficiency in transfers

Sometimes the targeting criteria established through beneficiary selection mechanisms and program implementation rules are inadequate, and transfers leak to non-poor individuals, accentuating public spending inefficiencies. The failures may stem from program design or implementation. In their examination of leakages in targeted spending on energy subsidies, social programs, and tax benefits, Izquierdo, Pessino and Vuletin (2018) estimate that, among the Andean countries, Peru has the least resource inefficiency in such transfers (0.4 percent of GDP; 1.8 percent of total spending). Bolivia, at 2.4 percent of GDP (7.2 percent of total spending) and Colombia, at 1.9 percent of GDP (5.9 percent of total spending), have more leakage than LAC (1.7 percent of GDP; 6 percent of total spending) (Figure 3.13).

Figure 3.13: Leakages in Targeted Spending, 2016
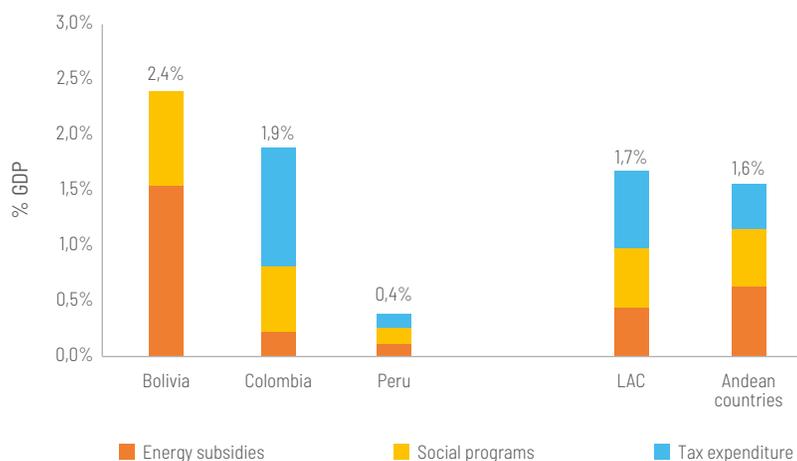
Source: update of Izquierdo, Pessino and Vuletin (2018).

Energy subsidies cause spending leakages in transfers to non-poor people.
Artificially low fuel prices are regressive by nature, involving a high tax burden
and causing inefficient decisions on allocation. In countries like Bolivia and Ecua-
dor, energy subsidies are one of the main sources of transfer inefficiencies. Del
Granado, Coady and Gillingham (2012) warn that Bolivia was one of the countries
with the least pass-through[65] during the commodities super-cycle. The correlate
has been a substantial increase in spending on fuel subsidies, which rose from
2 percent of GDP in the early 2000s to 5.7 percent in 2013 and 4 percent in 2015
(IEA, 2017).[66] The non-poor, therefore, enjoy more than 63 percent of the benefit
of fuel subsidies (World Bank, 2015;[67] IMF, 2017).[68] For Ecuador, Schaffitzel et al.
(2019) estimate that spending on energy subsidies can range from 0.8 percent
to 3.7 percent of GDP, depending on movements in international fuels prices.
Carrillo Maldonado, Díaz Cassou and Tejeda (2018) estimate that energy subsidies
for Ecuador are in the order of 3 percent of GDP. According to Castillo and Gómez
(2019), 62 percent of the beneficiaries of household gas subsidies are in the top

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65 Defined as the ratio of the change in retail fuel prices to the change in fuel import costs.

66 The decline between 2013 and 2015 responded to the fall in international oil prices. Fuel subsidies
    amounted to 11.4 percent of GDP between late 2003 and mid-2008, and 9.4 percent of GDP between
    2008 and 2014 (IDB, 2017), exceeding Venezuela (8.7 percent) and Ecuador (5.4 percent).

67 World Bank, Rebalancing Inclusive Growth to Deepen Gains on Poverty and Inequality Reduction,
    Washington, D.C., World Bank, 2015.

68 IMF, Article IV Consultation for Bolivia, Washington, D.C., IMF, 2017.

three income quintiles.[69] Looking at an adjustment and targeting of subsidies,[70] these authors estimate fiscal savings of US$1.595 billion in 2019, US$1.84 billion in 2020, and US$2.07 billion in 2021. In contrast, gasoline prices in Peru and Colombia are two to three times higher than in Ecuador; diesel prices are three times higher; and gas prices are eight to nine times higher (Jara et al., 2018).[71] Peru in particular has been conspicuous for having both a fuel price stabilization system that moderates the level of energy subsidies, and a specific list of goods that are exempt from the general sales tax (GST).[72] In Colombia there are deficiencies in the allocation of subsidies for public services and housing. These inefficiencies stem mainly from targeting system errors.[73] According to figures from the National Planning Department (DNP),[74] in 2015 more than 50 percent of pension subsidies went to the richest 20 percent of the population, while the lowest income quintile received just 4.3 percent of them.

The countries of the Andean region have conditional transfer programs that are designed and implemented in such a way as to focus their benefits on the poor, but there is still room for improvement. CCT programs have played a crucial role in the region. Targeting them remains complicated, however, because the mechanisms for identifying the poor are flawed. Bolivia's main conditional transfer programs include the Juancito Pinto and Juana Azurduy Bonds. According to Bolivian government data, in 2017 almost 50 percent of the population were beneficiaries

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69 In line with these results, Llerena Pinto et al. (2015) observe that the richest decile of Ecuador's population receives 25 percent of the benefits derived from indirect subsidies (propane gas, gasoline, diesel, and electricity) and the poorest decile receives only 5 percent of the benefits.

70 The savings provide for the total elimination of subsidies for the "extra" and "ecopaís" gasolines, a gradual dismantling of the diesel subsidy over three years, and targeting the liquefied petroleum gas subsidy on the poorest two quintiles of the population benefiting from the Human Development Bond (BDH).

71 Energy subsidies have different redistributive effects, depending on the type of fuel involved. Gasoline subsidies mainly benefit higher-income households, while the diesel and gas subsidy favors households in the lower-income quintiles. The distribution of the electricity subsidy among the different income quintiles is more uniform (Schaffitzel et al., 2019).

72 The biggest component of tax expenditures in the general sales tax is the exemption of agricultural products (0.46 percent of GDP in 2019, according to the Ministry of Economy and Finance) contained in Appendix I of the Consolidated Amended Text of the Law on General Sales Tax.

73 Given that, the Colombian government is currently preparing to update the Potential Beneficiary Identification System (SISBEN) in order to "increase the efficiency of public social spending." This is because, in the version currently used by the government (SISBEN III), 74 percent of the records have not been updated since 2009–11, so the system is no longer valid as a targeting mechanism.

74 DNP, Hacia un Nuevo Sistema de Subsidios y Transferencias: Más Justo, Transparente y Eficiente, Bogotá, DNP, 2018.

of some form of social assistance voucher,[75] a circumstance that has substantially reduced poverty in the country. Apella and Blanco (2015) warn that the program selection mechanisms are effective in reaching the poorest population, but that they feature various inclusion and exclusion errors related to problems of design and implementation.[76] The programs improved social well-being and expanded the provision of basic social services, but they were not adjusted for inflation and therefore had mixed and modest impacts on household incomes (Robles, Rubio and Stampini, 2015). Colombia's two main CCT programs are Familias en Acción and Jóvenes en Acción. In 2017 these prevented about 350,000 people from falling into poverty and 323,000 into extreme poverty, and they have also widened access to education among the vulnerable population. Nonetheless, the country also faces significant challenges in targeting its programs, a circumstance that has limited their impact (DNP, 2019). Ecuador's main CCT program is the Human Development Bond (BDH). This is largely responsible for the reduction in poverty in Ecuador during recent years, and it has also had positive effects on school enrolment and the incidence of child labor (Schady and Araujo, 2008; Edmons and Schady, 2012). But the program has had only a modest impact on human capital accumulation over the long term, and thus it might be inadequate in helping households to escape the intergenerational poverty trap (Araujo et al., 2016). Among the Andean countries, Peru has the best targeting in its social programs, with well-established eligibility mechanisms that have allowed for the proper centralization of social protection spending. The main CCT program, Juntos, provides monetary incentives to households in the country's poorest districts. According to the 2017 assessment report of the Juntos program (MIDIS, 2017), targeting has worked well, making it possible to serve the poorest of the poor and thereby narrow the gaps within this segment. The two stages of the targeting process must be strictly adhered to. They leave a little room for discretion on the part of administrators, but the bulk of the information on decisions is beyond their power to alter.[77] As a result, Juntos is one of the social programs with the lowest leakage rates (Valenzuela, 2013).

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75   Including the "Renta Dignidad" non-contributory pension program.

76   Although the criterion for selecting beneficiaries of the Juancito Pinto Bond is an effective targeting mechanism, four out of every 10 children attending public schools and six out of every 10 attending private schools with an agreement are non-poor (World Bank, 2015). Among the program's shortcomings are "the grades covered by the program, since it excludes the starting grade, which has very little school coverage, and four grades of secondary school, in which there is a significant dropout rate and teenagers have higher costs for school supplies" (Navarro, 2012).

77   The poverty rate is calculated by the INEI or in line with the synthetic index of the Household Targeting System (SISFOH). The latter is an intersectoral and intergovernmental system administered by the Ministry of Women and Human Development (MINDES) that provides socioeconomic information for targeted public interventions to identify potential users. The aim is to help improve equity and efficiency in the allocation of public resources.

Allocative efficiency in public spending: the case of decentralization

Another factor influencing the efficient use of public resources is the alloca‑tive (in)efficiency of spending. Allocative efficiency refers to how governments allocate their spending to different functions (education, health, social devel‑opment, investment, and defense; between generations; at different levels of government) in order to maximize productivity and economic growth. Given the decentralization processes that have gained strength in the various countries of the region, this section will focus on the main allocative inefficiencies in the distribution of spending between central and subnational governments in the An‑dean countries. The main arguments for decentralization originate in the classical theory of fiscal federalism, which postulates that the process brings governments closer to citizens and allows public resources to be allocated more efficiently. The realization of decentralization's benefits, however, requires effective fiscal autonomy in local governments, as well as adequate institutional capacity that enables an efficient process to determine accountability and define spending among the different levels of government. Absent these conditions, fiscal de‑centralization can degrade the efficiency of public service delivery (Izquierdo, Pessino and Vuletin, 2018).

For several years, the countries of the region have been furthering their fiscal decentralization. Bolivia, Colombia and Peru stand out because they are polit‑ically unitary countries with high levels of local public spending. Indeed, subna‑tional governments in Colombia and Peru execute about 32 percent of general government spending, while the average for LAC subnational governments is 18.6 percent. Subnational spending in Bolivia (29.9 percent) is also above the regional average and a little below the OECD average (32.2 percent). Ecuador is the Andean country where subnational governments execute the lowest share of spending, at 11 percent. This degree of decentralization is below the LAC average (see Figure 3.14, Panel A).

Figure 3.14: Subnational Government Spending, circa 2016

A. Subnational spending as %
of general government spending

B. Vertical fiscal disequilibrium as %
of subnational spending
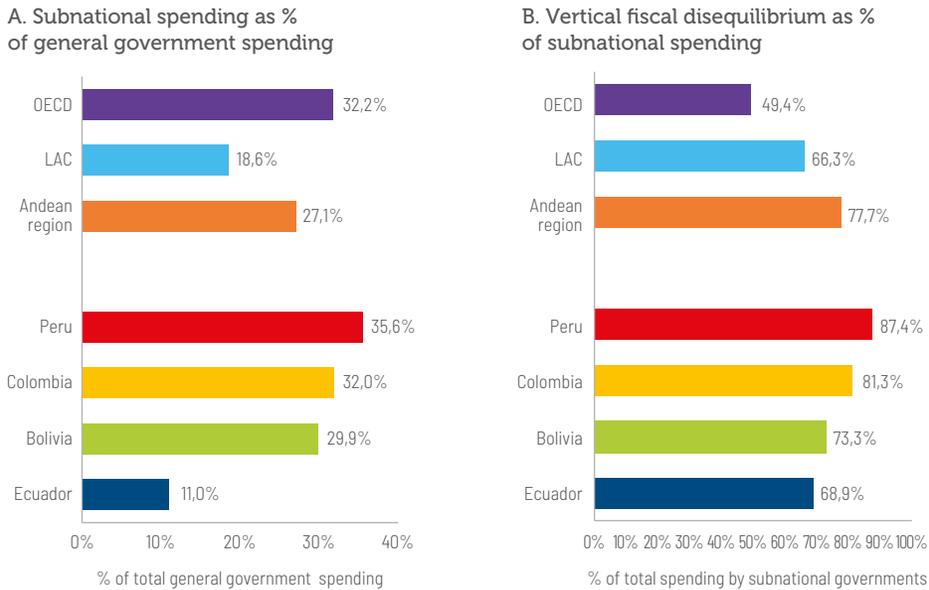
Source: Izquierdo, Pessino and Vuletin (2018).

Note: data for Bolivia, Ecuador, and Peru have been updated to 2017, and for Colombia to 2016.

Despite the decentralization of spending in the Andean countries, the region's subnational governments still have limited fiscal autonomy, and little capacity to generate their own revenues. This lessens transparency and accountability in local governments, curbing the incentives to improve spending efficiency. Spending decentralization in the Andean countries has outpaced revenue decentralization, creating significant vertical fiscal imbalances.[78] As a percentage of total spending by subnational governments, Peru, Bolivia, Ecuador, and Colombia have vertical fiscal imbalances of 87.4 percent, 81.3 percent, 73.3 percent, and 68.9 percent, respectively. The Andean average is therefore much higher than the LAC average (66.3 percent of subnational spending) (Figure 3.14, Panel B). In countries like Colombia, the revenue raised by the country's provinces (the departments) accounts for just 30 percent of total revenues.[79]

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78 Vertical fiscal imbalances are created when there is a gap between subnational government spending and government revenues.

79 Transfers from the national central government to the departments account for about 50 percent of total revenues, while transfers of royalties (from the exploitation of natural resources) account on average for 20 percent (Bernal et al., 2018).

Institutions: inefficiencies in spending management and recommendations

Public procurement

The Andean countries' procurement processes need strategic planning. Generally speaking, the countries lack sectoral procurement units that undertake timely programming of their annual purchases. Lack of information on the goods and services demanded by public bodies hinders the central units coordinating the procurement processes from introducing strategic procurement policies that minimize unit prices and improve the quality of inputs.

The coverage of procurement systems and the capacities of procurement units are limited in the Andean countries. The general procurement schemes establish the principles for most public offices, but in the Andean countries there are many special regimes with laxer provisions at all stages of the procurement process, undermining the efficiency of procurement. In Ecuador, the organic law on state enterprises gives primacy to procurement with a single bidder (50 percent of the total between 2013 and 2017). This leads to a substantially higher price (cost overrun) than purchases made under the general regime's competitive processes (Sercop, 2019). In Peru, almost 30 percent of total public purchases are made under the 13 special regimes[80] that are not subject to the coordination, methods or oversight of the general regime (OSCE, 2019). In Colombia, the proliferation of special regimes (public enterprises, contracts between state bodies, and the defense and intelligence sector) explains why more than 80 percent of contracts for the provision of services use non-competitive procurement methods (Zuleta, Saavedra and Medellín, 2017). The countries of the region also lack a robust central institution to coordinate and regulate the public procurement system. Colombia Compra Eficiente, for example, does not have enough staff to coordinate procurement in the local-level institutions. In Peru, two institutions coordinate public procurement (Perú Compras and the Supervisory Agency of State Procurement [OSCE]), but coordination between them is weak and therefore they duplicate activities.

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80 PetroPerú and ProInversión's concessions are notable for their volume of purchases.

In the Andean countries, the volume of public procurement that involves direct contracting and exceptions to competitive methods causes procurement inefficiencies. The abuse of direct contracting and/or exceptions increases unit prices and reduces the quality and efficiency of spending.[81] In Bolivia there is a general procurement system applying to all public bodies, but the grounds for exceptions and direct contracting with no ceilings on amounts (which were widened on several occasions) have affected the degree of competition in the public procurement market.[82] A significant exception in Bolivia is the preference for domestic rather than imported goods.[83] In Peru, the limited competition in certain goods and services markets is evident in the fact that 70 percent of purchases (as measured by number of cases) are made under a simplified award scheme. This obviates the need for a bidding process or competition that usually takes longer (5 percent of cases), and 10 percent of purchases (measured by amounts) are made under exceptions to the general scheme (World Bank, 2017).[84] In Colombia, three out of every five contracts or one out of every three pesos in purchases are formalized through non-competitive contracting, particularly at the subnational level. Hence there is much room to improve competition in public procurement and spending efficiency (OECD, 2016).[85] According to the World Bank (2019), 75 percent of procurement procedures in Ecuador between 2013 and 2017 involved one bidder, and more than 5 percent of the cost of purchases could have been saved if another supplier had joined the process and the supplier base had been diversified.

Most countries in the Andean region have introduced modern digital tools that improve procurement efficiency, but there is still room for further savings. All the Andean countries except Bolivia have moved forward with strategic policies to centralize the procurement of standardized goods and services, but the efficiency gains can increase further. The World Bank (2019) estimates that if Ecuador were to opt for large volumes of consolidated purchases, electronic catalogues and framework agreements would yield savings of 10 percent on the purchase of

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81 It is argued that the procurement of certain goods and services by individual public bodies, even in emergencies, be conducted with non-competitive methods.

82 Ortiz (2018) analyzes the case law that, by means of 94 supreme decrees and 13 laws modifying Law 1,178, authorized direct contracting for B$10,497 million (equivalent to US$1,520 million or 4 percent of GDP).

83 Imported products can only be offered if there are no domestic products.

84 In amounts, the tenders cover 60 percent of public procurement and in cases the exceptions cover 1 percent.

85 Competitive bidding has accounted for a small share of the total number of contracts (1 percent), but it accounts for about 17 percent of the total resources on procurement in the period 2012–16 (Zuleta, Saavedra and Medellín, 2017).

goods and services as a result of lower unit prices.[86] In Peru, many procurement processes are for a small number of regularly purchased product groups. According to the World Bank (2017), efficient procurement strategies in Peru would yield fiscal savings of 0.4 percent of GDP.[87] In Colombia, between 2013 and 2016, the introduction of demand aggregation mechanisms reduced procurement times and costs from three months and six months to one hour and 20 days, and about 20 percent of the total cost. These savings could be greater if subnational bodies adopted framework agreements on pricing (Bernal et al., 2018).

In line with the above, the Andean countries have developed procurement websites, although these still center on providing information rather than facilitating transactions. Peru's public procurement system allows for electronic transactions, but the Electronic System of State Procurement (SEACE), run by the OSCE, is only used to distribute and record ex-post information. The Perú Compras website offers a wide range of technological innovations that boost efficiency and modernize public procurement processes, but it covers only 8 percent of public purchases of goods, not services and public works, and remains unused at the subnational level. Colombia's Electronic System of Public Procurement (SECOP) II includes public works and is transaction-focused, thereby enabling state bodies to conduct the entire procurement process online (DNP, 2018b). Nonetheless, it is used by only about 25 percent of public bodies at the central level, and local agencies are not obliged to use it. Ecuador's National Public Procurement Service (Sercop) manages the public procurement transactions website. This, an outcome of the framework agreement, has an e-catalogue from which purchasing institutions can buy directly.[88] To acquire standardized goods and services not included in the e-catalogue, institutions making purchases have to hold reverse auctions in which suppliers of equivalent goods and services bid the price downwards.[89] Bolivia's State Procurement System (SICOES) is strictly

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86 Ecuador introduced modern tools, as well as information and communication technology (ICT), to improve competition in the procurement of goods and services under the general regime, wherein purchases through electronic reverse auctions, tenders, and electronic catalogues account for just over 75 percent of the total (Sercop, 2019). By contrast, procurement of goods and services under special regimes does not use these modern procedures, which cut the costs of public procurement.

87 There is little use of corporate and on-demand purchases of goods and services, as they are only used nationally, and account for 10 percent of the total. Regional and local governments do not apply strategic purchasing policies, despite making almost 20 percent of purchases of goods and services between them.

88 In recent years, Ecuador's National Public Procurement Service (Sercop) has made progress in introducing modern tools and ICTs to improve competition and therefore efficiency in the procurement of goods and services under the general regime.

89 At a public event or electronically through the website.

an ex-post information system that publishes the legal documentation on each process.[90] For all the countries except Ecuador, most public works are carried out in the sphere of subnational governments, but there is deficient integration with electronic public procurement systems.

The Andean countries have made uneven progress on transparency and accountability in procurement processes. Peru and Colombia have instituted public procurement monitoring mechanisms in their procurement websites, containing open data, analysis, and assessments of procurement processes.[91] To a lesser extent, Ecuador's Sercop publishes monthly briefings, statistics, and reports on the procurement system under the general scheme. Bolivia, by contrast, has no public information on procurement processes (by method, direct purchases, and exceptions by type).[92] This hinders accountability, public scrutiny, and efficiency improvements.[93]

The staff tasked with public procurement have a limited degree of professionalization, and the monitoring and enforcement system is strictly legal and not performance-based. In Colombia the main problems of public procurement, especially at the subnational level, include the complexity of the regulations and the scant development and management of the capacities of the actors in the procurement system. As an example of this, the OECD (2016) warns that control and safeguard systems are in place in Colombia, but the complexity of procurement processes causes the oversight bodies to focus on compliance with the rules rather than on improving commercial outcomes. This hampers improvements in the

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90   When it began, the State Contracting System (SICOES) reported 2,694 contracting processes in 2002, while in 2018 some 89,675 institutional publications were reported (www.sicoes.gob.bo/portal/index.php).

91   Perú Observa and the Observatorio del Organismo Supervisor de las Contrataciones del Estado (OSCE) in Peru, and open data from the Sistema Electrónico de Contratación Pública (SECOP) in Colombia

92   Apart from Peru and Colombia, with incipient appraisals of Perú Compras, the countries of the region do not assess the procurement system's performance.

93   Bolivia has one of the lowest ratings in Latin America in terms of budget transparency (10 out of 100), according to the 2017 Open Budget Index drawn up by the International Budget Partnership. In particular, the limited information available makes it hard for citizens to monitor public spending, participate in budget decision-making, and foster the accountability of public entities regarding the use of public resources. This situation is reflected in Bolivia's place on Transparency International's Corruption Perception Index (2018), where the country is ranked 132 out of 180 countries. The anti-corruption structure is weak, partly because of limited institutional capacities and the scant resources it is given (World Bank, 2015).

efficiency of public procurement.[94] In Peru there is a high level of turnover among staff working on public procurement in the executing agencies, making it difficult to create the technical capacities that the process demands.

Countries should take further steps to centralize public procurement by developing web portals enabling the use of ICT and modern tools. This would lead to economies of scale and greater competition in public procurement (corporate purchases, framework agreements, reverse auctions, e-catalogues, and supplier registers). The Andean countries are gradually transforming electronic procurement centers from mere ex-post or interactive information points to centers focused on real-time transactions. The availability of information on public procurement, and the transparency of the process, have improved in Colombia and Peru with the publication of open data and assessment reports in the public procurement monitoring sites of Compra Eficiente and Perú Compras/OSCE. Nonetheless, in line with the foregoing analysis and the recommendations of Izquierdo, Pessino and Vuletin (2018), the following should be considered:

i) The regulations should be changed so that general procurement systems are broader and simpler in their coverage by levels of government and institutions, with fewer specific schemes.

ii) The use of competitive methods in contracts (tendering and competitive bidding) should be widened, and there should be limits on the use of exceptions and direct purchases.

iii) With regard to the above points, a central body should be strengthened (or in Bolivia's case, created) to coordinate and regulate public procurement or to forge links between the coordinating body and the body entrusted with regulation.

iv) Colombia, Ecuador, and Peru are making gradual progress, but the coverage of the web portal for public procurement transactions should be improved and expanded, especially as regard the inclusion of public works, as well as public and subnational enterprises. Care should be taken to ensure that the portal is not merely an ex-post information point (Bolivia),[95]

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94 In Colombia, procurement monitoring and oversight is the responsibility of the Comptroller General's Office and the Attorney General's Office. There are other bodies at the departmental and municipal levels, such as the municipal ombudsman or overseers.

95 Supreme Decree 3548-2019 stipulates that the state will gradually move towards electronic means of public procurement.

but rather it should be leveraged with the use of modern tools and ICTs to exploit economies of scale and greater competition in public procurement.

v)   Countries should commit to transparency and publish open data on public procurement, especially in Bolivia.

vi)   Finally, the public procurement system's performance should be assessed regularly.

Public administration

The multiplicity of labor regimes hinders the coordination of public adminis-tration policy in the Andean countries. All the countries have an autonomous or high-level central office that coordinates the management of the public admin-istration. Nonetheless, one common factor of inefficiency in the public service career structure is that there are several employment regimes, each governed by its own regulations that establish obligations, rights, and duties for each em-ployee. Although Ecuador's pay scale sets minimum and maximum levels for the various employment categories, the system is patchy because some institutions are outside the standardized pay scale or implement it only partially. This prompts a great deal of labor mobility towards certain institutions in the public sector (García et al., 2016; Iacoviello, 2014). In 2013, the Peruvian authorities approved Law 30.057 on the civil service, with the aim of establishing criteria to simplify and unify some employment regimes. This law, however, recognizes a variety of special career paths (diplomacy, university teaching, school teaching, military, police, prisons and the judiciary), as well as the range of additional employment regimes (administrative, health care, administrative service contracting [CAS]).[96] In Colombia there are more than 40 special and specific employment regimes whose rights (benefits) and duties differ from the general regime. The special systems are constitutional in origin, such as the offices of the comptroller, om-budsman, and public prosecutor; the specific systems are legal in origin, such as the foreign ministry, the Directorate of National Taxes and Customs (DIAN), and the armed forces. The special and specific regimes even have their own entry competitions, which are not held under the aegis of the National Civil Service Commission (CNSC). The situation in Bolivia is similar.

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96   One of the aims of Law 30.057 is precisely to become a kind of umbrella that covers these careers and eventually unifies them (IDB, 2016).

Wage gaps favoring workers in the public sector over those in the private sector are not subject to review. Most countries in the Andean region do not undertake exercises to assess the wage gap between public and private-sector workers at the general level, or by sector and level of government. Only SERVIR in Peru analyses wage gaps at the general level, through a study of household surveys and databases on staffing in the public administration.

Another source of inefficiency in public employment is the high degree of direct contracting of "professional services" as a staff management tool. In Colombia, direct contracting of professional services accounts for more than half the contracting at the national level. At the local level, such contracting accounts for more than 80 percent of the total (World Bank, 2015).[97] In Peru, about 170,000 people are contracted under the "rendering of services" category in the public sector. About 150,000 of these, accounting for 11 percent of public-sector employment, have informal status.[98] Ecuador still has the category of occasional contracting for professional services, which does not follow the requirements of the handbooks, or else uses entrance exams. In any case, according to the regulations this process is controlled by the governing body, in line with the percentage determined by the Organic Law on Public Service (LOSEP). There are still authorized exceptions, however, such as those related to recruitment in new institutions, investment projects, or positions at senior levels of the hierarchy (Jara Iñiguez, 2017).

Moreover, the proliferation of contractors in public entities is detrimental to the development of an efficient administrative career structure and the principle of merit in public service. In most cases, the recruitment of "contractors" does not involve highly competitive criteria and is effected outside the system of "merit-based entry" into the public administration. In Colombia, the large number of contractors stems partly from the scarcity of merit-based competitions for administrative positions. About 44 percent of national-level positions and 60 percent of local positions are vacant or are held on an interim or provisional basis (Bernal et al., 2018).[99] In Peru, the substantial number of people employed under

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97 World Bank, Contratación directa en Colombia: elementos de derecho internacional y consideraciones empíricas sobre su prevalencia. Práctica Global de Buen Gobierno, Washington, D.C., World Bank, 2015.

98 This definition of informality refers to people doing subordinate work but not registered on the public employment list and therefore unable to access employment benefits.

99 R. Bernal et al. (2017). *Informe final de la Comisión del Gasto y la Inversión Pública,* Bogotá, Fedesarrollo and La Imprenta Editores S.A. (available at https://www.fedesarrollo.org.co/sites/default/files/ LIB-2017COMISION.pdf).

the "rendering of services" category is partly explained by legal restrictions on hiring staff and the greater flexibility that this type of contract allows.[100] In Colombia, this kind of recruitment makes it difficult to monitor the number of public officials, since a significant number are recruited under the service provision category and as direct hires, in categories classified as transfers or investment. The aim is to bypass the law limiting the growth of operating costs in public bodies (Bernal et al., 2018).

The countries of the Andean region, apart from Colombia and to some extent Peru, lack comprehensive and up-to-date centralized databases of the public administration. Such a database should contain information on profiles, salary levels, and experience. If this information is not available, there should be a comprehensive electronic payroll system that enables institutional and sectoral payroll assessments.

The prime goal in the public administration is to have a central office that coordinates employment and wage policy in the public sector. That policy must be consistent within the public sector and with the private sector, in terms of wage and non-wage levels and benefits. Hence the main recommendations are as follows:

i)   Even if countries have a central office for public administration (or a unit in a ministry), it should be autonomous and should coordinate the management of the public administration with the widest possible coverage by level of government and for the various institutions, in line with the Ministry of Finance.[101]

ii)   Efforts should be made to create a comprehensive and updated central staffing database of the public administration, with information on personnel profiles, salary levels, and experience.

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100 SERVIR, El reto de la informalidad en el sector público peruano, Lima, SERVIR, 2017.

101 In Bolivia, the General Directorate of the Civil Service of the Vice-Ministry of Labor, Civil Service and Cooperatives should be ranked as an autonomous or high-level central office that coordinates the management of public administration. In Colombia and Peru, the National Civil Service Commission and SERVIR, respectively, are autonomous entities, but in both cases they only handle public tenders and performance assessments. The Civil Service Directorate of Colombia's Ministry of Labor and the Resource Directorate of Peru's MEF coordinate employment policy and salaries. Hence both institutions remain to be coordinated so as to relate the issue of authorities, merits, and organizations with the benefits granted and with staffing levels.

iii) This database should be a key input for conducting institutional and sectoral payroll assessments, as well as comparisons of the public–private sector pay gap.[102]

iv) The necessary regulations governing the public administration must be updated to allow the practice of competitive and meritocratic processes for the development of an administrative career.[103]

v) Because of the decentralization of social services, the management of public administration at the subnational level should be strengthened so as to improve the efficiency of salary spending.

vi) All contracts for services or labor should be recorded as staff costs in the interests of better monitoring and control. This reflects the constraints imposed by current laws in the Andean countries that prevent the efficient and appropriate allocation of human resources among the different areas of the state.

vii) Finally, for many of these changes, the regulations have to be updated. These, as in Bolivia, are 20 years old and obsolete.[104]

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102 As mentioned earlier, all the countries of the region have positive wage gaps with respect to public workers, but Ecuador has the widest gap and is where the greatest savings can be made.

103 All the Andean countries have a civil service career system that, *de jure*, provides for competitive and meritocratic criteria in recruitment, remuneration, and promotion. *De facto*, however, practices outside the rules take precedence and many promotions are frozen (as in Peru and Colombia). Colombia's National Civil Service Commission is making progress in filling vacancies according to criteria of competence and meritocracy.

104 In Bolivia, the Law on the Public Servant Statute dates from 1999; Colombia's Law 909 dates from 2004; in Ecuador, the Organic Law on the Civil Service and Administrative Career dates from 2010; and Peru's Civil Service Law dates from 2013.

Transfers

The Andean countries lack an integrated system of social and fiscal adminis-trative information that would allow for massive, high-quality data exchange to target spending, such as Argentina's SINTyS system. In the Andean region, means tests or geographic systems are used, based on geographic data that have inclusion errors of more than 50 percent. These targeting methods are inefficient, accounting for only 50 to 60 percent of observed variability in living standards. The integrated information systems using up-to-date administrative data implemented in Argentina with the creation of SINTyS in 1997 could serve as models to improve targeting in the Andean countries (Pessino and Fenochi-etto, 2007; Azevedo, Bouillon and Irrazábal, 2011; Izquierdo, Pessino and Vuletin, 2018). In order to grant social subsidies, Colombia's System to Identify Potential Beneficiaries of Social Programs (SISBEN, version III) classifies the population according to a score based on their socioeconomic conditions. SISBEN is being updated to boost the efficiency of targeting households that receive subsidies for residential public services. To that end, it uses not only the scores related to people's quality of life, but also geographic and cartographic information and data from the Geographic Institute (IGAC) and the Pensions and Parafiscal Manage-ment Unit (UGPP). The notion of "integration of instruments" is applied, based on relevance (capacity to pay, geographic information), and the aim is to ensure that it is used for integrated targeting. Such improvements are insufficient, however, compared to the capacity conferred by an integrated digital system. In Bolivia, the Social and Economic Policy Analysis Unit (UDAPE) has made progress in the conceptual design of an information system that will enable the exchange of data between agencies (social, tax, and social security programs, personal and property registries). This will make it possible to improve the targeting of social program beneficiaries. But there is still a long way to go to its implementation, which is the most complex part of such systems.

Peru, like Ecuador, also lacks an integrated digital system. Peru's National Tar-geting System (SINAFO) is intersectoral and intergovernmental, and provides socioeconomic information for targeted public interventions, with a view to identifying potential users and thereby improving equity and efficiency in the allocation of public resources. Ecuador's Social Registry and the Directorate of the Interconnected Registry of Social Programs (Social Registry, formerly SEL-BÉN) are used to choose beneficiaries. These two sources, together with the database of active payment beneficiaries, make up the register of those receiv-ing the main social programs, including the BDH. The Social Registry, however,

has not yet been linked to beneficiaries of energy subsidies (households), so as to improve efficiency and targeting.

One of the biggest challenges facing the Andean countries concerns energy transfers and subsidies (except in Peru), because their targeting needs to be improved by means of an integrated data system. This poses a political challenge, but progress should be made towards the following goals:

i) Calculating expenditures on transfers for social programs, energy subsidies (especially in Ecuador and Bolivia),[105] tax expenditure (Colombia),[106] and their desired impact on the population and economy.[107]

ii) Assessing the leakage of such transfers to non-poor beneficiaries, and devising a system and procedures to improve the targeting of transfers.[108]

iii) Inducing greater data exchange (social programs, tax and social security bases, registers of people and property, and so on) among government agencies on the beneficiaries of transfers.

iv) Establishing a central unit to coordinate and integrate existing administrative and information databases.[109]

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105 In Colombia, for example, there is a failure to account for and make available data on energy subsidies. In Bolivia there is a lack of official data on energy subsidies, but the country does not have Colombia's accounting problem.

106 The leakages happen because there are universal tax exemptions on the consumption of basic foodstuffs, medicines, and rents. The Colombian case is particularly noteworthy because the non-poor are included. The proposal did not prosper in Colombia but tax spending, like energy subsidies, could be improved by increasing targeted transfers to the poorest households so as to exclude the non-poor.

107 In Colombia, the findings of the assessments of these programs have not always been taken into account in modifying them or deciding whether they should be retained. For example, although the assessment of Familias en Acción indicated that the program had only been effective in meeting its goals in rural areas, it was extended to urban areas.

108 For example, in Ecuador, in 2014 the government introduced stricter eligibility conditions for the BDH program so as to improve its targeting and give priority to people in the lowest quintile. Targeting consequently improved and the percentage of users in to the first quintile increased (from 34.7 percent in 2012 to 42 percent in 2016), but overall coverage rates declined substantially.

109 In Colombia, for instance, it is not possible to establish from administrative records whether a household, a person, a company or a producer receives more than one type of subsidy nor, in total, what proportion of their income comes from public resources. It is also common for spending on subsidies with the same purpose to be entrusted to more than one responsible institution.

v) Setting up an integrated data system that is wide in coverage and scope, and is periodically updated. Without this the previous points cannot be implemented.[110]

The main challenge facing all countries is to integrate existing databases of beneficiaries with the other administrative databases (tax, social security, personal and property registries, among others).

Institutions to improve allocative efficiency

Results-based budgeting

Peru is notable for having set key high-level priorities, implementing a model of change based on external evidence; Colombia has devised monitoring and assessment techniques, although without managing to integrate them into the budget cycle and improve spending. Peru instituted clear and manageable priorities in nine of the Ministry of Health's 10 budget programs on nutrition, health, and early childhood skills, integrating planning and performance into the budget and following recent trends in results-based budgeting in developed countries. Peru's strategy, coordinated by the Ministry of Finance (MEF), began in 2007 and seeks to improve the effectiveness and efficiency of public spending, aligning it with the country's priorities. It was designed to gradually supplant budgeting marked by a traditional focus on inputs based on past allocations. This was to be replaced by a system of budget prioritization based on strategic plans and interventions derived from models of change. As for Colombia, the main activities of the DNP's Public Policy Evaluation Office are: monitoring the targets of the national development plan, strategic evaluations of public policies, and strengthening results-oriented management. The National System of Management and Results Evaluation (Sinergia) monitors more than 650 indicators of the programs linked to the National Development Plan (PND) 2019–2023. Because of its scale, this arrangement hampers efficient use of the information. Despite all the effort put into evaluations, the information they provide is not integrated into the budget cycle and the recommendations are not used to improve interventions and efficiency.

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110 In Ecuador, the beneficiary database has not been updated since 2014. Colombia is moving forward with SISBEN IV.

Spending assessments

The MEF's Office of Spending Quality in Peru conducts assessments of only a handful of priority programs in order to identify failings and readjust the operating model to improve efficiency. Independent budget design and execution assessments[111] allow resources to be allocated to products (goods and services) by means of budget program designs, using the logical framework method. The programs affect the attainment of results that benefit the population; they allow spending to be assessed with a causal perspective, from input to outputs and outcomes that can be monitored with performance indicators; and they interlink the interventions of the three levels of government across the territory. Change models based on external evidence, however, have been used only for the Ministry of Health's strategic programs. It is hard to assess spending because there are almost 100 budgetary programs.[112] The Directorate of Spending Quality does not conduct cost-benefit analyses of programs in general. Design assessments make it possible to identify shortcomings in program activities, and to readjust the operating model and budget allocations so as to improve their efficiency. Impact assessments were not particularly useful because by the time they were completed and commitment matrices were determined, the program had already been altered. In Colombia, Sinergia[113] is devising a targeted assessment component to study the operation, impact, and development of the government's main policies and programs; this will serve as an input to decision-making on their design and implementation.[114] Process and/or outcome assessments are usually more cost-effective. There are no cost-benefit assessments, no evaluations of program design, and none of transfer leakage. The assessment findings are not integrated into the budget, and there is not even follow-up on the program changes induced by the assessments.

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111 See https://www.mef.gob.pe/es/presupuesto-por-resultados/instrumentos/evaluaciones-inde-pendientes.

112 See https://www.mef.gob.pe/es/presupuesto-por-resultados/estructura-de-programas.

113 See https://sinergia.dnp.gov.co/Paginas/inicio.aspx.

114 See https://sinergia.dnp.gov.co/Paginas/Internas/Evaluaciones/Metodolog%C3%ADas.aspx.

Allocation and management of subnational spending

Problems of inefficiency in spending also arise from allocative issues caused by the high degree of vertical imbalance. This in turn stems from the low level of subnational taxation and spending decentralization, and creates disincentives to improve subnational management. Subnational governments in the Andean region have insufficient capacity to manage decentralized functions, the prime example being problems in implementing public investment. There are no institutionalized mechanisms to coordinate parallel responsibilities between different levels of government (plan contracts, sectoral councils). Subnational governments account for a large share of spending on public-sector wages and public procurement (especially public works), but improvements in public procurement management systems and public administration are not usually integrated into progress made by central governments. Still incipient is the use of digital technologies and tools to improve management efficiency (land registry, expenditure targeting, strategic purchasing policy, electronic payroll, results-based budgeting, and program assessments). Subnational governments handle a significant share of public spending in Bolivia, Colombia, and Peru, but in practice they have limited authority over how to allocate spending because most national transfers (in the form of royalties or the general system of shares) are specifically allocated, especially to education, healthcare, and water and sanitation (OECD, 2014). This type of regulation aims to ensure that the central government can devote the resources to the areas of highest priority (such as education and healthcare). These rigidities, however, sometimes make it hard for local authorities to use the resources.[115] Moreover, the transfers that local bodies receive in the form of royalties from the exploitation of non-renewable natural resources largely depend on international commodity prices, which can affect their fiscal sustainability in the event of price movements on the international market.[116] Additionally, allocations of decentralized spending among the levels of government form a complex system because the system includes both a devolution and delegation of functions, and because there are many parallel functions among levels of government. Despite this, no institutions or councils have been devised or put in place to coordinate the shared functions of public spending. According to the OECD (2016), Colombia's plan contracts have been effective in strengthening coordination, supporting capacity-building, and developing infrastructure. But their use is still limited, difficulties remain in contract enforcement, and there are no penalties for non-compliance. Additionally, it is a challenge to monitor contract implementation.

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115   In 2017, unused royalty resources available in Colombia was close to 1.2 percent of GDP.

116   In Bolivia, taxes on natural resources (oil and gas) account for a third of total tax revenues (Fretes Cibils and Ter-Minassian, 2016).

The countries of the region must refine the instruments used to distribute resources to local authorities. These transfers should respond less to historical or political factors and more to each region's spending needs, as well as its social and fiscal achievements. Such a transfer system would help to reduce horizontal disparities between regions. Earmarked transfer resources should be aligned with both the national and local development plans. Subnational bodies should have an appropriate degree of flexibility to allocate expenditure. They should be allowed to devote resources to budget lines not originally covered by the regulations when the initial goals have already been met or new priorities have emerged in their localities. Efforts must also be made to tax more at the subnational level, so as to improve collection performance and reduce the existing vertical imbalance. All of this requires that countries assess and improve the capacities of subnational governments to manage decentralized functions.

Medium-term expenditure framework

Among the countries of the Andean region, Colombia and Peru have made the most progress in developing their medium-term fiscal framework (MTFF), although there is room for improvement. Colombia's MTFF and medium-term expenditure framework (MTEF) should improve the coverage of estimates and the detail at all levels of government.[117] Colombia and Peru are the only countries that have such as framework. They should be annual, however, with projections (actuarial or otherwise) of spending items (health and pensions) that could compromise fiscal sustainability in the medium term.[118] Another significant limitation of the existing MTEFs in Peru and Colombia is that they are still aggregated—that is, they set spending ceilings by ministry, without detailing allocations to priority or strategic programs. The MTEFs do not reflect the key goals or targets established in government planning, nor do they take account of policy and program assessments. They should do so in order to make clear the extent to which resource allocations are aligned to strategic objectives and the cost-effectiveness of the interventions, thereby improving the efficiency of public spending.

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117 Although the entire NFPS is covered, the MTFF only contains details of income and spending estimates at the central government level.

118 Given the high degree of informality in the countries of the region, we did not estimate scenarios of labor formality and their impact on revenue from social security contributions and the future cost of contributory pensions.

Institutions for better efficiency in spending management at the macro level

Except for Bolivia, the countries of the Andean region have fiscal rules, although Peru is the only country with a dual rule that protects public investment. Colombia applies a structural balance rule and has a structural deficit target of 1 percent of GDP for 2022.[119] Peru has four macrofiscal rules applicable to the national government.[120] The fiscal rules consist of: i) debt; ii) economic performance; iii) non-financial spending; and iv) a current spending rule.[121] Peru's fiscal rule limits not only the growth of total public spending (which cannot vary +/-1 percent above the rate of long-term economic growth) but also the growth of current spending (which cannot exceed the economic growth rate less one percentage point). This rule therefore contains growth of the more rigid current spending, thereby serving to protect public investment (Izquierdo, Pessino and Vuletin, 2018), since it puts a ceiling on current spending growth and investment increases by at least the same rate.[122] Ecuador introduced a reform of its fiscal rules in 2018. The new fiscal responsibility framework taking shape puts a limit on spending growth and also limits the deficit, while reaffirming the goal of keeping the debt below 40 percent of GDP in the medium and long term.[123] The new rules, however, do not distinguish between the handling of current and capital spending, so as to lessen the effects (apparent in Ecuador) of the volatility of hydrocarbon price cycles on the dynamics of capital spending. Bolivia has no fiscal rules. It is a

119 In the period 2012–2022, the structural balance must decline year on year. The proposed target stems from an econometric exercise to determine the structural balance required to achieve a debt level of 30 percent of GDP (López-Velandia and López-Ghio, 2019). By design, the rule is mainly one of structural revenues, since structural revenues are calculated first, adjusting tax revenues by fluctuations related to GDP and oil prices. A structural balance target is then established, and total spending is adjusted to close the budget constraint. Thus, given the structural revenues (RS) and the structural balance (BS), total structural spending (SS) satisfies the following equation: $BS = RS - SS$.

120 As regards the central level's regulation of subnational debt, Peru has two fiscal rules that must be considered in the budget stage and the execution stage: the Fiscal Rule on the Total Debt Balance and the Fiscal Rule on Current Account Savings.

121 The debt rule establishes that the non-financial public sector's (NFPS) total gross debt must be less than or equal to 30 percent of GDP. The economic performance rule states that the NFPS's annual fiscal deficit must be ≤ 1 percent GDP. The non-financial spending rule states that the rate of real annual growth of the general government's non-financial spending (NFS) must be less than or equal to the upper limit of the range of +/1 percentage point of that resulting from the 20-year average of real annual GDP growth.

122 Let X be the upper limit of NFS growth. NFS is equal to current spending (CS) plus investment (I). In the borderline case that CS and NFS grow at rate X, then , where the operator ∆ indicates gross rate of change and the shares of CS and I in NFS in the previous period. Thus, in the borderline case where current spending grows at the same rate as total spending, investment will grow at the same rate. Moreover, if current spending grows at a lower rate than total spending, then investment will grow at a higher rate than current spending.

123 The new system also involves some elements that could reduce fiscal procyclicality, such as the new stabilization fund or escape clauses to deal with extraordinary situations.

hydrocarbons-producing economy whose fiscal policy was strictly procyclical during the commodities super-cycle, and therefore it should aim to contain the effects of hydrocarbon price swings on fiscal policy.[124]

Except for Bolivia, the countries of the Andean region, have fiscal rules, although Peru is the only one with a dual rule that protects public investment.

Colombia and Peru are the only countries with independent fiscal councils, although Peru's is more independent. Colombia's Fiscal Rule Advisory Committee is a technical and independent institution comprising academics and former officials who are experts in fiscal policy. It oversees compliance with the rules, issues opinions on any changes, and determines the annual fiscal deficit target. Its statements are not binding, but they are understood as a requirement before making a decision that affects the fiscal rule. Peru's Fiscal Council is an independent committee that reports to the MEF. Its mission is to help improve transparency in public finance management through independent technical analysis of macrofiscal policy. To that end it issues the collective opinion of its members on the reasonableness of the methodologies and assumptions used in the MTFF, as well as on changes to and compliance with fiscal rules. It even conducts independent studies, such as on subnational public investment. Its role is therefore more important than that of its Colombian counterpart, because it produces its own projections and issues an opinion. In both cases, however, the opinions are non-binding, and the budgets of these institutions depend on the Ministry of Finance.[125]

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124 Ecuador has macrofiscal projections in the budget outline, which contains four-year budget programming, with the macroeconomic outlook (assumptions and international context), an assessment of debt sustainability, four-year fiscal programming, and a general description of subsidies, tax expenditures, and main contingent liabilities. Ecuador is making progress in developing the Medium-Term Fiscal Framework (MTFF) through its current program with the IMF. This is a "top-down" approach, linked to the fiscal rules, to establish aggregate spending ceilings for ministries and public bodies, which will plan their interventions accordingly. Bolivia has had a Fiscal and Financial Program (FFP) for 15 years, developed by the Ministry of the Economy and Public Finance and the Central Bank. It includes annual fiscal and monetary policy targets. Note that Bolivia's FFP is solid and was put together as part of a sophisticated process of institutional coordination. Its projections have proven to be consistent and accurate, but are produced only for the current year.

125 In Peru, in addition to publishing all the reports on its website, the MEF must include the Fiscal Council's opinion on the MTFF (in the official gazette and in said document) and the opinion on the fiscal rules must appear on the website.

Table 3.2: Fiscal Institutions in the Andean Region

	Tax Responsibility Act – fiscal rules	Medium-term fiscal frameworks	Fiscal councils	Stabilization funds
BOLIVIA	No	No (only the annual Fiscal-Financial Plan)	No	No
COLOMBIA	Yes (structural balance rule)	Yes	Fiscal Rule Committee	Yes
ECUADOR	Yes (permanent spending rule)	Budget outline	No	No
PERU	Yes (debt rule, spending and deficit rules)	Yes	Fiscal Council	Yes (Fiscal Stabilization Fund)

Source: prepared by the authors.

The countries should develop institutions to improve the efficiency of fiscal policy management, especially spending. At the macro level, efforts should be made to move forward with an appropriate fiscal framework in the form of fiscal rules, MTFFs, and fiscal councils. With regard to fiscal rules, as in Peru there should be dual clauses that establish greater control over the growth of current spending and create fiscal space, or protect public investment. Also needed are annual, medium-term fiscal and expenditure frameworks that have broad institutional coverage by level of government. These frameworks must have aggregate fiscal projections, but also some that are disaggregated by priority government programs, allocations based on policy and program performance, future obligations in the pensions and healthcare systems, contingent liabilities in PPPs, public and subnational enterprises, legal proceedings, and sovereign guarantees. All countries should adopt an MTEF whose projections are more detailed. Finally, independent fiscal councils should be set up to analyze fiscal policy performance, assess the costs and benefits of new spending initiatives, and conduct forward-looking analyses of public finances.

Policy options: collecting more and better

It is crucial to move forward with tax reforms that help raise revenue and improve equity. Reforms that improve equity and efficiency by reallocating tax burdens will affect economic growth, while striking a better balance between equity and efficiency.[126] Recent studies have shown that even if tax rates are not high, financing public investment through increased personal income taxes can boost long-term growth. If tax rates are high, as in Argentina and Brazil, public investment will only increase growth if it is financed mainly by restructuring the composition of public spending, and making significant efficiency gains (Christie and Rioja, 2016).[127] Recent research shows that potential revenue in the Andean countries could surpass 20 percent of GDP.[128] This suggests that there is significant room for an additional revenue-raising effort to increase public investment above current levels, and thereby drive economic growth to levels much higher than historical rates.

The corporate income tax should be simplified, reducing incentives for tax evasion and leakages. Business income tax was the main source of tax revenue until the advent of VAT. In Peru, for example, such tax revenue is twice that of personal income tax.[129] The global trend towards lower income tax rates began in the 1980s in the United States and the United Kingdom. In countries where nominal rates are still high, such as Colombia and Peru, consideration should be given to aligning corporate income tax rates with international standards. Currently, only five OECD countries have tax rates above 30 percent.[130] In the Andean

126 W. G. Gale and A. Samwick, Effects of Income Tax Changes on Economic Growth, in: A. Auerbach and K. Smetters (eds.), *The Economics of Tax Policy*, pp. 13–39, Oxford, Oxford University Press, 2016.

127 T. A. L. Christie and F. K. Rioja, Fiscal Position and the Financing of Productive Government Expenditures: An Application to Latin America, *Journal of Economic Policy Reform* 20, No. 2: 1–23, 2016. This statement is also found in Cavallo et al. (2018: 49–50): "In particular, when raising tax rates, the impact depends on the initial rate; the higher that initial rate is, the larger the negative impact on output will be. On the other hand, if initial tax rates are low, the output cost of increasing taxes is close to zero. Interestingly, several countries in the region, most notably some Caribbean and Central American countries, fall into this second category."

128 In a forthcoming study, Canavire-Bacarreza et al. estimate tax effort and capacity for a large sample of high, middle, and low-income countries during the period 1990–2016, using a stochastic frontier model of efficiency similar to that used in R. Fenochietto and C. Pessino, Understanding Countries' Tax Effort, Working Paper 13/244, Washington, D.C., IMF, 2013.

129 Instituto de Estudios Fiscales and Agencia Española de Cooperación Internacional para el Desarrollo (2017).

130 The incidence of a corporate income tax is different, depending on whether it applies to dividends, profits retained by companies, or interest received by the company's creditors. See A. Corbacho, V. Fretes Cibils and E. Lora (2012).

region, governments provide numerous tax incentives to businesses, including temporary exemptions, investment tax credits, "accelerated depreciation" allowances, and free-zone regimes. In many cases the incentives are redundant, inasmuch as they benefit investments that would have been made anyway. The incentives also create various administrative costs, and they encourage fraud and corruption, so eliminating them would make the tax more efficient.[131] In Peru, for example, tax breaks and reduced income tax rates are used as incentives to induce investment in certain regions. Companies established in the Amazon or in strategically located free trade zones are therefore granted tax cuts, in addition to special treatment for other taxes, such as fuel consumption.[132] Tax incentives that have not met their preestablished goals should also be eliminated. In Ecuador, for instance, company-level information reveals no correlation between the use of tax incentives and the level or growth of factor productivity or labor productivity. Indeed, it has been found that eliminating the tax incentives would yield fiscal gains of about 1.2 percent of GDP. In Colombia, recent reforms of corporate and personal income taxes have raised the cost of capital and the average effective rate, largely because of the increase in the rate on dividends. With respect to VAT, despite the progress made by levying the tax on previously untaxed goods, as in Colombia, there is scope to reduce the tax expenditures associated with VAT exemptions and reduced rates, which are not conducive to equity. This could be done by compensating the sectors most affected through monetary transfers, which are more transparent to monitoring by means of budgets. There is evidence to suggest that lower corporate income tax rates are associated with greater tax efficiency, but a gradual increase in the tax could be considered in cases like Ecuador, which has the region's lowest nominal rate.[133] Ecuador also has to amend highly distorting taxes such as the tax on foreign exchange outflows, which was introduced in 2007 to minimize volatility in short-term capital. The rate was initially 0.5 percent, but it was increased to 5 percent in 2012.[134]

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131   A. Corbacho, V. Fretes Cibils and E. Lora (2012).

132   *Ibid.*

133   A. Corbacho, V. Fretes Cibils and E. Lora (2012); M. Ruiz-Arranz and M. C. Deza (eds.), *Creciendo con productividad: una agenda para la región andina*, Washington, D.C., IDB, 2018.

134   The tax is levied on current and capital account transactions and therefore, according to IMF criteria, is a restriction on the movement of foreign currency. It currently accounts for 7 percent of total revenue, or about 1 percent of GDP.

The tax bases for personal income tax should be expanded. The factors that have conditioned this tax's performance in the Andean countries include: i) the narrowness of the tax base; ii) the large number of exemptions, deductions, and non-taxable minima; and iii) high levels of non-compliance, including late payments and collection problems. In the countries of the Andean region, personal income tax is levied mainly on formal workers in an employment relationship, who are subject to withholding by their employers. The difficulties in broadening the tax base for this kind of tax stem, above all, from the high degree of informality, independent workers' greater prospects of evasion and avoidance and, in almost all cases, the preferential treatment given to capital income. High rates of informality raise the question of how to finance social security, health insurance, and other kinds of benefits for taxpayers that are currently financed through payroll taxes, and to do so in a way that does not discourage formalization. In this regard, and in order to cover a larger number of workers, formalization strategies should begin to focus on informal workers who are working in formal businesses. Their incomes are generally higher than those working in unregistered enterprises.[135] Given the current state of the region's informal labor market, Bolivia would make the biggest fiscal gains, followed by Colombia, Ecuador, and Peru. In a scenario in which only those workers who are most likely to be formalized are in fact formalized,[136] the average gain would be 0.7 percent of GDP. In scenarios with tax systems similar to those of more developed countries—such as Spain, Italy, or LAC countries where personal income tax revenue is higher than in the Andean countries (Uruguay, for example)—the fiscal gains produced mainly by expanding the tax base, reducing exemptions and, to a lesser extent, increasing rates would be about 0.8 percent of GDP if Uruguay's personal income tax design were to be replicated. These gains could rise to 2.6 percent of GDP if reforms akin to the Spain scenario were adopted, and to 5.8 percent of GDP if Italy's tax system design were adopted (see Table 3.3). As regards equity gains, the most significant costs would be borne by the consolidated middle class and rich households, while the poor and the vulnerable middle class would not be affected to any great extent (Figure 3.15).

135 In these cases, the resource gain would come mainly from increased social security contributions. For example, a simulation exercise in which all currently informal workers are formalized reveals that the Andean region would gain, on average, 3 percent of GDP in higher revenue from social security contributions.

136 The probability of formalization is inversely proportional to a formality cost index (developed on the basis of the EUROMOD methodology).

Table 3.3: Results of Simulations of Personal Income Tax Reforms in the Andean Region

Country/ region/ scenario	Gains in fiscal space (% of GDP)			New taxpayers (thousands)		
	Spain	Italy	Uruguay	Spain	Italy	Uruguay
Bolivia	2.74	5.68	1.04	734	1,031	495
Colombia	2.26	4.28	0.51	3,958	6,024	2,821
Ecuador	2.60	6.86	0.73	1,111	2,183	1,072
Peru	2.62	6.19	0.74	2,331	5,739	1,112
Andean region average	2.56	5.75	0.76	8,134	14,977	5,500

Source: prepared by the authors on the basis of the results of simulations using the EUROMOD methodology.

Note: in the case of new taxpayers, presents the total for the Andean region.

Figure 3.15: Results of Simulations of Personal Income Tax Reforms in the Andean Region: Effective Rates by Income Deciles
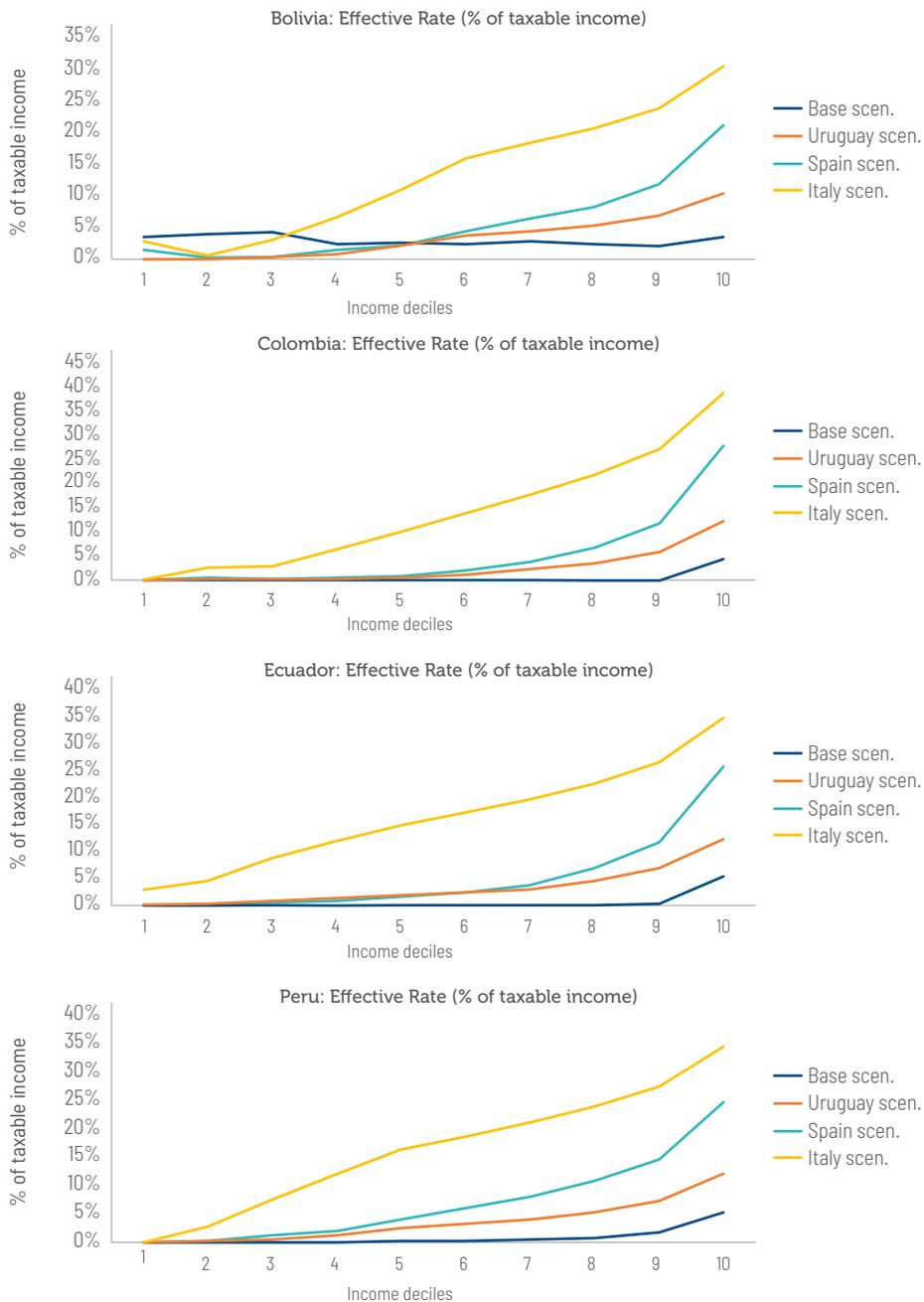
Bolivia: Effective Rate (% of taxable income)

Colombia: Effective Rate (% of taxable income)

Ecuador: Effective Rate (% of taxable income)

Peru: Effective Rate (% of taxable income)

Source: prepared by the authors on the basis of the results of simulations using the EUROMOD methodology.

Figure 3.16: Results of Simulations of Personal Income Tax Reforms in the Andean Region: Effective Rates by Stratum

Source: prepared by the authors on the basis of the results of simulations using the EUROMOD methodology.

Subnational tax revenues must be brought to levels similar to those in OECD countries. In the OECD countries, the subnational government tax take (state and local) averages 9 percent of GDP and 35 percent of total tax revenues. Decentralization is more likely to be effective when local governments are able to raise a relatively large share of their revenues in their own territories. Moreover, the smaller the transfers that subnational governments receive from central governments, the more effective accountability tends to be. Public policies to strengthen decentralization and the autonomy of local governments should focus on building institutional capacity and giving them incentives to increase their own revenues. This would be possible if instruments for real estate taxation were upgraded and the tax base were expanded by improving cadastral valuation methodologies, raising rates, taking advantage of the updating of the property register to devise non-tax revenue instruments, and optimizing the capacities of local tax administrations, yielding greater oversight and a higher tax take.137 An important aspect of managing local finances is the functioning and recovery of costs associated with the services transferred. This requires financially sustainable tariff schemes, sufficiently broad coverage, international quality standards, and equity in access. Greater capacity to raise revenue from real estate would give the Andean region resources equivalent to 0.7 percent of GDP on average.

Tax administrations must be strengthened, and must focus on broadening the tax base and tackling evasion. Tax administrations should take decisive steps towards modernization and digitization. They could begin by providing most tax services online. This would facilitate tax compliance, and make it easier and faster to access taxpayers' returns. One instrument they have begun to use is electronic invoicing. Currently, the countries of the region that have a consolidated electronic invoice are Argentina, Brazil (São Paulo), Chile, Ecuador, Mexico, Peru, and Uruguay. The main advantages of electronic invoicing include: i) it shortens processing cycles, including collection; ii) it reduces human error; iii) it cuts transaction costs (such as printing and storage space); iv) it aids the fight against fraud; and v) it helps modernize the economy and strengthen the technology sector because of the use of large-scale communication and digital signatures, and it fosters service development.138 Electronic invoicing's several effects include a

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137 Except for Brazil, there are no subnational income taxes. This is in contrast to OECD countries, where more than a third of average subnational revenue is from such taxes. See ECLAC, *Panorama fiscal de América Latina y el Caribe 2019: políticas tributarias para la movilización de recursos en el marco de la Agenda 2030 para el Desarrollo Sostenible,* Santiago, Chile, ECLAC, 2019, p. 69.

138 K. Hernández Romero and J. A. Robalino Herrera, Evidencias del impacto de la factura electrónica de impuestos en América Latina, in: A. Barreix and R. Zambrano (eds.), *La Factura Electrónica en América Latina, Panama* City: IDB and CIAT, 2018.

significant improvement in the traceability of transactions. It also has substantial impacts on taxpayers' risk perception, because electronic information increases the likelihood of detecting fraud or non-compliance with obligations.

In order to implement electronic invoicing, tax administrations must have the following elements in place: i) the taxpayer register, particularly as regards taxpayers' duties (in terms of the taxes to which they are subject and their formal obligations); ii) receipt and processing of electronic returns; iii) frequent and routine receipt of information from third parties by electronic means; and iv) effective auditors and effective collection enforcement. These factors aid voluntary compliance with tax obligations because of the perceived risk of being penalized effectively in the event of non-compliance.[139] The countries of the region have progressed to different degrees and face different challenges in using electronic invoicing. In Ecuador, 14 percent of taxpayers issue such invoices.[140] In Peru, although the issuance of electronic invoices covers 10 percent,[141] the use of electronic vouchers, electronic sales receipts and, to a lesser extent, electronic invoices has become widespread, rising from about 8,000 electronic vouchers issued in 2010 to nearly 2 billion in 2018. The number of issuers of payment vouchers has also grown significantly, to about 300,000 in July 2019. The wealth of information contained in electronic documents goes beyond collection issues, since it allows information to be cross-referenced at a very detailed level of transactions, making it possible to detect fraud in public procurement. Similarly, the information available to tax administrations should be processed with machine-learning techniques to prepare taxpayer risk profiles that can be used in tax oversight. A crucial step is the mass use of electronic invoicing and the move towards electronic control of goods transport, an area marked by significant resource losses as a result of under-declaration. Some interventions from behavioral economics could be applied extensively to combat the evasion of certain taxes. Finally, countries should foster institutional coordination between domestic tax agencies and customs, and encourage compliance with OECD regulations on international taxation, as well as the OECD Global Forum for the exchange of information.

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139 K. Hernández Romero and J. A. Robalino Herrera (2018).

140 K. Hernández Romero and J. A. Robalino Herrera (2018).

141 *Ibid.*

Table 3.4: Summary of Measures to Create Fiscal Space in the Andean Region (% of GDP)

Measures		Bolivia	Colombia	Ecuador	Peru
Needs					
Additional investment needed to close the gap by 2038 [a]		2.0%	3.5%	5.9%	3.7%
Fiscal adjustment required [b]		4.4%	0.0%	0.0%	0.0%
Total needs		**6.4%**	**3.5%**	**5.9%**	**3.7%**
Financing sources					
Corporate income tax [c]		0.1%	0.7%	1.2%	0.2%
Corporate income tax (rates) [d]			-0.5%		-0.8%
Personal income tax [e]	Conservative	1.0%	0.5%	0.7%	0.7%
	Medium	2.7%	2.3%	2.6%	2.6%
	High	5.7%	4.3%	6.9%	6.2%
VAT [f]		1.0%	1.1%	1.0%	0.1%
VAT evasion		3.2%	3.4%	1.7%	4.6%
Informality [g]		1.3%	0.4%	0.6%	0.5%
Subnational revenue [h]		1.0%	0.2%	0.4%	1.2%
Total revenues	**Conservative**	**7.7%**	**5.8%**	**5.6%**	**6.6%**
	Medium	**9.4%**	**7.6%**	**7.5%**	**8.4%**
	High	**12.3%**	**9.6%**	**11.8%**	**12.0%**
Cost savings [i]	Payroll	1.1%	1.2%	2.2%	0.3%
	Public procurement	2.8%	2.0%	2.6%	1.8%
	Subsidies and transfers	2.4%	0.9%	1.7%	0.3%
Savings in the social insurance package (unemployment, pensions, and health) [j]		3.0%	2.9%	2.5%	1.6%
Total cost savings		**9.3%**	**6.9%**	**9.0%**	**4.0%**
All sources	**Conservative**	**17.0%**	**12.7%**	**14.7%**	**10.5%**
	Medium	**18.7%**	**14.5%**	**16.6%**	**12.4%**
	High	**21.6%**	**16.5%**	**20.8%**	**16.0%**

Source: prepared by the authors on the basis of estimates presented in Chapters 2, 3, and 5 of this book.

[a] The difference between the maximum annual infrastructure investment needed (as a percentage of GDP) and estimated investment in 2019.

[b] Authors' estimates of the required fiscal adjustment, taking as reference the projected primary surplus for 2020 in Colombia and Ecuador, the 2020–24 average in Bolivia and Peru, and long-term assumptions of real interest rates, potential GDP growth, and public debt as a percentage of GDP at the end of 2019.

[c] In all cases, corresponds to eliminating incentives in corporate income tax.

[d] Considers the fiscal cost of a reduction in the rate of corporate income tax from 33 to 30 percent in Colombia and from 29.5 to 25 percent in Peru.

[e] The Uruguay, Spain, and Italy scenarios, respectively.

[f] With regard to VAT in Colombia and Peru, refers to eliminating the leakage of tax expenditures on VAT to the non-poor. In Bolivia, refers to eliminating VAT and complementary regime VAT tax expenditures. In Ecuador, refers to increasing the VAT rate by two percentage points.

[g] In all cases, in the informality scenario, the 20 percent of informal workers most likely to be formalized are integrated (gross revenues from social security contributions and personal income tax).

[h] Difference between current subnational property tax revenues and the estimate from a cross-sectional regression with data from Latin America and the OECD. The dependent variable is subnational property tax revenue and the explanatory variables are the economy's share of world GDP and subnational spending as a percentage of total general government spending. Data are the latest available (circa 2017). Considers the total spending responsibilities of subnational governments, many of which are linked to central government transfers, and thus the predicted values may be overestimated.

[i] Refers to eliminating inefficiencies in spending on public procurement, transfers (excluding tax expenditures), and wages.

[j] Considers net costs (reform costs minus current costs) in unemployment, pensions, and health. In the case of health, takes as a basis a cost of the proposal of 4 percent of GDP.

Box 3.2: Improving Tax Compliance Using Approaches from Behavioral Economics

In Colombia, more than 20,000 taxpayers with unpaid debts were randomly assigned to a control group or to one of three forms of communication: letter, email or personal visit (Ortega and Scartascini, 2015). All taxpayers in the treatment groups received the same message, informing them of outstanding debts and warning them of the consequences of non-payment. The effect on tax compliance varied substantially depending on the communication method used. Among those in the treatment group, the effect on payment of outstanding debts was 8 percentage points for letters, 17 percentage points for emails, and 88 percentage points for personal visits; almost everybody who received a visit from a tax official made some kind of payment. The average amount collected was about US$590 for each email, US$550 for each letter, and more than US$2,000 for personal visits, with variable costs of US$0.0, US$0.5 and US$8.0, respectively. Behavioral interventions can also help identify secondary effects—that is, what happens to compliance with other taxes when the authorities make heavier use of penalties for a particular tax. On the basis of the experiment in Argentina, but focusing on taxpayers who are business owners under the deterrence treatment, the results show that publicizing fines and the likelihood of penalties for those who fail to pay their property tax increased the amount those same individuals reported in their gross sales tax.

Source: Cavallo et al. (2019) on the basis of Ortega and Scartascini (2015) and López-Luzuriaga and Scartascini (2018).

The proposed measures would enable the countries of the Andean region to gain substantial fiscal space. Table 3.4 presents estimates of the region's ample fiscal space, based on the recommendations set out in this chapter. The table begins by presenting revenue needs. First, it presents the additional investment in public infrastructure that would have to be made, according to the investment plans discussed in the previous chapter. It also shows the fiscal adjustment necessary to keep the public debt stable. These calculations were made in January 2020, before the onset of the Covid-19 pandemic. This crisis will significantly affect the fiscal accounts, and therefore the need for fiscal space. As we shall see, however, there is room. Once the needs are presented, income sources are identified, divided into revenue and expenditure savings. On the revenue side we start with the business tax, including savings from eliminating tax incentives but including the costs of bringing rates to levels that are more competitive internationally. The additional revenues are then considered if the income tax were to be designed like the systems in Uruguay, Spain, and Italy. Revenues from reducing VAT leakage are also considered. Finally, the additional revenues from including 20 percent of informal workers into the formal tax system are considered, and if the revenues of subnational governments were adequate for their level of income. With these revenue scenarios, we add the possible savings. On the expenditure side, the savings reflect the elimination of the inefficiencies discussed in this chapter; on the social insurance side, they reflect implementation of the proposals discussed in Chapter 5. The notes explain the hypotheses used for each country. It is evident that the revenue sources exceed the needs in all cases. This is important because, given the impact of the pandemic affecting the world and the region at the time of writing, it means there would be room for maneuver.

It is clear, however, that the constraints of each country's political economy can cause significant variations from these assumptions. Table 3.4 is a simulation of the variables proposed by this study to widen the fiscal space available to countries, with the aim of increasing investment in infrastructure and stimulating growth. Political economy considerations may imply that, in some cases, it might be more feasible to increase tax revenues by broadening the base of taxpayers rather than by cutting spending. In some cases, tax reforms may be more viable; in others, it might be more feasible to improve the efficiency of tax collection or to close spending gaps. In any case, although the differences in national circumstances may be significant as regards the scenarios for measures proposed in this book, the basic proposal remains valid: increasing fiscal space is a condition for the countries of the region to be able to allocate growing amounts to public investment, thereby stimulating economic growth and the well-being of the population on a path towards developed-country status.

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Chapter 4
The private sector as an engine of growth

The importance of the private sector in new economic growth strategies

The previous chapters highlighted infrastructure's role in accelerating growth in the Andean region, and how to find space for it in public finances. If a growth strategy is to be successful, however, the private sector must mobilize more resources. This chapter looks at the important role it can play. We begin by reviewing the main challenges to making private investment contribute more to growth. We then analyze the chief problems underlying those challenges. Finally, we present a series of actions to deal with the problems.

Growing by overcoming difficulties and obstacles. The Andean region's private sector has grown in size and importance, with investment rising from 13 to 21 percent of gross domestic product (GDP) between 2000 and 2014. Colombia and Peru are notable, with investment of 20 percent and 18 percent of GDP, respectively, in 2016. At the other extreme are Ecuador and Bolivia, where investment accounted for 11 percent and 8 percent of GDP, respectively. Each country of the region, however, faces constraints and barriers of varying significance that hinder the growth of private investment and, therefore, an increase in productivity. The main obstacles and challenges that public policies must tackle in future are the size of and competition from the informal sector, high non-wage labor costs, the enormous tax burden on businesses, high logistics costs, limited development of the financial system, and the absence of a culture of innovation.

Figure 4.1: Private Investment in Selected Countries
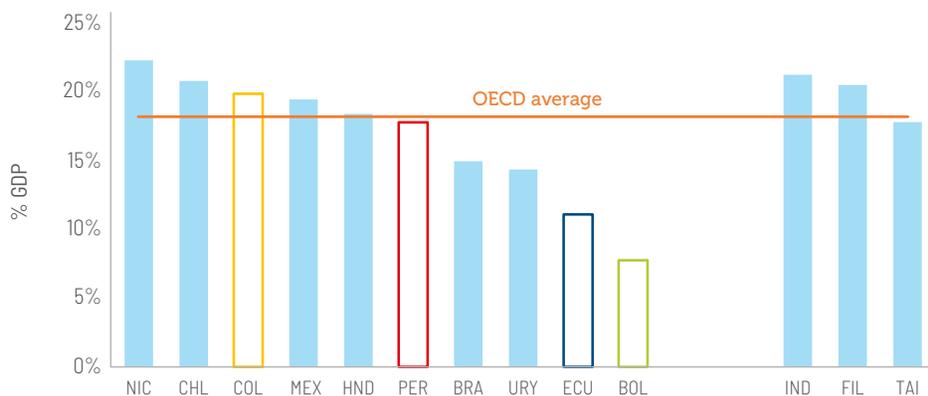
Source: *WEO* (IMF, 2016).

A challenging world backdrop. The current international economic environment is one of change driven by international competitiveness, and by the growing exchange of new technologies in products and services. Countries that can adapt to these changes—by implementing reforms that lead to economic and institutional modernization—will attain vigorous and inclusive growth. Sustaining growth in this context calls for stimulating the development of the private sector so as to increase its participation in the economy and its creation of new jobs. Countries must also integrate technologies that activate the engine of innovation and the knowledge economy, while simultaneously improving social equity.[1] Sustaining growth also requires that private businesses make a significant effort to improve their factor productivity by means of organizational strengthening and staff training. There will be a need, moreover, to establish an institutional environment that supports new business initiatives, training for new jobs, and innovation. The make-up of policies that induce the private sector to maximize its contribution to economic growth, therefore, will be crucial in meeting this goal.

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1   The compatibility between growth and greater equity is highlighted in the World Economic Forum's (WEF) Global Competitiveness Report 2018. According to that report, evidence suggests—contrary to popular belief—that there is no consistent relationship between economic growth and inequality; a country's economy can grow while simultaneously it has less inequality. Denmark, the Netherlands, and Sweden are prominent examples: they are in the top 10 on the Global Competitiveness Index (GCI) and are among the most equal countries in the world.

Productivity and growth in the Andean countries

Over the past two decades, productivity has fallen consistently in the countries of the region. The slow growth of labor productivity in the Andean countries also accounts for the development gap between the region and the countries of the Organization for Economic Cooperation and Development (OECD) and faster-growing Asian economies. In the period 1960–2017, average per capita GDP growth in Latin America and the Caribbean (LAC) was 1.76 percent, less than half that of other emerging regions such as East Asia and the Pacific (3.67 percent). This poor performance is largely explained by stagnating productivity. Over the past five decades, the Andean region's average total factor productivity (TFP) growth has been almost zero; in countries such as the United States, China, and Finland, annual TFP growth has been 0.78 percent, 1.83 percent, and 1.30 percent, respectively.[2] In 2013, average TFP in LAC was about 50 percent lower than in the United States, having amounted to 73 percent in 1960.[3]

The processes of stagnating productivity have not differed much among the Andean countries.[4] Productivity's contribution to GDP growth was negative in the period 1990–2017, while in the United States it contributed 0.5 percentage points a year to GDP growth.[5] In 2019, the productivity of Bolivian workers was 12.8 percent that of workers in the United States. In Colombia, Ecuador, Peru, and Venezuela, worker productivity was respectively 25 percent, 19 percent, 21 percent, and 16 percent that of an American worker (see Figure 4.2). Low labor productivity, measured as GDP per hour worked, accounts for more than 70 percent of the income gap in Colombia and Peru. Moreover, these countries have wider gaps today than in 1950.[6]

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2   Total factor productivity (TFP) is an indicator of an economy's ability to combine its available productive resources to produce goods and services. A higher TFP indicates higher average productivity and/or better resource allocation. A positive TFP contribution to economic growth thus indicates that growth in productive factors explains only part of the economic growth, and that the rest depends on the efficiency with which they are allocated.

3   Álvarez and Grazzi (2018); Grazzi and Pietrobelli (2016); Daude and Fernández-Arias (2010); Fernández-Arias (2014); Pagés (2010).

4   Grazzi and Pietrobelli (2016).

5   In contrast, the emerging economies of East Asia have successfully boosted TFP relative to the United States, from 49 percent in 1960 to 78 percent in 1980. Despite some decline, these economies still had about 64 percent of US TFP in 2013.

6   Arellano, Gouveia, Nieto-Parra, Orozco and Peers (2015).

Figure 4.2: Labor Productivity of the Andean Countries Relative to the United States, 2019
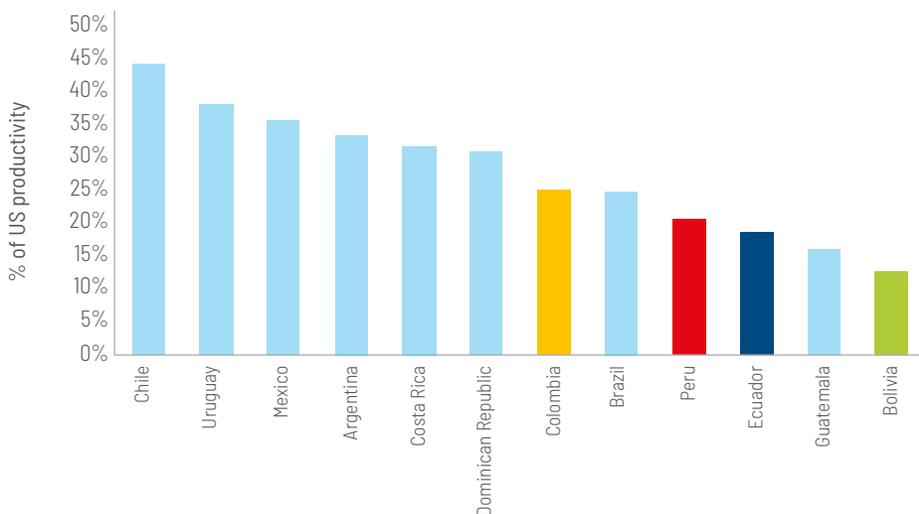
Source: prepared by the authors on the basis of data from The Conference Board (2019).

GDP growth has been based mainly on the accumulation of factors, such as labor and capital, rather than on productivity and competitiveness. Between 1970 and 2015, the Andean countries' per capita GDP grew by an average of 0.55 percent a year. TFP contributed 0.18 percentage points to this growth, and physical capital accumulation contributed 1.0 percentage points. According to the ranking of the World Economic Forum's (WEF) Global Competitiveness Index, which covers 140 countries, by 2018 Colombia and Peru were the best performers in the Andean region (positions 60 and 63). Ecuador, Bolivia, and Venezuela lagged behind (at 86, 105, and 127, respectively). Table 4.1 shows that the Andean countries posted negative TFP contributions over almost the entire period of 2010–18, with very few exceptions. Average labor productivity indices also reveal marked differences among sectors, as well as high degrees of specialization. Productivity differences in certain sectors, especially mining and hydrocarbons, are very significant. These variations stem from the high degree of specialization based on natural-resource exports, and the difficulties these economies face in raising average productivity as a whole, as well as revenues.[7] This is illustrated in Figures 4.3 and 4.4, which

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7   The sectors with the best productivity indicators are closer to the technological frontier and find it easier to absorb innovations. By contrast, those with very low productivity are far from the frontier and have less prospect of absorbing innovations. See Andrews, Criscuolo and Gal (2015); Hölzl and Friesenbichler (2010).

show average productivity by large sectors in Colombia and Peru. They reveal the region's wide diversity and specialization.[8]

Table 4.1: Contribution to TFP Growth in the Countries of the Andean Region, 2010–18 (percentage points)

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Bolivia	-1.8	-1.5	-1.4	-0.1	-0.1	-0.8	0.6	-2.9	-1.3
Colombia	-3.6	-2.8	1.7	-2.5	-0.8	-0.7	-1.6	-1.6	-2.1
Ecuador	-1.5	-0.3	4.1	0.6	-0.1	1.6	-4.6	-3.1	-1.7
Peru	-3.4	3.3	0.5	-0.6	1.0	-1.1	-0.6	1.9	-1.9

Source: prepared by the authors on the basis of data from The Conference Board (2019).

8   Kuznets (1979) has emphasized that excessive specialization and concentration of factors in a single sector poses problems for growth. According to the author: "It is impossible to attain high rates of growth of per capita or per worker product without commensurate substantial shifts in the shares of various sectors." This stylized fact has been endorsed in more recent literature, such as Imbs and Wacziarg (2003). On the basis of rankings of innovative countries, the World Intellectual Property Organization's (WIPO) 2018 Global Innovation Index Report confirms Kuznetz's thesis, reporting that: i) high-income economies are more innovative when their economic structures—and therefore their industrial portfolio—are more diverse; and ii) economies at all levels of development are more innovative when they have a more diverse export portfolio. See WIPO (2018), *Energizing the World with Innovation* (https://www.wipo.int/publications/es/series/index.jsp?id=129).

Figure 4.3: Average Productivity by Sector in Colombia, 2018
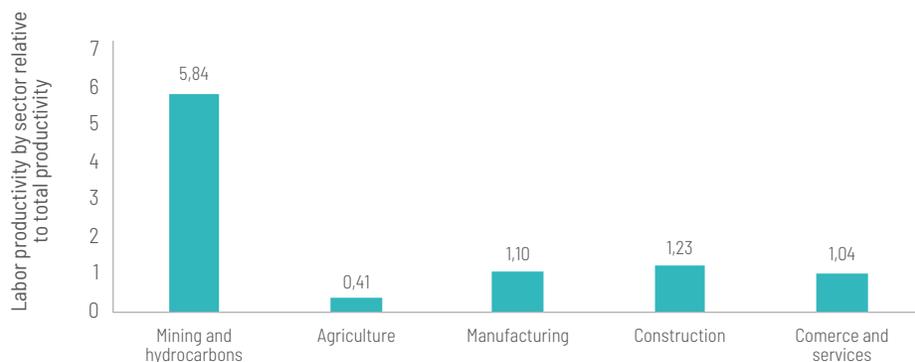
Source: prepared by the authors on the basis of DANE data.

Figure 4.4: Average Productivity by Sector in Peru, 2016
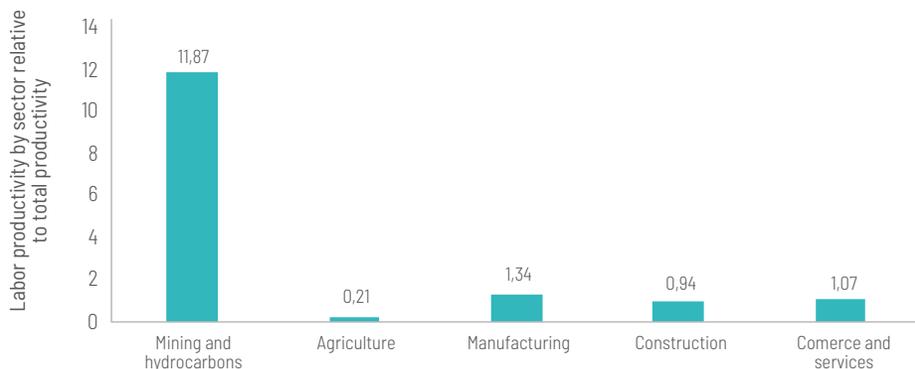
Source: prepared by the authors on the basis of data from the Central Bank of Peru and INEI, Peru.

The Andean economies offer evidence supporting the direct link between firms' export orientation and productivity. Economic theory states that the most productive firms are those that can access the international market, and there is empirical evidence at the international level to support this inference. Further, the positive link between productivity and exports is bolstered because firms entering foreign markets are more exposed to competition and have greater incentives to improve their productivity. Data from the Enterprise Surveys reveal a 10.6 percent productivity difference between exporters and

non-exporters of the same age and size that are operating in the same sector.[9] Figure 4.5 shows the productivity difference between exporting and non-exporting firms.

Figure 4.5: Exports and Total Factor Productivity in the Andean Region
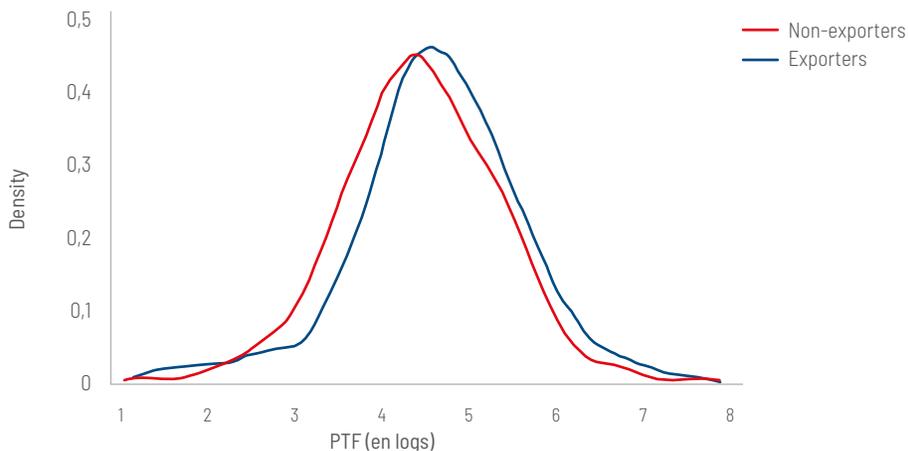
Source: prepared by the authors on the basis of Enterprise Surveys.

The presence of a large number of small enterprises is closely related to the productivity gap. One significant feature of the private sector in the countries of the Andean region is that the business environment consists mainly of micro-enterprises and self-employed workers, generally in the informal sector, whose contribution to investment and aggregate productivity is limited. Medium and large enterprises are not dynamic enough to increase investment and create the employment needed to absorb informal workers. This is true even in sectors where the Andean countries have the potential to grow or make their output more sophisticated. In Bolivia and Colombia, microenterprises account for 94 percent and 92.3 percent of all enterprises, respectively (see Figure 4.6). The percentage of microenterprises is similar in the other Andean countries.[10] The large number of small businesses in Andean countries is paired with low levels of productivity, a circumstance that translates into lower aggregate productivity than in other LAC countries.

9   The difference in average TFP between exporting and non-exporting firms in the Andean countries is 20 percent. When age, size, and sector are taken into account, the figure falls to 10.6 percent.

10 Although the distribution is similar for the Latin American countries, Argentina and Chile have a smaller percentage of microenterprises and a bigger percentage of small and medium enterprises (SMEs).

Figure 4.6: Firm Distribution by Size (% of All Firms)
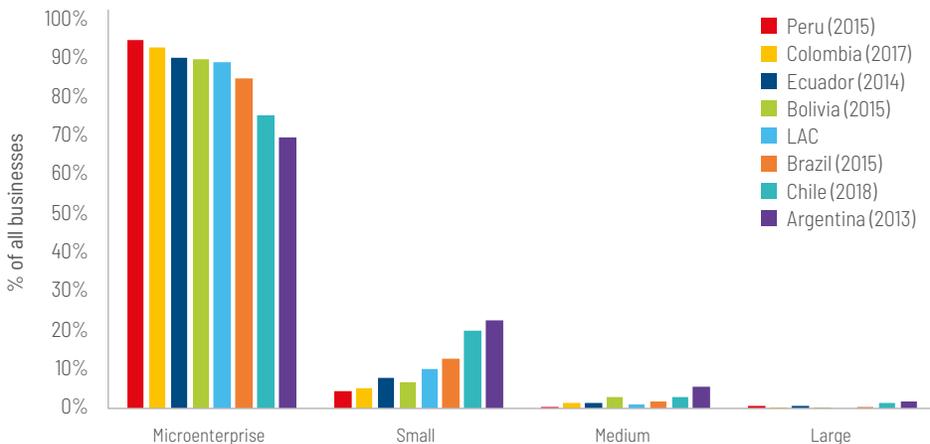
Source: prepared by the authors on the basis of Dini and Stumpo (2018) (Argentina, Brazil, Chile, LAC) and Ministry of the Economy of Bolivia.

Figure Chart 4.7: Average Productivity of Firms in the Andean Region
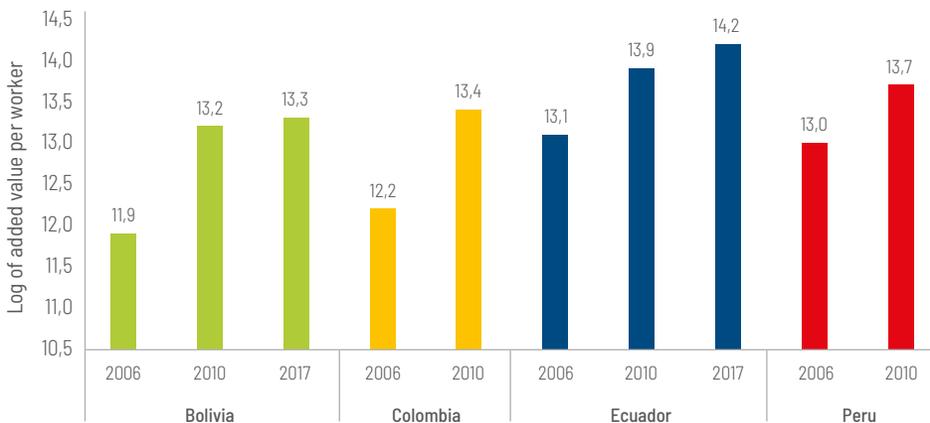
Source: prepared by the authors on the basis of data from the World Bank's Firm-Level TFP Estimates.

Figure 4. 8: Average Productivity of Firms in the Andean Region, by Size
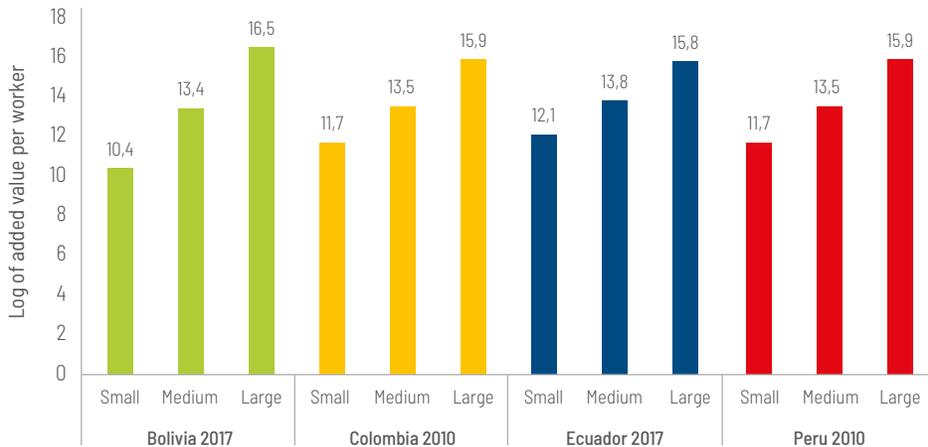
Source: prepared by the authors on the basis of data from the World Bank's Firm-Level TFP Estimates.

The ease of doing business takes different forms in different countries and responds to different circumstances. A business-friendly investment climate creates incentives for companies to invest, which has a significant effect on company productivity and growth, as well as on job creation.[11] The ease of doing business in the Andean countries varies. Colombia and Peru are ranked 65 and 68 of the 188 countries included in *Doing Business 2019*.[12] Venezuela, Bolivia, and Ecuador are ranked 188, 156, and 123, suggesting that it is more difficult to do business in those countries (Figure 4.9).[13]

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11 Escribano and Guasch (2012) present a methodology for studying the effect of the investment climate on business productivity, applying it to Guatemala, Honduras, and Nicaragua. Aterido, Hallward-Driemeier and Pagés (2011) study how the investment climate affects business growth.

12 *Doing Business* is a ranking of the ease of doing business on the basis of indicators that measure regulations on SMEs. In 2019 this index covered 10 categories: starting a business, construction permits, getting electricity, registering property, getting credit, protecting minority investors, paying taxes, trading across borders, enforcing contracts, and resolving insolvency. First place on the ranking is held by the country with the greatest ease of doing business.

13 World Bank (2019).

The main difficulties in developing business in the region arise from regulatory and institutional issues.[14] A solid institutional and regulatory framework is an essential condition for sustained company growth. According to the business climate surveys conducted in the Andean countries, entrepreneurs are mainly concerned with regulatory instability, weak legal rights, undue delays in resolving insolvencies, the operation of the goods market, protection of minority investors, and burdensome bureaucratic procedures to start a business. Additionally, entrepreneurs regard tax regulations and rigid labor legislation as obstacles to business development. These latter difficulties have created a vicious circle: labor regulations and tax practices linked to formal work have produced high levels of informality, which poses an obstacle to business growth. This in turn hinders the absorption of informal workers and the creation of formal employment. Aggregate behavior, moreover, does not reveal differences according to size: small enterprises are the most affected by the business environment, particularly as regards access to financing and services, and non-standard practices. On the other hand, the bigger the firms, the less likely it is that managers will identify these kinds of obstacles as the most important in their day-to-day business[15] (Figure 4.10).

The main difficulties in developing business in the region arise from regulatory and institutional issues.

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14   The links between the institutional environment and ease of doing business with economic growth have been widely documented. See, for example, Aghion, Yann, Cahuc and Shleifer (2010); Barro (1996); Beck and Levine (2008); Djankov, La Porta, Lopez-de-Silanes and Shleifer (2008); Helpman (2009).

15   Institutional barriers include problems related to licensing and permits, customs and trade regulation, political instability, and the judicial system.

Figure 4.9: Ease of Doing Business in the Andean Countries (Place in the Ranking)
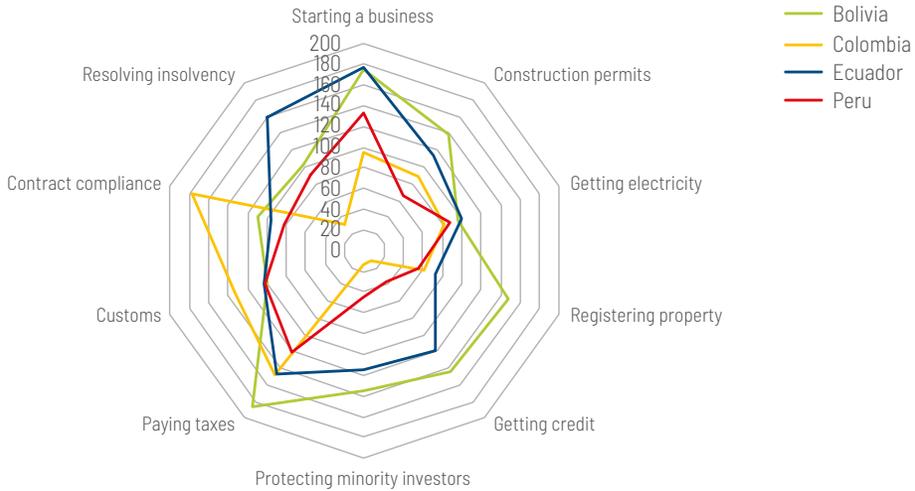
Source: prepared by the authors on the basis of World Bank (2019).

Figure 4.10: Main Obstacles by Firm Size (% of All Firms)
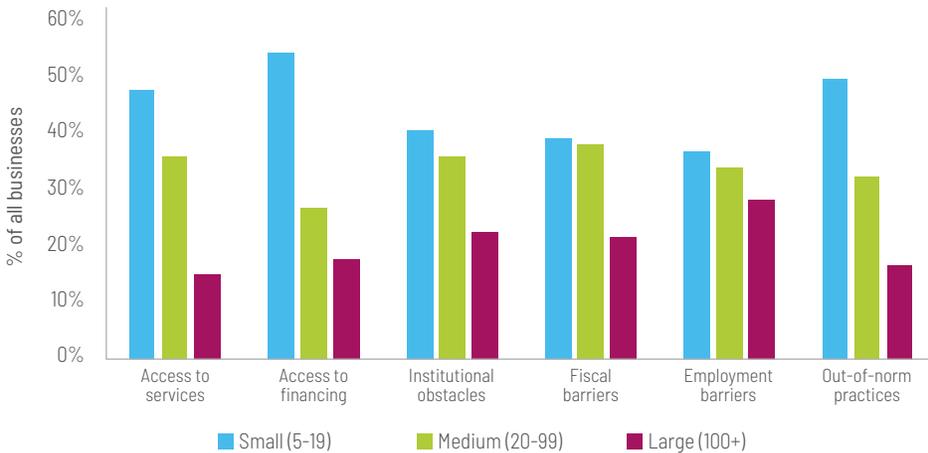
Source: prepared by the authors on the basis of data from WBES (World Bank).

Note: the data are expressed as a percentage of companies reporting that each issue is a major or severe obstacle to their operations.

Management practices are more important for large companies, while small firms pay more attention to the business environment. Case studies of 16 successful companies (in terms of growth in the region) were conducted in collaboration with the INCAE Business School. Analysis of the significant factors in their

rise showed that the driving forces in each of these organizations were internal factors such as leadership and strategic clarity, as well as close monitoring of the business environment and market trends, the pursuit of innovation, and an entrepreneurial mindset. Important matters such as the development and flexibility of the organizational structure were also considered, and whether personnel management was in line with the company's needs. The evidence suggests that the companies were able to overcome external barriers. In Colombia, for example, infrastructure problems were tackled by developing distribution centers and production plants in various parts of the country. In Ecuador, companies solved difficulties in access to credit and regulatory problems by growing with their own resources in order to limit financial risk. Specialized staff were assigned to mitigate institutional and regulatory risks. The latter approach has also been used as a business strategy in Bolivia and Peru.

Financial institutions are central to the growth strategy. Access to finance, as well as financial system development, are key determinants of productivity. The literature offers evidence of the positive impact of financial system development on: i) economic growth; ii) the allocation of capital to projects with higher returns, and iii) TFP.[16] The business sector has much less access to financing in the Andean countries than in the OECD countries, where credit to the private sector amounts to more than 70 percent of GDP. Financial development in the Andean region is limited and very diverse. Empirical studies by Sahay and other economists in LAC countries show that Colombia and Peru are among the five best positioned countries in terms of financial development. By contrast, Bolivia and Ecuador's financial development is low and mid-range.[17] This lag in the Andean countries' financial development is slightly greater than for the other LAC countries (Figure 4.11).

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16   See Aghion, Howitt and Mayer-Foulkes (2005); Demirgüç-Kunt and Huizinga (1998); Beck and Levine (2008); Galindo, Schiantarelli and Weiss (2007); Galindo and Majnoni (2006); Rajan and Zingales (1998).

17   Although it is a widely used measure, private sector credit as a percentage of GDP may not reflect a country's level of financial development. For this reason, Sahay et al. (2015) propose an alternative, broader measure that includes depth (size and liquidity of markets), access (ability of individuals to access financial services), and efficiency (ability of institutions to provide financial services at low cost and with sustainable revenues). The Andean countries reveal even wider gaps if, in addition to financial development in absolute terms, we consider financial development relative to economic fundamentals. Heng et al. (2016) further developed the study by Sahay et al. (2015) for Latin America and the Caribbean.

Figure 4.11: Financial Development in Latin American and Caribbean Countries, 2017[a]
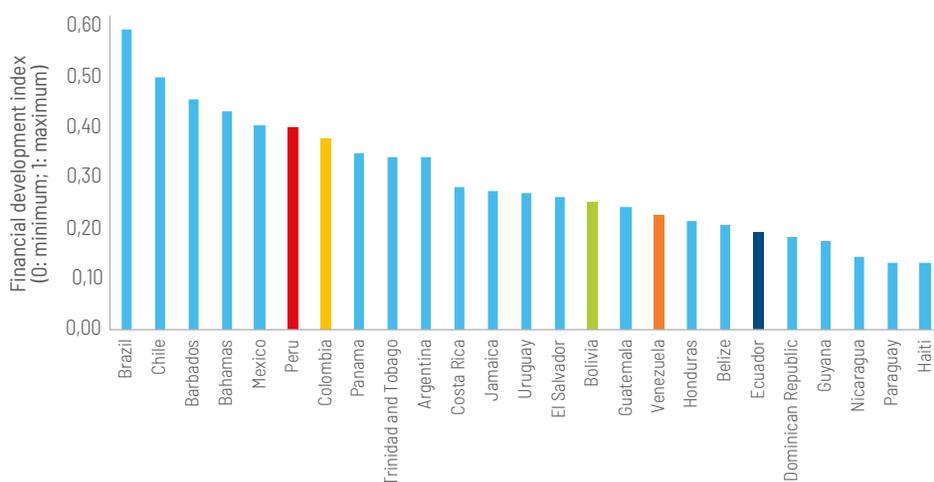
Source: prepared by the authors on the basis of data from the IMF's Financial Development Index Database.

Note: the values represent the financial development index.

[a] Financial development according to Sahay et al. (2015).

Apart from the constraint of low investment and capital intensity, the innovation ecosystem is underdeveloped. As in the rest of Latin America, the countries of the Andean region invest little in innovation activities, generally less than 0.55 percent of GDP.[18] In Colombia, research and development (R&D) spending amounted to just 0.22 percent of GDP in 2013, a figure well below the OECD average (2.36 percent) and the level of other countries with similar per capita income in Latin America (Brazil, 1.21 percent; Chile, 0.42 percent). The public budget is the main source of R&D funding. There is only limited state support for the creation of new businesses.[19] In 2015, R&D spending as a percentage of GDP in Latin America was 0.7 percent, far below countries like South Korea and Israel, where the figure is above 4 percent. In Ecuador, R&D spending between 2001 and 2014 averaged 0.21 percent, the lowest share being 0.05 percent in 2001 and the highest being 0.44 percent in 2014.[20] The business sector provided about 1 percent of R&D funding in 2011, down from 9 percent in 2008 and 18 percent in 2003. In the 2016 Global Innovation Index (GII), Ecuador ranks at 100 of 128 countries, behind Chile, Costa

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18   See Alvarez and Grazzi (2018).

19   See Navarro and Zúñiga (2011).

20   The Global Economy, *Business and Economic Data for 200 Countries* (undated).

Rica, Colombia, and Peru.[21] The low level of innovation in the region's economies is also apparent in the limited sophistication of its exports. On the 2017 Economic Complexity Index of 121 countries,[22] Bolivia is ranked at 108, Ecuador at 102, Peru at 81, and Colombia at 53. Excessive specialization in a few sectors and the limited complexity of the region's economies largely explain these differences. To some extent these factors also account for the difficulties these countries face in absorbing new technologies, as well as their slow spread through sectors that are further from the technological frontier.[23]

Figure 4.12: Innovation Activities by Companies, 2013–15
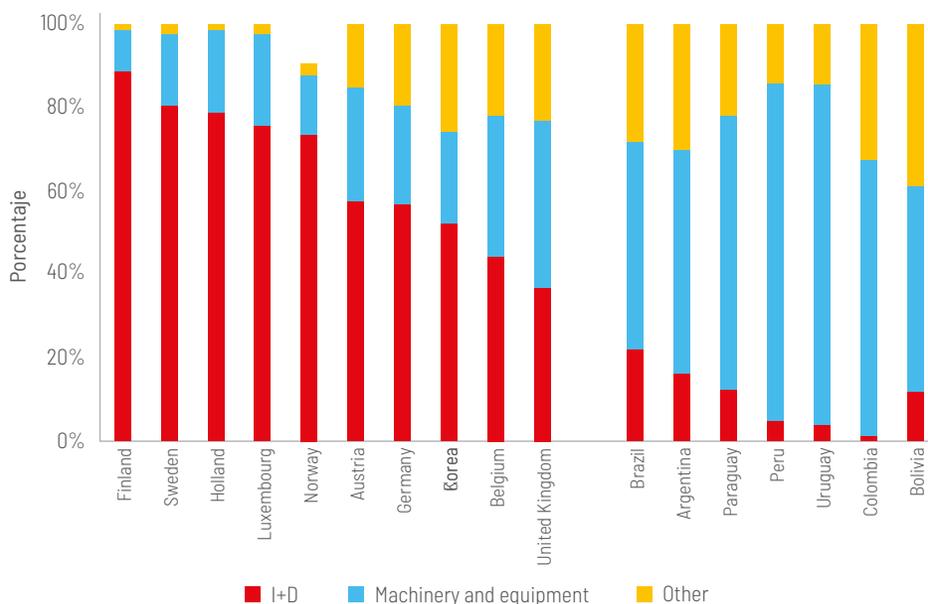
Source: Beverinotti, Foronda and Suaznabar (2018).

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21 Rubalcaba et al. (2019).

22 The Economic Complexity Index measures an economy's knowledge intensity, taking into account the intensity of knowledge used in making the products it exports.

23 In general, the specialization of the Andean countries' economies, which have fewer sectors in dominant technologies, is conducive to smaller enterprises on average, lower productivity, and wider diversity at the plant level in productivity and employment growth. Huerta-Arribas and Salas Fumás (2017).

Main obstacles to private sector growth

Informality is high. The level of informality in the Andean countries is very high, above the LAC average of 53 percent. An important aspect of informality is that it is inversely related to company size: the smaller the company, the greater the informality.[24] In Colombia, only 35 percent of workers are formal wage-earners, 18 percent are informal wage-earners, and about 47 percent are self-employed. This latter category also includes a large share of informal workers. Colombia's informality rate for women is higher than that for men: between 2009 and 2012, the informality rate was 65 percent for women and 60 percent for men.[25] In 2017, labor informality in Colombia's main urban centers was close to 47 percent.[26] Informal employment is also very high in Peru, at about 70 percent. Peru also has a very high proportion of workers whose employment is precarious. Moreover, almost half of Peruvian workers are in the country's two least productive sectors: agriculture, and the hospitality and retail sector.[27] Finally, in Bolivia almost 80 percent of workers are informal.[28] The available evidence suggests that high non-wage labor costs, among other things, discourage the hiring of formal workers in the Andean countries, especially lower-productivity workers.[29] The average duration of formal employment has declined as employers have opted for temporary contracts.[30] There is also evidence that the percentage of people who leave unemployment to take formal jobs is inversely related to the relative cost of formality. Higher hiring costs are also related to lower rates of wage labor, and

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24 See Salazar-Xirinachs and Chacaltana (2018). For Latin America there is empirical evidence that the GDP-employment elasticity was 0.36 in the period 1990–2012. The formal GDP-employment elasticity is 0.17. The latter indicates that the capacity to create formal employment in the region is almost half the capacity to create employment in general. A third of formal wage-earners are in temporary employment, a circumstance that produces high turnover between the different forms of employment. The rate of informal employment in companies with between two and nine workers is 72.4 percent; in companies with between 10 and 49 workers it is 29.1 percent; and in companies with 50 or more workers, it is 15.3 percent.

25 See de la Cruz, Andrián and Loterszpil (2016).

26 See Farné (2018).

27 OECD (2017).

28 In Bolivia an informal worker is defined as one who does not contribute to a pension plan. See IDB (2018).

29 de la Cruz, Andrián and Loterszpil (2016). In Colombia, the main reasons why it is hard to hire formal workers on indefinite contracts include: i) severance payments (40 percent); ii) high non-wage costs (35 percent); and iii) the level of the minimum wage (18 percent).

30 Between 2002 and 2012, the average employment period of formal-sector wage-earners in urban areas fell by 17 percent in Bolivia (from 5.6 to 4.6 years) and by 36 percent in Peru (from 6.1 to 3.9). Alaimo et al. (2015).

therefore to a higher number of self-employed people.[31] Similarly, the higher the costs related to formality, the lower the rate of formal employment of youths relative to adults. This also explains why more educated and productive workers are more likely to work in the formal sector.[32]

Many companies simply do not grow. Unlike in other countries, in which firms grow over time and become more established in the market, in the Andean countries size distribution is biased towards small firms. This is associated with a lack of business growth. In the United States, firms that have existed for more than 35 years are, on average, six times bigger than firms that have existed for less than five years; in the Andean countries, the former are only twice as big as the latter. Hsieh and Klenow (2014) have shown something similar for Mexico and India.[33] Indeed, a monitoring of firms between 2006 and 2016 (Figure 4.13) revealed that in Bolivia only 52 percent of businesses reported an increase in the number of employees, in Colombia 53 percent, in Ecuador 50 percent, and in Peru 59 percent. In other words, for 10 years—during which the region had high growth rates—almost half the firms did not grow.[34] In general, small businesses are an extraordinary source of employment, although there is evidence that both informal businesses and informal workers are less productive.[35] Moreover, microenterprises, informal workers, and irregular firms compete with formal workers and firms by evading tax and other regulations, allowing them to be less productive while remaining competitive.

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31   Alaimo et al. (2015).

32   *Ibid.*

33   See Hsieh and Klenow (2014).

34   See Ruiz-Arranz and Deza (2018).

35   See La Porta and Shleifer. (2014).

Figure 4.13: Proportion of Micro and Small Enterprises in the Countries of the Andean Region that Survive but Do Not Grow (%)
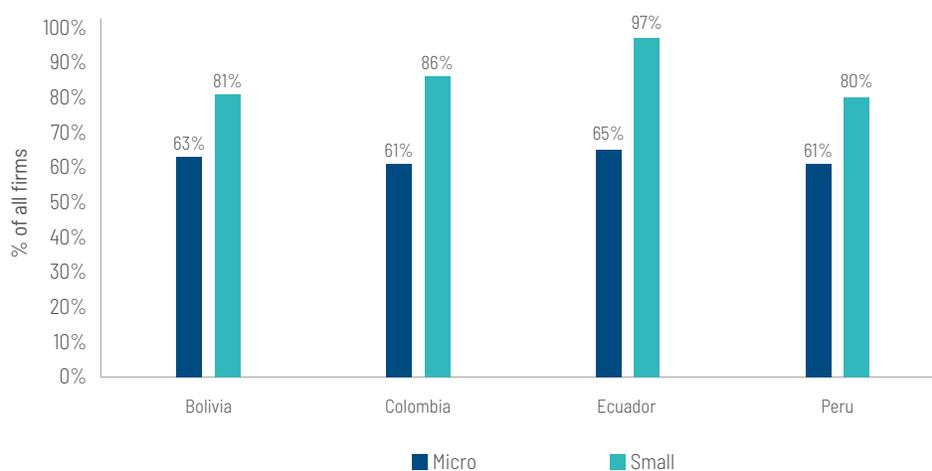
Source: Ruiz-Arranz and Deza (2018).

The private sector is little involved in innovation and is unconnected to innovation systems. In LAC, R&D financing and performance remain highly concentrated in public institutions.[36] Such financing comprises 59 percent of total investment in LAC, while in the OECD the figure is 35 percent.[37] The business community's low level of R&D financing in LAC is evident from a comparison with more advanced countries at the frontier of knowledge, where the share of businesses exceeds 60 percent (examples are Finland, South Korea, and Israel).[38] Similarly, there are few connections between science, technology, and innovation in businesses, and very poor interaction between enterprises, academia, and the business sector. These circumstances limit companies' capacity to internalize and exploit the development of new technologies and progress.

As an innovation strategy, companies in the Andean region have consistently preferred to buy technology rather than generate new ideas. Hence they have not encouraged the development of research capacities to absorb technology, and most are unaware of the importance of research for learning and innovation. The region's universities thus produce researchers and research capacities that the production system does not use. The least common innovation activity in firms is

36   Government agencies and universities.

37   Navarro and Zúñiga (2011).

38   de la Cruz, Andrián and Loterszpil (2016), *op. cit.*

commissioning research. This kind of innovation tends to have less relevant outcomes, because it copies existing products and processes instead of spurring more significant innovations, such as those that could arise from R&D investment. The most common innovation activities are related to the acquisition of capital goods, followed by undertakings that require greater staff participation, such as training, the acquisition of information and communication technologies (ICT) and, to a lesser extent, internal R&D, as well as engineering and industrial design.[39]

Access to credit is limited and mainly affects small and medium enterprises (SMEs). As regards the impact on investment and employment, data from the World Bank's Enterprise Surveys (WBES) reveal that access to financing increases the likelihood of investment by 16 percent and employment by 4.6 percent, the relative impact being greater for small businesses. As to credit allocation, as might be expected, credit for capital investment has had a greater effect on employment than credit for working capital. With respect to the link between credit and productivity, the data show that businesses in the region with access to credit are, on average, 32.5 percent more productive than those without such access. That difference falls to 19.6 percent when the comparison is between firms of the same size, age, and sector. Micro, small, and medium enterprises (MSMEs) face more restrictions than bigger firms in accessing credit; those restrictions largely explain their low productivity and growth.[40] In Colombia, MSMEs account for 99 percent of businesses, 80

Access to credit is limited and mainly affects small and medium enterprises (SMEs)..

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39 Exporting firms are making greater efforts to innovate. These efforts are related to the size of the companies; compared to SMEs, a greater proportion of large firms invest in the various innovation activities. Export firms are also more prone to innovate. For example, according to Beverinotti, Foronda and Suaznabar (2018), the tendency to innovate is higher in large, exporting firms that have foreign capital. Differences in human capital are equally substantial.

40 Several studies present evidence of the effect of access to finance on the growth of businesses: see Hall (1989); Beck and Demirgüç-Kunt (2006); Beck and Levine (2008); Canton et al. (2013); Mateev, Poutziouris and Ivanov (2013). For Latin America, see Cavallo, Galindo and Izquierdo (2010); Chiapello, Sanguino and Stucchi (2019). The relationship between financial constraints and business dynamics has also been studied by Cooley and Quadrini (2001); Clementi and Hopenhayn (2006); and Albuquerque and Hopenhayn (2004).

percent of private employment, and 35 percent of GDP, but they receive just 14 percent of commercial credits. At the end of 2013, about 186,218 commercial firms were receiving a commercial credit and 6,858 companies had the prospect of accessing a microcredit.[41] The main causes of this constraint include scant eligible collateral and weak contract compliance, which increases banks' risk aversion and reduces the credit supply.

There are systematic differences between large and small companies in their management practices. Figure 4.14 shows that, in general, large firms tend to have better management practices.[42] This is evident from the distribution of management practice scores for smaller firms, which is concentrated in the lower range, while the management practice scores for larger firms are concentrated in higher values. The biggest differences are between companies in Ecuador and Bolivia, followed by those in Colombia. The difference between Peruvian companies is less marked. Although the differences are more conspicuous in some countries than in others, they all display the same pattern: management practices are strongly related to business size.

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41   de la Cruz, Andrián and Loterszpil (2016), *op. cit*.

42   For the following exercise we segmented the companies into two groups: small companies are those with fewer than 155 employees, while large companies have more than that.

Figure 4.14: Business Size and Management Practices

Source: prepared by the authors.
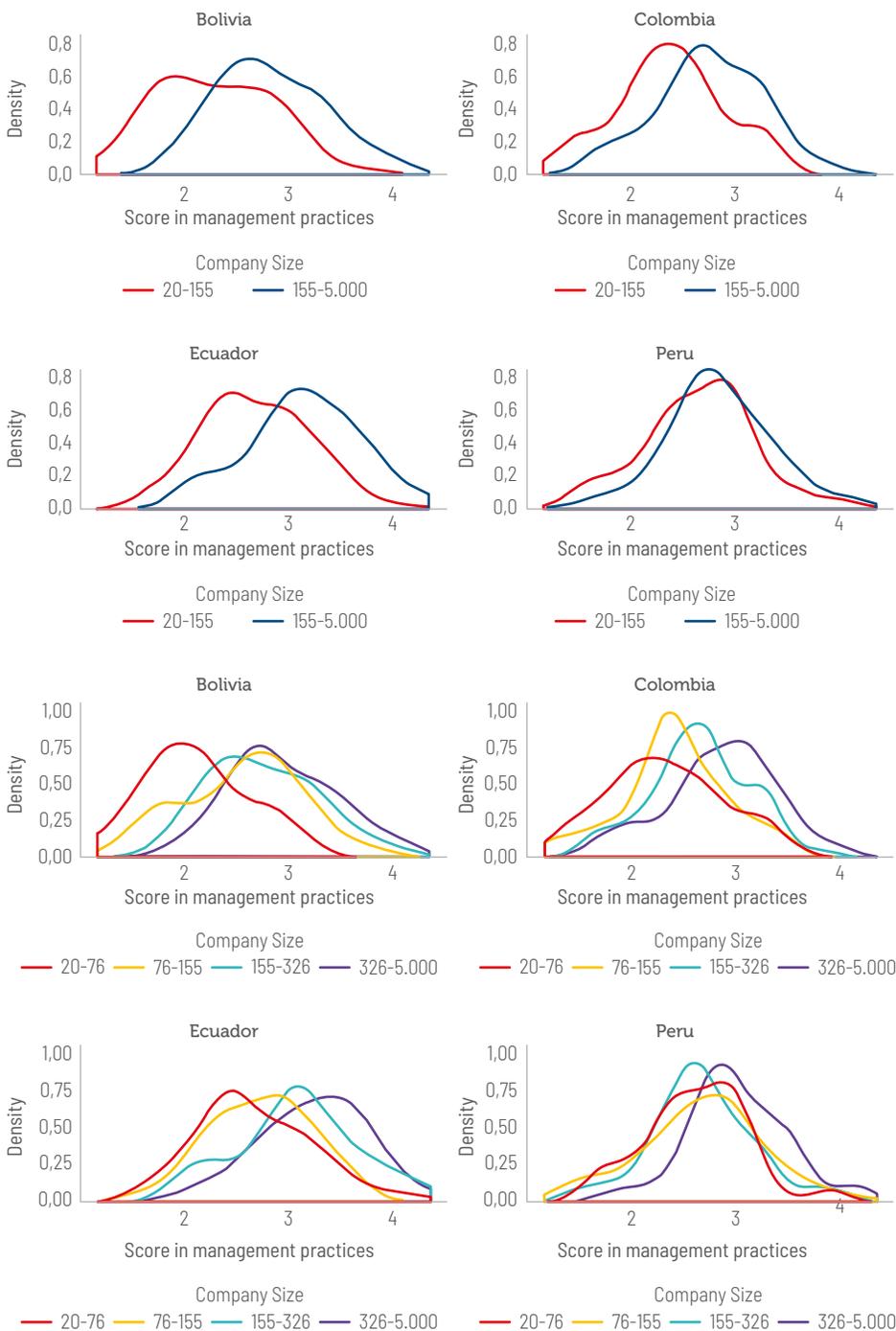
Job training is deficient relative to business demand. Companies often question the job training that public bodies offer to workers. Consequently, the firms usually provide training in the form of short, structured courses that focus on specific skills. The quality of the region's education system has generally improved over the past decade, but employers still point to the inadequate supply of professions providing the skills and aptitudes they need. According to Alaimo et al. (2015: 198), "the absence of this infrastructure makes it very hard to devise relevant training packages (for workers wishing to enter the labor market and those already active) that enable workers and firms to constantly update their skills and develop new ones to promote lifelong learning." The education and vocational training systems, therefore, should adapt the available training to present and future circumstances in the labor market, taking into account the implications that the ongoing technological revolution has and will have for that market. Countries should also support the introduction of vocational training that meets private-sector needs by upgrading existing training facilities for active workers.[43] The empirical evidence consistently shows that highly skilled workers are more likely to receive training, and the training they receive is more intensive, while low-skilled workers receive relatively shorter training. The evidence highlights the importance of complementary, off-the-job efforts to build the skills of the workforce, such as those geared to setting up a training system that strikes a balance between the efforts of private enterprises and public bodies, covering as many workers as possible in the formal economy.[44]

Policy proposals to encourage business growth in the Andean countries

The Andean region needs to push forward a structural reform agenda in order to induce an increase in private investment and productivity. A competitive environment and open markets are extremely important incentives for business development and innovation. The countries of the Andean region still have a long way to go to stimulate competitiveness and raise productivity. A starting point for this is to open up their economies. Current trade restrictions and regulations cause excessive friction that hinders the efficient reallocation of production factors, the creation of more productive firms, and the demise of low-productivity

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43 The percentage of workers receiving some form of training in 2012 was 14.2 percent in Latin America and the Caribbean, 37 percent in Mexico, 55.9 percent in South Korea, and 56.3 percent in the OECD countries (Alaimo et al., 2015).

44 González-Velosa, Rosas and Flores (2016).

companies. In other countries these circumstances have spurred the emergence of a dynamic business network (Melitz, 2003; Melitz and Trefler, 2012; Donaldson, 2015).[45] With no disregard for other factors (such as providing quality education and improving infrastructure to reduce transaction and transportation costs), policies that promote growth and higher productivity—through R&D, and the creation and adoption of new technologies—are more effective in a market environment that stimulates competition. Empirical studies also show that, in addition to the size of the economy and the level of per capita income, key determinants of company size are trade openness, market capitalization, and physical infrastructure.[46]

Public policies must foster flexibility in the allocation of production factors. Policy decisions, such as education, the degree of trade and financial liberalization, and the size of government, among other factors, are related to countries' growth rates and TFP. These factors have crucial effects on allocative efficiency and are very important in triggering changes in productivity, and therefore in growth-rate differences. A central element of the strategy to move towards a new pattern of growth should be changing the regulations that restrict commerce, especially those that make it unduly hard for production factors—labor and capital—to be reallocated to firms and sectors with greater growth potential. Empirical research has shown that allocative efficiency among the components of TFP accounts for 60 percent of the gap between the most developed and least developed countries. Technical efficiency explains the other 40 percent of the gap.[47]

This suggests that policies and actions with direct effects on factor allocation are very significant in explaining differences in growth performance between developed and developing countries.[48] In this new environment, labor-market flexibility can have a positive impact on employment, increase formal hiring, and

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45 The idea that productivity growth in a market economy invariably involves restructuring and factor reallocation within and between sectors is not new. Schumpeter coined the term "creative destruction," suggesting that the process of adopting new products and processes inherently involves the destruction of old products and processes. See Schumpeter (1942).

46 See Herrera and Lora (2015). The simulations in this study also suggest that, if the gaps were closed in each of these three areas, company size in the countries of the region, on average, would match global patterns in the distribution of companies by size.

47 The inefficiencies stemming from poor factor allocation were originally studied by Leibenstein (1966). Hsieh and Klenow (2009) calculated that removing distortions in factor allocation would increase productivity by 30 to 50 percent in industry in China, and 40 to 60 percent in India. According to these authors, the 2 percentage points of annual TFP growth achieved by China between 1998 and 2005 stemmed from the reduction of these distortions in resource allocation. See also Jones (2011). Olley and Pakes (1996), another pioneering work, emphasized resource allocation in the telecommunications industry.

48 See Oliveira Pires and Garcia (2012).

mitigate the negative effects of temporary contracts.[49] A matter related to devising public policies that encourage the mobility of production factors is that, although reallocation can be vital for growth, there are clearly losers in the process, including the owners of technologically backward firms and displaced workers. Hence the importance of building up social protection schemes, not only to mitigate the cost of unemployment but also to ensure that turnover leads to higher productivity and wages.[50]

Fostering economic growth requires a business environment that promotes innovation and higher productivity. If the private sector is to be fully integrated into economic growth processes, and if the countries are to attain high levels of social equity, it is vitally important to ensure that the Andean countries join the Fourth Industrial Revolution, use new digital technologies in production processes, and develop skills to improve labor practices. New technologies have lowered the cost of innovation, enabled entry into international markets, and facilitated access to venture capital.

One of the most direct routes to higher growth might be to stimulate the development of technologically advanced manufacturing and service enterprises, which feature more skilled workforces and greater process innovation. The firms that are most advanced in the use of new technologies also have positive externalities and no less important indirect benefits. For example, the presence of such firms can send key signals about the strength and vitality of the country's economy as a whole, they can attract highly skilled workers, and they can raise expectations for those in both formal and informal employment. The creation of new jobs also produces incentives for firms and workers themselves to aim for higher levels of education and training. In Bolivia, manufacturing and service companies that introduce process innovations are between 166 and 196 percent more productive than those that do not innovate. Manufacturing and service firms that introduce product

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49 In recent years, there have been significant increases in temporary employment in the formal sector. For example, in Bolivia the percentage of formal-sector wage-earners with temporary contracts in urban areas (aged 25–40) rose from 31 percent in 2006 to 43 percent in 2013. In Peru the figures rose from 50 percent in 2005 to 70 percent in 2013. The negative effects of temporary contracts include possible disincentives for training and human capital accumulation within companies, which can also have negative effects on productivity. In this regard, the available studies show a significant link between short-term employment relationships and a lower incidence of training. See Alaimo et al. (2015). The direct effect of temporary employment contracts on productivity has also been documented in European countries. See, for example, Dolado, Ortigueira and Stucchi (2016) for Spain.

50 The possible negative effects of employment reallocations towards more productive activities, and the need to devise social protection policies because of the ensuing unemployment, is addressed in Alaimo et al. (2015).

innovations are 56 percent more productive than those that do not innovate.[51] In Ecuador, younger firms and those that invest more in R&D activities per employee have significantly higher levels of employment growth and are much more likely to become high job-growth companies.[52] In line with this, high-growth companies are more likely to be young, and they even exert competitive pressure on more traditional companies and can be crucial to innovation.[53] The links between firms and academic institutions can be strengthened by allocating specific resources to those bodies that have better R&D outcomes and greater knowledge transfers to the productive sectors. Further, the very high failure rate of small businesses in their early years could be reduced by better training of new entrants to the business world. Public policies should be geared towards: i) supporting enterprise ecosystems; ii) lowering the organizational costs of growth; iii) supporting workers' financial participation in businesses, and linking part of their pay to productivity gains and company profits;[54] and iv) organizing, with employers' associations, management training and team-building activities for senior managers with standards of excellence, and including academic institutions in such activities.[55]

It should be a public policy priority to devise policies that reduce the financing obstacles currently hindering businesses. Financial solutions to the issue of low business productivity require multiple interventions, including better provision of credit and encouraging firms to access debt and capital markets.

Public development banks can play a crucial role in improving access to financing by offering resources for productive investments, and by improving the conditions that encourage private investment and make it viable—for example, through public guarantee funds[56] and public-private partnership (PPP)

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51   See Beverinotti, Foronda and Suaznabar (2018).

52   See Grijalva et al. (2018).

53   See Acemoglu et al. (2013).

54   In Germany (a country with one of the biggest proportions of large and medium firms in its economy), large companies are obliged to set up joint corporate governance bodies with representatives of workers and shareholders. See Huerta-Arribas and Salas Fumás (2017).

55   Colombia has had success stories in innovation, including: i) Ruta N (Antioquia): a partnership between the public and private sectors and academia to finance the development of innovative businesses in Medellín; ii) Tecnova (Antioquia): the aim is to foster partnership, information exchange, and synergies between universities and research centers and the region's businesses; iii) Connect (Bogotá): set up by the region's businesses and universities with public-sector support to increase innovation and entrepreneurship in Bogotá and Cundinamarca. See de la Cruz, Andrián and Loterszpil (2016), *op. cit.*

56   Arraiz, Meléndez and Stucchi (2014) present evidence of the effectiveness of Colombia's National Guarantee Fund.

financing schemes.[57] Private bank financing can be increased substantially if guarantee systems are introduced to reduce the lender's risk. Mutual guarantee systems that bring together sponsoring members (which offer guarantees) with participating members (which provide and also receive them) have begun to spread in LAC. These systems can be adopted in the Andean countries, by including tax advantages for sponsors.[58] In this regard, several LAC countries have experience of successful models featuring financial incentives and instruments to fund innovations, with the risks shared between the public and private sectors; they also have experiences of financing through credit lines and venture capital to support innovative enterprises.[59] Venture capital can be an important lever in transformation. An incipient ecosystem for innovation has begun to emerge, but there is still only a limited supply of new financial products, especially in the capital and complementary non-financial services markets. This is because of a lack of experience with these instruments, the limited legal and institutional basis to develop and implement them, and a business culture that is sometimes too risk-averse.[60]

At present, very few SMEs have the means and capacity to access this kind of financing. It should therefore be an important public policy goal to strengthen and increase capacity in this business segment, so that firms can access these new and innovative financing instruments based on knowledge and innovation. Countries should also support the provision of non-financial services geared to improving business skills, especially among underserved sectors such as MSMEs, so as to improve their access to credit.[61] Financial institutions can also help professionalize business management, the use of crowdfunding, and the deployment of risk capital to expand services and support innovative projects. With regard to breach of contract, creditors' rights must be assured through more effective judicial enforcement and debt restructuring programs for viable companies, with particular attention to SMEs.

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57 Mazzucato (2013).

58 See Crespi, Fernández-Arias and Stein (2014). These systems have been adopted in different forms in Argentina and Chile. Chile uses financial incentives such as long-term loans from the Corporación de Fomento de la Producción (Corfo) to boost the coverage and horizontal development of reciprocal guarantee systems. Giuliodori et al. (2020) show how mutual guarantee societies improved Argentine SMEs' access to financing.

59 Castillo et al. (2020) present, for example, evidence of the effectiveness of Argentina's FONTAR program to promote innovation.

60 The Andean countries lack developed secondary markets (apart from mortgage credit) and financial instruments to mitigate risks.

61 Castillo et al. (2014) provide evidence of the effectiveness of Argentina's Business Restructuring Program, which helped SMEs hire professional support services to improve management practices, among other things.

The growth of businesses would increase aggregate productivity and reduce informality. Public policies could boost productivity by enabling the growth of productive businesses. Hence an important policy goal should be to facilitate and promote the growth of enterprises and productivity. At the same time, technological change and the expansion of the digital economy have spurred the emergence of new business models, new forms of hiring, and new forms of employment, creating new occupations and allowing SMEs to expand globally in a way that traditional businesses had failed to do. E-commerce and digital platforms have also opened up new opportunities for SMEs: 50 million of them use Facebook to find customers, and 30 percent of their followers are from other countries. The creation of value chains involving large firms and SMEs can also have a significant impact on productivity. When SMEs have an organic link as suppliers to large companies and adapt to their quality demands, the large companies can become engines of SME growth, driving professionalization in the smaller firms and providing technological and organizational innovations and upgrades. To expand large companies' supply networks by using smaller firms, public policies should aim to improve SMEs' position in knowledge-intensive service sectors, and drive their growth towards more efficient and better-managed production scales and capacities.[62]

Pursuing policies that end discrimination in the labor market, mainly gender discrimination. There is evidence that women suffer discrimination in the labor market, as reflected in wages that are lower than those paid to men with the same skills and experience. In some cases this is because of discrimination for the same job, and in others it is because of discrimination in terms of the type of jobs that women get. The former kind of discrimination has been declining over time, but the latter is a serious problem and has grave implications for productivity. Management capacity is important to productivity, so the inability of women with high-level managerial skills to find jobs at that level indicates that there is enormous unused potential. Policies that favor gender equality would therefore have a significant impact on productivity in the Andean region's economies. The effectiveness of these policies will depend largely on the capacity to adapt to new trends in the labor market and exploit the opportunities that such trends provide.

Promoting training and job-placement policies for young people. Youth unemployment is higher than for the population as a whole, and mainly affects those who did not complete secondary school. Lack of skills among the most vulnerable

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62 Worth noting is the information in *Gig Economy* regarding independent workers who use new technologies and platforms to carry out their work. Workers in the gig economy are more likely to work part time and, unlike formal workers, they are more likely to work mainly from home. See Gitis, Holtz-Eakin and Rinehart (2017); Etsy (2015).

people hinders their entry into the formal labor market. Public policies should be geared more decisively to educating and training youths—for example, by incentivizing them to return to school, devising job training programs that enable them to enter the labor market and, not least, approving incentives for companies to hire young people and provide them with the training they need to find more stable, better quality, and productive jobs. In Brazil, for instance, the Apprentice Law grants tax exemptions to companies that hire and train youths for their first work experience.[63] In Colombia and Peru, programs to improve young people's skills, combining classroom teaching, workplace training, and job-search services (Jóvenes en Acción in Colombia, and ProJoven in Peru) have had satisfactory results in terms of employability, wages, and job quality.[64]

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63 Australia has pre-apprenticeship programs that include off-the-job instruction with a training program provider, on-the-job training, and practical experience for one or two years. There are also apprenticeship programs combining off-the-job and on-the-job training and practical experience while the apprentice is employed for three to four years. These have had positive effects on the participants' job prospects. See Alaimo et al. (2015).

64 OECD-IDB (2017).

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Chapter 5
Consolidating the middle class in the Andean countries

Chapter 1 pointed out that the region's substantial economic growth in the 2000s was the main driver in the rise of the middle class and the sharp fall in poverty. The strategy proposed in this book seeks to consolidate those gains. Apart from the growth strategy, however, that goal also requires rethinking social policies. This chapter identifies the main challenges to social policies from the standpoint of consolidating the middle class. It then discusses the main problems underlying those challenges. Finally, it makes a series of recommendations to tackle the problems.

Rethinking social policies

To consolidate the reduction of poverty and the expansion of the middle class, it is essential that the Andean countries resume a path of sustained economic growth. Bolivia, Colombia, Ecuador, and Peru[1] have made significant progress on poverty reduction. Between 2000 and 2017, the percentage of the population living in poverty (for example, with per capita incomes below US$5 a day) fell substantially in all the countries, mainly as a result of the high levels of economic growth in that period. That in turn translated into significant improvements in quality of life, better access to social services, and greater human capital accumulation. A return to growth is therefore essential in order to prevent the population from falling back into poverty, and to avert a decline in their well-being.

Consolidating the middle class can create greater prosperity. The middle class can drive up economic growth by increasing investment in human capital.[2] The greater propensity of middle-class families to consume and demand quality

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1   As in the rest of the book, this chapter defines the Andean region as comprising Bolivia, Colombia, Ecuador, and Peru.

2   See Banerjee and Duflo (2008).

goods could stimulate productive investments that positively affect income generation.[3] Some authors, moreover, argue that the middle class has the potential to uphold a greater degree of institutional and democratic stability.[4] The Andean countries, therefore, could embark on a virtuous circle in which sustained economic growth and the consolidation of the middle class are processes that nourish each other.

The consolidation of the middle class should not focus solely on driving growth. It also calls for rethinking social policies. There is a contrast between anti-poverty policies, which center on raising people's incomes above minimum subsistence levels, and policies that pursue the goals of economic stability and protection against risk.

The Andean countries face a significant challenge in this regard: their insurance systems have significant shortcomings, leaving vulnerable sectors of the middle class exposed to risks that could affect their income, and therefore their economic well-being. This chapter describes the middle class in the Andean countries. It examines the economic patterns that determined its growth, and considers the challenges of consolidating it. The chapter is divided into three sections. The first describes the emergence of the middle class, analyzes factors associated with its growth, characterizes its members, and considers the risks it faces, using information from household surveys. The second section goes deeper into the issues, especially the vulnerability afflicting a large part of the middle class as a result of income instability and the absence of protection. The third section presents policy recommendations.

Characterization of the middle class in the Andean countries

This chapter describes the middle class using an income-based definition that is common in the economic literature and is based on an observable and objective criterion. The definition is grounded in absolute measures of income level. Other definitions, based on relative measures, consider the position that the middle-income sector have in the internal income distribution. Under other, broader definitions, membership of the middle class is associated with a wide range of factors apart from income, such as social status, prestige, occupation,

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3   See Murphy, Shleifer and Vishny (1989).

4   See Easterly (2001).

and educational level. Nonetheless, absolute measures based on income level are the most appropriate when making international comparisons such as those discussed in this chapter.[5]

Specifically, the middle class is defined as those earning between US$5 and US$62 per capita per day. This population, in turn, is divided into two categories: a vulnerable middle class, with a daily per capita income of between US$5 and US$12.4; and a consolidated middle class, with a daily per capita income of between US$12.4 and US$62 (based on 2011 purchasing power parity [PPP]). The threshold between these two segments (US$12.4) arises mainly from the concept of economic security: there is evidence from some Latin American and Caribbean (LAC) countries that the probability of falling into poverty increases significantly when incomes are below this level.[6] This definition of the middle class is based on analyses of middle-income countries, is standard in the academic literature, and is the benchmark for the tracking statistics produced by the IDB's social sector[7] and other multilateral institutions, such as the World Bank.[8]

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5   Absolute measures facilitate comparability among regions and over time, but there are some disadvantages. One is that the inevitably arbitrary cut-off means that the population around the threshold has many similarities. This is a particular disadvantage in countries where large percentages of the population are close to the threshold. Analyses of the distribution of households around the thresholds, however, indicate that this does not seem to be the case for the Andean countries in the period under study.

6   According to Ferreira, Brunori and Peragine (2013), in many countries this threshold is close to that in exercises that define socioeconomic segments with self-reported information.

7   See, for example, the IDB's *Social Pulse* series: https://publications.iadb.org/en/social-pulse-lat-in-america-and-caribbean-2016-realities-perspectives. According to these studies, household size is not adjusted to equivalent adult scales because of the absence of consumption parameters to support the scales in the countries of the region. Taking the modified OECD scale, for the 1990s, the region's vulnerable and consolidated middle class would be even bigger, exceeding 80 percent.

8   For more details, see López Calva and Ortiz-Juárez (2011), and Ferreira, Lustig and Teles (2015).

The middle class in the Andean countries has grown exponentially over the past two decades. Some 75.9 million people, or 70 percent of the total population, currently belong to this socioeconomic stratum. The vulnerable middle class accounts for 41 percent of the Andean population, and the consolidated middle class for 31 percent. The middle class is now substantially bigger than it was at the beginning of the twenty-first century. In 2000 there were 39.9 million people in this group, accounting for less than half (41 percent) of the total population. The growth of the middle class over the past two decades is the result of a significant decline in poverty levels, which fell by more than 30 percentage points over the period (see Figure 5.1). The poor segment of the population ceased to be the biggest in relative terms, ceding space to the vulnerable middle class. The latter, in each of the four countries, now accounts for nearly 40 percent of the population (Figure 5.2).

Figure 5.1: Socioeconomic Classes in the Andean Countries, 2000 and 2017 (% of total population)
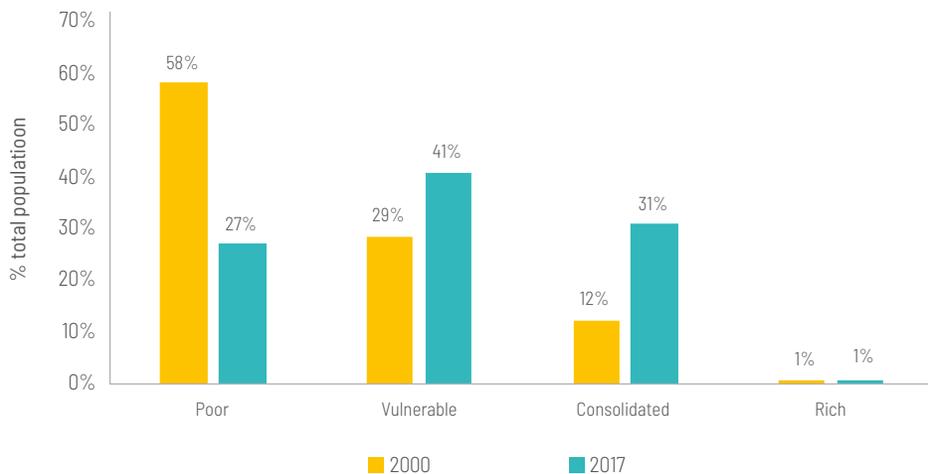
Source: authors' calculations on the basis of data from the IDB's Harmonized Household Survey Databases for Latin America and the Caribbean.

Note: refers to the average in Bolivia, Colombia, Ecuador, and Peru, weighted by population size.

Figure 5.2: Evolution of Social Classes in the Andean countries, 2005–17 (% of total population)


Source: authors' calculations on the basis of information from the IDB's Harmonized Household Survey Databases for Latin America and the Caribbean.

In the Andean countries, the expansion of the middle class has been associated mainly with real growth in income from employment. By contrast, the role of higher non-labor income (such as rents, transfers, remittances, and so on) has been limited. Both formal and informal sector earnings played a crucial role in the growth of labor income. At the sectoral level, income from the services and commerce sectors were key (Figures 5.3 and 5.4). This is connected to the tertiary sector's role as the leading economic sector in the Andean countries, accounting for at least 53 percent of GDP and 58 percent of the economically

active population (EAP). This sector, moreover, was very dynamic during the boom period, providing up to 50 percent of growth.[9]

Figure 5.3: Decomposition of Absolute Increase in the Middle Class in Bolivia and Colombia (percentage points)
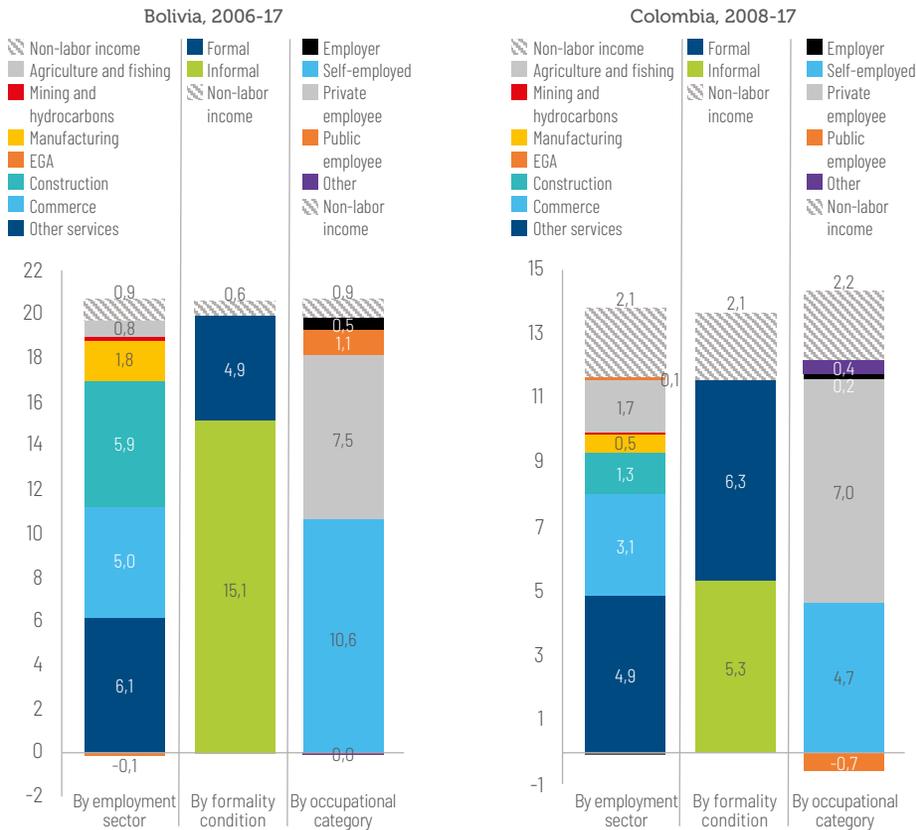
Source: authors' estimates on the basis of the IDB's Harmonized Household Surveys of Latin America and the Caribbean.

Notes: commerce includes restaurants and hotels. Non-labor income includes only monetary income, in line with how the variables in the IDB's Sociómetro database are devised. All incomes were deflated with the annual average consumer price index (CPI) by department (base 2007). Shapley-Shorrocks decomposition using the approach proposed by Azevedo, Inchauste and Sanfelice (2013). Considers the source of main employment, defined as formal employment if it contributes to social security.
EGW = energy, gas, and water.

9   The Shapley-Shorrocks decomposition is carried out to distinguish, statistically, the change in the proportion of the population belonging to the middle class in the 2004–16 period of analysis by income source. This method divides real per capita household income into its components: real per capita non-labor income, real per capita labor income and, within the latter category, income by productive sector.

Figure 5.4: Decomposition of Absolute Increase in the Middle Class in Ecuador and Peru (percentage points)
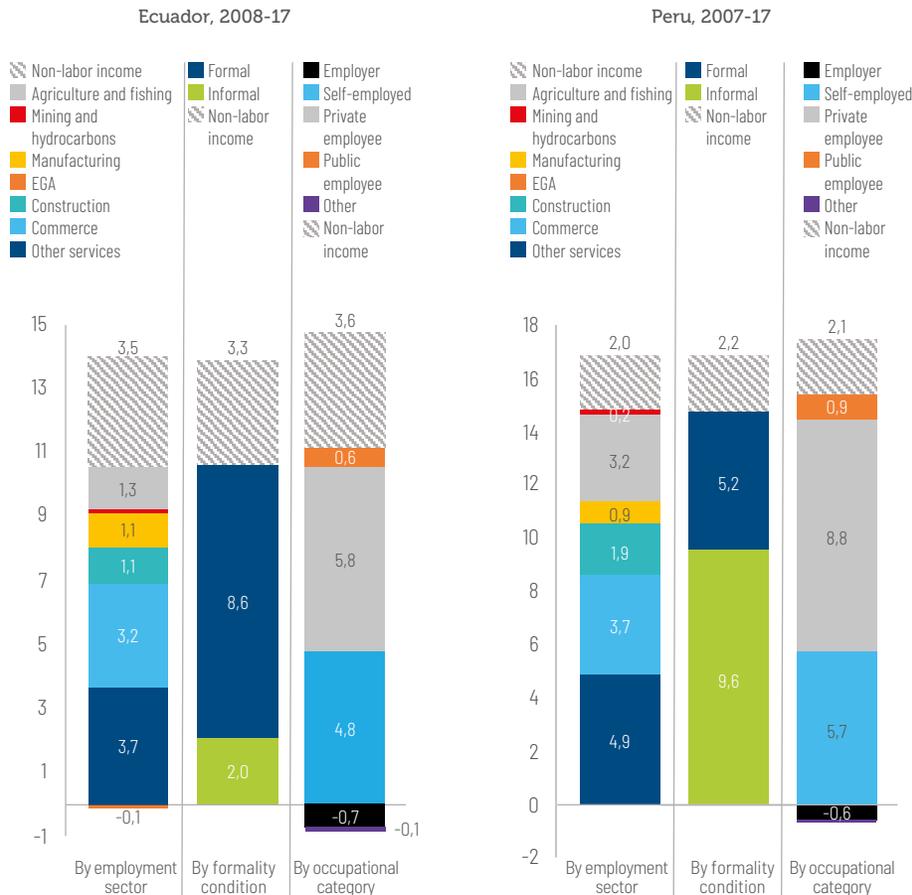

Source: authors' estimates on the basis of the IDB's Harmonized Household Surveys of Latin America and the Caribbean.

Notes: commerce includes restaurants and hotels. Non-labor income includes only monetary income, in line with how the variables in the IDB's Sociómetro database are devised. All incomes were deflated with the annual average consumer price index (CPI) by department (base 2009). Shapley-Shorrocks decomposition using the approach proposed by Azevedo, Nguyen and Sanfelice (2012). Considers the source of main employment, defined as formal employment if it contributes to social security. For Peru, uses the national poverty lines and defines the middle class as the sector whose per capita household income is above that line but does not surpass 10 times the value of the line.

EGA = energy, gas, and water.

Poverty reduction and the expansion of the middle class has stemmed largely from rapid growth in the region, which in turn allowed for an increase in social spending. There is evidence of the determinant role of economic growth in reducing poverty in the region. For example, comparing the contribution of economic growth and income redistribution to the growth of the middle class in LAC during the period 1995–2010, Ferreira, Brunori and Peragine (2013) show that, in most countries, economic growth was more important than redistribution.

The expansion of the middle class has led to improvements in many aspects of household well-being, such as the quality of housing and ownership of durable goods. In the Andean countries, significant differences are discernible between the vulnerable middle class and the poor in terms of domestic infrastructure and access to services, such as mains water and non-dirt floors in homes. There are also significant differences between the vulnerable middle class and the consolidated middle class in terms of the number of bedrooms per capita. In all the countries, this can be up to 30 percentage points higher for the consolidated middle class. Escaping poverty also entails a significant improvement in access to durable goods, such as a refrigerator or a car. This is not the case with housing, a circumstance that might be related to the scale of informal ownership in the region (see Table 5.1).[10]

Escaping poverty has also been associated with increased investment in human capital and a transformation in the demographic structure of households. The average number of years of education and the school attendance rate for children under 18 is notably higher among middle-class households. There is also a significant increase in the level of tertiary education, especially among the vulnerable middle class and the consolidated middle class. In Peru and Colombia, about 25 percent of people over the age of 25 in the consolidated middle class have a tertiary education. The share is only 8 percent in the vulnerable middle class. This could be related to higher rates of secondary school completion, particularly grades 10–12 (Ferreyra et al., 2017). In all countries of the region, as the socioeconomic level increases, there is a decline in the size of the household and the number of children under six years of age (see Table 5.1).

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10 In Ecuador and Peru, more than half of poor households that own homes do not have a deed. In Colombia, this figure is one third.

Table 5.1: Demographic Characteristics of Andean Countries on the Basis of Household Surveys

	Bolivia				Colombia				Ecuador				Peru			
	Poor	Vulnerable	Consolidated	Rich	Poor	Vulnerable	Consolidated	Rich	Poor	Vulnerable	Consolidated	Rich	Poor	Vulnerable	Consolidated	Rich
Domestic infrastructure and access to services																
Number of bedrooms per capita	0.68	0.66	0.95	1.43	0.55	0.63	0.79	0.97	0.50	0.63	0.90	1.30	0.50	0.60	0.86	1.36
Percentage of households with light	0.79	0.94	0.97	0.96	0.96	0.99	1.00	1.00	0.97	0.99	1.00	1.00	0.84	0.95	0.99	1.00
Percentage of households with access to mains water	0.40	0.70	0.81	0.78	0.74	0.90	0.96	0.99	0.79	0.89	0.95	0.97	0.73	0.85	0.93	0.97
Percentage of households with permanent flooring material	0.56	0.84	0.93	0.97	0.87	0.96	0.99	1.00	0.67	0.84	0.92	0.96	0.36	0.69	0.90	0.98
Possession of durable goods																
Percentage of households with a refrigerator	0.18	0.39	0.54	0.67	0.69	0.85	0.89	0.95	0.67	0.85	0.91	0.96	0.15	0.47	0.74	0.88
Percentage of households with a car	0.10	0.14	0.19	0.33	0.03	0.07	0.23	0.62	0.08	0.15	0.38	0.70	0.02	0.06	0.18	0.44
Percentage of households with own home	0.76	0.58	0.57	0.55	0.41	0.35	0.38	0.43	0.69	0.59	0.57	0.58	0.78	0.67	0.65	0.63
PPercentage of households with rented housing	0.08	0.17	0.18	0.19	0.25	0.40	0.43	0.37	0.13	0.19	0.22	0.24	0.04	0.09	0.12	0.21
Connectivity																
Percentage of households with a computer	0.14	0.34	0.50	0.64	0.11	0.30	0.53	0.81	0.17	0.37	0.61	0.84	0.06	0.25	0.54	0.75
Percentage of households with an internet connection	0.04	0.11	0.23	0.37	0.12	0.32	0.57	0.83	0.12	0.30	0.55	0.79	0.03	0.17	0.46	0.76
Access to education																
Percentage of people with tertiary education > 25	0.01	0.05	0.17	0.40	0.03	0.08	0.27	0.64	0.01	0.03	0.15	0.43	0.02	0.08	0.25	0.54
Average years of education > 18	6.12	9.24	11.44	13.64	6.20	8.23	10.82	15.07	6.72	8.51	11.49	14.91	6.20	8.98	11.57	14.38
School attendance rate <18	0.68	0.67	0.71	0.74	0.81	0.84	0.88	0.91	0.91	0.91	0.94	0.97	0.88	0.88	0.88	0.93
Demographic characteristics																
Average number of children under 6	0.57	0.55	0.25	0.05	0.55	0.37	0.16	0.09	0.70	0.48	0.26	0.15	0.52	0.42	0.21	0.12
Number of people over 65	0.35	0.22	0.24	0.24	0.28	0.26	0.28	0.26	0.27	0.25	0.27	0.24	0.41	0.36	0.37	0.35
Household size (number of people)	3.86	3.85	2.93	1.88	3.97	3.56	2.70	2.01	4.55	3.90	3.06	2.24	4.10	3.96	3.34	2.45
Average number of children	1.88	1.84	1.12	0.43	1.76	1.40	0.88	0.48	2.20	1.63	1.09	0.60	1.89	1.72	1.28	0.76

Source: prepared by the authors on the basis of household surveys.

These objective improvements in well-being seem to increase levels of satisfaction with life and subjective levels of perceived well-being. In Colombia and Ecuador (countries for which figures are available) there is an increase in the satisfaction and happiness index as people rise up the socioeconomic scale. In Colombia, when people are asked about their satisfaction with life on a scale of 1 to 10, where 10 indicates complete satisfaction, the average among the poor is 7.95. In the vulnerable middle class, the consolidated middle class, and the highest socioeconomic level, it is 8.26, 8.64, and 8.99, respectively. These are small increments but they rise uniformly with social class. In Ecuador, to a similar question about how happy people are with their lives, where 10 is the maximum score, the average responses of households in different segments were as follows: poor, 7.44; vulnerable middle class, 7.70; consolidated middle class, 7.99; and upper socioeconomic stratum, 8.43.

A major public policy challenge is to sustain the expansion of the middle class in a less favorable economic context. The expansion of the middle class in LAC in previous decades stemmed mainly from the region's economic dynamism in a positive external environment. This dynamism, however, is being interrupted by less favorable international circumstances. Hence the need to highlight the fragility of the progress made. The evidence of the region's income dynamics shows that in the past decade a non-trivial proportion of the middle class was exposed to the risk of falling into poverty: 14 percent of people who were in the middle class in 2003 experienced at least one episode of poverty in the following decade.[11] In Colombia, according to figures from the Longitudinal Survey of the Universidad de los Andes (ELCA), 15 percent of people in urban areas who belonged to the vulnerable middle class in 2010 had fallen into poverty by 2016. Moreover, 21 percent of those belonging to the consolidated middle class in 2010 were vulnerable by 2016. In rural areas, the probability of falling into poverty was higher: 36 percent of those who were vulnerable in 2010 had fallen into poverty by 2016, and 31 percent of those who belonged to the consolidated middle class in 2010 were in the vulnerable middle class in 2016. Most of those belonging to the consolidated and vulnerable middle classes in 2010 retained the same status six years later, but significant segments of the population suffered socioeconomic regression (see Table 5.2).

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11   See Medellín et al. (2015).

Table 5.2: Probability of Moving to Another Social Class in Colombia, 2010–16

Socioeconomic class	2016		
	Poor	Vulnerable	Consolidated
Urban			
Poor	39%	50%	10%
Vulnerable	15%	59%	26%
Consolidated	1%	21%	71%
Rural			
Poor	74%	23%	3%
Vulnerable	36%	52%	11%
Consolidated	26%	31%	42%

(2010 — row label spanning left side)

Source: authors' calculations on the basis of ELCA 2010–16. The statistics are divided between the urban and rural populations because of the survey's sample design.

Many middle-class households are at risk of falling back into poverty. In the case of the vulnerable class, the level of exposure to certain negative economic shocks is similar to that of the poorest households. In Colombia, the ELCA reveals that a very high proportion of urban middle class households suffers negative shocks such as job losses (27 percent of vulnerable households and 22 percent of consolidated middle class households) and the loss of assets (13 percent of vulnerable households and 15 percent of consolidated middle class households). Indeed, between the vulnerable middle class and the poor there are no statistically significant differences in the probability of experiencing these shocks. The same is true of exposure to other types of shocks, such as illness, violent events, or family-related disruptions. There is also a high incidence of economic shocks in rural households, especially production shocks. These affect more than 40 percent of vulnerable and consolidated middle class households (see Table 5.3).

Table 5.3: Incidence of Different Types of Shocks by Social Class in Colombia, 2016

	Poor	Vulnerable	Consolidated
Urban			
Assets*	13,9%	13,0%	15,7%
Employment*	29,8%	27,2%	22,1%
Family	32,1%	26,1%	21,4%
Production	4,0%	4,1%	2,4%
Health	34,1%	28,8%	28,3%
Violence	2,8%	1,8%	2,2%
Rural			
Assets	10,9%	13,9%	11,8%
Employment	11,8%	11,1%	7,8%
Family	10,3%	14,1%	14,3%
Production	55,9%	44,2%	40,7%
Health	35,5%	28,9%	28,7%
Violence	1,5%	1,5%	0,6%

Source: authors' calculations on the basis of ELCA 2010–16. The statistics are divided between the urban and rural populations because of the survey's sample design.

* For these kinds of shocks, the incidence among poor and vulnerable households is not statistically significant.

Another major public policy challenge concerns aspirations and demands for social services, which grow as incomes rise and therefore with social class. A clear example of this is the higher demand for quality health services, a demand that may accompany the expansion of the middle class. There is evidence for developing countries that middle-class households demand more expensive health services.[12] Another example is the greater demand for higher education in Ecuador. Expectations of the educational level that children from consolidated middle class Ecuadoran families would attain are substantially higher than expectations among poor and vulnerable households. Twenty-nine percent of parents in consolidated middle class households want their children to do postgraduate studies, and 39 percent aspire to an advanced university degree. For the vulnerable middle class,

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12   Banerjee and Duflo (2008).

the corresponding numbers are 14 percent and 48 percent, respectively; in poor households they are 8 percent and 44 percent (Figure 5.5).

The middle class has benefited from a huge expansion of access to higher education. The growth of the middle class coincided with a significant increase in access to higher education (see Figure 5.6). In the mid-1990s, the Andean countries had higher-education enrolment rates of no more than 30 percent. By 2016 the rate had reached 70 percent in Peru, 60 percent in Colombia, and 47 percent in Ecuador. In Bolivia, coverage increased between 1996 and 2007, standing at 38 percent in the latter year. Greater access to higher education was particularly pronounced among the middle class. Evidence from household surveys in the Andean countries shows that, during the period 2000–16, the growth in the number of middle-class people with higher education stood at 248 percent in Bolivia, 368 percent in Colombia, 353 percent in Ecuador, and 300 percent in Peru.

The increased demand for social services attendant on the growth of the middle class could put pressure on the supply of public services. Although the importance of public education relative to private education declines as income levels rise, middle-class households rely heavily on the public system. In the Andean countries, the proportion of students from the vulnerable middle class attending public institutions exceeds 80 percent. For the consolidated middle class, the share is about 65 percent in Colombia and 85 percent in Peru. There is also significant demand for public or subsidized health services among the middle class. In Colombia, 58 percent of adults in the vulnerable middle class, and 21 percent of those in the consolidated middle class, are members of the subsidized healthcare system. In Peru, 49 percent of adults in the vulnerable class and 19 percent of those in the consolidated middle class are in the Comprehensive Health Insurance System. Bolivia's middle class also makes heavy use of public establishments: in 2017, 30 percent of those in the vulnerable class, and 22 percent of those in the consolidated middle class, attended a public health facility.

Figure 5.5: Educational Aspirations in Ecuador by Socioeconomic Level (% of Responses)
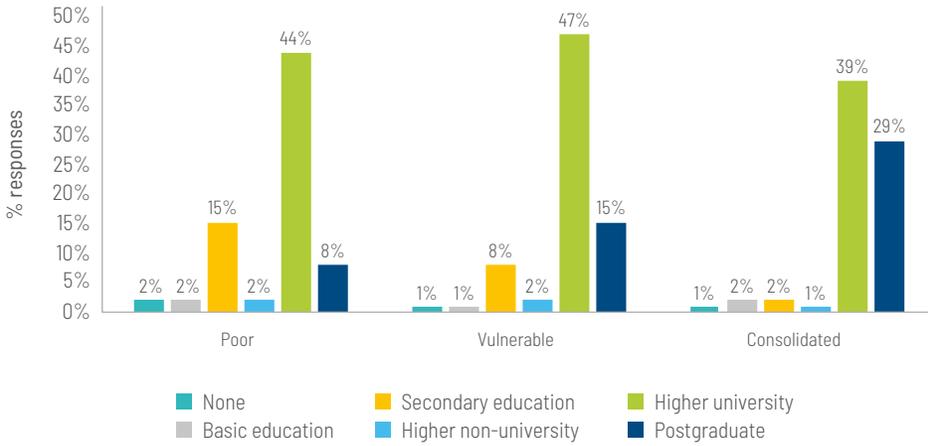
Source: prepared by the authors on the basis of data from the Quality of Life Survey.

Note: omits those who did not report their educational aspirations.

Figure 5.6: Higher Education Enrolment Rate (%)
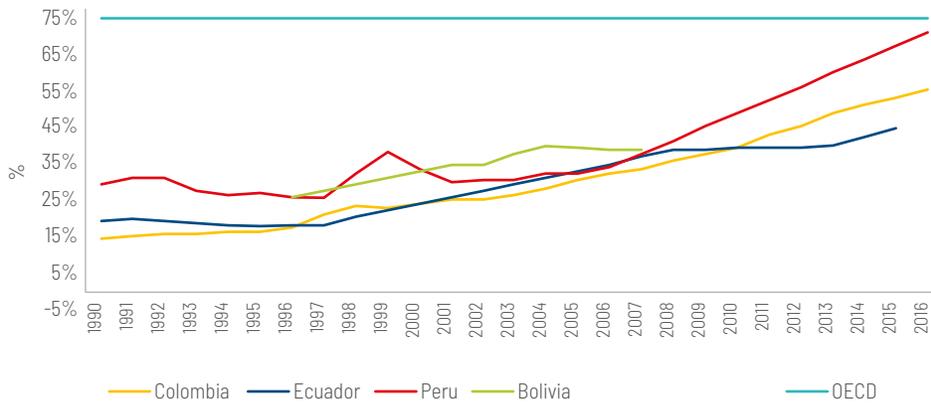
Source: prepared by the authors on the basis of UNESCO (2019).

Greater demand for social services can put strong pressure on spending if the expansion of the middle class is not matched by increased contributions to public finances. In fact, as discussed below, the high level of informality in the labor market for a large proportion of middle-class workers (which varies from country to country but can exceed a third) translates into very low levels of social security contributions. This might be being mediated by a self-perception of poverty among middle-class households. In Ecuador, for which data are available, 22 percent of respondents from the consolidated middle class consider themselves poor or very poor. This proportion rises to 48 percent among the vulnerable middle class. Hence a significant share of the vulnerable middle class receive antipoverty subsidies. In Colombia, a quarter of households in the vulnerable middle class receive the Familias en Acción subsidy. In Ecuador, in 2014, one out of every five households in the vulnerable class received the Human Development Bond (BDH).[13]

Without governmental capacity to make a satisfactory response to demands for social services, there is a risk of discontent among the middle class.

Without goverment capacity to offer a satisfactory response to demand for social services, there is a risk of discontent among the middle class. The evidence for the Andean countries points in this direction. The Latinobarómetro data, for example, reveal a high level of middle-class dissatisfaction with how public education operates in the Andean countries, especially Colombia and Peru, and that these levels of dissatisfaction exceed those of poor households (see Figure 5.7). This evidence also shows that, in Bolivia, 53 percent of the vulnerable middle class and 62 percent of the consolidated middle class have little or no trust in government. In Colombia these proportions are 82 percent and 84 percent, respectively; in Ecuador, 64 percent and 61 percent; and in Peru, 82 percent and 80 percent.

13   Survey of Living Conditions in Ecuador.

Figure 5.7: Dissatisfaction with the Performance of Public Education in the Andean Region, by Socioeconomic Stratum (%)
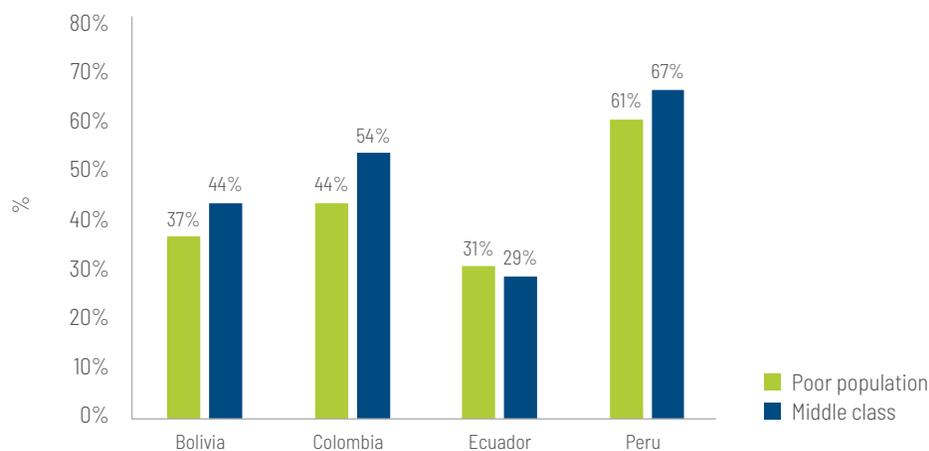
Source: prepared by the authors on the basis of data from Latinobarómetro 2015.

In short, the growth of the middle class is an indisputable social achievement that the Andean countries should celebrate. Consolidating it, however, needs hard work. The growth of the middle class has improved the quality of life of much of the population, and may even spur further long-term growth, especially because of higher levels of consumption and investment in human capital. Nonetheless, the sustainability of progress is under threat. As discussed later in this chapter, meeting these challenges requires rethinking social policies, and steering them towards the goals of economic stability and resilience that are essential for middle-class consolidation. This also entails long-term political consensus-building, because many of the measures proposed herein are intended to address difficult trade-offs, and thus require significant political management capacity.

Issues[14]

Lack of insurance among the middle class

Consolidating the middle class means averting its regression into poverty, and therefore a key goal is to build resilience to shocks. Exposure to various types of risks can cause fluctuations in the income and consumption of workers and their families, thereby compromising the desired consolidation. Some risks are natural, such as the ageing or death of a family member. Others are the result of economic events, such as changes in the demand for labor, which can cause unemployment. Because various market failures are involved, it is hard to mitigate the impact of these risks through private mechanisms.[15] Hence the need for public institutional mechanisms to mitigate risk, such as social security systems. These systems seek to protect citizens from certain risks, such as illness, unemployment, and a long lifespan or poverty in old age. They therefore comprise health, pension/retirement, and unemployment benefits subsystems, among others. In the Andean region, social security systems take various forms. Table 5.4 describes the main features of the subsystems covering the risks of job loss, poverty in old age, and sickness, which are the focus of this chapter.[16]

There are three instruments in the region to cover the risks of job loss: severance pay, unemployment insurance, and furlough or individual account. The first of these, severance pay, is used in all Andean countries and consists of a fixed, lump-sum payment by the employer to the worker at the time of dismissal; the amount depends on the length of service. The second, unemployment insurance, is a monetary benefit for workers who lose their jobs temporarily. It aims to partially replace lost wages and it is financed with state resources or collective funds that mutualize the risk. The mutualization arises because the contributions from employed workers finance the benefits of the unemployed. The third instrument, furlough or individual account, is financed from individual savings accumulated by workers through payroll deductions. When they are laid

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14 The analysis of social security systems and development of the proposals presented in this chapter: González-Velosa, C. and Robalino, D. "Hacia Mejores Mecanismos de Protección de Riesgos para la Clase Media. Un análisis para los países andinos". Forthcoming.

15 Examples of these failures are adverse selection and moral hazard problems, liquidity constraints or psychological biases that limit the demand for such insurance even among those with the financial means to pay for them.

16 The components covering other types of risks are not addressed, such as accidents at work or disability, because, given their complexity, they are beyond the scope of this chapter.

off, they can access the accumulated lump sum. Panel A of Table 5.4 shows that the Andean countries vary in their use of these three tools.

To cover the risk of poverty in old age, the Andean countries have used three tools to varying degrees: defined-benefit pensions systems, defined-contribution pensions systems, and non-contributory pensions,[17] which are usually financed by contributions from employers, employees, and the government. First is the *defined-benefit pension system*, which determines the amount of a pension or retirement payment on the basis of the worker's contribution history. This rule can be set by reference to the final salary or a longer period.[18] Since the rule is predetermined, the level of the pension or retirement payment does not depend on the investment yield. In all the Andean countries, public-sector institutions administer and pay out pensions/retirement benefits in defined-benefit systems. Second are *defined-contribution pension systems*, in which the contributor pays into an individual account, and the value of the assets accumulated at retirement determines the amount of the pension or retirement payment. In the Andean region, private administrators manage and pay out pensions/retirement benefits under defined-contribution systems. In both defined-benefit and defined-contribution systems, the Andean countries have established minimum pension/retirement pay amounts that are guaranteed for workers who meet the eligibility criteria. Depending on the case, these minimum pensions are financed with resources from the treasury or through solidarity funds. Finally, *non-contributory pensions* are anti-poverty mechanisms geared to low-income seniors and resourced from the national budget. Panel B in Table 5.4 shows how these tools are combined in different ways in the region. Colombia and Peru are exceptions in the Andean region, and in LAC generally, because they have defined-contribution systems and defined-benefit systems operating in parallel.

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17   In addition to the systems described here, the Andean countries have several special schemes, such as for teachers and security forces. These might have a high fiscal cost but they are small in terms of coverage. Colombia also has a system of voluntary contributions for high-income workers (BEPS: Periodic Economic Benefits) that also has limited coverage.

18   For example, the rule can take into account the last 10 years of contributions.

Table 5.4: Andean Countries' Instruments for Managing the Risk of Unemployment and Poverty in Old Age

	Panel A Managing unemployment risk		
	Unemployment insurance	Furlough/individual accounts	Severance pay
Bolivia			X
Ecuador	X	X	X
Colombia	X	X	X
Peru		X	X
	Panel B Risk of poverty in old age: pensions/retirement payments		
	Defined contribution	Defined benefits	Non-contributory pensions
Bolivia	X		X (Renta Dignidad)
Ecuador		X	X (Senior citizen's pension)
Colombia	X	X	X (Colombia Mayor)
Peru	X	X	X (Pensión 65)

Source: prepared by the authors.

As regards health insurance, structures in the Andean countries are substantially complex. This complexity is reflected not only in the presence of different programs and financing mechanisms, but also in the different ways of organizing health service provision. In this chapter we confine ourselves to describing the coverage and financing of the main social health insurance schemes. We do not analyze how the supply of health services is organized, the procurement and payment mechanisms, or problems attendant on the health system's efficiency and the quality of its services.

In general terms, the countries of the Andean region have three types of insurance: 1) contributory insurance, financed wholly or partly by contributions; 2) non-contributory insurance; and 3) national health services providing coverage to those who are not in the former two schemes.[19] In Bolivia, the main contributory insurance is the National Health Fund. There are also non-contributory programs for mothers of childbearing age, children, and the elderly, which are managed by the Ministry of Health. In Colombia, the General Social Security Health System is more integrated and has three types of beneficiaries: members of the contributory scheme, members of the subsidized scheme, and other members who include, for example, poor individuals who are not registered in the subsidy system or migrants unable to pay. In Ecuador, as with pensions and unemployment insurance, health insurance is managed by the Ecuadoran Social Security Institute (IESS) and has three pillars: the general scheme for formal wage-earners, the voluntary scheme, and Rural Social Security, which is a virtually non-contributory scheme. People who have not joined the IESS can receive medical care through the Ministry of Health's health centers and hospitals. Finally, there are two main schemes in the Peruvian system: EsSalud, which is the contributory scheme; and the Comprehensive Health Insurance (SIS), which is non-contributory. As in Colombia, those without access to these programs receive care through Ministry of Health institutions. All the countries also have special regimes for the armed forces, the police, and/or certain public officials (see Table 5.5).

Unfortunately, the way in which social security systems are designed in the Andean countries does not respond to actual circumstances in the labor market. Contributory pension/retirement, health, and unemployment protection systems are based on a model in which benefits are financed by compulsory

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19   See Ribe, Robalino and Walker (2012) for a formal definition of these three types of insurance.

contributions to wage employment. That is, they are based on a "Bismarckian" model[20] in which the employer and the employee both make social security contributions that are deducted from the payroll. This model was designed for economies in which most of the workforce is employed in the formal sector. But this is not the case in the Andean countries, where a significant proportion of workers, including middle-class workers, are self-employed or are employed in low-productivity informal enterprises. Panel A of Figure 5.8 shows that self-employment is far from being the preserve of the poor; on the contrary, a significant share of the region's middle class are self-employed.[21] The proportion of vulnerable middle class workers who are self-employed ranges from 33 percent in Ecuador to 44 percent in Colombia. In the case of the consolidated middle class, the share is 25 percent in Ecuador and 36 percent in Bolivia. Informality is widespread: more than 40 percent of vulnerable middle class workers earn less than the minimum wage, and less than a third contribute to the pension/retirement system (panel B of Figure 5.8).

The way in which social security systems are designed in the Andean countries does not respond to actual circumstances in the labor market.

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20 This model of social security is often described as "Bismarckian," a reference to the first social security system for old age created by Otto von Bismarck in Germany in the nineteenth century. For more details on the constraints it faces in informal economies, see Pagés, Rigolini and Robalino (2013).

21 Daude et al. (2017) document this same pattern for Latin America and the Caribbean (LAC).

Table 5.5: Health Systems in the Andean Countries

	National health system	Health insurance	Non-contributory health insurance
Bolivia	• **Coverage:** Population without coverage, formal-sector workers and their beneficiaries, women of childbearing age, children under five, and seniors. • **Financing:** National government resources, donations, external credits, Municipal Tax Co-participation, and National Solidarity Fund. • **Administration:** Ministry of Health and Sport, Departmental Health Service, and municipal and departmental health networks. • **Benefits**: Free basic services for those without health insurance.	• **Coverage:** Formal or self-employed workers and their direct beneficiaries. • **Financing:** Employer, employee, and government contributions • **Administration:** Health Funds hospitals and clinics. • **Benefits:** Coverage of common illnesses, maternity, and occupational risks for members and their beneficiaries; in-kind subsidies; medicines, medical and dental care.	• **Coverage:** Women of childbearing age, children under 5, seniors, people unable to pay in rural areas. • **Financing:** Government resources and donations, as well as credits. • **Administration:** Ministry of Health and Sport, Departmental Health Services, Local Health Directorate, and hospitals and health centers of the Ministry of Health and Sport, Departmental Health Services and Local Health Directorate. • **Benefits:** Dependent on type of population. Basic medical care.
Colombia	• **Coverage:** Members of the Contributory and Subsidized Scheme and associated participants. • **Financing:** Contributions to the General System of Social Security for Health (SGSSS), the General System of Contributions, VAT on liquor, consumption tax on beer, lotteries, and games of chance. • **Administration:** Ministry of Health and Social Protection, Health Promotion Agencies, and the Healthcare Provider Institute. • **Benefits:** Compulsory Health Plan (POS) services.	• **Coverage:** Employees, self-employed, pensioners, retirees and their dependents. • Financing: Contributions to the SGSSS (contribution rate of 12.5%). • **Administration:** Health Promotion Agencies and the Healthcare Provider Institute. • **Benefits:** POS services, subsidies in the event of inability to pay or maternity leave, and free membership for relatives.	• **Coverage:** People classified in levels I or II of SISBEN and special priority groups. • **Financing:** Resources from local authorities' own efforts, General System of Contributions, and the Adres solidarity subaccount. • **Administration:** Health Promotion Agencies, the Healthcare Provider Institute, and local agencies. • **Benefits:** POS services.

Table 5.5: Health Systems in the Andean Countries

	National health system	Health insurance	Non-contributory health insurance
Ecuador	• **Coverage:** The uninsured and unwaged. • **Financing:** General state budget. • **Administration:** Ministry of Public Health (MSP), Ministry of Economic and Social Inclusion (MIES), Office of the State Comptroller, and the MSP's hospitals and outpatient facilities. • **Benefits:** Diagnosis, treatment, and basic medications.	• Coverage: Members of the armed forces, police and their families, formal-sector workers and rural workers, and people with the capacity to pay. • Financing: Members' individual compulsory contribution (5.7% contribution rate) and state contribution. • Administration: Private providers under contract with the Ecuadoran Institute of Social Security (IESS), the Social Security Institute of the National Police, and public hospitals and clinics. • Benefits: Comprehensive medical care (consultations, preventive medicine and subsidies).	• Coverage: People living in poverty. • Financing: General state budget. • Administration: MSP, MIES, and hospitals and outpatient facilities of both ministries • **Benefits:** Dependent on the type of population. Basic medical
Peru	• **Coverage:** Members of EsSalud, Health Promotion Agencies and dependents, members of Comprehensive Health Insurance, and members of the armed forces or police and their dependents. • **Financing:** Taxes, co-payments, and donations and transfers. • **Administration:** Ministry of Health (MINSA) and hospitals, and MINSA health centers. • **Benefits:** Essential Health Insurance Plan (PEAS).	• **Coverage:** Formal-sector workers, military and police, and people with the capacity to pay, all with their dependents. • **Financing:** Contributions from employers (contribution rate of 9%) and retirees (contribution rate of 4% of insurable earnings). • **Administration:** Hospital (military and EsSalud). • **Benefits:** Specific health plan with coverage of all health needs.	• **Coverage:** People living in poverty. • **Financing:** Government resources, and donations and contributions. • **Administration:** MINSA, hospitals and regional health departments. • **Benefits:** Access to PEAS.

Source: prepared by the authors.

Figure 5.8: Self-Employment and Informality among the Andean Region's Middle Class

A. Self-employed workers (%)

VULNERABLE MIDDLE CLASS   CONSOLIDATED MIDDLE CLASS

Income decile

···●··· Bolivia   ···●··· Colombia   ··●·· Ecuador   ─●─ Peru

B. Workers with less than the minimum income (%)

VULNERABLE MIDDLE CLASS   CONSOLIDATED MIDDLE CLASS

Income decile

···●··· Bolivia   ···●··· Colombia   ··●·· Ecuador   ─●─ Peru
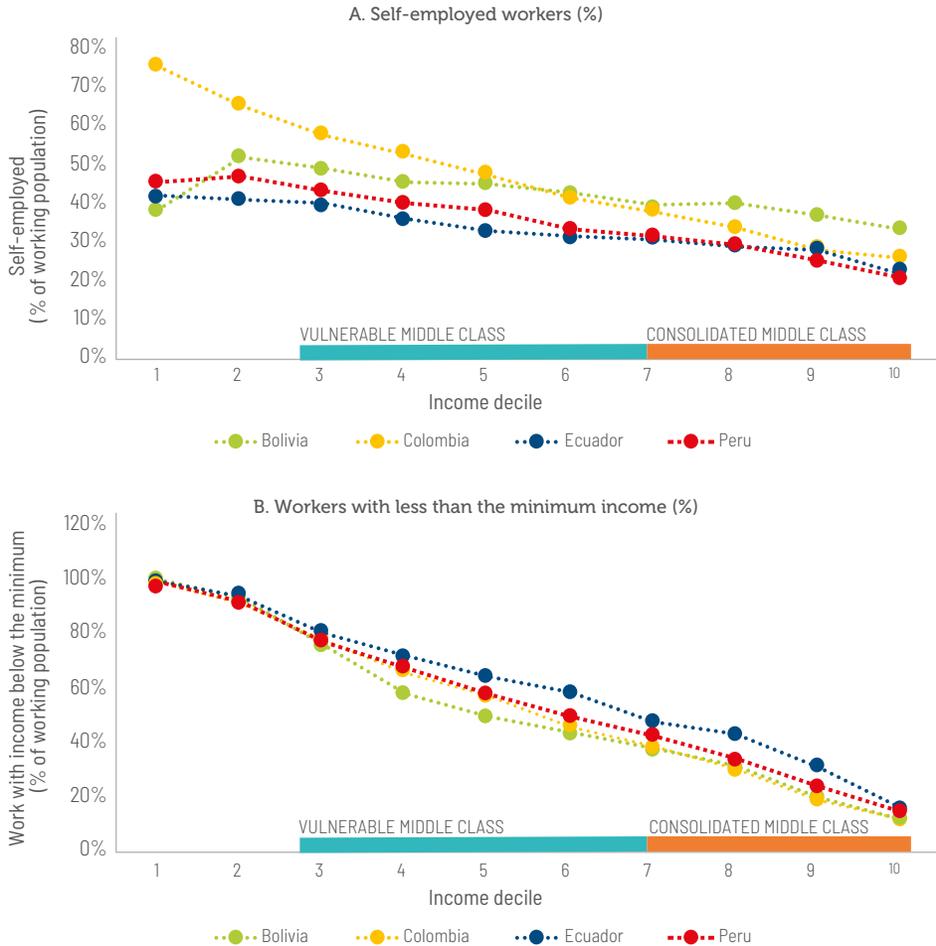
Source: González-Velosa and Robalino (forthcoming).

There are wide variations among the Andean countries in how social security systems are designed, but low coverage is a widespread problem. Indeed, social security does not cover most older adults for longevity risk in the Andean countries. In Colombia and Bolivia, only 27 percent of adults over 65 have a contributory pension. The proportion is even lower in Ecuador and Bolivia (see Figure 5.9). Given the rapid ageing in the Andean countries, these low levels of coverage may decline. The coverage of unemployment protection is also very low. There are no explicit indicators of unemployment benefits in the region, but the percentage of workers with a permanent contract is a good proxy because, in all countries, they are the ones who are mainly entitled to severance pay. Figure 5.10 shows

that, except for the consolidated middle class in Ecuador, vulnerable middle class workers with permanent contracts are a minority in all the Andean countries.

Figure 5.9: Percentage of Adults over 65 Receiving a Contributory Pension, 2017
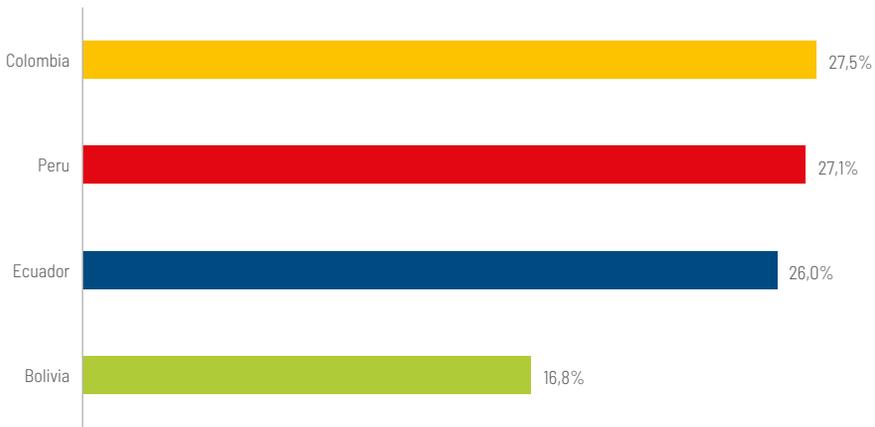
Source: SIMS-IDB, on the basis of household surveys.

Figure 5.10: Percentage of Middle-Class Workers with Permanent Contracts
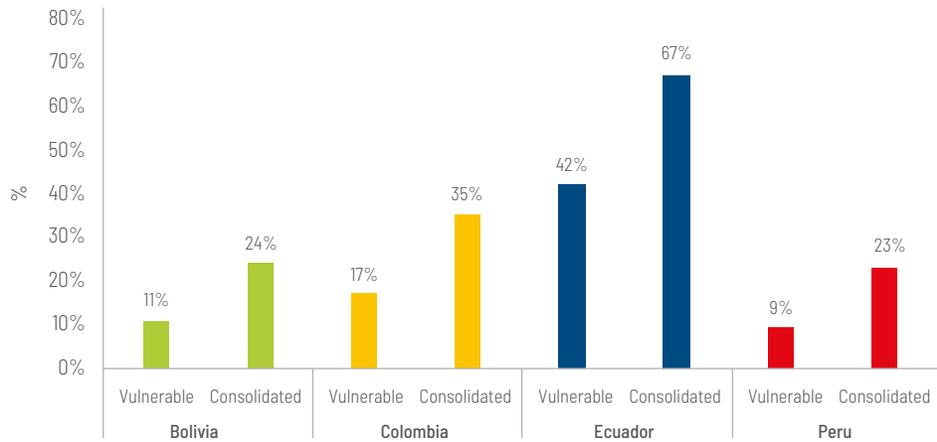
Source: SIMS-IDB on the basis of household surveys.

Even middle-class workers in the formal sector who have unemployment benefits and pensions/retirement payments might not be sufficiently protected. For example, the defined-benefit systems in Ecuador and Colombia are facing sustainability problems. Defined-contribution systems, on the other hand, face challenges of viability. They may offer inadequate pensions/retirement payments or, as in Colombia, fail to insure against longevity risk, since many pensioners/retirees receive retirement benefits that are not lifelong. Risk coverage in the Andean countries is also limited in the area of unemployment protection. For example, the most widely used method for mitigating the effects of unemployment is severance pay. This has significant shortcomings as a means of protecting workers' income, because the payment received by workers is proportional to their length of service in the company, and is therefore unrelated to the length of time they will be unemployed.

The effectiveness of social security systems is limited by several institutional weaknesses and design flaws. First, there is a widespread problem of fragmentation: each country has several programs, whose objectives and targeting criteria are not always synchronized. This gives rise to inequities, higher administrative costs, and no integrated overview of the system. Fragmentation makes it hard to devise policies coherently and, overall, means that workers have different rights and obligations according to the kind of employment relationship they have. The pensions and retirement schemes in Peru and Colombia are a notable example. In these countries, because two contributory systems (one with defined benefits and the other with defined contributions), are competing with each other and have different rules, two workers with identical contribution histories can have very different retirement benefits. Second, institutional schemes generally do not conform to financial or demographic realities, nor do they make their benefits and costs explicit. It is not common in the Andean countries to adjust the coverage and/or benefits of social security in line with explicit estimates of the costs of these increases. Ecuador's social security system is a clear example of this.

Below, we consider the issues at play in the Andean countries as regards the lack of insurance for unemployment and longevity.

Lack of unemployment insurance

There is no public institutional mechanism for income protection covering the self-employed, wage-earners in informal enterprises, formal workers with short-term contracts, or those who move between formal and informal work. In Colombia, self-employed workers can voluntarily join the individual savings account system, but less than 8 percent have done so. This might be partly explained by the high contribution required, which amounts to 8.33 percent of the stated salary. In Ecuador, voluntary contributors to social security (pensions and health) are excluded by law from unemployment programs. Paradoxically, therefore, workers in the Andean countries who do not have stable employment, who are therefore the most exposed to the risk of unemployment or to income fluctuations, and who might have less access to private savings mechanisms, have no way of accessing a public system that would let them smooth their consumption.

With regard to severance indemnities, the system is designed in such a way as to make it inadequate to protect the income of the middle classes in the Andean countries. Severance payments operate through the employer, so all self-employed workers are unprotected. Waged workers in small, low-productivity enterprises—which find it difficult to comply with labor codes or social security laws—are also kept out of the system. Another significant constraint is that none of the countries has regulations requiring companies to create reserves to cover outlays on severance payments, or to mutualize the risk to which they are exposed. Workers, therefore, are not fully insured against unemployment: even if bankruptcy legislation prioritizes payments to employees, companies that cut staff for financial reasons may not have the resources to pay severance.

Unemployment insurance could be adapted to voluntarily insure self-employed or informal workers, but this approach has limitations. Workers who choose to insure themselves voluntarily might be those most at risk of unemployment. This phenomenon, known as adverse selection, would raise the cost of the insurance. Moreover, insurance can create a problem of moral hazard, encouraging undesired behavior. For example, it could motivate people to declare themselves voluntarily unemployed, to extend the period of unemployment, or to work informally.[22] This can be a major problem for people in low-productivity jobs marked by high income volatility, or those working on short-term fixed contracts.

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22   See Kuddo, Robalino and Weber (2015) for a summary of the literature.

Individual savings account programs reduce adverse selection and moral hazard problems. Because of the non-mutualization of risks, however, these programs are more expensive than unemployment insurance. Additionally, the savings are unlikely to be enough for most workers in the vulnerable middle class.[23] Indeed, to amass savings equivalent to one month's income over a year, workers would have to contribute about 8 percent of their monthly income (a rate similar to that of the Colombian and Peruvian systems). Granting benefits equivalent to a 70 percent replacement rate for three months would require 2.1 months of savings (0.7 x 3), or a little more than two years of contributions. During that period, the worker would not be properly insured. In general, if the risk of losing one's job is high and the period of unemployment is long, a worker's ability to amass funds individually will be limited, as will the protection these savings can provide.[24] Hence the need to complement individual savings accounts with other resources, which may be from the government or may be future accrual loans. Countries such as Chile have introduced subsidies to complement individual savings accounts, but these do not involve a reduction in the contribution rate. Moreover, these subsidies are partly financed by employer-paid taxes on labor. This kind of design could not be used for self-employed workers.

Lack of longevity risk insurance

As mentioned earlier, the Andean countries have severe coverage shortcomings for pension and retirement payments. It is problematic, however, to widen coverage through the defined-benefit systems in Colombia, Ecuador, and Peru without redesigning them somewhat, given the serious difficulties of financial sustainability. In these systems, the rules that determine the amount of a pension or retirement payment under the defined-benefits schemes do not follow basic actuarial principles. Hence there is a significant difference between the value of the contributions and the level of benefits. People are granted relatively high benefits even when contribution periods are short, and thus there are fairly generous implicit subsidies. With each new worker entering the system, therefore, an implicit debt is built up. Moreover, as a recent IDB study points out, the subsidies are very regressive. In Ecuador, for example, workers with incomes equivalent to four or five times the average formal wage receive subsidies that, in net present

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23   Kuddo, Robalino and Weber (2015).

24   Micco and Repetto (2011).

value terms, exceed US$450,000. By contrast, subsidies for workers receiving the average wage are equivalent to US$200,000 or less[25] (Altamirano et al., 2019).

Defined-contribution systems could be expanded without compromising a country's fiscal situation, but they suffer from a problem of viability at the time of retirement. Defined-contribution systems have the virtue of directly linking benefits to contributions, and enhancing the transparency of any subsidy that exceeds the amount of what is actuarially fair. This makes it easier to widen them without negatively affecting public finances, and can encourage membership and savings. Nonetheless, there are problems of viability at the time of retirement. Many workers find it difficult to amass the resources needed to finance an adequate pension.[26] This is evident in Colombia, Bolivia, and Peru, where workers who contribute for less than 35 years, including those with average incomes, are unable to finance the value of the minimum pension. Additionally, the Colombian and Peruvian systems are plagued by structural problems that limit the supply of retirement products providing lifelong insurance for those who retire. Ideally, when they retire, members of pension schemes should transform the capital accumulated through their contributions into lifetime annuities—products that provide an allowance for the pensioner's entire life, regardless of longevity. Given the behavioral patterns that lead people to underestimate longevity risks and value income today more than protection in the future, taking out life annuities should be encouraged or even made compulsory. Colombia, however, has not managed to develop the market for old-age annuities, so most people who are enrolled receive a retirement product (known as programmed retirement) providing a monthly sum that may expire before the end of their life.[27] In Peru, since 2016, pensioners aged 65 have been entitled to withdraw 95.5 percent of the capital accumulated in the pension fund. This benefit extends to younger members who meet other requirements related to unemployment or high levels of accrual. This development has confronted members with a complex dilemma and has exposed them to biases (such as impatience, short-sightedness, and lack of financial education) that can lead to lack of protection in old age. A recent IDB survey shows that 92 percent of low-wage workers and 73 percent of high-wage workers withdrew all of their funds. More than half of the workers have used up the fund at a higher rate than an annuity would have allowed.[28]

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25   Figures in line with 2014 purchasing power parity (PPP). The exact value of subsidies varies by gender.

26   Sufficient means, for example, that the amount of the pension/retirement payment does not entail a marked fall relative to labor income.

27   See Bosch et al. (2015).

28   *Ibid.*

The redistributive mechanisms of pensions/retirement systems could be creating costs for formal employment and lowering the incentives to contribute. Pensions systems are usually based on the principle of solidarity, and therefore include redistributive mechanisms that partly or wholly subsidize the benefits for some workers. As mentioned earlier, all the countries have minimum pensions that are fully or partly guaranteed by the system if lower-income workers cannot pay for them. Ideally, these subsidies should be paid out of resources from the general budget, and not—as happens in the Andean countries—out of taxes on labor that may discourage labor formality. Minimum pensions can also reduce the incentives to save. In Colombia and Peru, for example, workers who save for between 20 and 35 years receive a minimum pension, which is a clear disincentive to save in the last 15 years.

Lack of health insurance

The percentage of the population covered by contributory or non-contributory insurance schemes varies by country and income level. In Colombia, coverage is almost universal: more than 90 percent of the population in each decile is in one of the two health insurance schemes. Coverage rates are also relatively high in Peru, where between 70 and 80 percent of the population in each income decile is a member of the contributory or non-contributory system. These two countries have high coverage rates because of the expansion of non-contributory programs, which cover between 80 and 90 percent of the poor, and between 40 and 70 percent of the vulnerable middle class. In Bolivia and Ecuador, by contrast, most people are not in the contributory programs and depend on health services provided by public health centers and hospitals. In these two countries, recent studies report problems of access and a lower quality of medical care than is available under contributory insurance.[29]

The low coverage of contributory insurance schemes can be attributed in part to financing mechanism based on income-related contributions. Such contributions can create implicit subsidies and taxes, and can be high for workers in low-productivity jobs. These contributions are an important source of financing in the Andean countries, accounting for nearly 2 percent of GDP and 50 percent of public health spending (see Table 5.6). They are not, however, related to the expected value of the health services to which members and their families can gain access. In fact, members' payments do not vary by their age or gender, nor by the

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29   See Ribe, Robalino and Walker (2012).

size or demographic structure of their families. For example, young, low-income workers with no dependents might make payments that exceed the expected value of their health services (and are thus paying a tax); on the other hand, a middle-income worker with a family of five might pay less than the expected value of the health services (a subsidy).[30] This implicit and non-transparent redistribution may reduce low-risk workers' incentives to join the scheme.[31] High-income self-employed workers may decide voluntarily not to contribute to the public system because of the unlikelihood that they will use it, and demand only private services. As to low-income self-employed workers, or those working in small, informal, low-productivity enterprises, the rates are relatively high.[32] In Colombia, for example, the contribution rate stands at 12.5 percent of income, 8.5 percent of which is paid by the employers of workers in a dependent relationship.[33] In Peru the contribution rate is 9 percent for workers and 4 percent for retirees. Ecuador's contribution rate of 5.71 percent is paid by the employers of dependent workers.[34]

30 Note that this *systematic* redistribution of income among groups with different risks is different from the *random* redistribution among groups with similar risks, which is the essence of a risk *mutualization* system. As discussed below, redistributive mechanisms are fundamental in health insurance, but it is possible to design them in a more transparent way and with fewer distortions in the labor market.

31 See Fischer, Frölich and Landmann (2018).

32 Membership is mandatory but it is hard to control.

33 In the case of dependent workers, the employer pays 8.5 percent and the worker pays 4 percent. In the case of pensioners with no income apart from their pension, the contribution rate is 12 percent.

34 As discussed below, lower contribution rates and/or lower implicit taxes may not be enough to guarantee that everyone will join. There is also a need to rethink the administrative mechanisms for registering and collecting contributions.

Table 5.6: Health Spending and Financing Sources in the Andean Countries

	Health spending			Financing	Public spending
	Public	Private	Total	of the general budget	Social security contributions
Bolivia	5%	2%	7%	3%	2%
Colombia	5%	1%	6%	2%	2%
Ecuador	4%	3%	7%	3%	2%
Peru	4%	1%	5%	2%	2%

Source: National Health Accounts; World Health Organization (WHO).

The structure of health insurance in the Andean countries might not be financially sustainable, nor provide enough protection for the working poor and vulnerable middle classes. In Colombia and Peru, current financing mechanisms and the availability of non-contributory schemes may be reducing incentives to contribute to social security; non-contributory programs impose an implicit tax on formal work.[35] In the absence of intermediate options, workers either pay the full contribution or none at all, and even those with some ability to pay may choose not to join contributory insurance schemes. Without structural changes in the labor market, non-contributory schemes may continue to grow. As costs in the health sector rise (the result of technological and epidemiological changes, as well as population ageing), these schemes may become financially unsustainable.[36] In Bolivia, and especially in Ecuador, there are fewer incentives to remain outside social security. It is very difficult, however, for vulnerable and low-income workers to finance the necessary contributions. They therefore depend on the services of public health centers and hospitals, whose problems of access to and quality of medical care are greater than in contributory schemes.

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35   See Camacho, Conover and Hoyos (2016) for Colombia; Aterido, Hallward-Driemeier and Pagés (2011) for Mexico's Seguro Popular; and Wagstaff and Manachotphong (2012) for Thailand.

36   See Chapter 2 in Cotlear et al. (2015).

Demand for high-quality social services: higher education

As mentioned earlier, the growth of the middle class has entailed an increase in demand for social services. In the interests of depth and scope, this chapter focuses on the specific case of greater demand for higher education, an emblematic tool of social mobility and middle-class aspirations.[37]

Given the aspirations of the growing middle class, demand for higher education coverage is unlikely to be curtailed. Financing is a major challenge in this regard. Unlike basic education, free and universal access to higher education is not a national entitlement in the Andean countries. Financing its growth, therefore, requires joint efforts between governments and households. All Andean countries combine public and private funding to pay for higher education. Except for Peru, the countries of the region invest at least 1 percent of GDP in higher education. In Ecuador, in fact, there has been a marked increase in this area (see Figure 5.11). The rise in enrolment, however, also stems from a significant effort by households. Figure 5.12 shows that in 2017, households allocated at least 20 percent of per capita income to financing higher education. This is significantly more than the amount they invest in primary and secondary school, although it has been declining in recent years. Further expansion of the system thus requires efficient cost-sharing schemes.

Figure 5.11: Public Spending on Higher Education (% of GDP)
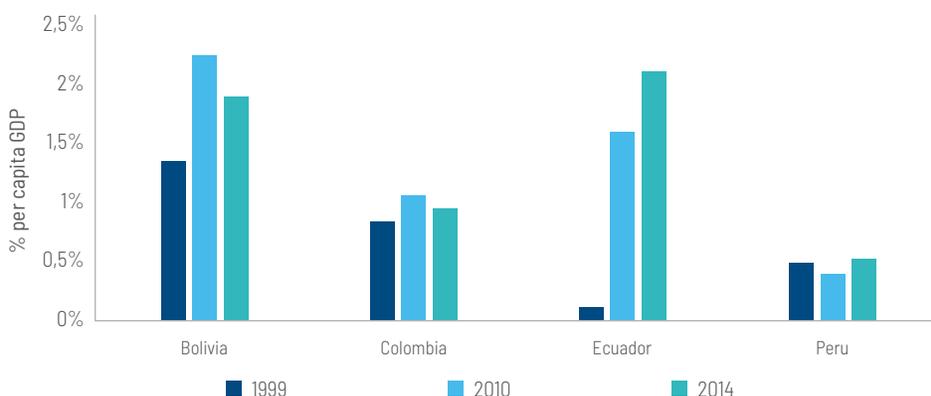
Source: prepared by the authors on the basis of the Socioeconomic Database for Latin America and the Caribbean (CEDLAS, 2019).

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37   See Chetty et al. (2017).

Figure 5.12: Household Financing of Education in Colombia and Peru, 2000–17 (% of Per Capita GDP)
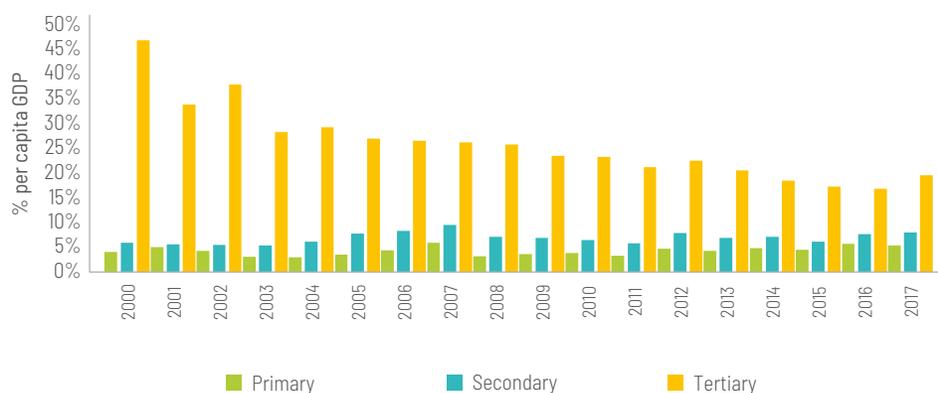
Source: prepared by the authors on the basis of UNESCO (2019).

Note: 2017 is only available for Colombia.

Another important challenge that the region must face is ensure higher education quality. The rise in enrolment at this level of education was matched by a diversification of supply: there was a marked increase in the number of institutions and programs. In Colombia, for example, the number of programs doubled between 2001 and 2011.[38] A higher education system whose supply is more diverse, and possibly better designed, can be a key element in consolidating the middle class. In the Andean countries, however, the expansion and diversification of higher education may have come at the expense of quality. In Colombia there is evidence that many programs in high demand do not give students added value in terms of improved skills.[39] About 30 percent of university graduates, moreover, would get negative economic returns. In other words, the salary increase they receive for gaining a degree does not offset the direct cost or the opportunity cost of investing in higher education.[40] In Peru, a recent study shows an increase in the percentage of low-quality educational institutions and the rate of graduate unemployment since 1997.[41]

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38   Camacho, Messina and Uribe (2017).

39   Balcazar and Ñopo (2016).

40   González-Velosa et al. (2015).

41   Lavado, Martínez and Yamada (2016).

Policy recommendations

Insurance for the middle class[42]

This section identifies options for reforms to extend social security coverage to the whole middle class in the Andean countries, and to do so in a way that is financially sustainable and equitable, while minimizing distortions in the labor market. This is based on certain general principles with a view to solving problems of institutional fragmentation, financing, and design. Additionally, we propose management and technological reforms to align social security with actual conditions in the labor market.

Specifically, we propose reform of the systems that protect citizens from the risks of unemployment and longevity, on the basis of the principles outlined below. First, we propose reforms that integrate social insurance programs into a single system, so as to ensure coherence. We also propose that this system treat all workers equally, with the same rights and obligations, regardless of where they work. Second, we propose that coverage be extended in ways that do not compromise the system's financial stability, linking contributions to benefits and making the per capita costs of subsidies explicit. Third, we propose that spending should be progressive, so that subsidies go mainly to workers with less savings capacity, and that those subsidies should be financed from the general budget and not from taxes on labor that may affect formal-sector employment. Fourth, we look at integrating social insurance programs with social assistance programs. In general, social security would include two types of anti-poverty subsidy: i) subsidies to guarantee a basic income, irrespective of employment status (employed, unemployed or inactive); and ii) subsidies to finance part of the contributions to social security. These subsidies should be expanded progressively to cover the vulnerable middle class.

An expansion of social security coverage requires: i) investing in mechanisms to identify and register all workers; and ii) collecting contributions from all workers, including the self-employed. As regards the first of these, governments should establish a compulsory social security registration system for the entire workforce (employees, the self-employed, and the unemployed). Costs should be kept low by using new information and communication technologies (ICTs). Some

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42   This section summarizes the proposal made by C. González-Velosa and D. Robalino, "Hacia Mejores Mecanismos de Protección de Riesgos para la Clase Media. Un análisis para los países andinos" (forthcoming).

public transactions (such as property registration, enrolment in public schools, applying for a passport or driver's license) should be made conditional on social security registration. Clearly, the process of devising this register would draw on existing information from social assistance and social security programs, as well as household surveys and censuses. As to the second point, collecting contributions, the problem is more complex, especially as regards workers in the informal sector. Technological innovations might be needed to collect contributions through consumption. Some complementary options for this are as follows:

i) Collections on payment in any transaction in which the member of the insurance scheme is the final consumer. This would be similar to value added tax (VAT), but if payments are linked to the worker's identity record they can be credited to social security accounts rather than to the Treasury.

ii) Collections on payment for telephone and internet services, and public services such as water and electricity. These transactions are easily traceable, even in highly informal sectors. With the right technology, therefore, part of the payments could be transferred to social security accounts.

iii) ATM transactions. The use of ATMs is very common, even in highly informal sectors, although less so among the poorest rural groups.

Recommendations for the design of unemployment insurance

We propose an income-protection system for the middle class in the Andean countries, which could be extended to informal and self-employed workers and, if viable, could replace the current systems, including severance payments. This system is a hybrid of traditional unemployment insurance and the individual account system, and it also includes a guaranteed basic income. The main features of the proposed system are as follows:

- *Financing the benefits.* Workers contribute to individual savings accounts. Workers who have negative balances in their accounts (because they are exposed to a higher risk of unemployment) receive at least the minimum insurance benefit through subsidies financed by a common fund that can combine workers' contributions and other taxes. The calculations below consider two extreme cases: one in which all financing is from the contributions of other workers (such as a 100 percent tax on savings, as is the

case with classic unemployment insurance); and another in which redistribution is financed exclusively through fiscal transfers. Part of these fiscal transfers could be financed by a *firing tax*.[43]

- *Coverage.* The insurance is compulsory and covers *all* workers in the vulnerable and consolidated middle class—that is, workers in deciles 3 to 10, regardless of the type of work they do.

- *Identification and registration.* It is assumed that the necessary administrative systems are in place to identify and register all workers who must take part (regardless of whether they are employed or not), as detailed above.

- *Insured income.* Wage-earners in the formal sector insure their wages, although there may be a ceiling.[44] Self-employed workers declare the income they want to insure. This income would be subject to the same ceiling and should not be less than the income estimated through proxy variables. The calculations presented here assume that self-employed workers report average income for the decile.

- *Collecting contributions.* Formal-sector wage-earners contribute through their employers. Self-employed workers may make payments directly or when they buy certain consumer goods, as described above.

- *Benefit amount.* The amount of benefit that the unemployed receive, as well as its duration, are explicitly defined. They do not depend on the contribution period, but only on the balance of the individual account. In all countries we assume that the benefit amount is equivalent to 70 percent of the salary, while the duration is set at six months in Bolivia, four months in Colombia and Ecuador, and two months in Peru.[45] Payment is conditional on the unemployed taking part in employment programs (training, registration, and orientation in public job-placement services).

- *Minimum benefit.* There is a minimum benefit, which is set in the calculations at 30 percent of the average salary.

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43 Blanchard (2009); Kuddo, Robalino and Weber (2015).

44 In pensions and unemployment insurance systems, a ceiling of 2.5–3 times the average income is recommended (few people have higher incomes). The idea is to allow higher-income workers to diversify risk management mechanisms and not rely solely on public programs.

45 These assumptions are based on statistics on the average length of unemployment in each country.

- *Basic income.* Unemployment insurance is linked to a program that guarantees a basic income to anyone who is unemployed (conditional on participation in employment programs). This basic income is assumed to be 15 percent of the average income. An individual may receive the basic income and the unemployment insurance simultaneously, *but the latter is reduced by the value of the former*.

In Bolivia the proposed system would cost about 0.3 percent of GDP: 0.17 percent to finance basic income and 0.11 percent to cover accounts with negative balances. The system's equilibrium contribution would be around 1 percent of income. This is a relatively low rate compared with that of the other Andean countries, a result of the lower risk of unemployment and the duration of the benefit, which is below the observed average (six months rather than ten). Clearly, instituting unemployment insurance in Bolivia would have to be matched by policies to improve job opportunities and reduce the time spent unemployed. As regards the benefits, basic income would replace between 28 percent and 10 percent of income in the deciles in which the vulnerable middle class is located (deciles 3 to 7); the rest would be replaced by unemployment insurance, covering up to 70 percent of the salary. Basic income, therefore, would represent between 3.7 months and one month of income. The value is relatively high because basic income is paid during the whole period of unemployment. For example, for a worker in decile 3, basic income would replace 28 percent of income for 13 months, which is equivalent to 3.7 months of salary (0.28 x 13 = 3.7). Basic income would be particularly important in Bolivia. First, as mentioned earlier, it would guarantee an income to all workers who are unemployed for more than six months. Second, it would ensure that the most vulnerable and high-risk workers (in each decile) who found it hard to maintain a certain balance in their accounts would receive a certain level of protection.

The results suggest that it is fiscally possible to introduce an income protection system in Bolivia. The new system could replace end-of-service severance payments. Instead, Bolivia could introduce a firing tax to help finance the cost of redistribution and/or active labor market programs. For example, a tax equivalent to 10 percent of the annual salary of people who lose their jobs could yield resources of about 0.04 percent of GDP[46] or 14 percent of the total cost of the program (assuming zero taxes on savings).

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46 Income from the firing tax is given as $Rev = (\sum i\ ei\ si\ Ei \times dtax \times wi) \times 12$, where Ei is the population employed in decile i; si is the fraction of this population that is covered by indefinite contracts; ei is the risk of unemployment in a month; wi is the average annual income of the decile; and $dtax$ is the firing tax.

In Colombia the system would cost 0.55 percent of GDP: 0.33 percent for basic income and 0.22 percent to fund accounts with negative balances. These accounts would have average negative balances of between 0.4 and 0.8 months of income. The system's equilibrium contribution rate would be 3 percent. This is higher than in the other Andean countries because in Colombia the duration and risk of unemployment are substantial, entailing higher unemployment rates. As in Bolivia, basic income is important and would replace between 30 and 15 percent of income in deciles 3 to 7. In these deciles the value of basic income would be between 0.7 and 1.5 months of salary.

In Colombia the proposed system could replace the three current systems, significantly reducing costs for the employer and possibly the government. Existing balances in the current individual savings accounts could be partly liquidated or transferred to the new system for prepayment of contributions. The cost of severance pay could also be reduced if it were replaced by a firing tax. For example, employers currently pay the equivalent of 8.3 percent of annual salary for a worker with one year's seniority, and 13.8 percent and 19.4 percent for workers with two and three years' seniority, respectively. These implicit, severance-related taxes could be replaced with an explicit, fixed tax of 8 percent of the annual salary. This would yield revenues equivalent to 0.14 percent of GDP, or 25 percent of the total cost of the program.

In Ecuador the income protection system would cost less than in Bolivia and Colombia. It would be equivalent to 0.21 percent of GDP: 0.13 percent to finance basic income and 0.08 percent to fund accounts in deficit. On average, these accounts would accumulate negative balances of less than one month's wages. The equilibrium contribution rate is estimated at 1.6 percent of income, which is also less than in Colombia. Although the benefits last for the same amount of time, the risks of unemployment in Ecuador are lower. With regard to benefits, basic income would replace between 25 and 10 percent of income in the deciles where the vulnerable middle class is located (3 to 7). This income would represent between 1 and 0.5 months of salary a year.

The proposed system could replace current unemployment insurance and individual severance accounts with a lower total contribution rate (between 1.6 percent and 1.9 percent, instead of the 3 percent currently paid: 1 percent from the employer for insurance, and 2 percent from the worker for severance). As in the other countries, the reform would also reduce the costs associated with severance pay by replacing it with a firing tax. In Ecuador, an 8 percent tax on

annual salary could yield resources equivalent to 0.15 percent of GDP, or almost 70 percent of the total cost of the program without taxes on savings.

Finally, in Peru, the cost of the program would be similar to that in Ecuador: 0.25 percent of GDP, with 0.15 percent for basic income and 0.11 percent for accounts in deficit. These accounts, on average, would also accumulate balances of less than one month's salary. The equilibrium contribution rate, however, could be higher than in the other countries: about 5 percent, with a benefit lasting for two months. This is because of the higher risk of unemployment in Peru. If the benefit only lasted for a month (observed average length of unemployment), the contribution rate would be 2.5 percent, between the rates in Ecuador and Colombia.

As regards benefits, basic income would replace between 10 and 28 percent of the income in deciles 3 to 7, but would account for less than 20 percent of a month's income because of the short period of unemployment. As in Colombia, the proposed system could also replace the individual account system, whereby the current balances would be partly liquidated or used to prepay contributions. As in the other countries, the costs of end-of-service severance payments could also be reduced. At present, for a worker with one year of service, this costs 12.5 percent of annual salary. For a worker with two years of service the cost increases to 25 percent of annual salary, and it can reach 62.5 percent for a worker with five years of seniority. Severance payments could be replaced by a fixed tax of 8 percent, which in Peru would yield the equivalent of 0.30 percent of GDP. These resources would be enough to cover the costs of the new income protection program.

Recommendations for the design of the pension and retirement system

Below we make some proposals for reforming the pension/retirement system in the Andean countries. These seek to reduce institutional fragmentation, widen coverage for vulnerable workers, increase the regressivity of spending, ensure fiscal sustainability, and create incentives for long-term savings. These goals could be met in both a defined-contribution system and in a defined-benefit system, as long as they are well designed. This means that the benefits offered should be linked to contribution levels, and to the rate of return on contributions that the system can pay.

It is assumed that Bolivia, Colombia, and Peru adopt an integrated defined-contribution system after solving the problems affecting the decumulation phase,

while Ecuador reforms its defined-benefits system. In defined-contribution systems, the life annuity is guaranteed by the state if necessary. Under both systems, however, the same redistribution mechanism is adopted. As with unemployment insurance, this consists of:

- Subsidies to contributions, replacing the concept of a minimum pension/retirement payment. These subsidies would encourage savings and, like the minimum pension, would help low-income workers, especially in the vulnerable middle class, to acquire a certain amount of pension. The subsidies would not be financed by contributions but by the general state budget, so as to avoid disincentives to formal-sector employment.

- A basic income independent of contributions, which would assume the function of non-contributory pensions and could eventually replace anti-poverty transfers. This basic income could also be absorbed into the basic income mentioned in the case of unemployment insurance. The subsidy could be universal or targeted.

We now compare the current systems with reformed systems as regards the level and source of benefits by income level, the incidence of subsidies, and the potential fiscal costs of universal coverage. The costs reported do not include the cost of the implicit pension debt in defined-benefit systems.

Bolivia

Bolivia's current defined-contributions system involves a high level of redistribution, with an implicit cost that could reach 4.5 percent of GDP in the event of universal coverage of the middle class. To that we must add the current cost of non-contributory pensions. This is the value of the contributions that the government implicitly subsidizes so that workers reach the minimum pension/retirement payment. These subsidies are high, especially for low-income workers, given the short contribution period (35 years with a full career), the low benefit amounts (for example, a low replacement rate), and the level of the minimum pension (35 percent of the average salary with a full career, and 24.5 percent with a partial career of 24 years).

In the reformed system, we propose raising the retirement age so as to extend the contribution period, and improving the targeting of contribution subsidies and basic income. The total cost of the integrated system would be 3 percent of

GDP (1 percent, the cost of the basic income that would replace non-contributory pensions). The main elements of the reform are: i) raising the retirement age to 60 for both men and women; ii) eliminating subsidies at the time of retirement; iii) adjusting the value of the minimum pension to 25 percent of average income; and iv) introducing a basic income set at 10 percent of average income. The subsidies to contributions would be lower for deciles 4 to 7, relative to the current system. The cost of the contribution subsidies would therefore be reduced to 2 percent of GDP. Targeting basic income also makes it possible to provide a higher level of protection for the poor (10 percent of average income instead of the 6.2 percent they currently receive).[47] This cost is estimated at 1 percent of GDP.

In Bolivia, the gap between the current system and the reformed system is narrower than in the other countries. Bolivia already has an integrated contributory system, and it is designed in such a way as to ensure that there is a direct link between contributions and pensions/retirement payments. The country also uses a redistributive mechanism whereby the minimum pension is linked to the contribution period. In this regard, the main difference with the reformed system would be the change from ex-post (at the time of retirement) subsidies, which prompt greater uncertainty about future fiscal costs, to ex-ante (at the time of contribution) subsidies. The biggest structural change would be replacing non-contributory pensions with basic income. Two aspects of basic income merit particular attention. First, basic income would be integrated into the contributory system, and therefore would be taken into account in calibrating the minimum pension and calculating the subsidies for it. Second, the basic income would be targeted on the basis of the worker's income. Bolivia, like the other countries, has the know-how and administrative systems to apply this kind of targeting.

Colombia

For Colombia, we took as our starting point the defined-contribution system, whose subsidies would amount to 4 percent of GDP with full coverage of the middle class. Although Colombia's contribution period is longer and its retirement age is higher than Bolivia's (42 years instead of 35, and 62 years instead of 55), the level of the minimum pension/retirement payment is higher. Vulnerable middle-class workers therefore receive pensions that are equal or almost equal

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47 In this case the costs are calculated on the basis of the current beneficiaries of non-contributory pensions.

to the final salary—that is, with replacement rates of between 100 percent and 86 percent for deciles 3 and 4, respectively. Subsidies for contributions to ensure the minimum pension are therefore higher in Colombia than in Bolivia.[48] Without changing the level of the minimum pension, and with full coverage of the middle class (deciles 3 to 10), the cost of subsidies could be very high, at 3.95 percent of GDP.

In Colombia, the new system proposes better targeting of subsidies to contributions while integrating basic income and lowering the minimum pension, decoupling it from the minimum wage. The total cost could reach 1.96 percent of GDP. The main elements of the reform are similar to those of Bolivia, but without changing the retirement age: i) there are no subsidies to contributions for high-income workers (the richest among the consolidated middle class and the upper socioeconomic level—that is, deciles 8 to 10); ii) the value of the minimum contributory pension is reduced to 30 percent of the average wage (the minimum pension would no longer be linked to the minimum wage); and iii) basic income is set at the equivalent of 10 percent of average income. These reforms involve substantial reductions in subsidies to contributions. In deciles 3 to 7, where the vulnerable middle class is located, these subsidies would fall from between 33 and 24 percent of the average salary to between 17 and 9 percent. The total cost of the subsidies would therefore decline from 4 percent of GDP (current system with full coverage of the middle class) to 1.56 percent of GDP. To these costs we should add the cost of basic income, at about 0.57 percent of GDP.

In Colombia, the main challenges are to integrate the contributory systems, eliminate the minimum pension tied to the minimum wage, and remove restrictions on the life annuity market. Adjustments to the defined-benefit system pose a major challenge, since they entail lowering the value of pensions for a significant group. The proposal is gradually to reduce the size of the defined-benefit system, while introducing reforms to align the level of contributions more closely with the level of benefits (see the reforms proposed for Ecuador). Alternatively, the public defined-benefit system could be transformed into an unfunded, defined-contribution system (notional accounts model) in which the rate of return is fixed in real terms. Workers could choose between the fixed-rate plan or a variable-rate plan (or plans) with a higher expected return.

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48 Currently, in Colombia, members contribute 1.5 percent of wages to a reserve fund that is used to finance the cost of the minimum pension/retirement payment.

Policy decisions regarding life annuities. Colombia should consider the following interventions with respect to life annuities: i) life annuities linked to the minimum pension should be compulsory; ii) purchase of a life annuity should be the default option for people who can retire with a pension higher than the minimum; iii) reduce the survivor's pension from 100 percent to 50 percent of the deceased's pension; iv) put the provision of life annuities out to tender or provide life annuities through the state; v) set up a basket fund to finance life annuities; this sets a predictable target for the pension value that determines the investment strategy, combines the collective savings of retirees with state resources, and distributes the risks among all participants in the pension system. This fund would seek to reduce the cost of issuing the incomes and to increase the predictability of pension values.

Finally, as regards the redistributive mechanism, Colombia already targets the non-contributory pension through its Colombia Mayor program. The main change would be integrating it into the distributive system (which affects subsidies to contributions), and distributing the subsidies during people's working lives. The amount of the subsidy, moreover, should be increased. Currently it is below the standard for the region and even below the extreme poverty line.

Ecuador

Ecuador has the most expensive and regressive pension/retirement system among the Andean countries. The implicit subsidies are equivalent to 15.5 percent of GDP with universal coverage, and mainly benefit high-income workers. Part of the problem is the high level of the benefit, which is unconnected to the contribution rate. The minimum pension or retirement payment is also large, at 50 percent of the average salary. As in Colombia, therefore, workers in the third and fourth deciles receive pensions equal to or almost equal to their final salary (with replacement rates of 98 percent and 85 percent, respectively). A yet more serious problem is that the subsidies paid to finance the value of pensions are regressive—that is, they are higher for higher-income workers. For example, the subsidy for the poorest decile is equivalent to 45 percent of the average salary, while for the richest decile it is twice the average. Currently, the cost of subsidies in the three richest deciles is equivalent to 5.6 percent of GDP, compared to 2.2 percent for deciles 1 to 7.

Reform of the Ecuadoran pension system requires structural changes. Specifically, it calls for changing the formula used to calculate the benefit, revising the level of the replacement rate, and improving the redistributive mechanisms

in a manner similar to the cases of Bolivia and Colombia. As regards the benefit formula, and with a view to ensuring the financial sustainability of a defined-benefit system, the following rules should be adopted:

- In calculating the pension/retirement payment, all salaries (declared income in the case of self-employed individuals) should be included, not only those for the past five years.

- The value of pensions should be strengthened so that the rate is actuarially fairer and does not affect the system's financial sustainability. Moreover, pensions should be automatically indexed to inflation.

- People who retire before (after) the legally established age have a lower (higher) accumulation rate, so as to encourage contributing for longer.

- With regard to the redistributive mechanism, the proposal is to: i) reduce the contribution subsidies for higher-income workers and make them explicit; ii) set the minimum contributory pension at 30 percent of the average salary; and iii) set the basic income at the equivalent of 10 percent of average income.

Implementation of these reforms would substantially reduce the total cost of subsidies to 3 percent of GDP, but would also lower the value of pensions. In the lowest deciles, pensions would be about 30 percent of the average salary instead of the current 50 percent. At the same time, however, the subsidies would be distributed progressively, mainly to the benefit of low-income workers. The cost of subsidies to contributions would be around 2.42 percent of GDP, and the cost of basic income would be 0.54 percent of GDP.

In Ecuador, the kind of reforms presented here are especially hard to implement because they involve large reductions in benefit levels and increases in contributions. Such reforms are vitally important, however, given the cost of the current system and the high degree of regressivity. In practice, the reformed system could maintain levels of benefits and subsidies that are higher than those considered in this study. These have to arise from social consultations and negotiations between the government, workers, and employers. What is essential in all cases is that the redistributive mechanisms be explicit and transparent, and

that both the cost of the subsidies and their distribution among different income groups can be established.[49]

Peru

In Peru we took the defined-contribution system as our starting point. It is the least expensive among the countries of the Andean region. Subsidies under the current system are estimated at 0.8 percent of GDP, with universal coverage. These more moderate fiscal costs are explained by a longer contribution period (45 years), a higher retirement age (65 years), and a lower minimum pension (24 percent of the average wage). Hence replacement rates are below 50 percent in the deciles where the vulnerable middle class is located (deciles 3 to 7).

The reforms proposed for Peru focus on the redistributive mechanisms (non-contributory pensions and the minimum pension/retirement payment), at a cost of 1 percent of GDP. The costs are marginally higher because they include the cost of basic income which, as in the other three countries, would replace non-contributory pensions. This would stand at 0.54 percent of GDP. In turn, the minimum pension would be replaced by explicit subsidies to contributions, at a cost of 0.48 percent of GDP. The level of subsidies in the contributory system would be reduced as a result of the basic income. Indeed, thanks to this income, the level of the contributory pension could be lower. In decile 3, for example, the subsidy would fall from 15 percent to 9 percent of average income. As in the current system, there would be no subsidy after the seventh decile.

In Peru the greatest challenge would be to integrate the contributory systems, though the country is already discussing this option. A basic element of this reform is to reverse or amend the law that grants members of the defined-contribution system the alternative of withdrawing the full balance of their pension at the age of 65. On this basis, workers in the defined-benefit system would be transferred to the reformed defined-contribution system. As explained above, the defined-benefit system is not cost-effective for workers with above-average incomes. For lower-income workers, the system offers implicit subsidies to attain replacement rates of about 50 percent or less. The same goal can be achieved in the defined-contribution system with explicit subsidies. As in the

49 It is important to note that the calculations in this section do not take into account the value of the current system's implicit debt, which is not backed by financial assets, nor the distribution asset. In principle, this non-capitalized debt would be financed through the general budget of the state, and its costs would then have to be added to the cost of subsidies.

proposal for Colombia, however, reform of the defined-benefit system could involve transforming it into a national accounts system. If necessary, depending on financial-market conditions, the state could issue long-term bonds to enable pension fund administrators to structure this portfolio.

Recommendations for the design of the health system

A detailed discussion of health system reforms in the Andean countries is beyond the scope of this chapter. Our aim is to give an idea of the post-reform fiscal cost of universal, comprehensive insurance, depending on the type of redistributive mechanism. Hence we do not consider the costs of transition to the new system or of increased demand for services. Indeed, we should make clear that implementing this kind of insurance would require a much more detailed analysis—not only of financing mechanisms but also of the structure of public and private health-service markets, as well as issues related to the design of appropriate procurement and payment systems.

The analysis is based on the following assumptions:

- All workers (irrespective of the sector in which they work) and their dependents are covered by the same health insurance. This insurance could be financed entirely by the state budget (universal subsidies) or cofinanced by contributions from members with the capacity to pay.

- The insurance offers a comprehensive health services plan similar to the Colombian scheme, which includes general medical care, laboratory services, surgical procedures, medication, and outpatient and inpatient services. The insurance also covers treatment of chronic diseases.[50]

- To determine the cost of the comprehensive health plan, we take the Colombian case as a reference.[51] It is assumed that the average cost of this

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50 In practice, the comprehensive health care plan should be adapted to the epidemiology of each country and adjusted every two to three years.

51 This assumption has been introduced given the lack of cost information at the country level. In practice, the cost of the plan is determined by epidemiological factors, as well as the price of different technologies and health services. Hence there must be differences among countries uncaptured in this analysis as regards the cost of the comprehensive health plan.

plan is 5 percent of GDP per capita.[52] In each income decile, adjustments are considered for three age groups: 0 to 14 years (62 percent of the average cost); 15 to 64 years (97 percent of the average cost); and over 65 years (three times the average cost). The cost differences between countries are then given by the demographic structure of the population within each income decile.

- Employed workers pay a premium[53] for each family member; this premium depends on their income level.[54] Two cases are considered: i) universal subsidies; and ii) targeted subsidies per income decile (D): D1–D3, 100 percent; D4, 80 percent; D5, 70 percent; D6, 60 percent; D7, 50 percent; and D8–D10, 0 percent.

The estimates suggest that integrated universal insurance in the Andean countries could cost between 2.5 percent and 5.5 percent of GDP, depending on how the subsidies are targeted. The costs are similar among countries, given that the same health service plan is assumed. The costs are slightly higher in Peru because there is a higher proportion of over-65s in each decile. In Bolivia, Colombia, and Ecuador, total spending with the reform would be similar to current public spending, but with universal coverage. In Peru, total spending would be higher than it is today, suggesting significant differences in the substance and cost of the health plan. In all cases, targeting subsidies makes it possible to reduce spending significantly.

Average premia range from 67 percent to 100 percent of average income in the poorest decile, and from 2.4 percent to 3.7 percent in the richest decile. They are generally higher than current contribution rates. Indeed, in the deciles in which the vulnerable middle class is located, premia are between 5.7 and 12.7

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52 In 2019, the capitation payment unit was set at 847,181 Colombian pesos under the contributory regime, or about 4.5 percent of per capita GDP. Age and gender adjustments were used, together with the population distribution, to calculate adjustment factors for three age groups: 0 to 14 years; 15 to 64 years; and over 65 years. In practice there can be significant cost differences between countries—not only differences in the population's epidemiological profiles, but also in the supply of and demand for different health services that affect their prices.

53 As in the Colombia, there are prorated fees and copayments in addition to premia. Income from these has not been included in the calculations.

54 The average number of dependents per employed person in each income decile was estimated on the basis of the household survey. It should be noted that, after adjusting the premium by age and sex, there is still an implicit redistributive component. Indeed, the most important determinant of health service use and costs within an age/gender group is given by the previous use profile conditioned by health status.

percent of average income in Bolivia; between 12 and 27 percent in Colombia; between 9 and 21 percent in Ecuador; and between 12.5 and 27 percent in Peru. Current contribution rates range from about 5.7 percent in Ecuador to 12.5 percent in Colombia. In each country, these contribution rates are lower than the value of premia as a percentage of average income, except in the deciles where the consolidated middle class is located. This suggests a high level of implicit redistribution financed through labor taxes. It should be noted that the proposed system can yield more progressive effective contributions, since it is based on explicit subsidies that are higher for poor and middle-income households.

In the proposed health system, implicit taxes on labor would be replaced by explicit subsidies. These subsidies would be financed from the general budget, which would depend on the substance of the health care plan, and the system of copayments and prorated fees. There are different options for creating the necessary fiscal space, including greater efficiency in public health spending and sector-specific taxes.[55] These may include part of the revenues from VAT (as in Chile), taxes on alcohol, cigarettes, or luxury goods (as in Colombia, Costa Rica, Mexico, Thailand), and others, such as taxes on property or financial transactions. It is also possible to replace some of the implicit taxes on labor with explicit taxes on company profits and the earnings of high-income workers (as in Colombia, Jamaica, and Tunisia).

In Bolivia and Ecuador, operation of the proposed system requires that the substance of the health plan be defined explicitly, and that its cost be estimated for different population groups. This does not necessarily involve reducing access to health services. In general, countries tend to ration health services implicitly. Indeed, there is an almost unlimited range of services that can be offered in a context of limited public resources. This requires setting priorities and increasing efficiency in the allocation of those resources, so as to improve the population's health and provide greater financial protection. This prioritization can be effected through health technology assessments (HTAs) conducted by independent agencies.[56] Explicit health plans are based on "positive lists" that define the diagnoses and/or interventions covered by the plan.[57] For example, Bolivia and Ecuador could carry out these assessments and analyze whether the

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55 See Chapter 4 in Cotlear et al. (2015).

56 This is a complex activity requiring proper time and resources, both physical and financial.

57 In general, the lists are based on interventions/procedures. Few low- and middle-income countries use standardized diagnostic coding systems such as the International Classification of Diseases (ICD) published by the World Health Organization (WHO).

services currently offered are cost-effective, or whether other kinds of interventions should be considered. Explicit plans could facilitate the transition to results-based procurement and payment mechanisms that create incentives to reduce costs and improve the quality of health services.

Recommendations for financing higher education through quality assurance[58]

The public policy response to the challenges of funding and quality in the Andean countries' higher education systems depends largely on the institutional environment, which varies from country to country. Peru, for example, has a model that is firmly grounded in the expansion of private provision. This differs from circumstances in Ecuador (Ferreyra et al., 2017). Several principles, however, can guide countries as they tackle the challenges of funding and quality.

The rules for allocating supply-side subsidies must be designed so that they do not create greater inequalities or deter efficiency and quality. Supply-side subsidies that consist of providing resources to public institutions can create sustainability problems if they are not properly designed. Allocations to institutions based on historical budgets, without adjusting for coverage or performance, can perpetuate ineffectual academic programs and spending inefficiencies (González-Velosa et al., 2015). Public universities that are highly selective by academic background might restrict admission to students from upper socioeconomic levels who have completed high-quality secondary education, which means that subsidies are going to students who can pay. In this regard, it is advisable to adopt innovations conducive to improved performance and greater progressiveness in the design of supply-side subsidies. This is the case, for example, of competitive funds that encourage quality in higher education, like Chile's Program to Improve the Quality and Equity of Education (Mecesup) and Mexico's Fund for the Modernization of Higher Education (FOMES). Performance-related contracts, in which the government agrees to provide more funding to educational institutions in exchange for improved performance, are also very promising. This kind of contract is common in European countries such as Denmark, Finland, France, and Spain. In Chile, too, there are some precedents (González-Velosa et al., 2015).

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58 Recommendations based on the analyses of González-Velosa et al. (2015).

Demand-side subsidies for higher education, such as subsidized grants and loans, should be designed to avoid inequalities and inefficiencies, and should be accompanied by an ample supply of information. Ideally, scholarships should consider both academic merit and financial need, so as to ensure that recipients have an appropriate academic background and face financial constraints on their access to higher education. Credits should also be designed on the basis of these criteria and should mitigate students' excessive exposure to financial risk, particularly among those who lack resources. This can be achieved by means of well-designed financial instruments like income-contingent loans, whose repayment rates automatically rise and fall in line with the borrower's income.

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