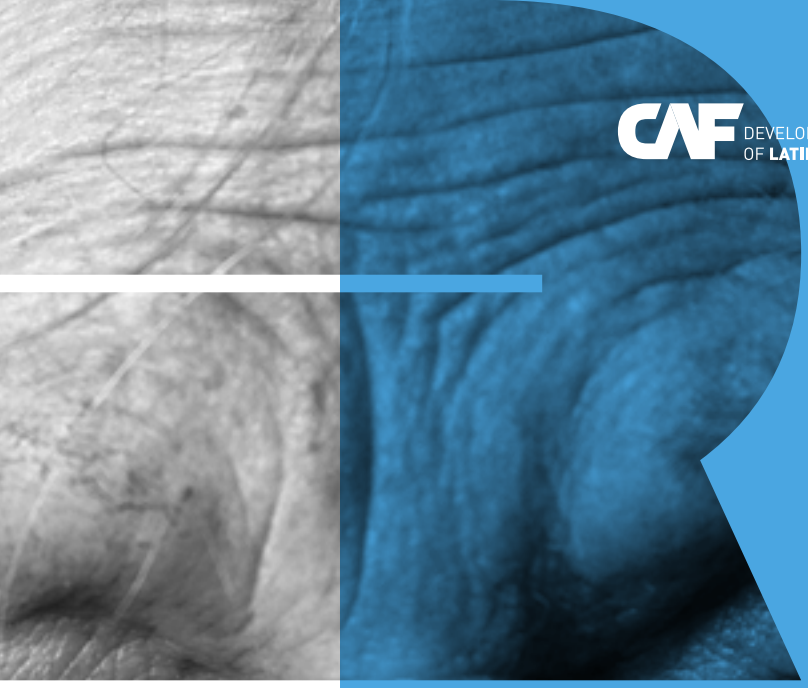
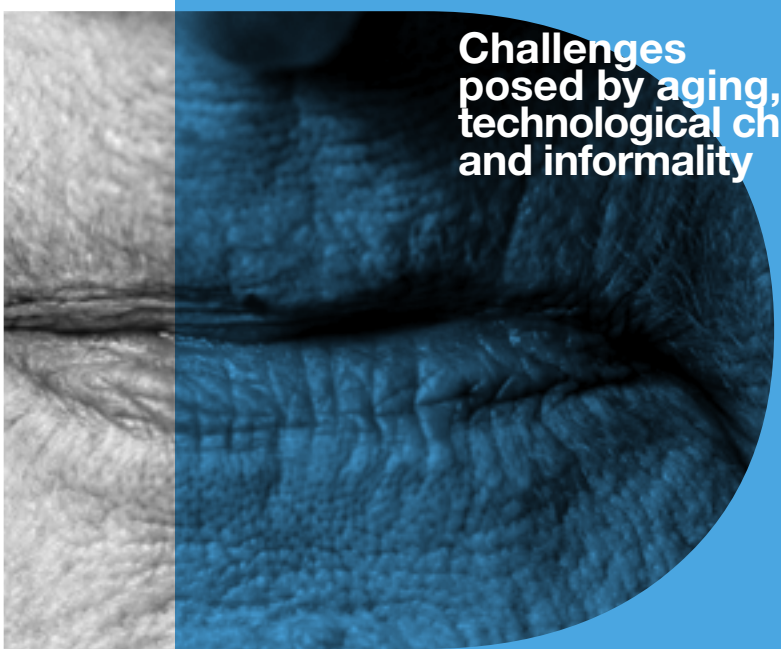


CAF DEVELOPMENT BANK OF LATIN AMERICA

2020 RED Report on Economic Development

Pension and healthcare systems in Latin America

Challenges posed by aging, technological change, and informality



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Prologue

Modern States commit a significant amount of their budgets to funding a system of transfers to protect their people from certain risks, and simultaneously, to promote inclusion and equality. This social protection system is an indispensable instrument to promote the well-being of citizens and economic and social development, especially in countries with large inequalities such as those in Latin America. Adverse events with strong impact, such as the COVID-19 pandemic, highlight the importance of the proper functioning of these protection mechanisms, especially for the poorest families.

Of the wide range of programs that integrate social protection, this new edition of the Report on Economics and Development focuses on those components related to older adults; specifically, pensions, health and long-term care systems, as well as aspects of the labor market that condition the coverage of these systems and their funding.

This emphasis is justified and timely. On the one hand, older adults make up a segment of the population particularly subject to health risks and insufficient income. On the other hand, these components cover an important part of public spending in Latin America, reaching around 8.5% of GDP in total. Finally, its current relevance is due to the accelerated aging that the region will experience in the coming years, a fact that will pose a significant challenge to the financial sustainability of health and pension systems.

Added to the challenge posed by accelerated aging are labor informality and the trend toward digitalization and automation of production processes. Informality determines the size of the contributory pillar of protection systems and strongly influences their design, to the extent that it is necessary to balance the provision of more protection with the promotion of incentives for formal employment. Advances in digitalization and automation, although incipient in the region, could be very disruptive for employment trajectories, especially among workers who perform routine tasks. This factor would negatively impact the taxpayer base of social protection systems.

Given this context, any reflection on the redesign of these systems in Latin America requires a comprehensive vision that takes into account the interactions between the demographic structure and the conditioning factors of the labor market. This report incorporates these ingredients and offers critical insights to address these problems and move toward a financially sustainable, quality and inclusive social protection for older adults.

The assessment made in the report shows fragmented protection systems for older adults with important gaps with respect to standards in the developed world. Despite improvements in pension coverage in the past two decades, which were supported by the growth of the non-contributory pillar, 4 out of 10 older adults in the region still do not have access to any type of pension. On the other hand, in some countries, the amounts of non-contributory pension payments are insufficient to lift this demographic group out of poverty. A similar picture emerges with regard to health systems, given that 4 out of every 10 older adults have access only to the universal public health system (basically the public hospital network), struggling to improve the quality of its services. Closing these gaps is a major pending task, at least in some countries.

The report presents some principles that can guide future reforms. In the area of pensions, it is important to guarantee a minimum income for the elderly and to ensure the financial balance of the contributory component. In some countries, it is essential to review the minimum retirement ages and, in others, the formulas for calculating the replacement rate. There is also a need to make pension contributions mandatory for all workers, including the self-employed, and to reduce the minimum years of contribution required in some countries where they are too high given the incidence of informality. In terms of health system policies, the key guidelines include progress toward greater integration between the different subsystems, the development

of mechanisms to control spending and to ensure an efficient use of resources, prevention policies, and the implementation of care policies for older adults.

The necessary progress toward closing the coverage and quality gaps combined with the aging process throughout the region implies financing needs. Many countries have practically no margin to increase income through higher contribution rates, but there is greater potential for tax collection through a rise in the number of taxpayers. To this end, it is essential to promote greater participation of women in the labor market and, above all, to reduce informality. In addition to implementing policies to boost revenue for social protection systems, some countries have fiscal space to meet the demands of higher spending by raising tax collection.

Admittedly, each country in the region is experiencing unique circumstances in terms of the challenges facing their social protection systems, and the spaces and opportunity to address them. However, to a greater or lesser extent, the need for reform is in every country. With this report, CAF aims to support a necessary reflection on policy alternatives that will lead to better social protection and better well-being for our older adults.

Luis Carranza Ugarte
Executive President, CAF

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The chapters were written by:

Chapter 1 Fernando Álvarez

Chapter 2 Pablo Brassiolo and Manuel Toledo

Chapter 3 Lian Allub and Guillermo Alves

Chapter 4 Dolores de la Mata and Ricardo Estrada

Chapter 5 Christian Daude

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Social protection for older adults and the demographic challenge

1

Social protection for older adults and the demographic challenge[1]

Latin America is aging rapidly. Over the next 30 years, the proportion of Latin Americans aged 65 and over will double, reaching almost 18%, while the population aged 80 and over will increase from less than 2% to 5%. It took around 100 years for countries like France and Sweden to experience a similar process. By the end of the 21st century, three out of 10 Latin American adults will be aged 65 or over.

This demographic trend poses serious challenges to social security systems, especially to the pension and health components. Demographic factors are compounded by labor market aspects, the most significant of which is informal employment. In addition to informality, recent technological changes and the emergence of new work modalities also condition social protection and its financing mechanisms.

This report will examine the challenges of social protection systems and the public policies to address them. It focuses on pensions, and health and long-term care services for older adults. It presents a comprehensive and insightful overview of both systems, taking into consideration the interactions between the demographic structure, the labor market, and the factors that determine their financial equilibrium and sustainability. It also provides some key ideas to tackle these challenges and build good quality social protection for older adults and the population.

Chapter 1 is an introduction to social protection systems in Latin America. First, it reviews the main reasons for public social protection. Then, it provides an overview of pension and health systems. Finally, it examines the processes driving the changes in the demographic structure of Latin America countries, in particular, mortality, fertility and migrations.

1. This chapter was prepared by Fernando Álvarez, with the research assistance of Roberto Ferrer.

Social security is undoubtedly a powerful instrument for development, favoring equality and protecting people against certain risks. Consequently, states allocate significant resources to public social protection mechanisms. However, expenditure varies from country to country, even among those with similar levels of development. On average, expenditure on pensions and health, as a proportion of GDP, is lower in Latin America relative to that in developed countries. This expenditure gap is not only due to the relatively low proportion of older adults in the region, but is also related to the quality of such systems (defined by the coverage and generosity of benefits per person).

Because these programs pursue distributive objectives, it is essential to explore the availability of such protection instruments to families with different income levels. A fragmented pension and health system with considerable differences in the protection offered to families from different socioeconomic status could jeopardize its distributive role.

This report reveals that social protection for older adults varies considerably between countries: many face the challenge of improving system coverage; others, that of increasing pensions and improving the quality of the health system. However, all countries will face an increase in the proportion of older adults, which will threaten the financial sustainability of the social protection systems. Hence, inevitably, at least in some countries, reforms of social protection systems must be encouraged or consolidated. The specific characteristics of these reforms and their difficulties depend on the situation of each country. This book provides information and policy guidelines to rise to this challenge.

Social protection and development

From birth, people face risks and circumstances that could affect their quality of life.

From birth, people face risks and circumstances that could affect their quality of life. Being born in an unfavorable social context may impact a person's capacity to accumulate skills. Accidents and job loss affect a worker's potential to generate income. Finally, for older adults, it increases their risk of having health-related problems and lacking enough resources to meet their consumption needs.

The state helps people address these risks by providing a wide range of programs. These include cash transfers to poor households, the provision (and regulation) of health services, unemployment insurance, workers' compensation plans, and old-age pensions, among other benefits. This book focuses on the instruments that provide protection for older adults—pension systems and health and long-term care services—given the importance

of these components in social spending and their high sensitivity to the demographic changes to come.[2]

Public protection programs are not the only source of protection against certain events or situations in old age. There are many private insurance products against health contingencies. Likewise, intra-family transfers (either in money or time) or the accumulation of assets at earlier ages in life are also helpful tools. However, these private mechanisms often provide insufficient levels of protection. Public provision is crucial.

Often, private mechanisms provide an insufficient level of protection. Public provision is crucial.

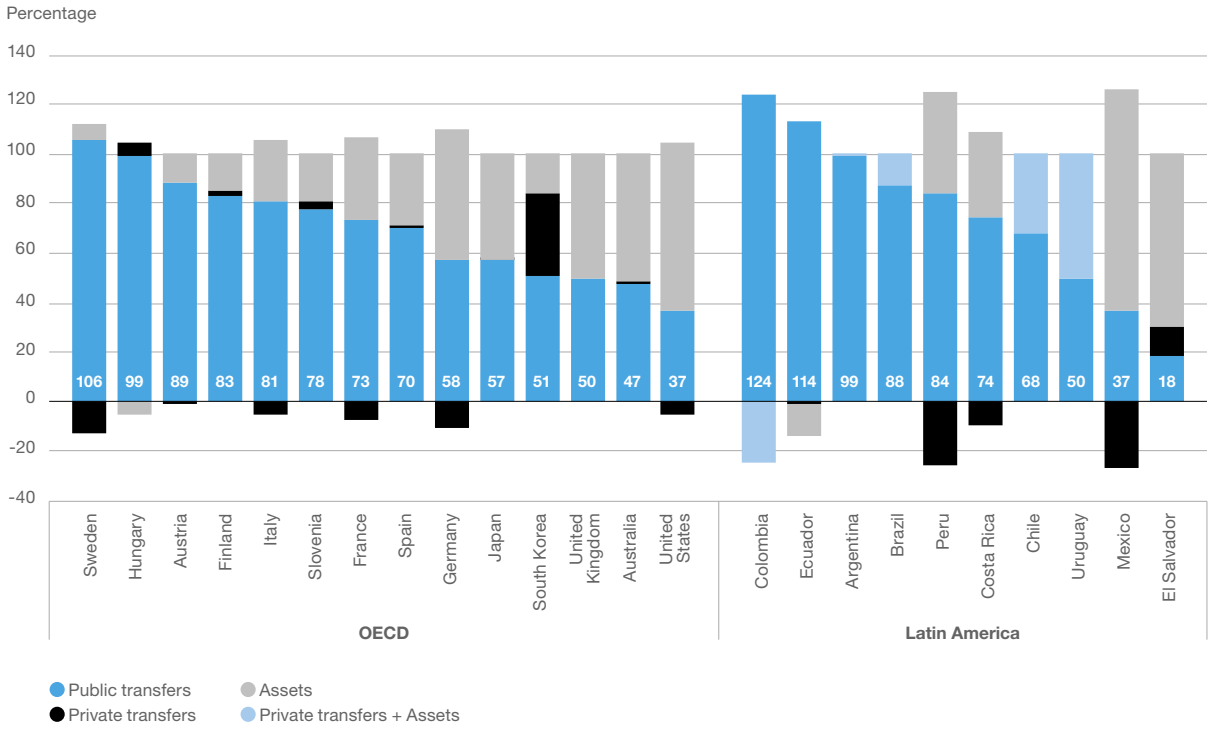
Indeed, social protection systems finance a large portion of what people consume after retirement, when their income from work is lower and their health expenses are higher. In this regard, Figure 1.1 shows, for different countries and years, how adults over 65 years old fund their income deficit based on three sources: i) assets (including capitalization-funded pension systems); ii) public transfers (including transfers from pay-as-you-go pension plans); and iii) private transfers (in some cases, based on the available information, assets and private transfers are shown together).

In all countries, the role of public transfers is beyond question. These are especially relevant in European economies, like Austria, Finland, Hungary, Italy, and Sweden, as well as in Latin America, including Argentina, Brazil, Colombia, Ecuador, and Peru. The significance of individuals' assets is particularly high in the United States and, in the case of Latin America, in El Salvador and Mexico. Overall, private transfers play a minor, even negative role,[3] but in some countries, like El Salvador, they are even comparable to public transfers, which is most likely related to the flow of remittances.

2. The focus of this book does not mean ignoring the crucial importance of social spending at earlier stages in life. The importance of expenditure on education for development is beyond question (CAF, 2016). Moreover, insurance against labor market contingencies can improve employment histories. Indeed, welfare in old age is closely linked to skill-building and employment history, and, therefore, the protection provided at earlier lifecycle stages.

3. A negative value of this funding source would suggest that, rather, it is older adults who transfer money to younger generations.

Figure 1.1
Lifecycle deficit funding for adults aged 65 and over



Notes: Per-country data years are as follows: Brazil (2002); Sweden (2003); Japan, Mexico (2004); Hungary (2005); Finland (2006); Peru (2007); Germany, Colombia, Spain, Italy (2008); Australia, Austria, El Salvador, Slovenia (2010); Ecuador, the United States, France (2011); Chile, South Korea, United Kingdom (2012); Costa Rica, Uruguay (2013); Argentina (2016).

Source: Comelatto (2019), for Argentina; National Transfer Accounts (2020), for the rest of the countries.

The provision of social protection mechanisms is an essential part of the role of the state. The following section includes arguments in support of the public provision of insurance schemes.

Reasons to have public social protection systems in place

Three arguments in support of public social security systems are often cited: i) market failure, ii) distributive objectives and iii) paternalism (Diamond, 1977).

The market does not always provide the necessary means for societies to distribute risks efficiently among their citizens. In such cases, state intervention can potentially improve welfare. One of the market failures that imposes

significant restraints on insurance markets is asymmetrical information,[4] which causes adverse selection and moral hazard problems.

Adverse selection occurs when insurance companies do not have information about certain characteristics of insured parties that are important for contract definition. For example, the exposure of the potential insured to the risk involved. Because of this lack of information, insurers cannot price buyers' insurance according to their particular risk. Therefore, they must set a single (average) price of insurance that reflects the average risk of the potential pool of clients. This discourages low-risk people from buying insurance (because it is expensive for their exposure) and yields inefficiently low coverage. If risk exposure were observable, insurers could charge lower-risk individuals less, encouraging them to opt-in. Adverse selection may restrict both the number of individuals who choose to buy insurance (extensive margin) and the level of coverage for certain risks (intensive margin), particularly high-cost risks, like catastrophic illness.

The (standard) adverse selection model empirically implies a positive correlation between the required level of coverage and actual exposure to risk, even after considering the policyholder's characteristics that the insurer can observe. Using this principle as a basis, econometric tests were conducted, which validated the presence of adverse selection in some insurance markets, but not in others (Cohen and Siegelman, 2010).[5]

One of the markets where adverse selection problems have been found, and that is related to the management of risks in older adults, is annuities.[6] Some studies in the United Kingdom have shown that the average lifetime of retirees who convert their pension savings into an annuity is longer (Finkelstein and Poterba, 2002). They have also found evidence of adverse selection in the type of annuity: individuals who believe to be at risk of dying relatively young are more likely to select an annuity that guarantees payment for a longer period of time, even in the event of premature death, when the annuity is paid to secondary beneficiaries.[7] Evidence of adverse selection has also been identified in health insurance, where individuals with a worse health condition (which the insurer cannot observe) often purchase more generous coverage (Cutler and Zeckhauser, 1997).

---

4. Information asymmetry occurs when one contracting party has less relevant information than the other.

5. One reason that weakens this correlation is that people cannot always process (or possess) information in a better way than insurers do to identify their risks. Another reason is that choosing the type of insurance is a multidimensional problem and exposure to risk is just one relevant factor. In addition, the degree of risk aversion plays its part: if low-risk individuals are more risk-averse, a negative correlation may even come up between insurance demand and the level of risk, in what is sometimes called propitious selection.

6. Annuities are contracts that an individual or enterprise signs with an insurer. In return for a single payment or successive payments, the insured can receive income benefits for a specific period of time or for the rest of their life.

7. According to the study, the average rate of premature death among individuals who purchase these types of guarantees is higher than the average rate of insured individuals who do not purchase these guarantees, which drives up the annuity price.

A public policy strategy to counteract the effects of adverse selection is making insurance compulsory or, in the same spirit, implementing subsidies and penalties to encourage the purchase of insurance.[8] Some studies support the idea that this type of policy can improve welfare (Dahlby, 1981; Hackmann, Kolstad, and Kowalski, 2015). This type of policy could solve the problem of adverse selection in the extensive margin (buying insurance or not) but not necessarily in the intensive margin (type of coverage). An alternative for this is compensation for insurers in risky cases.[9]

In the moral hazard problem, it is individuals' actions that are unobservable. Consequently, being insured can lead to "risky or opportunistic" behavior by insurance holders. For example, having health insurance could trigger the performance of unnecessary procedures, increasing the costs of services; likewise, having a non-contributory pension and health system could discourage workers from looking for formal jobs. In these contexts, information asymmetry implies partial insurance, for example, through a copayment as a mechanism to discipline the insured.

There is no private insurance against the risk of not having access to contributory pensions. Non-contributory systems fill this void.

In extreme cases, market failures can even result in a lack of insurance markets for certain risks. A classic example is the risk of unemployment, and that is why unemployment insurance is offered through public programs. In the same vein, no private insurance is available against the risk of an employment history with long periods of informal employment that prevents workers from having access to contributory pensions to finance expenses in old age. Non-contributory schemes fill this void. When providing these systems, the state does not escape the aforementioned incentive problems caused by information asymmetry, particularly the fact that non-contributory programs can discourage participation in contributory schemes (getting a formal job). In this moral hazard problem, the copayment solution could be implemented with a lower benefit for non-contributory pensions.

Finally, the presence of externalities is another market failure that endorses public intervention in social protection. There are clear examples of this in healthcare. For communicable diseases, strong subsidies for diagnosis, prevention, and treatment are justified. There is also evidence that better health conditions encourage investment in human capital (Jayachandran and Lleras-Muney, 2009), an investment with well-known positive externalities.

8. Subsidies can encourage the purchase of insurance, but they must be financed by taxes that can have negative impacts on efficiency or productivity. Penalties, in turn, can be limited by the governments' power to enforce them and have unwanted distributive effects.

9. A common regulation that can even exacerbate selection problems is restricting price discrimination, which can prevent insurers from charging different prices based on risk dissimilarities. For more details, see Geruso and Layton (2017).

The second argument supporting public social protection and insurance mechanisms is distributive motivations.[10] Social inclusion and reduced inequality are usual government objectives, and the right to access social protection is covered by multiple national laws and has been reinforced by international agreements, like the Sustainable Development Goals (SDG).[11]

This does not mean that all societies appreciate distributive elements in social protection systems in the same way. What can be said about the preferences of Latin Americans in this regard? According to the 2019 CAF Survey[12] (ECAF) (CAF, 2020), citizens from the main cities in the region seem to have a balanced position regarding redistribution aspects of the pension system. Specifically, there is large support for the provision of a universal minimum income for older adults, but at the same time, for keeping some proportionality between pension payouts and contributions (Table 1.1).

On average, over 55% of respondents "strongly agree" (and 75% at least agree) with pensions granting a minimum income to all older adults, regardless of their contributions. The principle that a retirement pension should be proportional to the contributions made by workers throughout their working lives is slightly more divided, but, overall, it has also gained significant support, particularly in Montevideo, Panama City, and Buenos Aires. However, respondents also expressed their preference for more egalitarian benefits, especially in Asuncion and Santiago de Chile (Table 1.1).[13]

Over 55% of ECAF Survey respondents "strongly agree" with pensions granting a minimum income.

10. The distributive argument could be approached in the framework of market failures. Under the veil of ignorance explained by philosopher John Rawls, people would be willing to sign contracts that distribute the risks related to their endowment at birth; however, once information about endowment at birth is apparent, those who received a good endowment may have no incentives to compensate people who received a poor endowment.

11. In 2015, member states of the United Nations adopted 17 goals as part of the 2030 Agenda for Sustainable Development (for more information, visit https://www.un.org/sustainabledevelopment). Some targets involved social and health protection provision challenges. In particular, target 1.3 is to: "Implement nationally appropriate social protection systems and measures for all, including minimum floors, and by 2030 achieve substantial coverage of the poor and the vulnerable." Target 3.8, for its part, aims to: "Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all."

12. The CAF Survey is an annual survey conducted in Latin America's main cities. In 2019, over 11,000 respondents were surveyed in 11 cities: Asuncion, Buenos Aires, Bogota, Mexico City, Panama City, La Paz, Lima, Montevideo, Quito, São Paulo, and Santiago de Chile.

13. Men and individuals who had completed higher levels of education were relatively more inclined toward proportionality and less inclined toward minimum thresholds.

Table 1.1
Citizens' pension system preferences in Latin America

Region	Panel A. View on granting minimum pensions regardless of contributions (percentage of responses)					Panel B. View on pension payouts (percentage of rsponses)				
	Response					Response				
	1 Strongly disagree	2	3	4	5 Strongly agree	1 The same for everyone	2	3	4	5 Proportional to contributions
Asuncion	5.2	1.4	4.0	9.4	80.0	44.8	2.4	7.9	8.7	36.2
Bogota	6.0	5.2	12.4	23.2	53.2	25.8	4.6	15.2	23.7	30.8
Buenos Aires	6.5	3.8	11.9	19.3	58.5	28.0	2.8	11.6	15.3	42.3
Mexico City	5.2	5.0	14.8	29.3	45.7	20.3	9.8	19.3	27.2	23.4
Panama City	14.4	6.0	11.0	19.0	49.6	22.8	5.0	10.3	14.8	47.1
La Paz	4.8	6.0	15.9	27.2	46.2	25.4	5.5	21.5	21.0	26.7
Lima	4.4	5.8	12.0	37.0	40.8	18.9	10.7	19.4	25.8	25.2
Montevideo	12.3	2.4	10.7	15.0	59.6	17.9	3.5	11.6	17.6	49.4
Quito	11.0	5.4	15.7	18.1	49.8	23.6	7.8	18.6	17.5	32.5
São Paulo	6.9	3.2	7.7	17.1	65.1	30.5	4.6	9.2	16.8	38.9
Santiago de Chile	4.9	3.7	15.3	13.1	62.9	34.5	11.5	26.4	14.5	13.1
Average	7.4	4.4	11.9	20.7	55.6	26.6	6.2	15.5	18.4	33.2

Notes: The question for panel A is: On a scale from 1 to 10, where 1 means "Strongly disagree" and 10 means "Strongly agree," to what extent do you agree with the following statement: "The state should grant minimum income for all older adults, irrespective of the contributions they made during their working lives"? The question for panel B is: Where would you place your view, on a scale from 1 to 10, where 1 means that retirement pensions must be the same for everyone and 10 means that retirement pensions must be proportional to the contributions made by people during their working lives? In the table, the response scale is recoded: (1 = 1) (2 to 4 = 2) (5 to 6 = 3) (7 to 9 = 4) (10 = 5).

Source: Authors based on ECAF 2019 data (CAF, 2020).

When it comes to redistribution, contributory systems run into difficulties due to the limited coverage that low-income families receive.

In effect, under social protection mechanisms, intra and inter-generational redistribution (between the rich and the poor) can be implemented but not all instruments are equally suitable to achieve this goal. In practice, when it comes to redistribution, contributory systems run into difficulties due to their limited coverage in the segments of low-income families. Therefore, non-contributory systems often bear the burden of inclusion. However, pension payouts that are too low in the non-contributory scheme—which could be understood as a means to solve the problems of moral hazard—and the low quality of non-contributory health systems could stand in the way. This situation reflects the tension between providing insurance and the right incentives, a tension that the design of these programs must contemplate.

The third reason to endorse the provision of public social protection systems is paternalism or behavioral biases. The argument is that individuals tend to make sub-optimal decisions because of impatience, overconfidence, or the inability to access or process information correctly, among other reasons.[14] Consequently, the state has to shape individual behavior, forcing, for example, certain minimum saving levels. One of the most important questions in this regard may be whether individuals can save optimally for retirement. Some works support the myopia hypothesis, which holds that individuals yield to temptation and consume in excess at earlier stages in life, lowering their living standards in old age (Laibson, 1998).

The provision of public social protection mechanisms for old age is certainly well-grounded, but it also faces major challenges. First, in regard to how they are financed, these programs are expensive and require taxing. If such taxes are levied on salaries, they may reduce formal employment (and encourage informal employment) due to the lower net income from salaries resulting from tax deduction. Second, regarding benefits, social protection can also distort people's behavior and labor market outcomes on different fronts, like labor supply, the choice between formal versus informal employment, the retirement age, among others.

The provision of public social protection mechanisms for older adults is riddled with major challenges.

These two challenges are certainly interrelated and are actually two sides of the same coin. Both should be considered together when assessing the net social value of these social protection programs. The key for a good design is to balance insurance provision with incentive offerings, considering, in turn, the role played by structural elements in the economy. These challenges will be explored in Chapter 5.

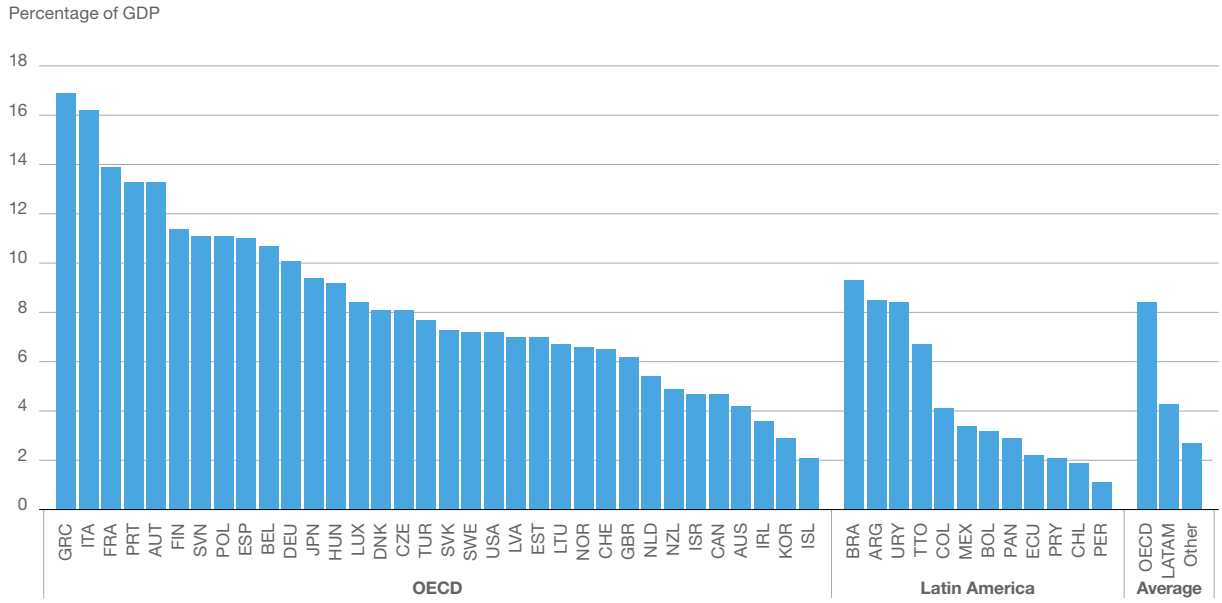
Social protection in Latin America —a bird's-eye view

In Latin America, expenditure on pensions and health relative to GDP has increased during the first years of the 21st century. However, on average, it is still lower than in developed countries. In OECD countries, expenditure on pensions is equivalent to 9% of GDP and public spending on health is equivalent to 6.4%, compared to 4.3% and 4.1%, respectively, on average in Latin America (see Figure 1.2).

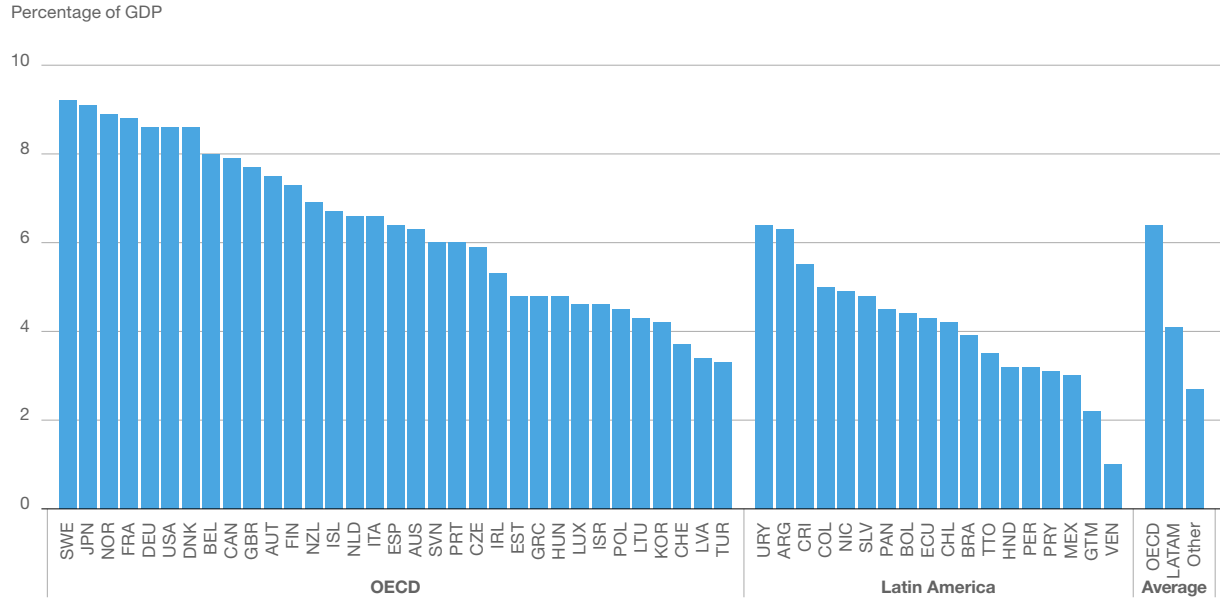
14. Benartzi and Thaler (2007) study limitations in the case of decisions about retirement savings.

Figure 1.2
Public expenditure on pensions and health as a proportion of GDP

Panel A. Expenditure on pensions for older adults



Panel B. Public expenditure on health



Notes: On panel A, data for each country are for the following years: Ecuador (2013); Poland (2014); Germany, Austria, Belgium, Canada, Denmark, Slovakia, Slovenia, Spain, Estonia, Finland, France, Greece, Hungary, Ireland, Iceland, Italy, Japan, Latvia, Lithuania, Luxembourg, Norway, the Netherlands, Portugal, the United Kingdom, the Czech Republic, Sweden, Switzerland (2015); Australia, South Korea, the United States, Israel, Mexico, New Zealand, Turkey (2016), Argentina, Bolivia, Brazil, Chile, Colombia, Panama, Paraguay, Peru, Uruguay (2017). "Others" include different years from 2001 to 2016. On panel B, expenditure means specifically domestic general government health expenditure. The average of the last three available years (2015-2017) is shown.

Source: Panel A: authors based on IERAL data (2020) for Latin American countries; OECD data (2020e) for OECD countries; and ILO data (2017) for the rest. Panel B: authors based on World Bank data (2020).

Pension expenditure as shown in Figure 1.2 includes both contributory and non-contributory pensions, although the latter is often a minor component of total expenditure. There are some exceptions, like Bolivia and Trinidad and Tobago, where non-contributory pensions are of relative importance (see Figure 3.10 on page 194). Concerning health expenditure, it is worth noting that, due to data limitations, the percentages reported in Figure 1.2 do not reflect solely expenditure related to the provision of healthcare for older adults, but to the whole population. It is known that health expenditure increases considerably during old age. Therefore, a society's age structure affects the size of its public health budget.[15]

As shown in the figure, there are remarkable differences within each group of countries and in both systems.[16] In the case of pensions, Brazil, Argentina, and Uruguay (from highest to lowest expenditure) stand out in Latin America, with levels around 9% of GDP. On the opposite end, are countries like Ecuador, Paraguay, Chile, and Peru. Some countries from the Organisation for Economic Co-operation and Development (OECD), like Italy, spend more than 14% of their GDP on pensions, but others, like South Korea and Iceland, do not even reach Latin America's average values. In terms of health, Argentina and Uruguay also stand out in the region, with similar values to the OECD average.

Different reasons account for the limited expenditure on pensions and health in the region compared to rich countries. The first one is the level of development. Indeed, a well-known phenomenon is that the magnitude of public spending as a proportion of GDP grows with per capita income levels (CAF, 2012). This relation also applies to social expenditure[17] and, as shown in Figure 1.3, to pension and health spending.

A well-known phenomenon is that the magnitude of public spending as a proportion of GDP grows with per capita income levels.

Figure 1.3 also shows that in countries like Argentina, Brazil, and Uruguay, pension expenditure is high in relation to income per capita, while in Bolivia it is comparable to spending in countries with the same income per capita levels. In the rest of the countries, pension expenditure is low, even when compared to economies with a similar per capita income. In the case of health expenditure, the situation improves, but in some countries, like Mexico, it is lower than what could be expected given their level of development.

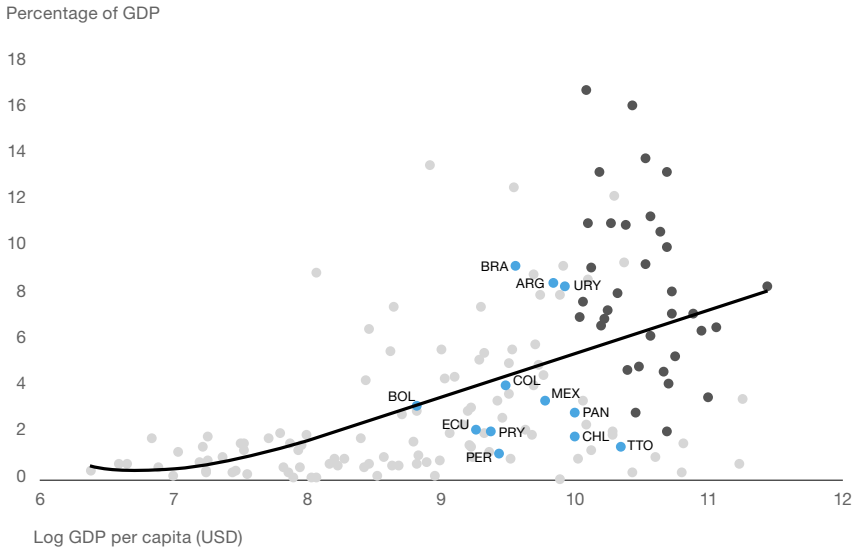
15. Chapter 4 elaborates on this with administrative record data.

16. These differences between countries with similar levels of development suggest that there are differences in the way societies provide pensions and healthcare. In some of these models, the state plays a more decisive role than in others, as described in Chapters 3 and 4.

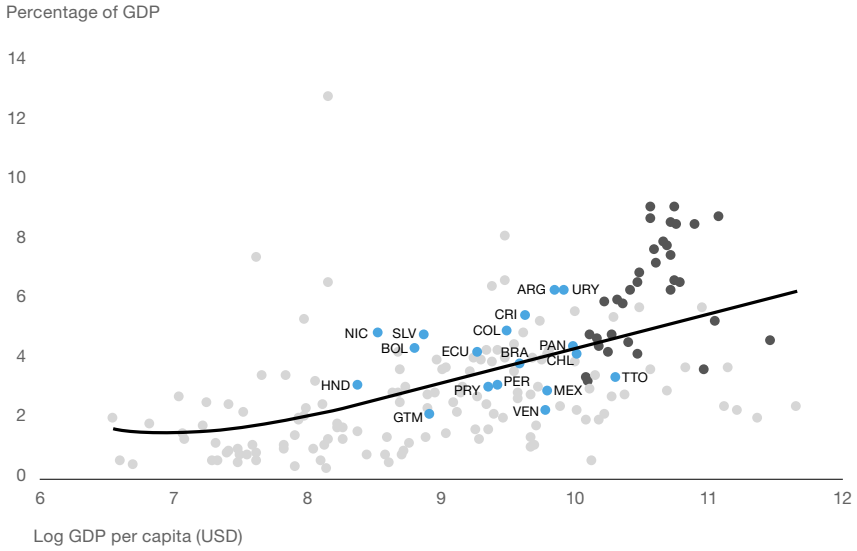
17. The importance of social expenditure in developed countries is a phenomenon that emerged strongly in the second half of the previous century. In 1930-1940, social expenditure accounted for less than 5% of GDP in most developed countries (see Figure A 1.1 in the Appendix). Therefore, the current level of social expenditure in any Latin American country is often higher than in developed countries, for example, in the United States, when they had the same GDP per capita (see Figure A 1.2 in the Appendix). During those historical periods of today's developed countries, social expenditure tended to be low. As a result, the helpfulness of this historical perspective to evaluate the size of social expenditure and its different components in Latin America at present can be considered limited.

Figure 1.3
Pension and health expenditure in relation to GDP per capita

Panel A. Public expenditure on pensions



Panel B. Public expenditure on health



Notes: On panel A, data are for different years: Latin American countries from 2013 to 2017, OECD countries from 2014 to 2016, and the rest from 2001 to 2016. On panel B, expenditure means specifically domestic general government health expenditure. The average of the last three available years (2015-2017) is shown for all countries except for Venezuela (2012-2014). In blue, Latin American countries and, in dark gray, OECD countries. The GDP is stated in constant 2011 U.S. dollars (PPP adjusted).

Source: Panel A: authors based on IERAL data (2020) for expenditure in Latin America; OECD data (2020e) for expenditure in OECD countries; ILO data (2017) for expenditure in the rest of the countries; and World Bank data (2020) for GDP. Panel B: authors based on World Bank data (2020).

Based on the above, the expectation of reaching the levels of pension and health public spending in developed countries may be a challenge for the region, given its per capita levels of income. However, it is essential to understand the reasons behind this gap and to what extent it undermines the goals and ambitions of having a quality social protection system for everyone.

From an accounting perspective, pension and health spending is determined by three factors: two of them are associated with system characteristics (coverage and the value of benefits) and the other one is related to demographic factors (size and composition of the target population).[18] In other words, the pension and health expenditure gap compared to developed countries can originate in a lower proportion of older adults, but also in low coverage or fewer benefits for retirees and reduced health expenditure per patient.

The demographic factor alone cannot account for the differences in pension and health expenditure as a proportion of GDP in the region's countries compared to developed countries.

Certainly, the region is relatively young. However, as highlighted in Box 1.1, the demographic factor alone cannot account for the differences in pension and health expenditure as a proportion of GDP in the region's countries compared to developed countries. As a result, in some countries, the gap in expenditure is largely associated with coverage, the generosity of systems, or both.[19] In this chapter, we offer a brief overview of these aspects, which are explored in depth in Chapters 3 and 4.

Box 1.1
What drives the expenditure gap: system characteristics or the age population structure?

If in a certain Latin America country, the expenditure by beneficiary, and the pension and health system coverage are maintained at current values, but the age population structure were as in a typical OECD country, how much would be spent in health and pensions? To answer this question, it is necessary to explore the extent to which the expenditure gap with developed countries is associated with demographic factors or system characteristics. Pension expenditure can be stated as $G = \sum_x B_x C_x P_x$, where B_x is the pension expenditure on one individual whose characteristics are defined by the vector x; C_x represents coverage—the fraction of people meeting these characteristics who receive the benefit in the target population—, while P_x represents the number of persons in the target population who meet the characteristics defined by vector x.

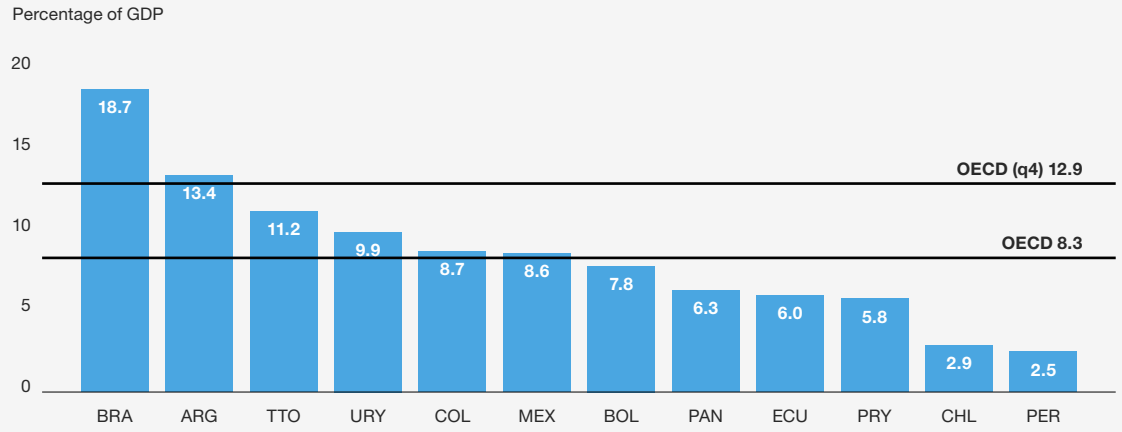
Under the assumption that coverage is independent of x,[a] it is possible to define pension expenditure in relation to GDP (G/Y) as the product of three components: the average benefit relative to GDP per capita, b; coverage, c; and the size of the target population relative to the total population, in this case, the fraction of older adults aged 65, p. As a result, in the hypothetical scenario where, in a certain country, c and b are set at their actual values, but the fraction of older adults is set as the OECD average, p^*, the expenditure as a proportion of GDP in that country would just be $\frac{\tilde{G}}{Y} = \frac{G}{Y} \times \frac{p^*}{p}$.

18. This disaggregation principle is used to generate pension, health and education spending projections, which are integrated in Chapter 5. The positive association found between the pension and health expenditure and development partly results from the fact that coverage and expenditure per beneficiary grow with development.

19. To a certain extent, salary differences for the same human capital level could also account for dissimilar health expenditures per patient.

Figure 1 shows pension expenditure for different Latin American countries in the above hypothetical scenario. Values are particularly low for Chile and Peru, where, even using the OECD fraction of older adults, coverage and benefit expenditures account for less than 5% of GDP. By contrast, in countries like Argentina and Brazil, in particular, expenditure is relatively high and becomes even higher when the OECD fraction of older adults is applied.

Figure 1
Pension expenditure (counterfactual)



Notes: Expenditure is adjusted for the ratio between the proportion of the population aged 65 and over in the average OECD country and the proportion of the population aged 65 and over in the respective country. The horizontal lines represent the average expenditure (counterfactual) of the OECD and the average expenditure of the countries in the upper quartile of expenditure (25%). Latin America data are for 2017, except for Ecuador (2013) and Mexico (2016). OECD data are based on information that varies from 2014 to 2016.

Source: Authors based on IERAL data (2020) for expenditure in Latin America; OECD data (2020e) for expenditure in the OECD; and United Nations data (2019b) for individuals aged 65 and over.

Conducting a similar exercise for health expenditure poses additional challenges, for example, the beneficiary population does not comprise solely older adults. Hence, in this case, the role of demographic factors is explored using a simple regression analysis, where the variable to be explained is general government public health expenditure as a proportion of GDP—or, alternatively, as a proportion of the population—, and the explanatory variables are the proportion of older adults aged 65, in addition to a series of binary variables that identify each country in the region and the different years. The sample includes annual observations for the period 2000-2017, and Latin American and OECD countries. The coefficient of the binary variable associated with each country represents how this country's expenditure differs from the OECD average, deducting demographic factors in both cases.

The analysis confirms that health expenditure lags in some countries, even when discounting the demographic factor. For the expenditure as a percentage of GDP, the coefficient of the binary variable that identifies each country in the region is negative and statistically significant, except for Argentina, Colombia, Costa Rica, El Salvador, Nicaragua, and Panama, countries for which the coefficients are statistically indistinguishable from zero. In terms of expenditure per inhabitant, all these coefficients associated with the region's countries are negative and statistically significant (see Table A 1.1 in the Appendix to this chapter).

a. As an equivalent, it may be assumed that B_x is independent of x, instead of C_x.

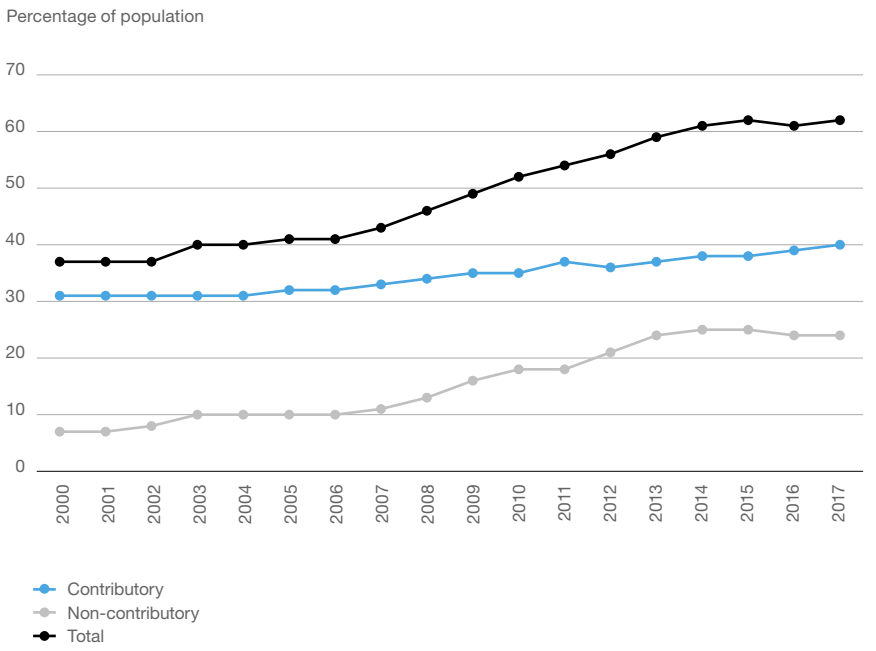
Pensions

According to ILO data, the average social protection coverage for older adults is above 90% in developed countries, being universal for most of them.[20] Figures for Latin America differ from these in a large number of countries.

A recent study, based on administrative data for 17 countries in the region, presents the evolution of coverage from 2000 to 2017 for both contributory and non-contributory pensions; for the former, pay-as-you-go and capitalization-funded systems are considered (Arenas de Mesa, 2019). This coverage is summarized in Figure 1.4: panel A shows the evolution of the average coverage for Latin America, while panel B shows coverage per country in the most recent year (2017).

Figure 1.4
Coverage of contributory and non-contributory pensions

Panel A. Evolution of pension coverage for individuals aged 65 and over, 2000-2017



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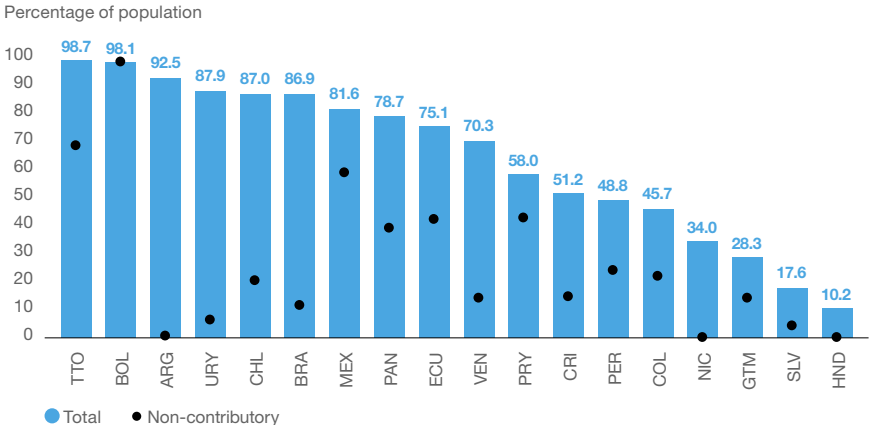
20. In this group of countries, Spain has particularly low coverage, with around 66%.

Panel B. Pension coverage for individuals aged 65 and over per country, 2017



Notes: Panel A shows the simple average for Latin America. Included countries: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Nicaragua, Honduras, Mexico, Panama, Paraguay, Peru, Uruguay, and Venezuela. Social security moratoriums in Argentina are included as contributory.

Source: Authors based on Arenas de Mesa (2019) and ILO (2017).

Coverage gains are largely due to the emergence of non-contributory pensions.

In 2000, the (simple) average for coverages in the region was around 37%, mainly under contributory systems. In 2017, it was over 60%. Coverage gains are largely due to the emergence of non-contributory pensions. In 2000, 7.4% of adults received a non-contributory pension; today, this figure is over 24%.[21]

Information at the country level shows great heterogeneity in terms of both coverage and composition between contributory and non-contributory pensions. The highest coverage levels are found, from highest to lowest, in Bolivia, Argentina, Uruguay, Chile, Brazil, and Mexico, all above 80%, but with a contrasting combination. While Argentina, Uruguay and, to a lesser extent, Brazil and Chile, provide coverage especially with contributory pensions, the wide coverage offered in Bolivia and Mexico is based on a non-contributory scheme. In countries like Colombia, Peru, and especially some Central American countries, coverage is below 50%.

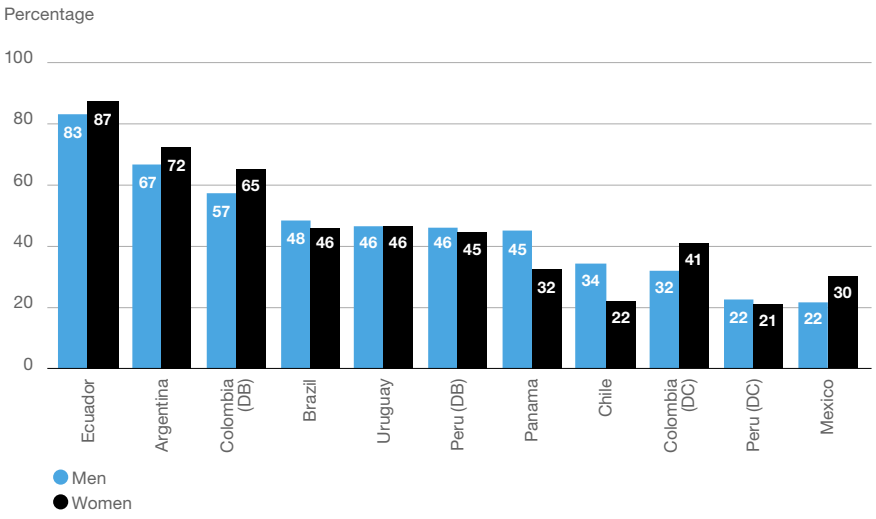
Regarding the sufficiency of a pension system, the replacement rate can be used.[22] It is an indicator of the extent to which a system can replace the income a person earns during their working life with retirement income. Chapter 3 shows a simulation exercise that compute replacement rates by gender, years of contributions made, and working condition (employee or self-employed person) (see Table A 3.6 in the Appendix for Chapter 3 on page 219).

21. From 1997 to 2011, non-contributory systems were introduced in 10 countries in the region: Bolivia (1997), Ecuador (1998), Colombia (2003), Guatemala (2005), Mexico (2007), El Salvador (2009), Paraguay (2009), Peru (2011), and Venezuela (2011). In the following countries, systems have also been long implemented: Uruguay (1919), Argentina (1948), Brazil (1971), Costa Rica (1974), Chile (1975), and Cuba (1979) (Arenas de Mesa, 2019).

22. For further details, see section "Sufficiency of pension payouts" in Chapter 3.

Based on the simulated replacement rates, countries are divided into three groups (Figure 1.5). In the first group, which includes Argentina, replacement rates are similar to or higher than the average for OECD countries (around 60%). In the second group, which includes Uruguay, average rates are below 60% but over 45%, a value that the ILO has defined as a minimum standard in its Convention No. 128.[23] These countries can improve their sufficiency, but do not show critical levels. The last group includes countries with replacement rates below the ILO's minimum standard. This group, which includes Chile and Mexico, are faced with challenges in terms of contributory pension payouts.

Figure 1.5
Simulated replacement rates (average contributions) for salaried employees, by gender



Notes: For further details, see Table 3.5 in Chapter 3 on page 187. Colombia and Peru are broken down by defined benefit (DB) and defined contribution (DC).

Source: Authors based on Allub, Alves, and López (2020).

It is important to highlight that simulated rates were calculated based on the number of contributions made by an average worker or, if this number was lower than the minimum threshold required, the minimum number of contributions needed to access a contributory pension. Chapter 3 delves into the assumptions behind these simulations. In addition to Figure 1.5 data, replacement rates for schemes targeting the self-employed are shown, as well as changes in replacement rates for workers that contribute throughout their working lives. As could be expected, a scenario with a maximum number of contributions made reproduces higher replacement rates; however, the ranking of countries is similar when using average or maximum contributions.

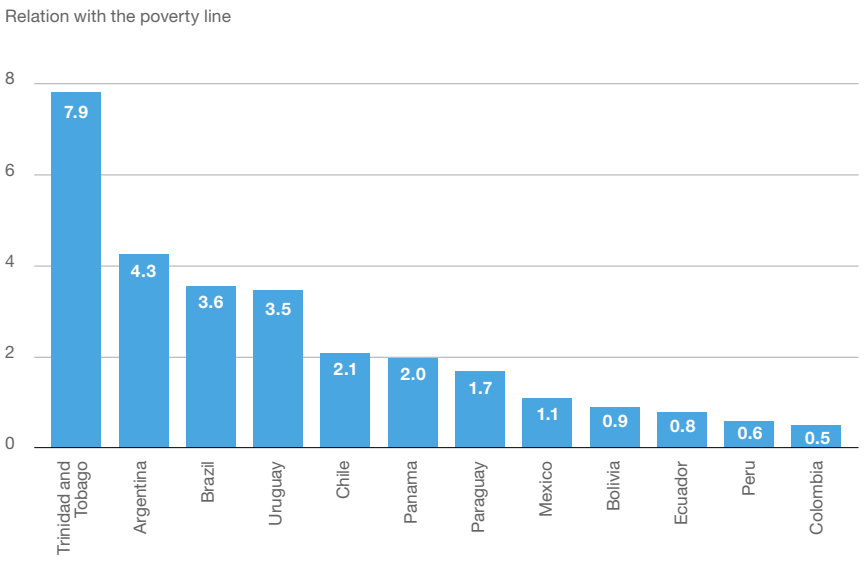
23. See ILO (2006).

It is also worth noting that high replacement rates do not mean that pensions are sufficient for financing expenditure levels at old age. Low salaries may lead to insufficient pensions even with high replacement rates. In principle, this is an issue of productivity or inequality rather than a pension system design problem.

In some countries in the region, non-contributory pension payouts are even below the poverty line.

Non-contributory pensions, as expected, are considerably lower than contributory pensions, and, again, they vary significantly between countries. Within the group of the region's countries in the study, the rate varies from slightly above 36% of GDP per capita in Trinidad and Tobago to less than 5% in Colombia (see Chapter 3). These low payouts may involve a limited capacity for pensions to offset labor income losses upon retirement; however, they can alleviate poverty in older adults, although, in some countries in the region, payouts are even below the poverty line (see Figure 1.6).

Figure 1.6
Non-contributory pensions as a proportion of the poverty line



Notes: All data are for 2018, except the data for Mexico, which are for January 2019. In the case of Colombia, payouts vary by municipality. The authors of the report used the highest payout outside Bogota since this is the most common value among the country's municipalities. In the case of Trinidad and Tobago, payouts vary based on income. The authors of this report used the highest payout as a benchmark value. In Ecuador, payouts refer to the program Pensión para Adultos Mayores, the non-contributory scheme with the highest number of beneficiaries in the country. The USD 4 poverty line value is used, stated in 2011 U.S. dollars (PPP adjusted).

Source: Authors based on each country's pension payouts found on their official websites.

Along with the estimates above, it is interesting to explore citizens' perceptions as to pension sufficiency to ensure adequate consumption during retirement. Table 1.2 presents information for 11 cities in the region, based on ECAF 2019 data. In particular, it shows what proportion of respondents say that, in their opinion, (1) the pension will be adequate to maintain the same consumption

expenditure as in the present, (2) it will be adequate, but their budget will be tight relative to current consumption, or (3) it will be inadequate and highly insufficient. It is worth noting that this question is not limited to pensioners; these percentages are for responses given by citizens over 40 who are currently beneficiaries of some pension system or who estimate that they will be. In the table, the perception of salaried employees (panel A) is separated from the perception of non-professional self-employed individuals (panel B).

First, it is apparent that self-employed individuals are more likely to say that the pension is highly insufficient. In this group, over 50% has this view, while the average for salaried employees is 37%. This dissimilar perception between both worker categories could be reflecting payout differences between contributory and non-contributory pensions. Second, responses show much dispersion between cities. In Santiago de Chile, the number of respondents who think that the pension is insufficient is clearly the majority, while in Quito this response is much less frequent.

Table 1.2
Perceptions of pension sufficiency in Latin America

Region	Panel A. Responses by employees (percentage of responses)			Panel B. Responses by self-employed individuals who completed up to secondary education (percentage of responses)		
	It will be enough, just as it is now	It will be enough, but my budget will be tighter	It will not be enough, highly insufficient	It will be enough, just as it is now	It will be enough, but my budget will be tighter	It will not be enough, highly insufficient
Asuncion	21.2	46.8	32.0	25.0	31.0	44.0
Bogota	19.2	42.3	38.5	28.0	25.0	47.0
Buenos Aires	18.9	39.3	41.8	13.4	20.8	65.8
Mexico City	35.4	38.5	26.2	21.2	35.9	42.9
Panama City	24.7	28.8	46.5	18.1	30.3	51.5
La Paz	18.0	55.2	26.8	11.4	26.1	62.6
Lima	19.3	34.2	46.5	14.0	39.7	46.3
Montevideo	19.8	45.7	34.4	15.3	33.2	51.5
Quito	32.0	43.1	24.9	35.0	27.8	37.2
São Paulo	32.9	35.3	31.8	25.0	22.9	52.1
Santiago de Chile	5.1	31.0	63.9	3.0	25.6	71.4
Average	22.4	40.0	37.6	19.1	28.9	52.0

Notes: All individuals in the sample are over 40 and expect to have access to a pension in the future. The question is: "Considering all the money that you will receive as a retiree or pensioner, while you live, do you think that your retirement pension will be enough to (1) live in the same conditions as you do now; (2) live on a tighter budget than you do now; (3) it will not be enough, and it will be highly insufficient?" The percentage for each response per city is shown. The panel on the left presents the sample of salaried employees, while the panel on the right shows the sample of self-employed individuals who completed up to secondary education.

Source: Authors based on ECAF 2019 data (CAF, 2020).

Health

Although each country has its own nuances, health systems in the region usually consist of three components. The first one is the social security contributory component, which works as compulsory insurance for formal workers, where coverage typically extends to the beneficiary's direct relatives and contributory system retirees. It is financed with contributions by workers plus government funds if it faces a deficit. The second component includes free or strongly subsidized public health or social welfare non-contributory systems where services are typically supported by a hospital network and primary care centers. This group is financed with general taxes. Finally, there is private insurance, which is voluntary for individuals who wish to supplement the healthcare benefits they have available, usually looking for higher-quality coverage.

Around four out of 10 older adults have access only to universal public health systems.

Chapter 4 shows the distribution of beneficiaries based on these three pillars, both for the population as a whole and for adults aged 65 or over (Figure 4.7 on page 234). Table 1.3 shows the information for this last case. On average, just 2% of the population aged 65 or over has private insurance coverage, although in countries like Uruguay this percentage is close to 10%. The mean value for social security or the contributory pillar coverage targeting older adults is 56% across the region, with a similar heterogeneity pattern as contributory pensions. In countries like Argentina and Uruguay, this figure exceeds 90%, while, on the opposite end, coverage reaches about 25% in countries like Bolivia. Just as with contributory pensions, these patterns are related to informal employment. On average, around four out of 10 older adults have access only to universal public health systems, but in countries like Paraguay and Peru, and especially Bolivia, over 60% of older adults rely exclusively on non-contributory public systems.

Table 1.3
Older adults (aged 65 or over) in any of the three pillars of the health system

Country	Public only (non-contributory)	Social Security (contributory)	Private health insurance
Argentina	4%	94%	2%
Bolivia	75%	24%	2%
Chile	26%	74%	1%
Colombia	49%	51%	0%
Ecuador	58%	42%	0%
Mexico	53%	46%	1%
Panama	33%	65%	2%
Paraguay	61%	35%	4%
Peru	61%	38%	1%
Uruguay	1%	91%	9%
Average	42%	56%	2%

Source: Authors based on CEDLAS data (2020).

A universal non-contributory public system does not necessarily provide full effective health coverage.

However, a universal non-contributory public system does not necessarily provide full effective health coverage in the sense stated by the World Health Organization (WHO). According to the WHO, universal health coverage means that all people have access to needed health services of sufficient quality, when and where they need them, without being exposed to financial hardship (WHO, 2019d). Quality issues in the health system or any of its components, especially in non-contributory public health schemes, may restrict effective coverage for the general population and, in particular, for older adults.

One first sign of potential quality issues is the low public health expenditure in the region's countries as compared to developed countries. This gap in expenditure persists even if differences in the proportion of older adults are considered (see Box 1.1). In addition, within the group of Latin American countries in the study, expenditure per potential beneficiary between the contributory and the non-contributory system is not the same (an aspect that is further examined in Chapter 4), which could suggest quality contrasts between these two subsystems. The widest gaps are found in Bolivia and Peru, where expenditure per beneficiary on the non-contributory public system is 27% and 45% of that in the contributory system expenditure, respectively (see Table 4.5 on page 284).

As stated above, quality issues translate into low effective coverage and may result in inadequate access to the necessary health services or limited financial protection against illness. Figure 1.7 compares countries in the region with OECD countries on these two dimensions.

In order to measure (the lack of) financial protection, the percentage of families spending more than 10% of their household income on health expenses is presented. Coverage for these services is measured through the average of three components of the WHO's service coverage index (see WHO, 2019d): reproductive, maternal, newborn and child health; infectious diseases; and service capacity and access.[24]

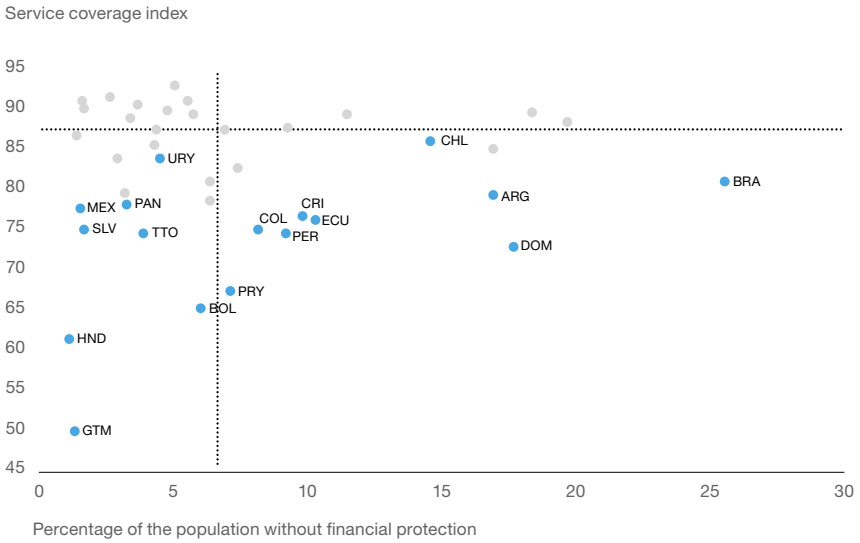
Considering the average of these three coverage[25] components, all the countries in the region are below the OECD average. Chile and Uruguay are relatively close to the OECD average, while Paraguay, Bolivia, Honduras, and Guatemala show a wider gap, in this order. In regard to the financial protection indicator, Brazil, the Dominican Republic, Argentina, and Chile are the worst performers. In these countries, over 14% of households spend more than 10% of the household income on health expenses. As highlighted in Chapter 4, the probability of having such high expenditures

24. Individual components are presented in Table A 1.2 in the Appendix. The WHO's compound index also includes a noncommunicable disease component, which measures the prevalence of hypertension, diabetes, and smoking. Concerning this component, the WHO recognizes that there may be a misrepresentation of coverage in the proposed terms, given the weak correlation found between the prevalence and treatment of this component (see WHO, 2019d). This is why they were excluded from this report. However, the message suggested by Figure 1.7 is robust, even if this component is included.

25. Certainly, this is not an exhaustive indicator of health services. It is not exclusive to services targeting older adults either, which is the subject matter of this report. Despite that, it is helpful at least to provide an overview of the quality of care for older adults as it focuses on the use of essential services aids in attempting to measure the effective health system coverage as a whole.

levels is strongly related to the presence of an older adult in the family (see Figure 4.24 on page 263).

Figure 1.7
Health service coverage and financial protection



Notes: The coverage index is an average of three components of the World Health Organization's compound service coverage index (see WHO, 2019d): reproductive, maternal, newborn, and child health; infectious diseases; and service capacity and access. It is measured on a scale from 1 to 100, where higher scores indicate better performance. The lack of financial protection is stated as the percentage of families who spend more than 10% of their household income on health expenses. Gray dots reflect OECD countries. The dotted lines show the OECD average.

Source: Authors based on WHO data (2020).

Some challenges concerning coverage or the scale of benefits, along with the upcoming demographic changes, are a call to action.

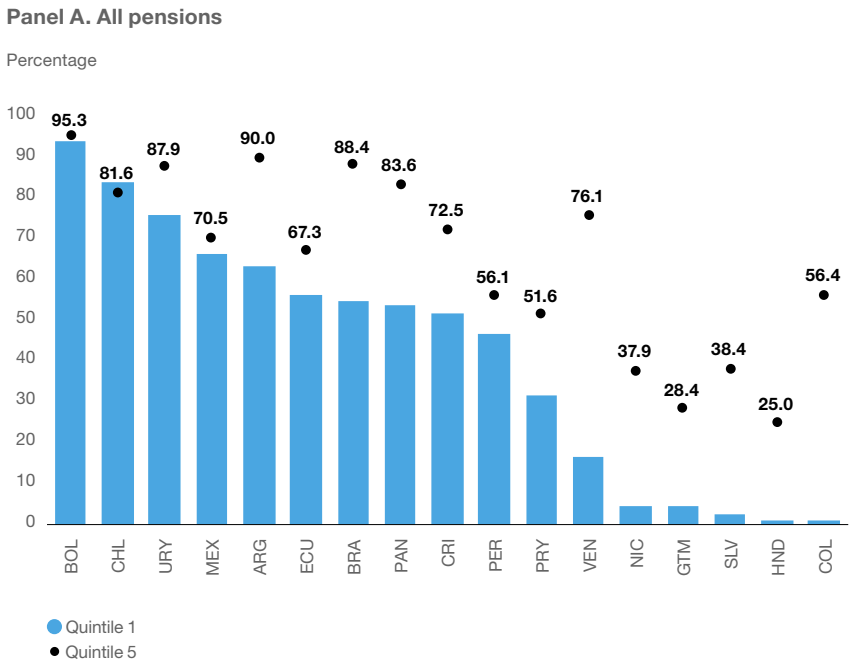
The bird's-eye view of pensions and health systems presented here leaves two clear messages. The first one is the significant heterogeneity among the region's countries. This is true in terms of the importance of spending as well as the coverage and quality of benefits. The second is that the gap in pension and health spending between the countries of the region and the more developed countries is not exclusively related to the fact that the Latin American population is relatively young, but also, to a large extent, to the quality and coverage of the insurance provided. This implies challenges regarding coverage or the level of benefits that vary from one country to another and which, along with the upcoming demographic changes, are a call to action. The next chapters will delve deeper into these challenges and the scope for action to meet them.

Social protection —socioeconomic level and the distributive impact

Pensions and health expenditure can have distributive goals. However, assessing the extent to which the system actually redistributes may not be trivial. One way to approach this issue is by exploring access to these programs by socioeconomic levels. Figures 1.8 and 1.9 show the case of pensions and health, respectively.

In particular, Figure 1.8 depicts the proportion of older adults who receive some type of pension (panel A), contributory pensions (panel B), or non-contributory pensions (panel C). Figure 1.9 illustrates the proportion of individuals who have access to private insurance, contributory health systems (social security), or non-contributory (universal) systems. Both figures present information for the poorest 20% of the population (Q1) and for the wealthiest 20% (Q5).

Figure 1.8
Pension coverage by income level and type of pension



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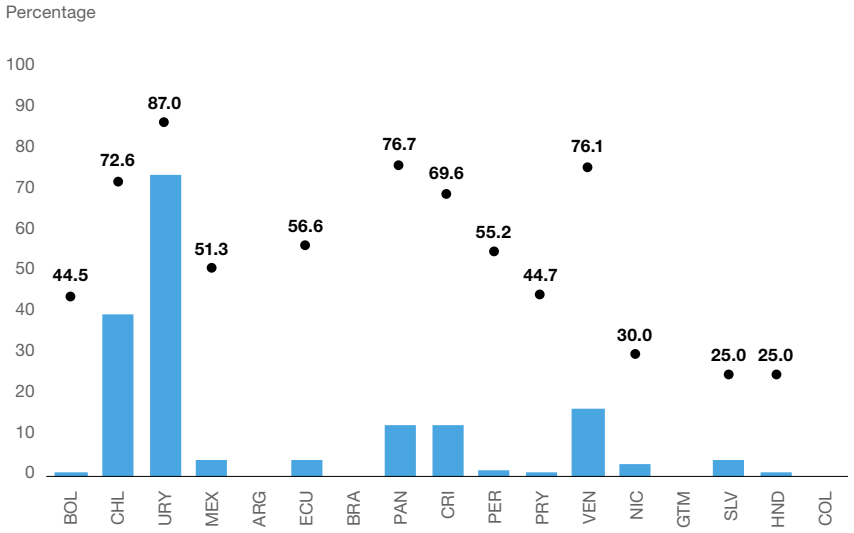
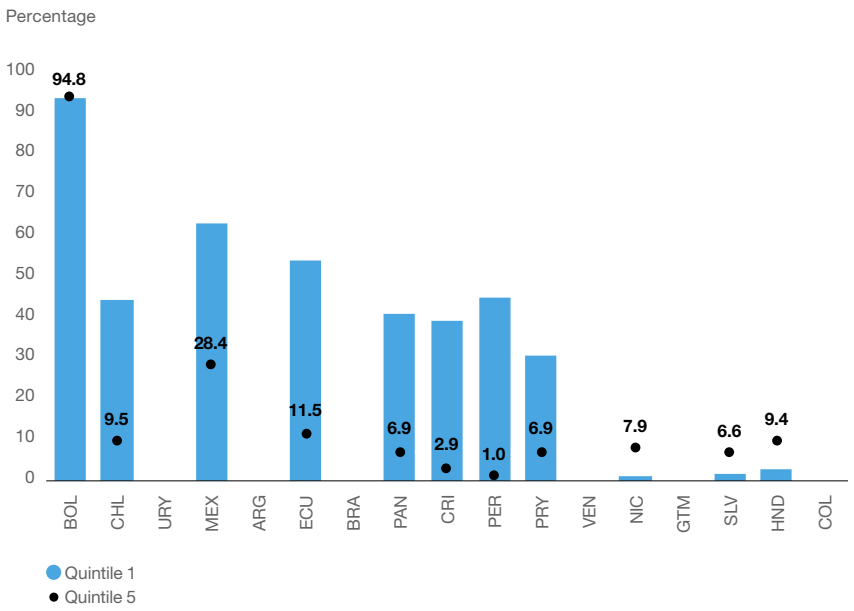
Panel B. Contributory pensions



Panel C. Non-contributory pensions



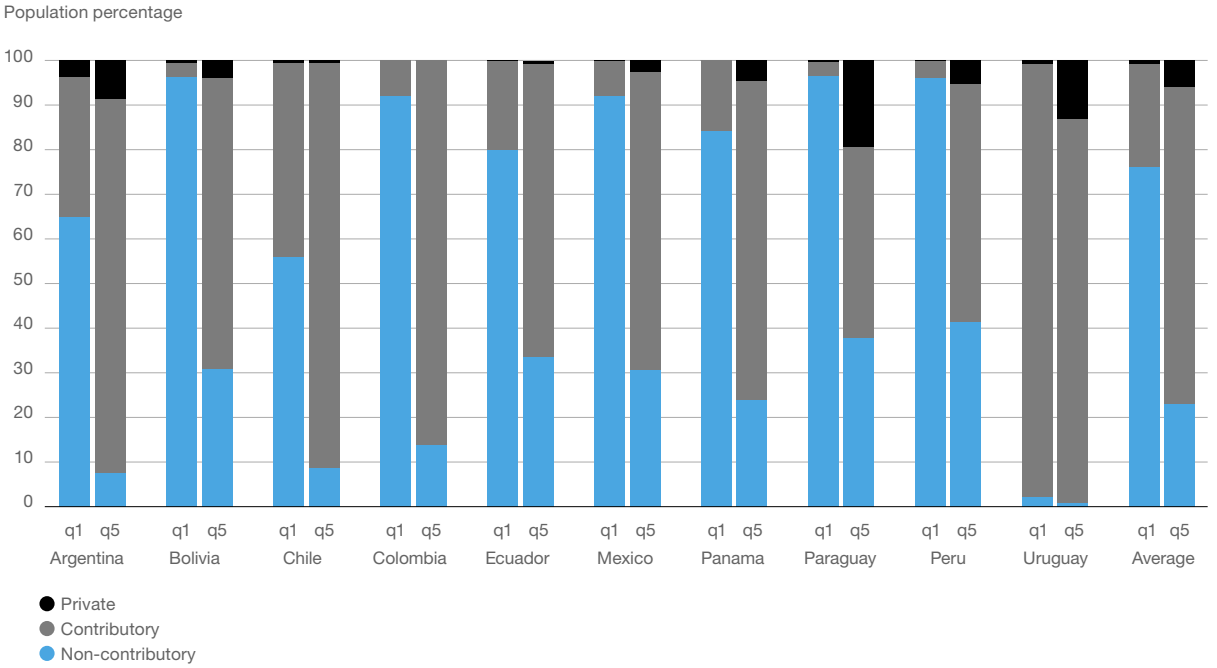
Notes: For El Salvador, contributory and non-contributory system coverages are for 2017 (CEDLAS, 2020) and total coverage is for 2015 (ECLAC, 2018). For Nicaragua, contributory and non-contributory coverages are for 2014 (CEDLAS, 2020), while total coverage is calculated as the sum of both types of coverage. For Honduras, non-contributory coverage is for 2017 (CEDLAS, 2020), contributory and total coverage being for 2015 (ECLAC, 2018). For Uruguay, contributory coverage is for 2017 (CEDLAS, 2020) and total coverage is for 2015 (ECLAC, 2018). For Argentina, Guatemala, Mexico, and Venezuela, data are for 2014. For the rest of the countries, data are for 2015 (ECLAC, 2018).

Source: Authors based on Table I.3. in ECLAC (2018) and CEDLAS (2020).

In Figure 1.8, it is apparent that lower-income families have a smaller share of contributory pension systems and a higher share of non-contributory pension systems. Taking Panama as an example, it is clear that within the poorest 20%, only 13% of

older adults have access to a contributory pension; by contrast, within the wealthiest 20%, the portion of older adults who are beneficiaries of the contributory system is 77%. While 41% of older adults in the poorest group receive a non-contributory pension, less than 7% receives a non-contributory pension in the wealthiest group.

Figure 1.9
Health coverage by type of insurance according to socioeconomic level



Notes: The non-contributory scheme includes people who stated not to be covered by any health insurance. Data are for the following years: Nicaragua and Guatemala (2014); Paraguay (2015); Chile, Costa Rica, Ecuador, Honduras, El Salvador, and Uruguay (2017); Argentina, Bolivia, Colombia, Mexico, Panama, and Peru (2018).

Source: Author based on CEDLAS data (2020).

Similarly, Figure 1.9 shows that private insurance or the contributory health system provide more limited coverage to the poorest families, so they depend more strongly on universal health coverage. To continue with the Panama example, within the wealthiest 20% percent of the population, 24% relies on universal health coverage (free and public). By contrast, within the poorest group, 84% of households are covered solely by the public health system.

The poorest families rely more heavily on universal health coverage.

As indicated in the previous section, contributory pensions are more generous than non-contributory ones; similarly, contributory health systems are often associated with more spending per client and, as a result, better quality. Therefore, this first approach seems to reveal that poor families have little participation in the most attractive segments of pension and health systems.

This situation is compounded by other vulnerabilities often prevalent among the poorest population groups, which poses strong risks in situations like with the COVID-19 pandemic in 2020 (see Box 1.2).

Box 1.2
Limited protection and high vulnerability: a dreadful combination

Not only do the poorest families rely more heavily on the non-contributory health system, typically more susceptible to congestion and lower quality, but they also tend to be more vulnerable to health shocks like the COVID-19 pandemic. The situation of older adults, which is the most vulnerable group to this disease, is of particular concern.

The higher vulnerability of the poor originates from different sources. On one hand, the health of the poorest may be worse as a result of many factors, including nutrition problems, limited investment in prevention actions, and certain unhealthy habits. This may determine the probability of death if they catch the COVID-19 infection. On the other hand, there are additional factors that may make poor families more susceptible to disease transmission. Some of these relate to the household environment, like limited availability of potable water or living with a high number of people. Others are associated with their employment condition, combined with weak social protection institutions, particularly no unemployment insurance. This is the case of informal workers, a highly numerous group in the region (see Chapter 2), who can maintain their flow of consumption only if they continue working.

Evidence for developing countries about the prevalence of diseases and the conditions of risk according to the socioeconomic level is still incipient and not entirely conclusive. However, in some cases, there is evidence of a higher prevalence of health problems among the poorest. For example, a recent study has found that obesity among men and women in Argentina, and women in Venezuela and Mexico, is higher in individuals of lower socioeconomic status (Jiwani *et al.*, 2019). Another study—including Argentina, Brazil, Colombia, and Chile—of the incidence of a major cardiac event (death, stroke, myocardial infarction, or heart failure) has found that the risk ratio between people who did not complete primary education and who completed advanced education was 1.23 in developed countries, 1.59 in middle-income countries, and up to 2.23 in low-income countries (Rosengren *et al.*, 2019).[a] Finally, in Mexico, the risk of suffering from diabetes among individuals with a college degree is 20% lower than among people who completed just primary education; likewise, the incidence of diabetes among the richest 40% of the population is 73% the incidence found among the poorest 60% (Córdova, 2019).

Moreover, ECAF 2019 data, presented in Table 1, reveal that families of lower socioeconomic status, measured by income, education, or formal employment, tend to have a more deteriorated health (odds ratio >1). They also record fewer preventive visits to the doctor than families of higher socioeconomic status. Informal workers and those who did not complete college are more likely to smoke than other individuals. Similarly, heavy alcohol use and eating fast food is more common among informal than formal workers, while people on low incomes are more likely to skip regular physical activity. They also tend to suffer more frequently from water supply interruptions, live in overcrowded households and with an older adult. Finally, household overcrowding and congestion are also more frequent in the lowest socioeconomic status (by the three measures).

Table 1
Perception of health, healthy habits, and household conditions (odds ratio)

	Low-income vs. the rest	With vs. without advanced education	Informal vs. formal employment
Perception of (very) bad health	3.453***	3.045***	3.502***
Infrequent preventive visits to the doctor	1.707***	1.748***	2.448***
Smoking	1.009	1.749***	1.412***
Heavy alcohol use	1.116	1.005	1.527**
Heavy fast-food eating	0.931	1.368	1.386**
No regular physical activity	1.266*	1.144	0.989
Water supply interruption	1.255**	0.927	1.055
High household congestion (6 or more people)	1.665***	2.293***	1.437***
Overcrowded household (more than 2 people per room)	3.050***	4.406***	1.724***
Older adult (65 and over) in an overcrowded household	2.347**	1.732	0.896

Notes: Figures represent odd ratios that result from logit regressions controlled for age, gender, and city. For example, low income increases the probability of (very) bad health by a factor of 3.45. Low income is defined as the poorest 25%. The health condition was divided among those who reported "bad" or "very bad" health, and those who reported "regular," "good" or "very good" health. The frequency of preventive visits to the doctor was divided between the group who had their last medical checkup within the last three years and the group who did not. Alcohol use was divided between the group who consumed at least "3 or 4 days a week" and the group who did not. Fast food eating was divided between the group who consumed at least "3 to 6 times a week" and the group who did not. Limited physical activity means exercising typically less than three days a week for less than 30 minutes.
* means 10% statistical significance, ** means 5% statistical significance and *** means 1% statistical significance.

Source: Author based on 2019 CAF Survey (ECAF) data (CAF, 2020).

Another recent study has examined some labor vulnerabilities (Berniell and Fernández, 2020). Based also on ECAF 2019 data, the authors found that people who did not complete secondary education and informal workers are much less likely to do remote work (because of the characteristics of their occupation, and Internet access and physical space restrictions, coupled with limitations associated with childcare). In terms of mobility patterns to go to work, the study found that people who did not complete secondary education are more likely to need public transport, while this is less likely among informal workers.

This combination of restricted social protection and high vulnerability coupled with limited prevention may account for the higher mortality rates among people of low socioeconomic levels, especially older adults, in pandemic situations, particularly during the current COVID-19 crisis. Indeed, although the COVID-19 phenomenon is currently in full development, emerging findings are already showing that, as with other diseases and pandemics in the past, there is a socioeconomic gradient for the most vulnerable families, which suffer the disease more severely. For example, in the UK, women in the most deprived areas were 133% more likely to die from COVID-19 than those in the least deprived areas (Stafford and Deeny, 2020). In the United States, evidence also confirmed the association between socioeconomic factors and mortality rates (Ahmad *et al.*, 2020).

This discussion highlights not only the relevance of introducing the social dimension into care strategies in this type of crisis, but also, regardless of this particular moment, of having an inclusive social protection system in place.

a. For middle and low-income countries, significant differences were also found among the group that completed secondary education and the group with advanced education. The study analyzes factors like age, gender, region (urban or rural), risk, the wealth index, and the level of education together.

Other research works have delved into a distributive analysis of fiscal management, particularly social spending, calculating concentration coefficients for different programs[26] and estimating the changes in income distribution due to fiscal transfers and taxes (Lustig, 2018). Although these methodologies present some limitations, they offer a helpful accounting approach about how the different transfers, particularly those associated with pensions and health, impact the distribution of current income.[27]

Table 1.4 is based on data from a project that has applied this type of methodology for a large set of countries (Lustig, 2018). The information is for the region's countries included in the project. In particular, the table shows the concentration coefficients for contributory and non-contributory pensions and public spending on health. For reference purposes, the table also shows the concentration coefficient of government's expenditure on education, and the concentration coefficients of conditional cash transfers and education expenditure, both with a strong redistributive orientation. The table also shows the Gini index for market income distribution and for market income distribution plus contributory pensions.

Non-contributory pensions have a low concentration coefficient that is typically negative, showing that this instrument is "pro-poor."

As expected, non-contributory pensions have a low concentration coefficient, which is typically negative, showing that this instrument is "pro-poor," although to a lesser extent than conditional cash transfers, which are highly focused on the poor. Only Guatemala and Bolivia are positive concentration coefficient cases, even though they are close to zero, revealing an equitable distribution among the population. In contrast, the concentration coefficients of contributory pensions reflect high values, especially in Colombia, Mexico, Panama, and Paraguay (all above 0.67). In fact, in these countries, the income Gini coefficient including pensions is higher than the market income Gini coefficient without pensions, i.e., contributory pensions are slightly regressive. Countries like Argentina, Chile, and Uruguay show the lowest concentration coefficients of contributory pensions. These coefficients are significantly lower than the income Gini coefficient, meaning that in these countries contributory pensions are progressive in relative terms.

It is important to highlight that, on average, the income Gini coefficient is similar to the income Gini coefficient plus pensions in Latin America, while in the United States and Europe this coefficient drops considerably when pensions are included.[28]

Public spending on health is slightly "pro-poor" (it has a negative concentration coefficient), although not as much as the government's expenditure on education. In some countries, it is slightly positive, but well below the income distribution Gini coefficient.

26. The concentration coefficient is an ordinary tool for the analysis of the distributive incidence of tax expenditures. It is calculated much like the Gini coefficient, but using the concentration curve (instead of the Lorenz curve), which reflects the cumulative proportion of cash transfers or expenditure (instead of the cumulative proportion of income). In contrast with the Gini coefficient, the concentration coefficient can be negative, in which case the program is defined as progressive in absolute terms or "pro-poor." If the coefficient is positive but smaller than the Gini coefficient, the program or cash transfer is deemed to be progressive in relative terms.

27. Within the main limitations are the lack of general equilibrium effects and the static nature of the calculations, which leaves aside the intertemporal character of citizen-state relations, particularly important in terms of contributory social security. Moreover, inefficiencies in the quality of expenditure, typically regressive because they are larger in services targeting the poorest, are disregarded.

28. For the United States, the Gini index decreased from 0.48 to 0.45, while in Europe it dropped from 0.46 to 0.35.

Table 1.4
Impact of social assistance vs. social security on poverty and inequality (concentration coefficients)

Country	Expenditures					Gini	
	Conditional cash transfer	Pensions		Education	Health	Income	
		Non-contributory	Contributory			Market	Market + pensions
Argentina (2012)		-0.34	0.39	-0.05	-0.20	0.502	0.475
Bolivia (2009)		0.01		-0.02	-0.04	0.503	0.503
Brazil (2009)	-0.60	-0.46	0.61	-0.14	-0.12	0.593	0.573
Chile (2013)		-0.30	0.39	-0.17	-0.10	0.503	0.494
Colombia (2014)			0.75	-0.21	0.12	0.575	0.575
Costa Rica (2010)		-0.47	0.59			0.512	0.508
Dominican Republic (2013)	-0.24		0.53	-0.21	-0.25	0.517	0.517
Ecuador (2011)			0.61	-0.23	-0.13	0.482	0.479
El Salvador (2011)	-0.47	-0.31		-0.14	0.12	0.437	0.440
Guatemala (2011)	-0.36	0.09	0.66	-0.02	0.28	0.511	0.513
Honduras (2011)				0.02	-0.03	0.561	0.564
Mexico (2014)	-0.52	-0.21	0.69	-0.06	0.06	0.528	0.528
Nicaragua (2009)				-0.01	0.03	0.482	0.482
Panama (2016)	-0.68	-0.37	0.72	-0.10	-0.08	0.555	0.557
Paraguay (2014)			0.67	-0.08	-0.18		0.522
Peru (2011)	-0.69		0.61	-0.21	0.05	0.474	0.473
Uruguay (2009)	-0.61	-0.51	0.45	-0.16	-0.10	0.544	0.505
Venezuela (2013)		-0.14	0.53	-0.20	-0.10	0.411	0.401
Average	**-0.52**	**-0.27**	**0.59**	**-0.12**	**-0.04**	**0.51**	**0.51**

Source: Author based on CEQ data (2019).

Table 1.4 calculations are related to current transfers. However, social protection programs, especially pensions, are intertemporal in nature, involving transfers from the individual to the state during their working age and transfers from the state to individuals during retirement. Therefore, ideally, an assessment of the distributive role of these programs should take this element into account. Pension systems could be oriented toward favoring low socioeconomic levels to the extent they impose minimum thresholds and ceilings to benefits, or to the extent that contribution grows strongly with wages, or benefits do not grow so much with contributions. Moreover, the rich receive their pensions for a longer period of time because they live longer, which introduces a regressive bias into pension schemes.

The rich receive their pensions for a longer period because they live longer, which introduces a regressive bias into pension schemes.

Chapter 3 discusses the financial sustainability of contributory pension systems through a simulation exercise that calculates the ratio between the expected present value of received pensions and the expected present value of the contributions made. To the extent this ratio is greater than 1, the scheme would seem to be intertemporally deficient, involving a transfer to workers.[29] The greater the ratio, the higher the transfer.

Consequently, this indicator could be used to compare the magnitude of the implicit transfer for different socioeconomic levels and, then, assess the redistributive orientation of the contributory scheme from an intertemporal approach. Table 1.5 presents relevant information in this regard. Specifically, it shows the division between the ratio for workers who did not complete secondary education and the ratio for workers with a college degree. Therefore, if the value of the indicator in the table is greater than 1, the implicit transfer will be higher for the less-educated group.

In this table, the indicator is shown for men and women separately. The table also shows information for two scenarios regarding contribution density. The first one assumes that contributions are made during the entire working life and the second imposes the average contributions made by workers according to gender and education level. If average contributions do not exceed the legally required minimum, this minimum is considered to access a contributory scheme. Finally, simulation is conducted for two alternative life expectancy scenarios. The first one assumes a uniform life expectancy for the two levels of education equivalent to the life expectancy (measured at the minimum retirement age of each country) for the relevant gender in the applicable country. The second scenario assumes a five-year gap[30] between people with a college degree and high school dropouts. This gap seems reasonable according to the available information on life expectancy associated with the level of education in different countries (see Figure A 1.3 in the Appendix).

Several conclusions can be drawn from this table. First, when there are no differences in terms of life expectancy, less-educated people seem to be the group that is most favored by contributory systems from an intertemporal approach. In other words, the ratio between the expected present value of pensions relative to contributions is higher for them. In the most representative scenario of average contributions, the ratio is greater than 1 in all countries, except for Ecuador. Second, this redistributive orientation is stronger for women and for those who do not make regular contributions throughout their entire working life.

Finally, the life expectancy gap significantly reduces the redistributive orientation implicit in the contributory system, with ratios falling about 20 percentage points. However, only in some cases, like men in Argentina who make contributions during their entire working life, this decline is sufficient for the ratio to decrease below 1. That is to say that assuming a person made all the necessary contributions to be

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29. Otherwise, if this ratio is less than 1, the system will not suffer any sustainability problem and, from an intertemporal approach, there would be a transfer from the worker to the system.

30. Specifically, the life expectancy attributed to people who completed the highest levels of education is equal to the unconditional mean of education plus 2.5 years, while the people with the lowest levels of education are imposed 5 years less than those with the highest levels of education.

eligible for a contributory system, these systems seem to show a redistributive orientation, even if a reasonable gap in life expectancy is imposed.[31]

Table 1.5
Redistributive orientation of contributory systems: an intertemporal approach

Country	Contributes during the entire working life				Average contributions			
	Men		Women		Men		Women	
	Uniform life expectancy	5-year gap	Uniform life expectancy	5-year gap	Uniform life expectancy	5-year gap	Uniform life expectancy	5-year gap
Argentina	1.03	0.88	1.33	1.16	1.07	0.91	1.65	1.19
Brazil	1.16	1.01	1.29	1.13	1.68	1.46	3.35	2.91
Chile	1.50	1.31	1.15	1.01	1.31	1.14	3.01	2.67
Colombia (DB)	0.73	0.64	0.93	0.83	1.33	1.16	1.34	1.19
Colombia (DC)	2.27	2.00	3.61	3.22	4.32	3.81	4.56	4.07
Ecuador	0.88	0.77	0.93	0.82	0.94	0.83	0.88	0.78
Mexico	1.67	1.43	2.33	2.02	3.06	2.62	2.83	2.42
Panama	1.46	1.28	1.67	1.50	1.88	1.65	1.97	1.77
Peru (DB)	2.04	1.74	2.03	1.73	1.89	1.62	1.07	0.91
Peru (DC)	1.00	0.86	1.38	1.18	2.08	1.79	2.17	1.86
Uruguay	1.06	0.89	1.10	0.91	1.13	0.95	1.39	1.15
Average	**1.34**	**1.17**	**1.61**	**1.41**	**1.88**	**1.63**	**2.20**	**1.90**

Note: For Colombia and Peru, separate calculations were conducted for defined-benefit (DB) and defined-contribution (DC) systems.
Source: Author based on Allub, Alves and López (2020).

In summary, the burden of redistribution seems to be carried by non-contributory pension schemes and free and universal health coverage as a consequence of the poorest having relatively low coverage in contributory pension and health systems. This situation may continue at least until the economy exhibits a higher degree of employment formality. However, the low amounts (or the lack) of non-contributory pensions, which, in some cases, are below the poverty line, and the low quality of universal health coverage in some countries (see Chapter 4) are challenges that need to be faced for the social security system to deliver effective protection to all older adults, especially the poorest.

31. This average orientation of the system may not operate if workers whose pensions are above the minimum thresholds (elements that introduce progressivity) but have considerable life expectancy differences are compared. A study conducted within the context of this report seems to point in this direction (Edwards, Soto, and Zurita, 2020). Focusing on Chilean workers whose wealth accumulation in the pension fund allowed them to access an annuity higher than the basic solidarity pension (around USD 160 per month), the authors found that, when retirement age is reached, there is a 3-year gap in life expectancy between the wealthiest and the poorest. This gap, if not factored in for pension calculations, introduces a regressivity element in the study group of workers. To illustrate this point, the authors estimated the necessary capital to fund the pension of one person. According to their findings, based on this life expectancy gap, official tables underestimate the value for the wealthiest pensioners (by 9% for unmarried men, for example) and overestimates the value for the poorest (by 3% for unmarried men, for example).

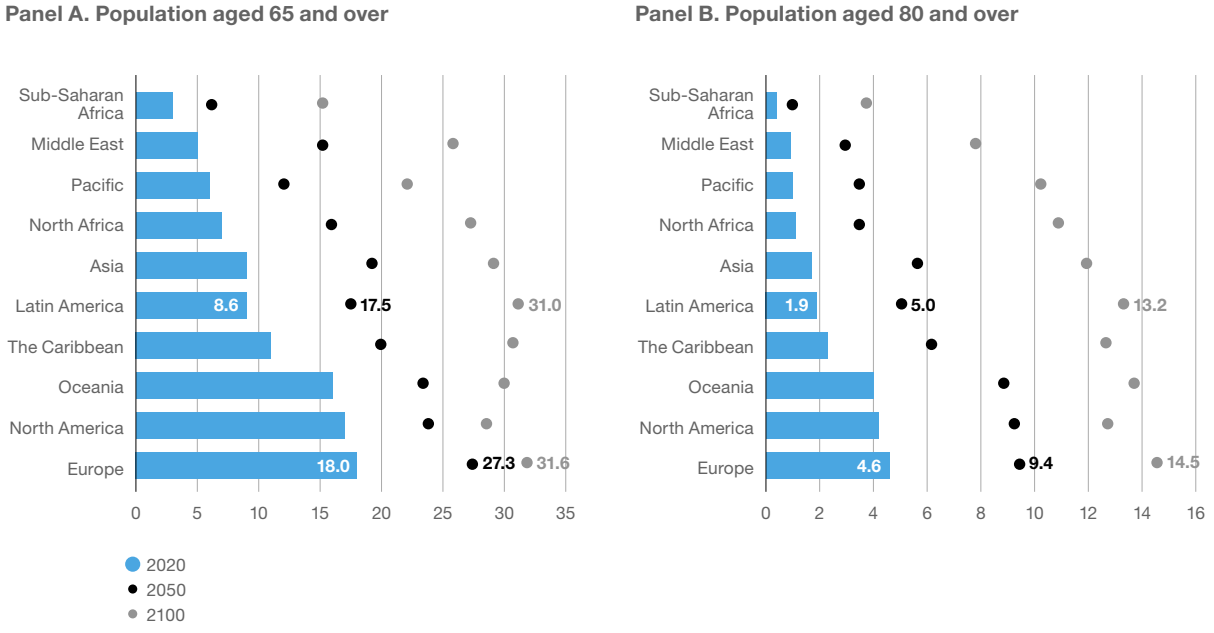
Aging: a common challenge

At present, slightly above 8% of the population in Latin America is aged 65 or over. By 2050, this figure will more than double.

Latin America is still a relatively young region, but it will not stay so for very long. At present, slightly above 8% of the region's population is aged 65 or over, well below the 18% recorded in Europe. By contrast, by 2050, this percentage would more than double, reaching 17.5%, comparable to the present level in Europe. By the end of the century, it will be above 30%. A similar pattern applies to people aged 80 or over, who are expected to account for 5% of Latin America's population in 2050 and above 13% by the end of the century (Figure 1.10).

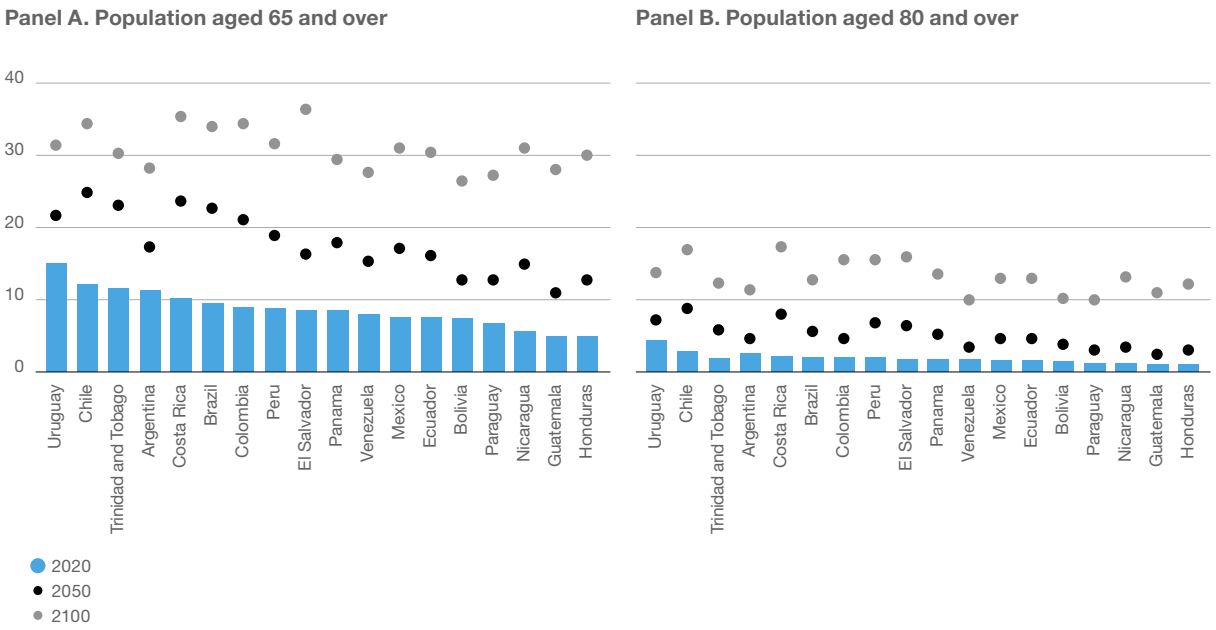
Latin America is currently very heterogeneous in terms of age distribution across the population. Uruguay has the highest proportion of adults aged 65 or over (15%), not very far from the average in Europe. It is followed by Chile, Argentina, and Costa Rica, all with more than 10% of their population over 65. In all other Latin American countries, this proportion remains in single digits (Figure 1.11). Even in countries with the oldest populations, like Uruguay and Chile, the share of older adults is expected to more than double by the end of the century. Therefore, aging is a common trend in Latin American countries. Besides, as will be shown below, it will progress at a relatively accelerated pace.

Figure 1.10
Percentage of present and future population aged 65 and over by world regions



Source: Author based on United Nations (2019b).

Figure 1.11
Percentage of present and future population aged 65 and over by Latin American countries

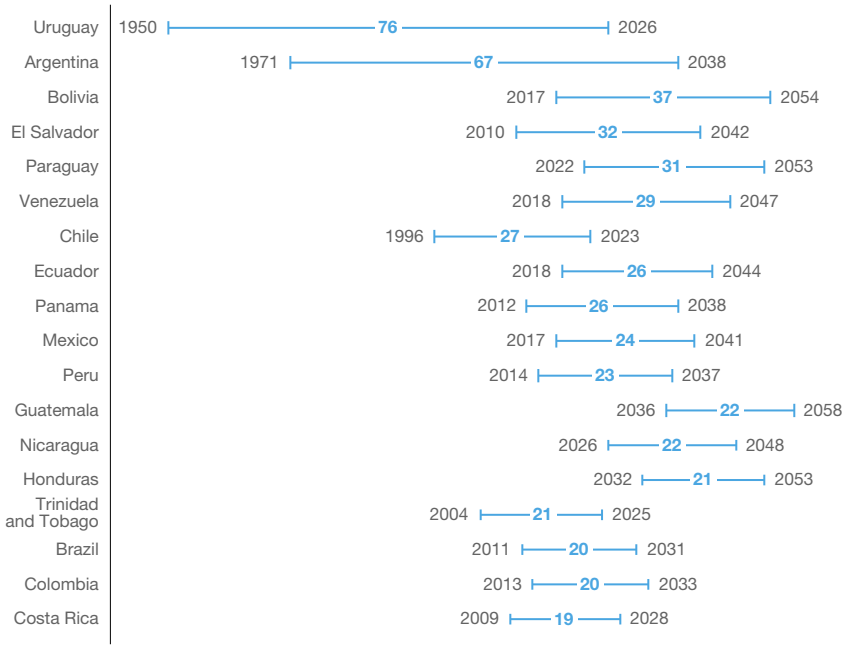


Source: Author based on United Nations (2019b).

The change in the proportion of older adults results from a significant decline in mortality and fertility rates, a phenomenon known as demographic transition. A recent study has explored demographic transitions over time and between countries (Delventhal, Fernández-Villaverde, and Guner, 2019). Among other findings, the authors conclude that more recent transitions are faster. In general, transition started later in Latin American countries, so it tends to be more rapid. France and Sweden needed 115 and 85 years, respectively, for their population aged 65 and over to increase from 7% to 14% percent (Aranco, Stampini, Ibarrarán and Medellín, 2018). By contrast, the region will more than double this growth over the next 30 years.

Differences in the aging rate between recent and earlier transitions are also noticeable across the region. Figure 1.12 shows the number of years that were needed or will be needed for older adults (aged 65 or over) to account for 7% to 14% of the total population in several Latin American countries. While this process was gradual in Uruguay and Argentina (it took 76 and 67 years, respectively), it will require just from 20 to 30 years in the majority of countries.

Figure 1.12
Number of years for the population aged 65 or over to increase from 7% to 14% of the total population



Notes: For this calculation, years with a value below 7% and above twice the value of the initial year were excluded. Only Uruguay deviates from 7% since in 1950 the proportion was already 8.2%.

Source: Author based on United Nations (2019b).

The growth of the older adult population will not be at the expense of the population under 15 years of age, exclusively.

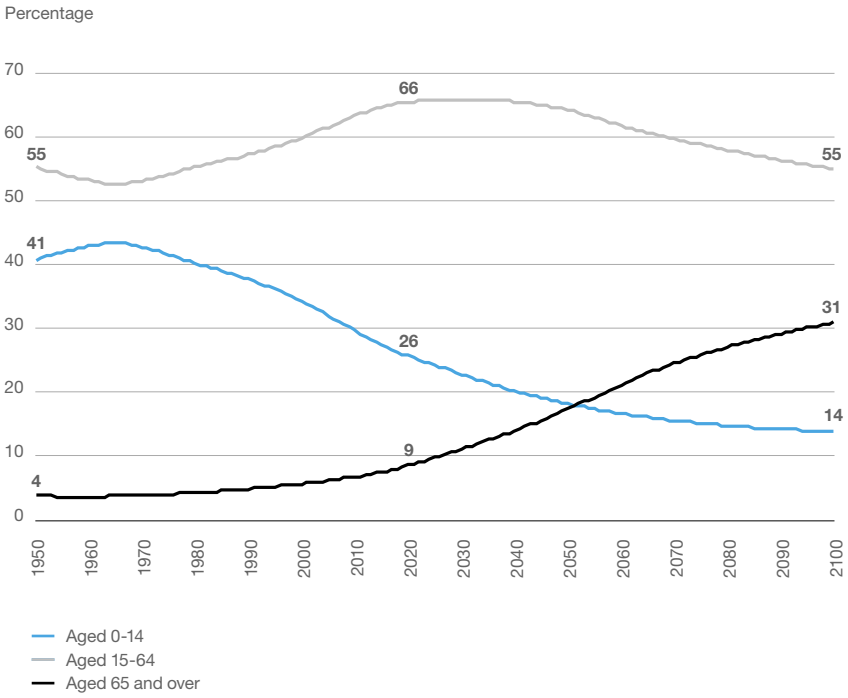
The number of older adults will grow not just at the expense of the population under 15, which will decline, on average, from over 25% in 2020 to less than 14%, but also of people aged 15-65. Indeed, the average proportion of the population aged 15-64 in the region will decrease from almost 66% to 55% of the total by the end of the century (see Figure 1.13 for the Latin American average and Figure A 1.1 in the Appendix for country-based information).

A widely used indicator that summarizes age distribution is the dependency ratio or its inverse, the potential support ratio. From a purely demographic perspective, the dependency ratio measures the number of individuals under 15 and over 65 as a proportion of the people aged 15-64. Similarly to the global dependency ratio, the youth dependency ratio covers people under 15 relative to individuals aged 15-64, while the old-age dependency ratio comprises persons aged 65 or over per individual aged 15-64.

The numbers in Figure 1.13 suggest a significant change in dependency ratios for the rest of the century. At present, in Latin America, per 100 persons aged 15-64, there are on average 52 persons off this range, of whom 13 are aged at

least 65. By 2100, the region will have 81 individuals off the 15-64 range per 100 persons, of whom 56 will be over 65. The implication of this trend is clear: the number of workers relative to the number of older adults will decrease, which represents a challenge for the provision of social protection, particularly for the pension and health components.

Figure 1.13
Latin America's population structure by age groups, 1950-2100



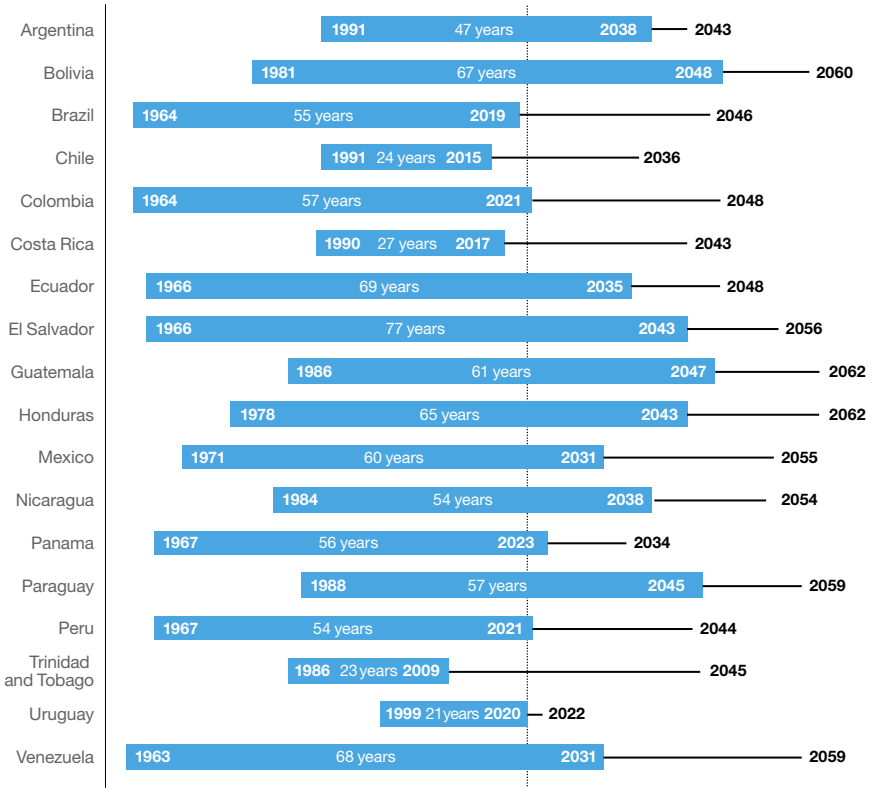
Source: Author based on United Nations (2019b).

Demographic transition shows a U-shaped behavior of the dependency ratio. On average, the region is approaching its bottom dependency ratio, which is expected to grow starting in 2023.[32] However, it will take the region 40 additional years to reach the current OECD average level. Most Latin American countries still record decreasing dependency ratios, although in some, like Chile, these

32. In its simplest version, the decreasing phase of the dependency ratio determines the duration of the first demographic dividend—the potential growth of GDP per inhabitant due to the change in age distribution across the population given the productivity of labor (i.e., as the relative size of the labor force in a country expands, the country's GDP per inhabitant expands too simply because there are more workers and producers relative to the total population). At the end of this chapter, the demographic dividend will be analyzed in more depth and some estimates will be presented that incorporate labor participation, income, and consumption patterns during a life cycle, in addition to age structure changes.

ratios have already started to grow or are about to (Colombia and Peru). In contrast, countries like Bolivia, Guatemala, and Paraguay are expected to have decreasing dependency ratios until around 2045 (see Figure 1.14).[33]

Figure 1.14
Decreasing dependency ratio time window: Latin American countries



Notes: Black horizontal lines show the ascending period of the dependency ratio from its bottom value up to the average in OECD countries by 2020 (55.4). The dependency ratio is calculated as the ratio between the following age ranges: (0-14 and 65+) / 15-64. The dotted vertical line shows the year 2020.

Source: Author based on United Nations (2019b).

33. Figure A 1.6 in the Appendix shows country-based dependency ratio dynamics for the period with available data (1950-2100). The particular situation in Argentina and Uruguay is worth mentioning. In these countries, the usual U-shape of the dependency ratio is not clear for the period under analysis. In the case of Uruguay, the dependency ratio's minimum level was reached in the year 2020, but the decline from 1950 is quite moderate. Then, it seems that Uruguay experienced a relevant decline in the dependency ratio before 1950. In Argentina, the decline is slightly sharper, but still below the region's average. Besides, in Argentina, the dependency ratio remained very close to this minimum level for a long time.

Demographic processes in Latin America

Age distribution and, therefore, dependency ratio changes, are the result of three processes: mortality, fertility and migrations. The patterns in these three processes for Latin America will be briefly examined below.

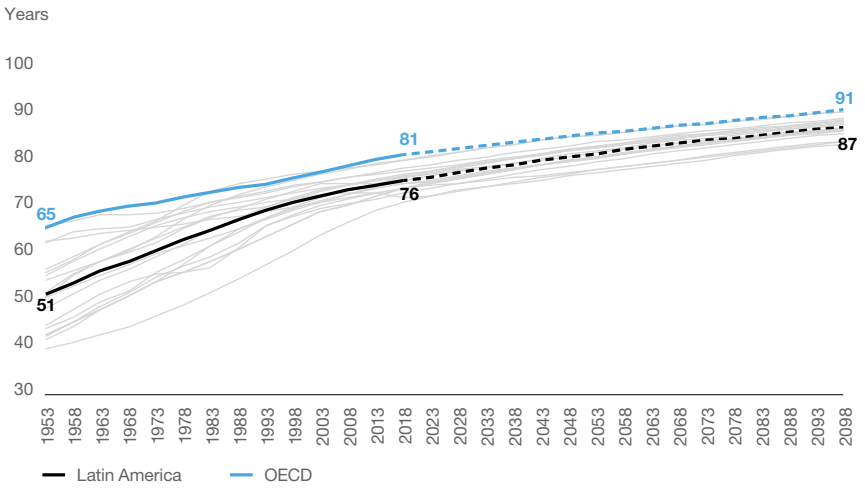
Mortality and life expectancy

The term life expectancy reflects an estimation of the number of years that a person from a given population will live. The estimation of this measure is based on mortality rates by age over a given period, so the indicator reflects the expected duration of life if age mortality patterns are consistent with those of the period in question.

From 1950 to 2018, the region increased life expectancy by almost 25 years, reducing the gap in this variable with respect to the average of OECD countries by about two-thirds, from 14.8 to 5.4 years (Figure 1.15).[34] This gap is expected to narrow even more over the next 80 years, with the average life expectancy at birth in Latin America and OECD projected to reach 87 and 91 years, respectively.

From 1950 to 2018, life expectancy increased by almost 25 years in the region.

Figure 1.15
Life expectancy at birth in Latin America and the OECD, 1953-2098



Notes: The dashed lines reflect projected values. The gray lines represent 17 countries in Latin America. Values shown are for 1953, 2018, and 2098.

Source: Author based on United Nations (2019b).

34. The gray lines in the figure represent the different countries in the region and show a sort of convergence with the countries that initially had a shorter life expectancy at birth, showing larger gains.

The increased life expectancy at birth can be accounted for by the decrease in mortality rates across all age ranges, although for some countries gains are larger in some ranges compared with others. Figure 1.16 breaks up gains in life expectancy at birth from 1958 to 2018 due to the decrease in the mortality for each age group. Figures represent the percentage of years gained as a result of decreased mortality in the applicable group.

Table 1.6
Disaggregated changes in life expectancy at birth by age groups, 1958-2018

Country	Age range					
	0-9	10-19	20-39	40-59	60-79	80+
Argentina (12)	17.6	6.9	16.3	28.5	29.2	1.5
Bolivia (30)	37.8	12.6	16.3	15.8	17.0	0.6
Brazil (23)	27.5	8.8	19.6	22.5	20.3	1.3
Chile (24)	21.6	9.0	19.9	26.1	22.1	1.2
Colombia (21)	23.6	9.7	16.6	23.7	25.2	1.1
Costa Rica (21)	22.3	7.1	15.6	25.6	27.7	1.6
Ecuador (25)	30.5	9.8	17.4	20.5	20.6	1.2
El Salvador (25)	34.9	8.7	15.9	20.5	19.4	0.6
Guatemala (28)	34.0	12.5	18.2	19.6	15.2	0.6
Honduras (30)	32.9	11.3	19.8	20.6	14.8	0.7
Mexico (20)	31.4	11.5	21.0	19.3	15.5	1.3
Nicaragua (29)	29.9	14.3	21.1	19.1	15.1	0.6
Panama (19)	19.7	8.1	15.9	25.7	28.5	2.2
Paraguay (11)	26.9	4.1	7.0	22.5	37.3	2.1
Peru (30)	34.5	12.1	16.9	18.0	17.9	0.6
Trinidad and Tobago (12)	12.0	10.6	17.5	24.2	34.5	1.2
Uruguay (11)	12.9	4.1	12.4	30.4	36.8	3.5
Venezuela (14)	23.1	5.9	19.9	29.9	20.0	1.2
United States (9)	7.4	3.1	9.1	33.6	43.6	3.2
Germany (12)	9.5	5.7	11.5	27.4	43.0	2.9

Notes: The table shows for each country the percentage contribution of each age group to the change in life expectancy at birth for the period 1958-2018. Numbers between brackets next to the country name reflect gains in life expectancy at birth in total years for the same period.

Source: Author based on United Nations (2019b).

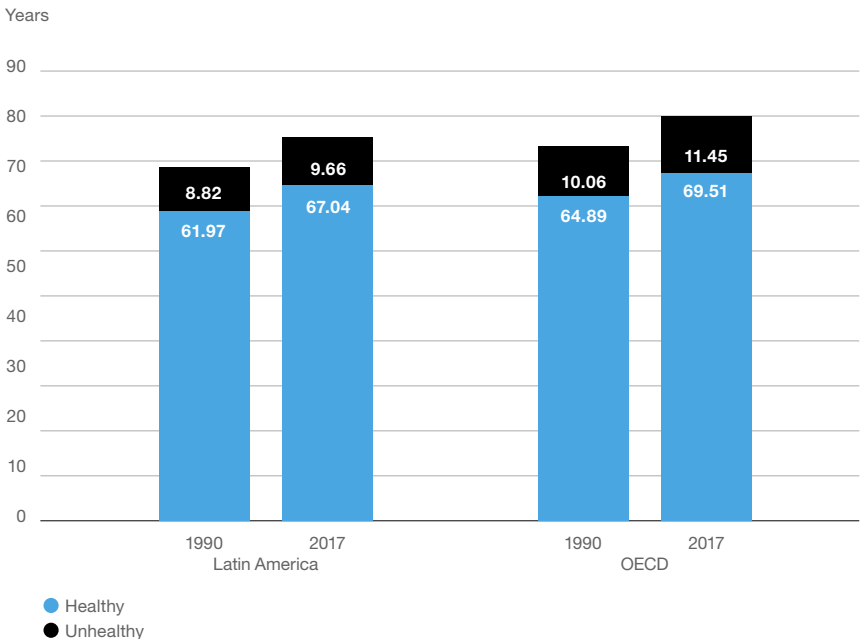
In most Latin American countries, reduced infant mortality account for large gains in life expectancy.

It is clear that in most Latin American countries large gains in life expectancy are achieved as a result of reduced infant mortality. This is not the case in developed countries, like the United States or Germany. In general, gains associated with the age group of adolescents (aged 10-19) are relatively moderate in all countries. Finally, life expectancy for older adults (60 or over) increased considerably overall, especially in countries with a high level of income, where this is the group that accounts for the highest gains. For example, this group accounts for 46% of the years gained from 1958 to 2018 in Germany, and 47% in the United States. In the region, Uruguay and Paraguay show a similar profile, although of a smaller magnitude.

Through a combination of mortality and morbidity rates, it is possible to explore not only how life expectancy has changed, but also the ratio between life expectancy and good health status. In this regard, it is important to highlight that the increased life expectancy of older adults has also increased the time during which people enjoy a healthy life, but it has also extended the period with some disability. On average, the number of years that a person can expect to live healthy in Latin America has grown from 62 to 67, while the number of years lived with a disability has increased from 8.8 to 9.7, i.e., a 5 to 1 favorable ratio (see Figure 1.16 for regional average results and Figure A 1.7 for country-based information). If Latin America can follow the steps of OECD countries, the number of unhealthy life years is expected to continue to rise as the population ages.

Increased life expectancy has extended the time during which people enjoy a healthy life, but also life with some disability.

Figure 1.16
Life expectancy at birth: healthy life years and years lived with disability, 1990-2017



Notes: Healthy life expectancy adjusts the conventional life expectancy for years lost on account of premature deaths and years lived with disability. Causes for disability include from otitis media (lasting just a few days) to epilepsy (which may be a lifelong condition). In the calculation of years lost due to disability, the different conditions have been assigned weights that represent social preferences for each health status relative to the societal ideal of good health; weights are based on surveys to the general public. The calculation is based on the Global Burden of Disease Study 2017, which includes 359 conditions and lesions.

Source: Author based on IHME data (2017).

The increase in healthy and unhealthy life years involves more health and long-term care expenditure for old age. At the same time, it opens a window of opportunity to fund spending by raising the retirement age, a topic in public debate facing political economy challenges (see Chapters 3 and 5). In this

regard, a recent study estimates how many additional years the population can work before retirement, given the better health condition of older adults, for a group of developed countries. In one of these scenarios, 5.5 years of additional working capacity were calculated as a result of health improvements (reflected in reduced mortality rates) from 1977 to 2010 (Coile, Milligan and Wise, 2016). Chapter 2 explores the extent of the feasibility to increase labor participation for older adults in the region (see the "Labor participation: gender and activity gaps in adult life" section).

A final element to be highlighted is the socioeconomic gradient in life expectancy. Even though mortality has been reduced and, therefore, life expectancy has increased for all socioeconomic levels, large differences remain. Some sources report an OECD gap (*circa* 2016) of 5.6 years in life expectancy (at age 30) between those with a college degree and those with only secondary education (OECD, 2019b). The country with the narrowest difference was Turkey, with 2.66 gap years, while the widest disparity was reported for Slovakia, with almost 10 years. In the region, Mexico shows a 5-year gap (see Figure A 1.3 in the Appendix).

In the context of this report, a study was commissioned based on Chilean pensioners whose wealth accumulation in the pension fund allowed them to access an annuity higher than the basic solidarity pension (around USD 160 per month). The sample excluded the poorest because of the characteristics of the study. Despite that, gaps of around 3 years of life between the poorest and the wealthiest pensioners were found (Edwards *et al.*, 2020).[35] This life expectancy gap favoring the wealthiest, as indicated in the "Social protection—socioeconomic level and the distributive impact" section, is a source of potential regressivity in pension systems.

Fertility

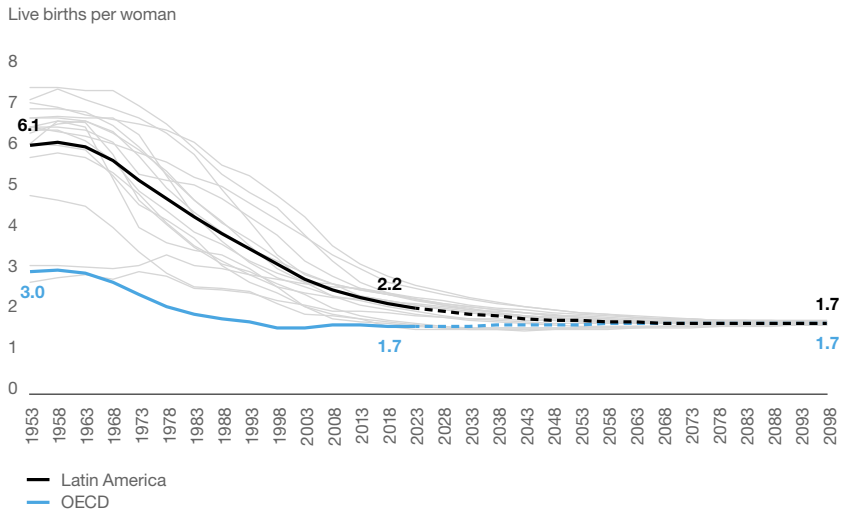
From 1950 to 2020, the fertility rate in the region declined from 6.1 to 2.2 live births per woman.

Demographic transition has been characterized by a strong reduction in fertility rates, in addition to decreased mortality rates. From 1950 to 2020, the fertility rate in the region declined from 6.1 to 2.2 live births per woman.[36] This figure is larger than in OECD countries, but the gap has closed. By the end of the century, the fertility rate in Latin America is expected to be already 1.7 children per woman, virtually the same value as the projection for the OECD (see Figure 1.17).

35. The authors generated three groups of pensioners under two approaches: one based on the monthly value of pensions and the other one, on accumulated wealth. For the first approach, the poorest group was defined as the individuals receiving monthly pensions below 5 *unidades de fomento* (UF), while the wealthiest group was identified as the persons receiving above 10 UF. For the second approach, the poorest group was defined as the individuals whose wealth was less than 1200 UF, while the wealthiest group was identified as the pensioners whose wealth was above 2400 UF. In both cases, the gap in life expectancy between the poorest and the wealthiest groups was similar: three years. *Unidad de fomento* is an inflation-linked Chilean peso-denominated unit of account. As of the study date, its approximate value was USD 40.

36. Just Uruguay and Chile's rates (2.7 and 3.2, respectively) were below and slightly above the OECD's (3.0) at the beginning of the 1950s.

Figure 1.17
Total fertility rate in Latin America and OECD countries



Notes: The dashed lines reflect projected values. The gray lines represent 17 countries in Latin America. Values shown are for 1953, 2018, and 2098.

Source: Author based on United Nations (2019b).

These fertility trends result from multiple factors. Changes in social norms, the demand for human capital in a context where the family decides between quality and quantity of children, reduced infant mortality rates, technological changes, and even offered pensions are some of the reasons presented by works on this topic (Greenwood, Guner and Vandenbroucke, 2017).

A key mechanism of the economic theory of fertility is associated with the trade-off between quality and quantity in the decision to have children, originally stated by Becker (1960). In Becker's theory, the happiness of parents depends (positively) both on the number of children (quantity) and how much they invest in them (quality). However, increasing quality (spent per child) raises the cost of a larger quantity (number of children). Under this conflict, and with a strong preference for quality relative to quantity, the theory can produce a negative relationship between income and fertility.[37, 38]

37. A negative income-fertility relationship is a robust fact both under cross-country data (Manuelli and Seshadri, 2009) and under country-level data, even in developed countries. For example, Jones and Tertilt (2008) estimate a -0.38 income elasticity of fertility (or fertility variation in the face of changes in the levels of income of consumers) for a group of cohorts in the United States. Although this elasticity has declined over time, it continues to be significant.

38. When both income and, therefore, demand for quality increase, the cost per child rises. This effect motivates a reduction in the number of children.

Decreased fertility may lead to higher education expenditure per student, increasing productivity. In principle, it can also facilitate women's participation in the labor market, closing the participation gender gap compared to developed countries (see Chapter 2). However, the expected higher demand for care from older adults plays a critical role in the opposite direction, as described in Chapter 4, because women are more actively involved in these tasks.

Migrations

Migration may impact age distribution across the population for one reason: migrants are relatively young.[39] Therefore, migration may represent an opportunity for developed countries to face the population's aging challenge and favor the sustainability of social protection systems.[40] The situation in Latin America is quite different: in migratory terms, we represent the origin, not the destination.

The aging process to be faced by Latin America has little to do with the expected migratory flows.

In 2019, the global number of migrants exceeded 271 million people, equivalent to 3.5% of the world's population (IOM, 2019). Of this group, 30.3 million departed from Latin America, while 9.9 million chose this region as their place of destination (United Nations, 2019a). This negative balance, added to the young age of migrants, implies that part of the deterioration of the dependency ratio in most Latin American countries could be attributed to expected migratory flows. Nevertheless, as we will discuss, the aging process to be faced by Latin America has little to do with the expected migratory flows.

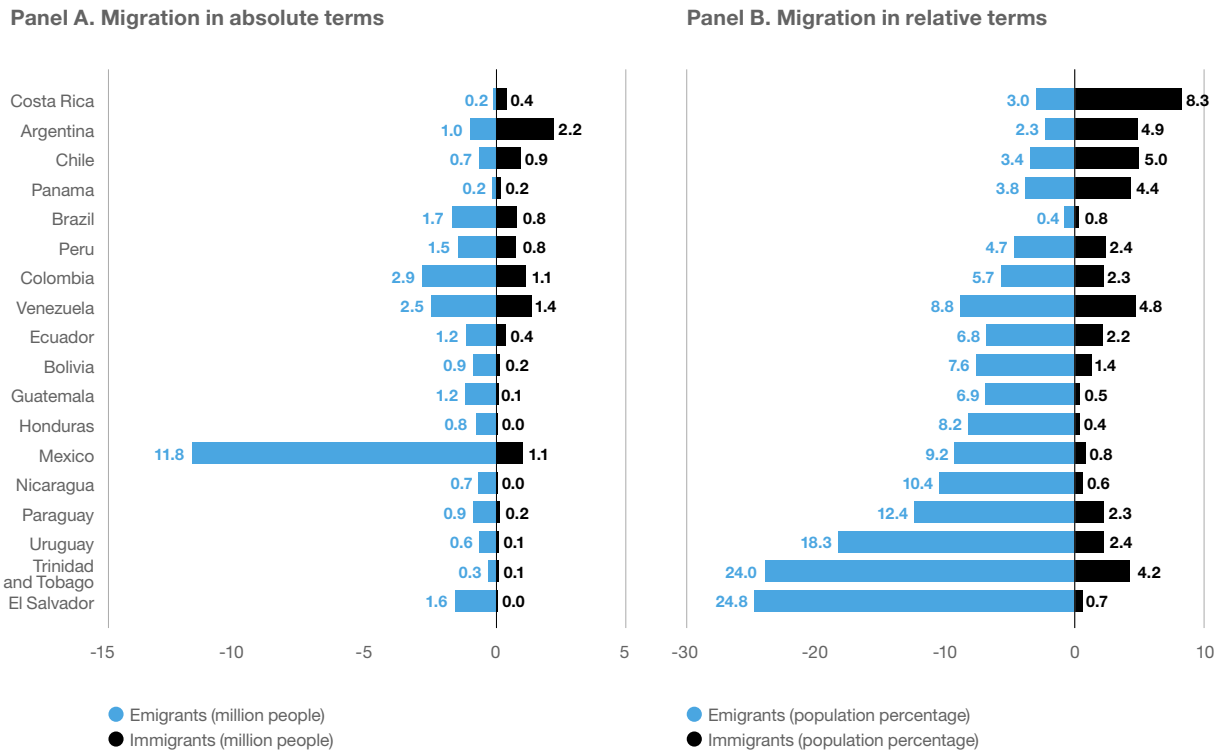
Migration adopts different shades across the region. Mexico is, by far, the country with the highest emigration record: almost 12 million Mexicans lived abroad in 2019. Colombia and Venezuela follow, although with significantly less migration, with 2.8 and 2.5 million emigrants, respectively.[41] In terms of population percentage, rather small countries stand out, like Nicaragua, Uruguay, Paraguay, and, particularly, El Salvador (Figure 1.18). It is precisely in these countries where migration is more significant as a population percentage and, hence, where age distribution would be most likely to change.

39. By 2000, of the new immigrants who had arrived in the United States (defined as individuals living in the country for less than 1.5 years), just 2.3% were aged 65 or over. Although the gap between the age of new migrants and natives narrowed over the period 2000-2017—from 9.7 years to 6.8 years—, migrants continue to be significantly younger (Camarota and Zeigler, 2019).

40. Some estimates suggest that the necessary immigration levels to keep replacement rates constant in these countries exceed expected (and historical) levels (United Nations, 2001). In spite of this, immigration seems to be an indispensable support of social protection systems in developed countries (Pritchett, 2020).

41. These figures are based on official statistics. In some cases, therefore, they may be underestimated. For example, in March 2020, the International Organization for Migration (IOM) calculated that the number of migrants who had left Venezuela was 4.7 million (IOM, 2020).

Figure 1.18
Migrations in Latin America, 2019



Notes: Ranked by net migration as a population percentage, from highest (Costa Rica) to lowest (El Salvador).
Source: Author based on United Nations (2019b).

Figure 1.18 also reveals that the large majority of countries have more emigrants than immigrants. Just Argentina, Costa Rica, and Chile have a net favorable balance in their migration flow. Costa Rica has the most favorable net balance given the size of its population, the net balance of migrants accounting for over 5% of the total population.

The relevant question in the context of this report is to what extent is the expected migration flow responsible for the region's population aging for the coming years. One way to address this question is to project the population structure against a counterfactual scenario where net migration equals zero. In this exercise, the outlook does not change significantly and population aging would remain a serious problem: by 2050, the proportion of adults would be 17.35% (instead of 17.5%), while by 2100 this figure would reach 29.49% (and not 31%).

El Salvador is one of the countries where expected population aging could be mostly alleviated if net migration equaled zero from 2020 onwards. However,

even for this country, the outlook would not be much different either: from 2020 to 2050, the share of older adults would rise from 8.7% to 15.2% (instead of 16.3%), while by 2100 it would reach 31.1% (instead of 36.4%).

Emigration from countries like El Salvador may increase dependency ratios and, therefore, slightly hinder the sustainability of public social protection programs. Nevertheless, by contrast, intra-family cash transfers in the form of remittances provide large support. Figure 1.1 (page 24) is eloquent: in El Salvador, private transfers are almost as important as public transfers for the funding of the deficit between disposable income and consumption expenditure by older adults.

Demographic dynamics, fiscal situation, and growth

Demographic transition may have important implications for the economy. This section will point out two major ones: fiscal challenge and growth opportunities.[42]

The main challenge posed by aging relates to the provision of quality social protection and its fiscal incidence.

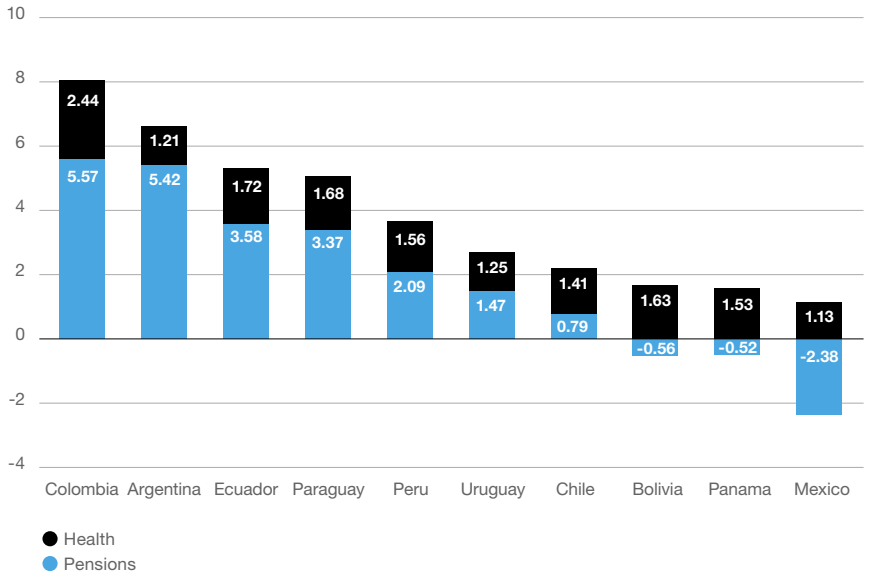
It could be argued that the main challenge posed by aging relates to the provision of quality social protection, and, in particular, with its fiscal incidence. This is a topic of great interest for this report. Income and spending projections for the pension system are presented in Chapter 3, while similar forecasts for the health system are described in Chapter 4. One of the scenarios explored is associated with the effect of aging if coverage and transfers per beneficiary were maintained under current system conditions.[43] Figure 1.19 shows this projection and, in particular, the increase in the variable of public spending on pensions and health as a proportion of GDP for the period 2015-2065 that would result from expected demographic changes.

Impacts vary remarkably across countries, mainly due to the pension component. For Colombia and Argentina, increased spending on pensions and health exceeds 6 percentage points. In most countries, the pension component growth is the most significant, except in countries that, like Chile, have implemented capitalization schemes or are currently transitioning to capitalization-based or mixed schemes. The fiscal situation is much more difficult considering that, besides, some countries also have challenges regarding pension coverage and sufficiency, along with low healthcare quality (see Chapters 3, 4, and 5 for further details about this and other scenarios).

42. Implications for the real interest rate, the composition of demand, and, therefore, the economic cycle and the role of the monetary policy transition mechanisms have already been mentioned, in particular, strengthening the channel linked to wealth effects (Mester, 2017).

43. In some countries, like Mexico, these current conditions involve a transition to capitalization-based or mixed schemes. For further details, see Chapter 3.

Figure 1.19
Change in expenditure on pensions and health as a proportion of GDP, 2015-2065



Source: Author based on IERAL (2020) for pension spending and WHO (2019b); Crosta, Porto, Carella and Cerimelo (2019); de la Mata and Valdés (2020); Buitrago and Torres (2020) and United Nations (2019b) data on health expenditure.

Demographic dynamics not only poses challenges, but also offers opportunities. In particular, GDP-per-inhabitant growth can improve through what is known as demographic dividends.

Demographic dynamics can improve GDP- per-inhabitant growth.

This potential growth has multiple sources. Some mechanisms result from the different behavioral patterns that people adopt over their life cycle. For example, individuals work more in some stages of their lives than in others.[44] Other mechanisms are associated with changes in these patterns, for instance, demographic change may lead women to work more (or less), regardless of their age.

Regarding the channels involved, typically three are mentioned. The first one is related to labor supply. Labor participation varies throughout the life cycle; then, as the importance of the group with the highest participation grows, labor supply increases. However, labor participation may also change as a result of alterations in participation patterns. Other typical examples are a

44. It is important to highlight that there exist significant variations even among the age groups normally used to measure dependency ratios. For example, the income (and, hence, the contribution to social security) received by a worker aged 25 is not the same as the income received by a worker aged 40. By the same token, the health expenditure of an adult aged 66 is not the same as the expenditure required by an adult aged 80. Then, this information should be available in more detail to examine the implications of age changes.

larger women's participation in the labor market, encouraged by a decline in fertility, which could be counterbalanced by the demand for care from older adults. Changes in longevity and the health condition of older adults may also lead to labor supply variations for the elderly population.

The second channel is associated with savings. The inclination to save varies with age. In particular, typically during the retirement period consumption exceeds income. Similarly, the young who are starting their working lives save very differently than a person with significant work experience. That is why, again, a variation in age distribution will change aggregate savings. However, demographic trends also impact behavior in terms of savings. Longevity increases the demands for asset accumulation to fund a longer retirement. Changes in the size of families may impact intra-family cash transfers (for example, they may be reduced) to fund old age expenses and, in this way, influence saving patterns (increasing savings). To the extent it translates into a capital increase, savings can raise labor productivity and, as a consequence, GDP.[45]

The last channel is associated with human capital. Reduced fertility may lead to larger investments from parents in their children (in line with the above quality-quantity trade-off). Increased life expectancy, in turn, encourages the accumulation of human capital. For example, Jayachandran and Lleras-Muney (2009) found that the decline in maternal mortality and the ensuing longer life expectancy of women increased literacy and years of education for women.

A recent study quantified the importance of some of these channels for a comprehensive set of countries from different regions, including Latin America (Mason, Lee, Abrigo, and Lee, 2017).

The study makes a distinction between the first demographic dividend, linked to economic growth induced by the effect on labor supply (given the productivity of labor, and the patterns of participation, consumption, and income throughout the life cycle), and the second demographic dividend, associated with the potential growth of the productivity of labor originating in larger savings to fund (higher) old age expenses. Table 1.7 shows the magnitudes of both dividends for different time windows and for a set of Latin American countries. The Appendix presents some methodological aspects supporting these measurements.

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45. In an open economy, a portion of the savings may be in the form of foreign assets. This would reduce the impact on GDP growth, but, at the same time, the rate of return on foreign assets would increase national income.

Table 1.7
Demographic dividends at different periods

Country	Dividend 1					Dividend 2		
	1950-2020	2021-2060	2061-2100	Start	End	1950-2020	2021-2060	2061-2100
Argentina	0.01	-0.05	-0.16	1992	2037	0.60	0.66	0.36
Bolivia	0.19	0.30	-0.05	1977	2063	0.72	0.77	0.49
Brazil	0.34	-0.34	-0.16	1967	2024	0.68	0.84	0.19
Chile	0.30	-0.39	-0.13	1969	2020	0.81	0.78	0.20
Colombia	0.32	-0.24	-0.18	1968	2024	0.95	1.05	0.30
Costa Rica	0.33	-0.35	-0.15	1966	2023	0.73	0.83	0.19
Ecuador	0.25	0.09	-0.14	1972	2048	0.61	0.84	0.42
Guatemala	0.14	-0.09	-0.34	1990	2033	0.36	0.90	0.49
Honduras	0.28	-0.15	-0.32	1978	2033	0.32	1.13	0.37
Mexico	0.38	0.01	-0.22	1976	2041	0.48	0.87	0.34
Nicaragua	0.38	0.18	-0.21	1979	2046	0.96	1.16	0.40
Panama	0.33	-0.03	-0.13	1970	2032	0.55	0.56	0.29
Peru	0.27	-0.14	-0.25	1971	2028	0.65	0.89	0.39
Paraguay	0.39	0.26	-0.10	1950	2051			
El Salvador	0.24	-0.15	-0.31	1970	2033	0.52	0.85	0.31
Trinidad and Tobago	0.28	-0.44	-0.14	1970	2014			
Uruguay	0.02	-0.16	-0.18	1993	2027	0.49	0.55	0.27
Venezuela	0.44	-0.01	-0.24	1970	2042	0.63	0.76	0.38
Latin America	0.27	-0.07	-0.19			0.63	0.84	0.34

Notes: The dividend average for the indicated range of years is calculated for each country. Latin America data is the simple average of the already calculated averages per range. Paraguay data for the second dividend are unavailable. Numbers represent GDP growth per effective consumer (see Appendix).

Source: Author based on Mason et al. (2017).

According to these calculations, within the next 40 years, the first dividend could cause an average GDP decline of 0.07% per year, which would result from an expected drop in employment relative to the population, attributable to aging. The decrease associated with this relative drop in employment is even larger during the second half of the century. For some countries, like Bolivia and Paraguay, the coming 30 years will offer a sizeable first demographic dividend.

The second dividend, in turn, has the potential to contribute to growth up to 0.84% per year within the next 30 years and around 0.34% per year in the last 40 years of the century.[46]

It is relevant to note that these figures should be interpreted very cautiously because they are based on some important assumptions. In addition, they represent a growth potential that can be taken advantage of if some conditions, that may not be entirely met in the region, prevail (Box 1.3). Even so, the exercise offers some general lessons to be highlighted.

Little benefit can be derived from demographic dynamics if the productivity of labor remains constant.

First, the window of opportunities will close because both dividends reduce remarkably in the second half of the century. Second, little benefit can be derived from demographic dynamics if the productivity of labor remains constant. This is basically what is revealed by the moderate magnitude of the first demographic dividend. Moreover, growth associated with a natural change in employment relative to population (the first dividend), in the countries where it still exists, will be later reversed and transformed into a decline, in line with the U-shape of the dependency ratio. By contrast, productivity gains originated in demography (second dividend) are more permanent.

In summary, in the coming years, the population in Latin American countries will age markedly and this will exert significant fiscal pressure. The mechanical growth linked to the labor supply channel—keeping productivity constant—is moderate and reversible and, while demography offers room for productivity gains through higher savings and investment, the region's economies do not seem to meet the conditions to take full advantage of these gains. An agenda that fosters growth and productivity gains, whether or not they originate in demographic dynamics, will certainly be an indispensable ally to sustain quality social protection for all.

46. These are optimistic figures. On one hand, they assume that the entire growth of the older adults' consumption needs is funded with capital accumulation and that capital is used efficiently. Not only is capital allocation inefficient in developing countries (Hsieh and Klenow, 2009), but deficits can be funded through intergenerational transfers. Moreover, another adjustment variable may be a reduction in consumption levels during old age.

Box 1.3
Challenges to taking advantage of demographic dividends

To take full advantage of the opportunities for growth offered by demographic dynamics, different dimensions of the economy must work appropriately. Unfortunately, most of these dimensions continue to be a challenge for several countries in the region.

The demographic structure may foster growth, not just because of the size of the workforce, but also because of its quality. The first two realms are related to the traditional mechanisms for the accumulation of human capital: health and education. The importance of investment in health during early childhood, including gestation, to accumulate skills for work is well known (CAF, 2016). Therefore, women and children are a cornerstone of any health policy. Indicators presented in this report suggest a lag in this regard in some Latin American countries (Table A 1.2 in the Appendix). In education, although the region has improved remarkably in terms of access, major needs remain unmet, like access to advanced education, along with education quality (CAF, 2016).

The third realm encompasses the job market. It is of no use to have a large and quality workforce if there are no quality jobs and the market will not allocate the workforce appropriately. Unfortunately, there are failures here too. The region is characterized by the presence of a large number of low-quality enterprises that offer precarious work, and by an inefficient allocation of the work factor, including, among others, informal employment, a gender participation gap, and skills mismatch (CAF, 2018).

A portion of the growth opportunities tied to aging are associated with the generation of savings and how they can be channeled to the best productive uses. Harnessing this channel requires a good financial system. Indicators like limited credit as a proportion of GDP, a large differential between lending and borrowing interest rates, the relatively low number of adults with savings accounts, and the high proportion of enterprises with credit access constraints, all suggest problems in this realm (CAF, 2018). Access to funding for young companies and the development of bond and stock markets are of particular interest.

Finally, the state's capabilities to improve education and health spending efficiency, along with the design and implementation of public policies in the above dimensions are relevant cross-cutting areas. Evidence shows that there are still challenges to be met regarding public management transparency (CAF, 2019).

Exploring policies to improve these areas goes beyond the scope of this report. The list is lengthy and part of the development and productivity growth agenda that Latin American countries should adopt. The purpose of this box is to make the challenges of capitalizing on the growth opportunities offered by demographic dynamics clear.

Keys to understanding social protection challenges for older adults in Latin America

1 Social protection is a critical development instrument that protects people from certain risks and fosters inclusion and equality. Its implementation poses challenges: both funding and insurance impact people's behavior and may lead to undesirable and unintended outcomes. Therefore, it is essential to have a good system design.

2 An additional challenge for social protection and, in particular, for pension and health systems, is population aging. Over the next 30 years, the proportion of adults 65 and over will double, reaching almost 18%, while people 80 and over will increase from less than 2% to account for 5% of the population. Aging develops at a much faster pace across the region than in developed countries, which experienced a similar process in the past.

3 Pension, health spending, and architecture vary significantly among countries. In most Latin American countries, it accounts for a lower proportion of GDP than in developed countries. The current relative youth of the region's population can explain the low level of this spending just partially. In general, system architecture elements are also significant. Consequently, in addition to the challenge of aging, many countries also face coverage and quality difficulties (including the sufficiency of pensions).

4 Aging will have a critical fiscal incidence if present conditions are maintained. Spending as a proportion of GDP between 2015 and 2065 might exceed 6 percentage points in Colombia and Argentina. The pension component growth is the most significant, except in countries that have implemented capitalization schemes or are currently transitioning to capitalization-based systems.

5 In general, spending on non-contributory pensions and universal health has an equalizing role. Quality gaps between contributory and non-contributory systems, coupled with the fact that poor families have a small participation in contributory schemes, undermine the social protection system's capacity to promote equality and reduce poverty. Indeed, in some countries, like Colombia and Peru, non-contributory pensions are below the poverty line.

6 Demographic dynamics also offers potential opportunities. Leveraging demographic dividends in full is contingent upon the prevalence of conditions that are not entirely met in the region, which include better performance of educational systems, the labor market, and financial systems.

Appendix

Notes on the methodology for demographic dividends

The first demographic dividend is associated with support ratio growth, while the second one is related to changes in the productivity of labor tied to demographic factors.

Beyond a strictly demographic interpretation, a support ratio, according to Mason *et al.* (2017), can be defined as the ratio between the number of effective workers, L_t, and the number of effective consumers, N_t. To calculate the number of effective workers, the population aged x is weighted by the income of this age group, relative to the income of representative persons aged 30-49. The number of effective consumers is calculated in a similar way. As a result, the support ratio is:

$$TA_t = \frac{L_t}{N_t} = \frac{\sum_{x=0}^{\infty}(y(x)/y_{30\text{-}49}) \times P(x,t)}{\sum_{x=0}^{\infty}(c(x)/c_{30\text{-}49}) \times P(x,t)}$$

It is important to note that the output per consumer $\frac{Y_t}{N_t}$ can be written as the support ratio (SR) times the output per worker $\frac{Y_t}{L_t}$ (productivity of labor). Therefore, the GDP per consumer growth rate will be the sum of the support ratio growth rate plus the productivity of labor growth rate.

Several channels associate demographic changes with changes in labor productivity (output per worker). Mason *et al*. (2017) explore one of these, i.e., capital accumulation. As societies age, the need for asset accumulation and transfer to finance the demands of older adults grows. It is this increase in assets which favors capital accumulation and, hence, output per worker.

To quantify this second dividend, the authors assume a Cobb-Douglas-type production function with 1/3 capital share. In this case, productivity of labor growth will be equivalent to 0.5 of the capital-GDP ratio growth rate. The authors, based on some assumptions, equate capital stock growth with "wealth for retirement" growth, which is the demand for the wealth needed to fund consumption during old age W_R. Wealth demand is estimated based on the gap between the present value of consumption and the present value of income for all older adults at a critical age (for details, see Mason *et al.*, 2017). Consequently:

$$\left(\hat{\frac{Y}{N}}\right) = \hat{TA} + 0.5\left(\hat{\frac{W_R}{Y}}\right)$$

Figures and additional tables

Table A 1.1

Statistical analysis of Box 1.1 "discounting" the demographic factor from health expenditure

	GG Expenditure (% of GDP)		GG Expenditure per capita	
	(1)	(2)	(3)	(4)
Argentina	-0.862*	0.106	-1316.8*	-1048.1*
	(0.007)	(0.735)	(0.000)	(0.000)
Bolivia	-2.825*	-1.121*	-2033.3*	-1560.1*
	(0.000)	(0.001)	(0.000)	(0.000)
Brazil	-2.410*	-0.825*	-1737.1*	-1296.9*
	(0.000)	(0.013)	(0.000)	(0.000)
Chile	-2.827*	-1.681*	-1633.6*	-1315.4*
	(0.000)	(0.000)	(0.000)	(0.000)
Colombia	-1.262*	0.362	-1715.2*	-1264.2*
	(0.000)	(0.279)	(0.000)	(0.000)
Costa Rica	-0.919*	0.585	-1571.9*	-1154.3*
	(0.004)	(0.076)	(0.000)	(0.000)
Ecuador	-3.196*	-1.457*	-1929.0*	-1446.2*
	(0.000)	(0.000)	(0.000)	(0.000)
El Salvador	-1.618*	-0.0540	-1931.8*	-1497.5*
	(0.000)	(0.871)	(0.000)	(0.000)
Guatemala	-3.897*	-1.885*	-2068.4*	-1509.6*
	(0.000)	(0.000)	(0.000)	(0.000)
Honduras	-2.845*	-0.782*	-2082.5*	-1509.7*
	(0.000)	(0.027)	(0.000)	(0.000)
Mexico	-3.333*	-1.626*	-1808.7*	-1334.7*
	(0.000)	(0.000)	(0.000)	(0.000)
Nicaragua	-2.635*	-0.641	-2059.5*	-1506.0*
	(0.000)	(0.068)	(0.000)	(0.000)
Panama	-1.539*	0.0631	-1534.4*	-1089.5*
	(0.000)	(0.850)	(0.000)	(0.000)
Paraguay	-3.746*	-1.887*	-1987.8*	-1471.5*
	(0.000)	(0.000)	(0.000)	(0.000)
Peru	-3.383*	-1.697*	-1960.5*	-1492.2*
	(0.000)	(0.000)	(0.000)	(0.000)
Uruguay	-0.829*	-0.513	-1377.4*	-1289.6*
	(0.009)	(0.088)	(0.000)	(0.000)
Venezuela	-3.219*	-1.418*	-1801.2*	-1301.2*
	(0.000)	(0.000)	(0.000)	(0.000)
Population aged >65 (%)		0.176*		48.97*
		(0.000)		(0.000)
Constant	5.298*	2.786*	1573.2*	875.6*
	(0.000)	(0.000)	(0.000)	(0.000)
Observations	896	896	896	896

Notes: The sample period is 2000-2017. The figures shown are coefficients calculated on the basis of ordinary least squares regressions. They are interpreted as the difference between expenditure by the country in question and expenditure by the average OECD country, discounting the effect of age structure on the population (represented by the fraction of people aged 65 and over). For columns (1) and (2), the difference is measured in percentage points, while for columns (3) and (4), in current USD. For example, expenditure in Bolivia is 2.8 percentage points below the OECD. The general government health expenditure refers specifically to domestic spending. Expenditure per capita is stated in current USD adjusted for PPP. Regressions include year fixed effects. The p-values are shown between brackets. An * means 5% statistical significance.

Source: Author based on World Bank data (2020) for health expenditure and United Nations data (2019b) for the population.

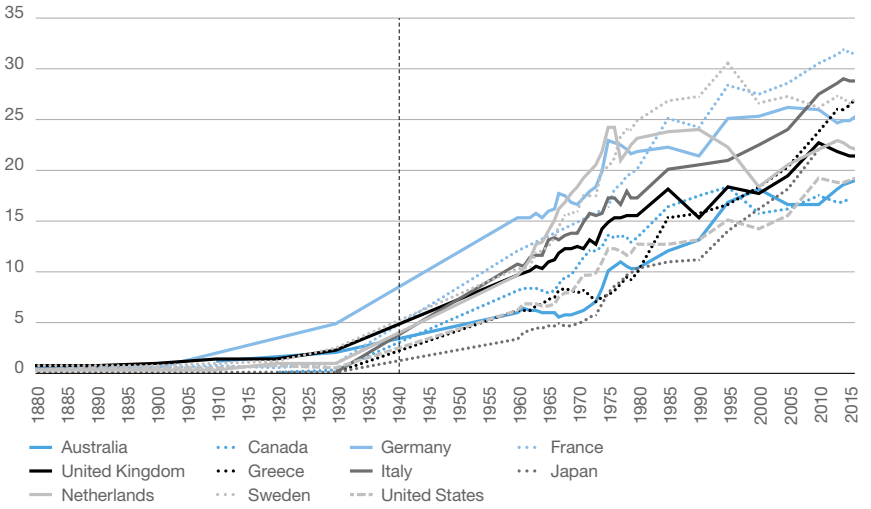
Table A 1.2
World Health Organization coverage indicators

Country	Health services coverage index				(Lack of) financial protection
	Maternal, newborn, and child	Infectious disease	Capacities	Average	
Argentina	88	64	89	79.4	16.9
Bolivia	70	49	82	65.5	6.0
Brazil	77	70	99	81.1	25.6
Chile	92	74	94	86.2	14.6
Colombia	82	61	85	75.2	8.2
Costa Rica	87	68	77	76.9	9.8
Cuba	95	77	100	90.1	n.d.
Ecuador	81	64	86	76.4	10.3
El Salvador	82	66	79	75.3	1.7
Guatemala	71	56	32	50.3	1.4
Honduras	79	66	45	61.7	1.1
Mexico	83	71	80	77.8	1.6
Panama	83	65	89	78.3	3.3
Paraguay	85	58	63	67.7	7.1
Peru	75	69	81	74.8	9.2
Dominican Republic	83	63	75	73.2	17.7
Trinidad and Tobago	80	67	78	74.8	3.9
Uruguay	93	68	94	84.1	4.5
Venezuela	76	67	75	72.6	n.a.
LATAM Average	82.2	65.4	79.1	74.8	8.4
OECD Average	91.5	77.3	96.0	87.8	6.9

Notes: The reproductive, maternal, newborn, and child health component measures, among other aspects, the percentage of children who received three doses of the DTP vaccine, and the percentage of children with suspected pneumonia who receive care at a medical center. The infectious disease component includes, for example, the fraction of TB cases successfully detected and treated, along with the percentage of people with HIV who receive antiretroviral therapy. The healthcare system capacity component covers, among other aspects, the number of beds and healthcare workers (for more details, see WHO, 2019d). “n.a.” means data are unavailable.

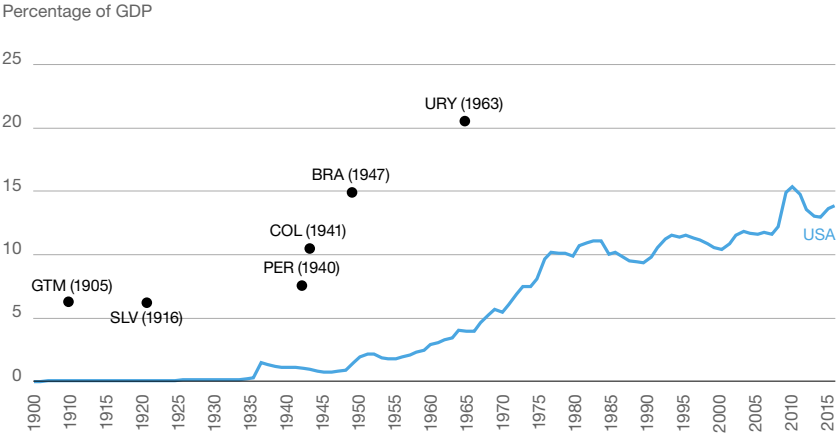
Source: Author based on WHO (2019d).

Figure A 1.1
Historical perspective of public social expenditure as a percentage of GDP in developed countries, 1880-2016



Source: Ortiz-Ospina (2016) based on OECD (1985) and Lindert (2004).

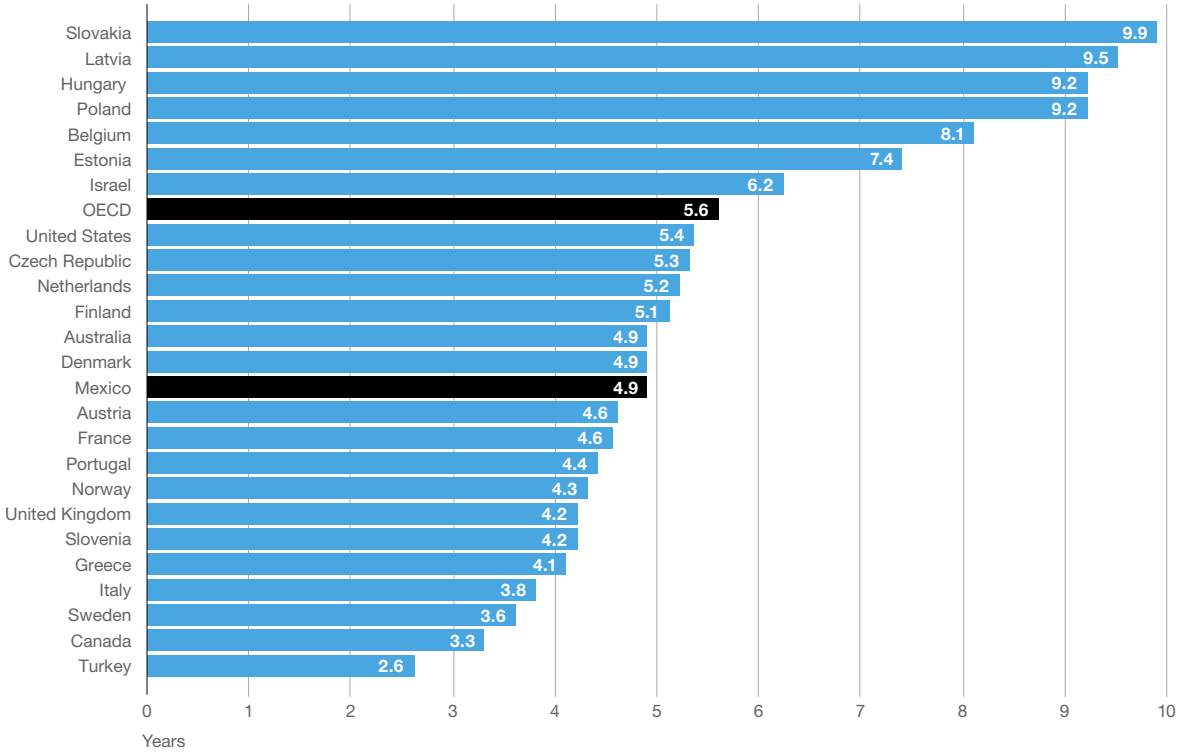
Figure A 1.2
Historical perspective of public social expenditure as a percentage of GDP in Latin America and the United States



Notes: For Latin American countries, the value of public spending in 2016 is shown; the year in which Latin American countries and the United States had comparable constant GDP per capita is included between brackets. The blue line reflects public spending in the United States, which is funded by the central (i.e., federal) government. In Latin America, public spending is funded by the central government + the social security scheme. For example, in 2016, expenditure in Brazil accounted for 14.9% of GDP. When GDP per capita in the United States was comparable to the 2016 GDP per capita in Brazil (back in 1947), the United States spent 1.5% of GDP.

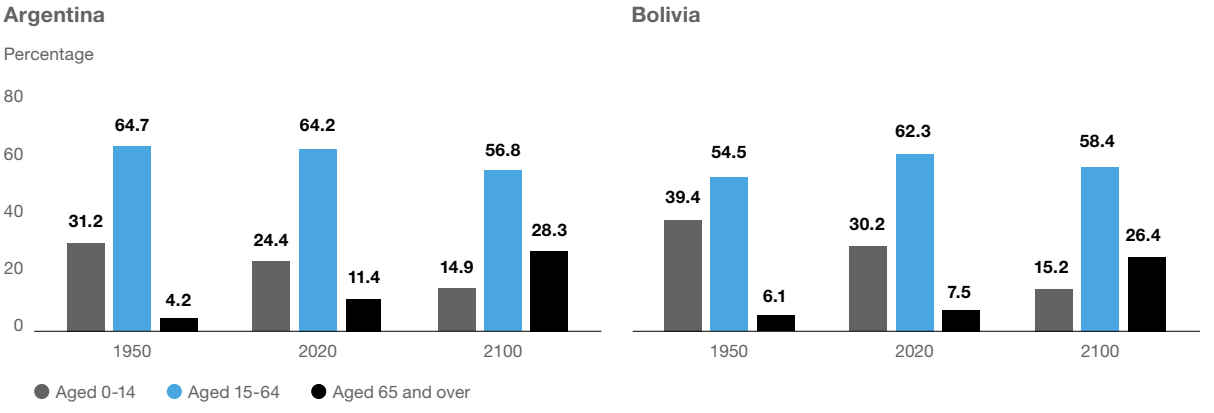
Source: Author based on spending data by OECD and UCLG (2020) for Latin America, and USGS (2020) for the United States. Historical GDP per capita data in USD adjusted for PPP are based on Inklaar et al. (2018).

Figure A 1.3
Life expectancy gap at age 30 between people with a college degree vs. with secondary education, circa 2016



Source: Author based on OECD (2019b).

Figure A 1.4
Population structure by age groups in Latin American countries, 1950, 2020, and 2100



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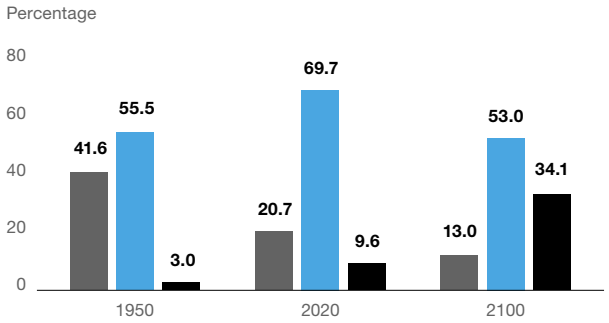
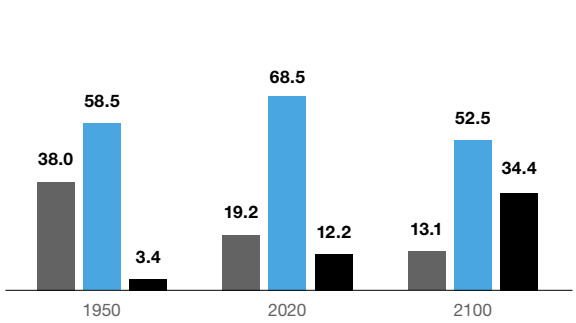
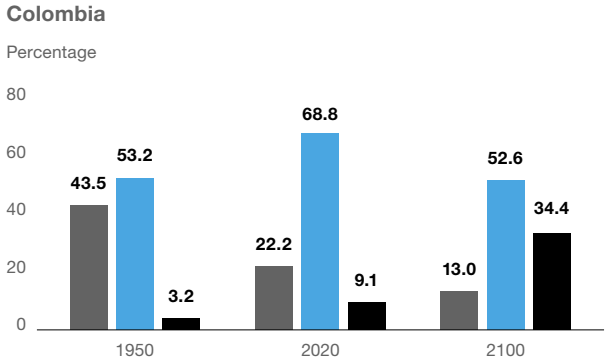
Brazil



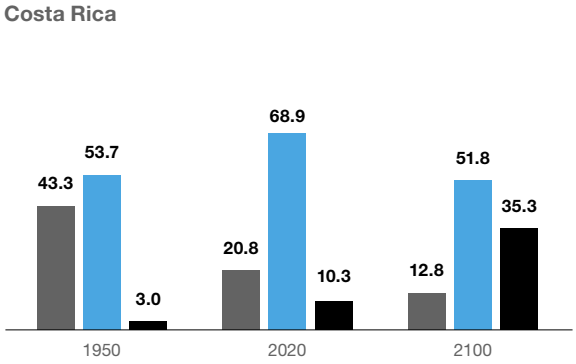
Chile



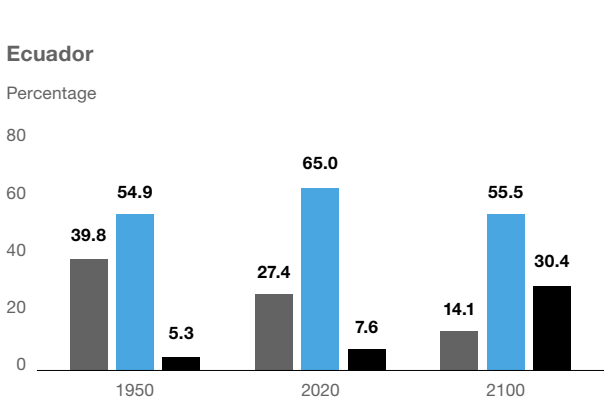
Colombia



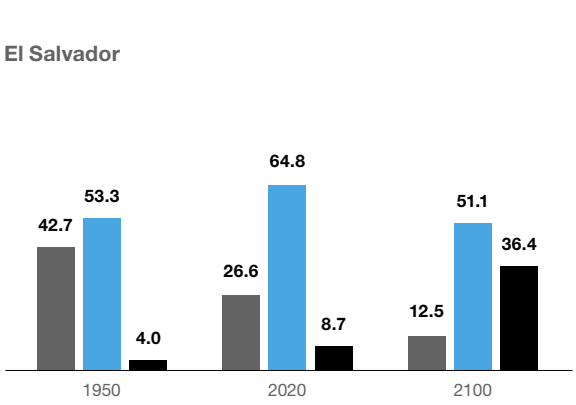
Costa Rica



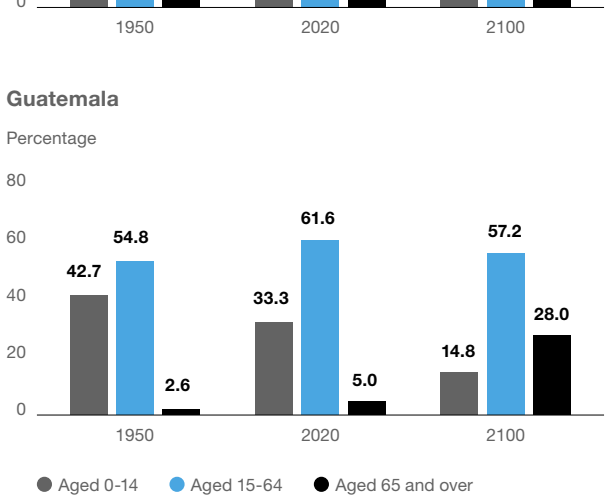
Ecuador



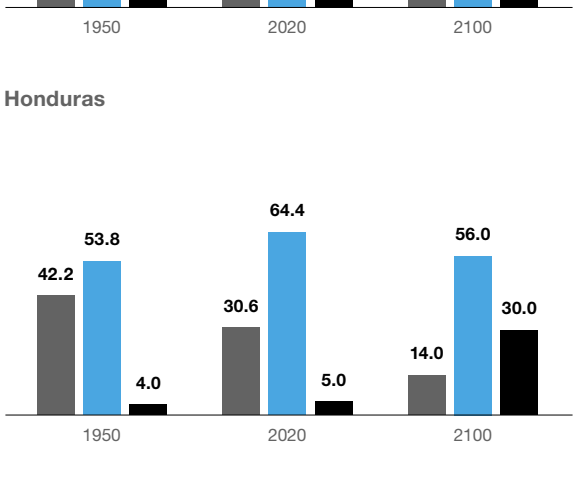
El Salvador



Guatemala



Honduras



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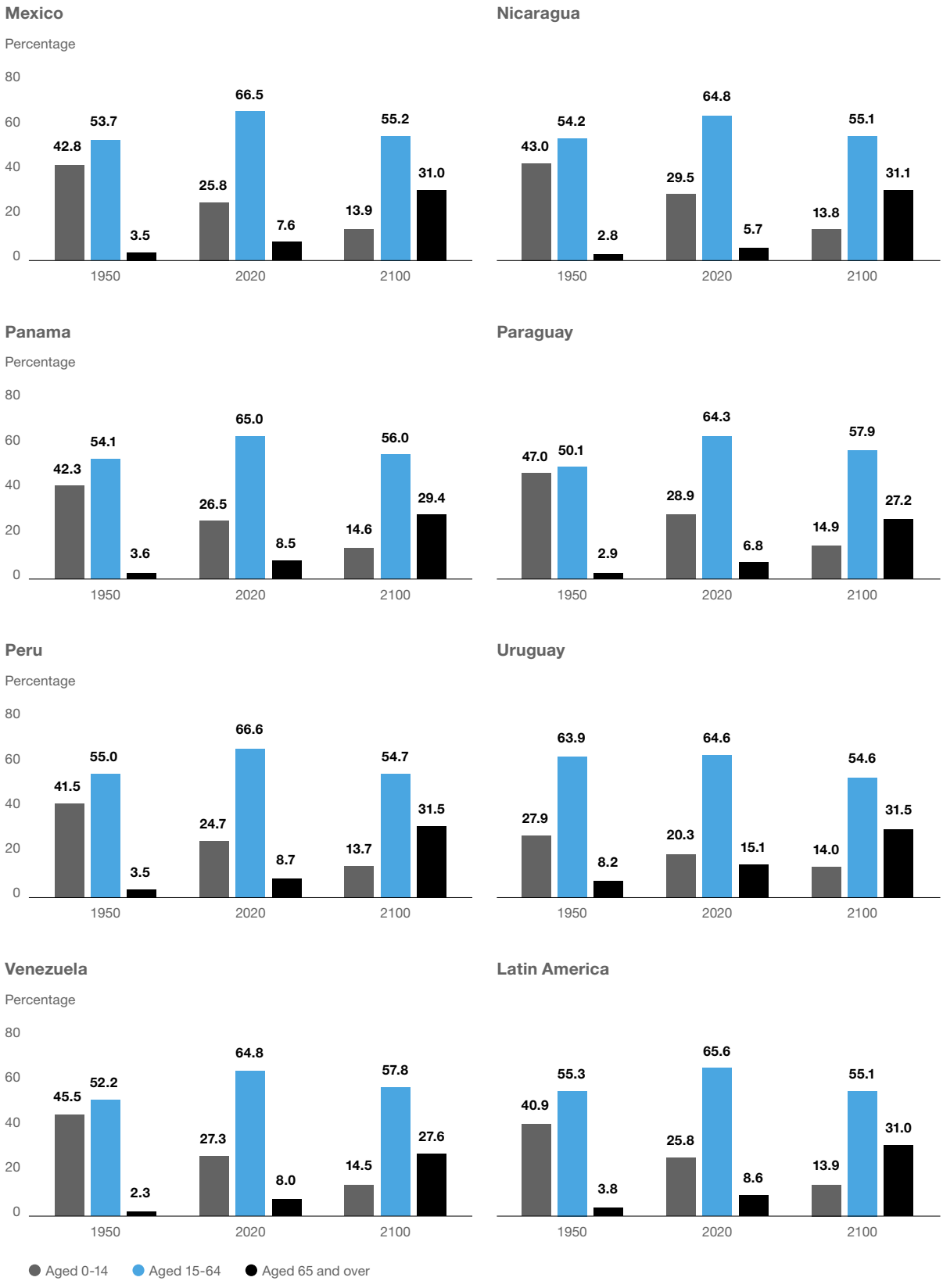
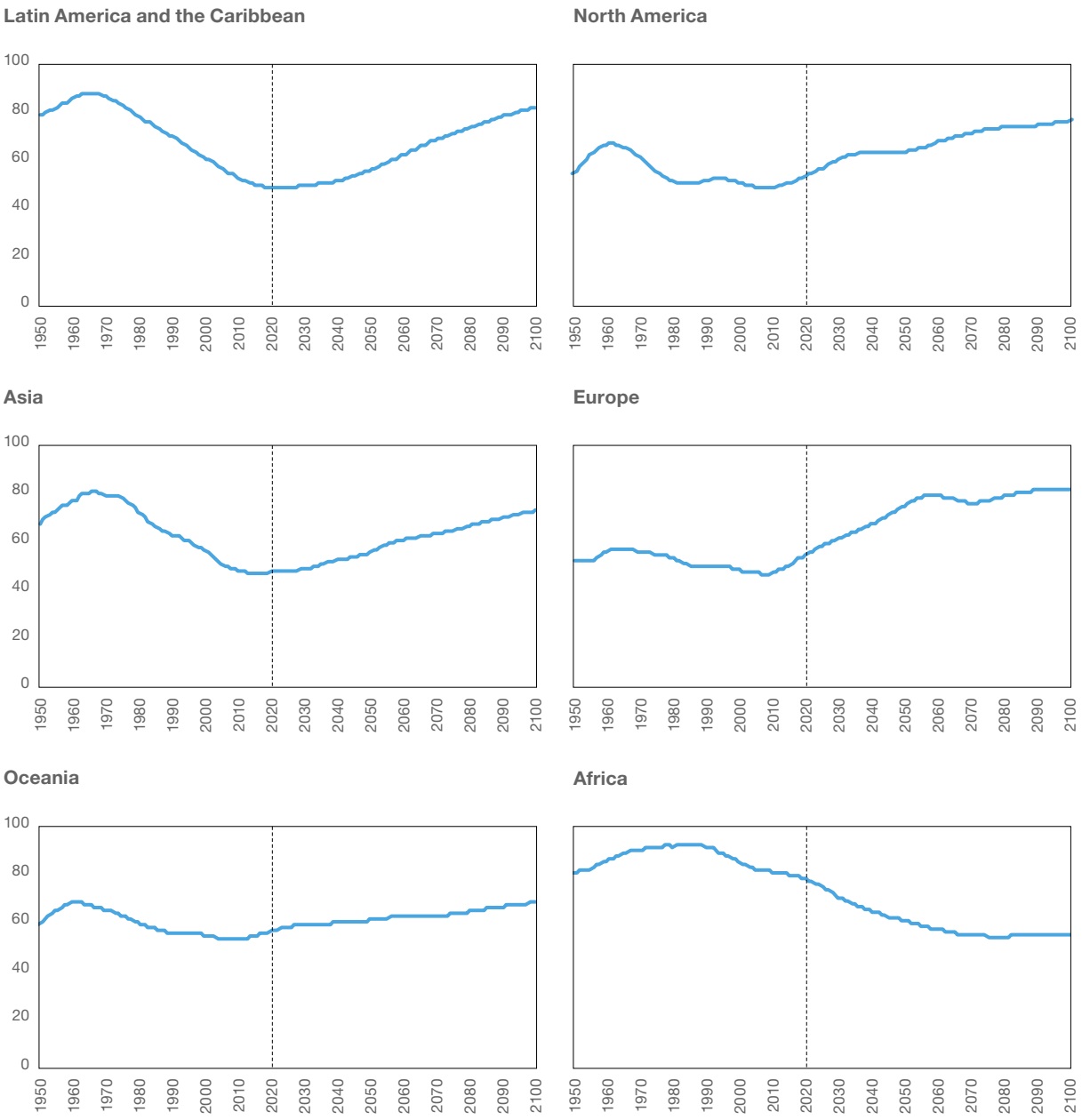


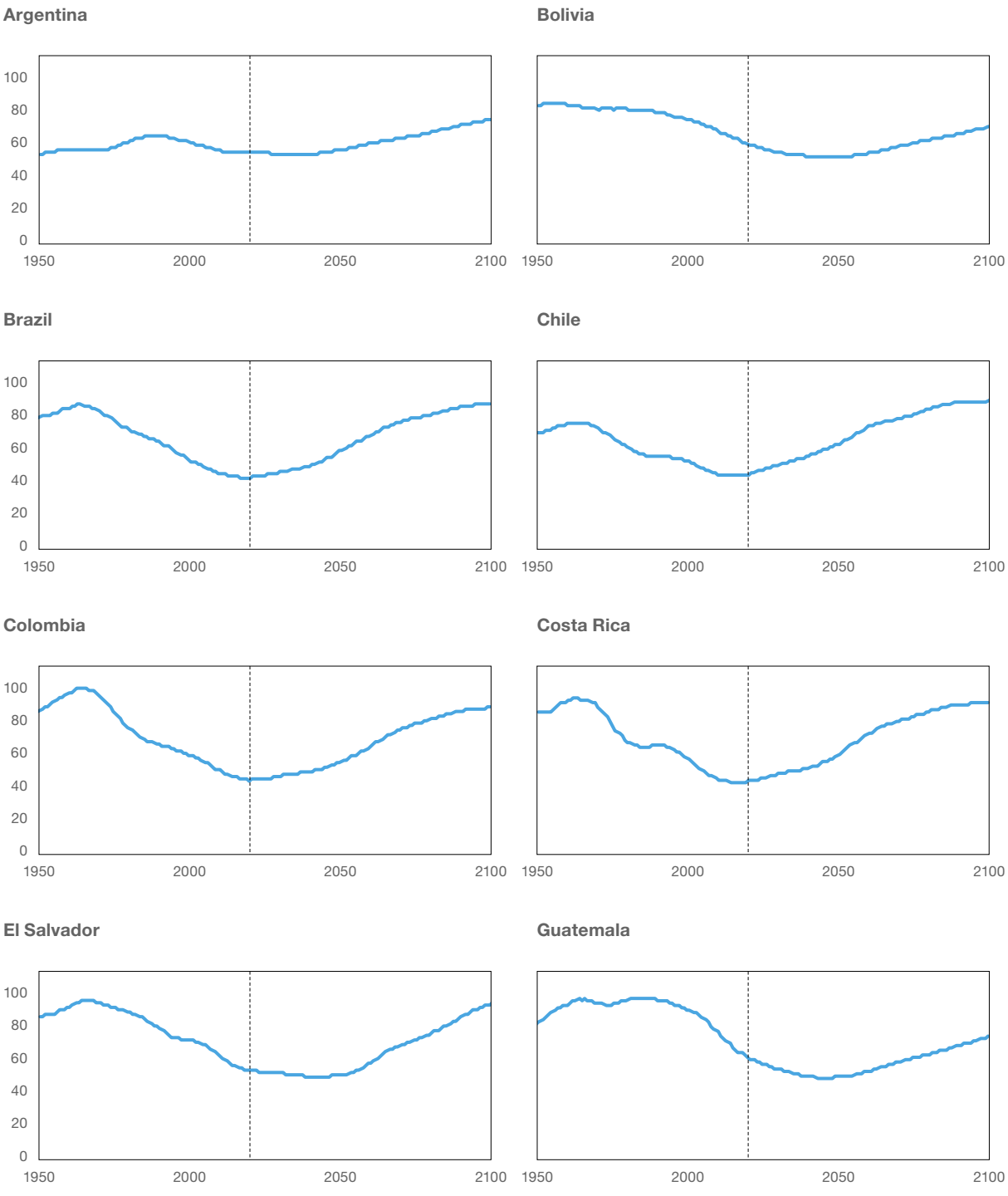
Source: Author based on United Nations (2019b).

Figure A 1.5
Dependency ratio in world regions, 1950-2100



Notes: The dependency ratio is calculated as the ratio between the following age ranges: (0-14 and 65+)/15-64. The vertical line indicates the year 2020.
Source: Author based on United Nations (2019b).

Figure A 1.6
Dependency ratio in Latin American countries, 1950-2100



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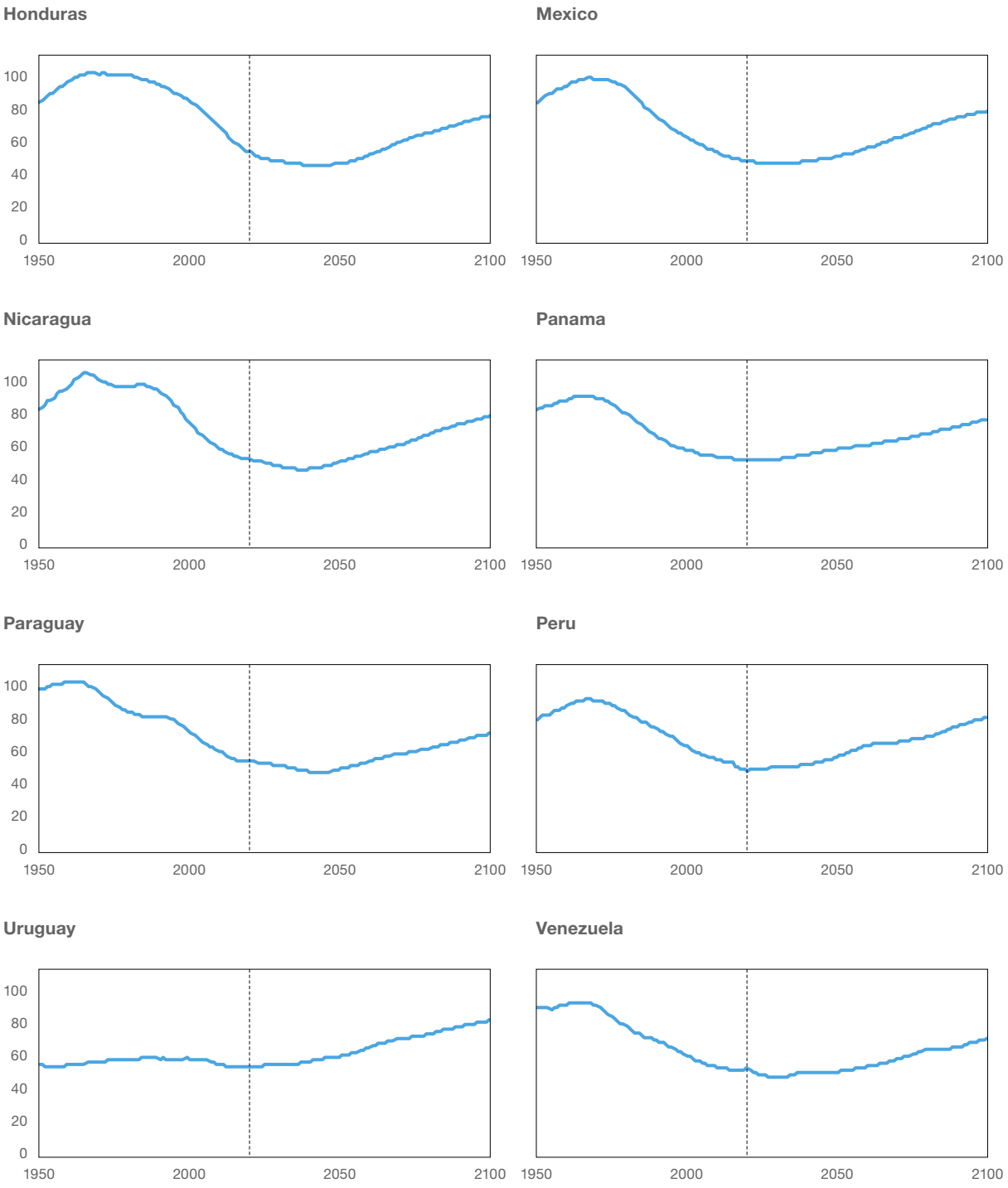
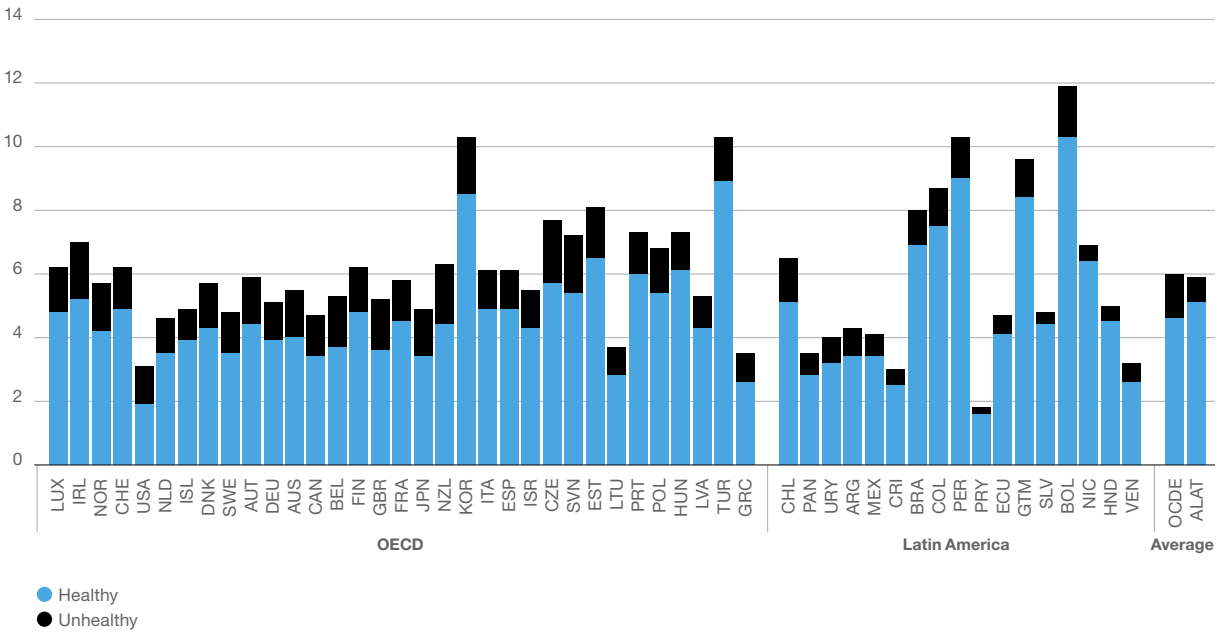


Notes: The dependency ratio is calculated by the ratio between the following age ranges: (0-14 and 65+)/15-64. The vertical line indicates the year 2020.
Source: Author based on United Nations (2019b).

Figure A 1.7
Life expectancy years gained: healthy and with disability, selected countries, 1990-2017



Notes: Bars are ordered by GDP per capita (at constant prices and adjusted for PPP, 2011) in 2017, except for Venezuela, with unavailable data. Healthy life expectancy adjusts the conventional life expectancy for years lost for premature deaths and years lived with disability. Causes for disability can include from otitis media (lasting just a few days) to epilepsy (which may be a lifelong condition). In the calculation of years lost due to disability, the different conditions have been assigned weights that represent social preferences for each health condition relative to the societal ideal of good health; weights are based on surveys to the general public. The calculation is based on the Global Burden of Disease Study 2017, which includes 359 conditions and lesions.

Source: Author based on IHME data (2017).

Table A 1.3
List of country codes

Code	Country	Code	Country
ARG	Argentina	ISL	Iceland
AUS	Australia	ISR	Israel
AUT	Austria	ITA	Italy
BEL	Belgium	JAM	Jamaica
BOL	Bolivia	JPN	Japan
BRA	Brazil	KOR	South Korea
BRB	Barbados	LTU	Lithuania
CAN	Canada	LUX	Luxembourg
CHE	Switzerland	LVA	Latvia
CHL	Chile	MEX	Mexico
COL	Colombia	NIC	Nicaragua
CRI	Costa Rica	NLD	Netherlands
CUB	Cuba	NOR	Norway
CZE	Czech Republic	NZL	New Zealand
DEU	Germany	PAN	Panama
DNK	Denmark	PER	Peru
DOM	Dominican Republic	POL	Poland
ECU	Ecuador	PRT	Portugal
ESP	Spain	PRY	Paraguay
EST	Estonia	SLV	El Salvador
FIN	Finland	SVK	Slovakia
FRA	France	SVN	Slovenia
GBR	United Kingdom	SWE	Sweden
GRC	Greece	TTO	Trinidad and Tobago
GTM	Guatemala	TUR	Turkey
HND	Honduras	URY	Uruguay
HTI	Haiti	USA	United States
HUN	Hungary	VEN	Venezuela
IRL	Ireland		

Notes: Author based on ISO alpha-3 country codes.

Informal employment and technological change: old and new challenges for social protection

2

Informal employment and technological change: old and new challenges for social protection[1]

The social protection system seeks to protect families against certain risks, like unemployment, illnesses, and poverty in old age, as well as to provide a mechanism for transferring income and consumption between the present and the future. The implementation of systems to achieve these goals and, consequently, their effectiveness, is closely linked to the labor market situation. Both access to benefits and the finance of the system depend on the type of occupational status of workers. In general, coverage is provided in the form of several benefits for salaried workers and is mainly funded with contributions by employers and employees.

Labor markets in Latin America have particular structural characteristics, like a high proportion of non-salaried and mostly informal employment, high levels of informality among salaried workers, and low participation of women in the labor market, which limit the effectiveness of social protection systems in providing coverage to the working-age population. From a life cycle perspective, there is a high turnover between situations with and without social security coverage that conditions the potential for workers to accumulate enough years of contributions to access a pension upon retirement or to ensure a level of benefits that would allow them to avoid poverty at old age. In brief, these structural characteristics pose challenges in terms of the financial sustainability of systems as well as the coverage and sufficiency of benefits.

These characteristics interact with demographic and technological trends, presenting additional challenges but also opportunities for reform. The ongoing trend toward increased longevity, added to decreasing birth rates as countries go through the final phase of the demographic dividend, tends to deteriorate the financial sustainability of social security systems even more. The effects of technological advances on the labor market may deepen existing unbalances if they are not neutralized with suitable policies. The new technologies of digitalization, automation, and artificial intelligence have the potential to increase productivity and drive economic growth, but they can also disrupt labor markets, reducing the employment and income generation opportunities—and, therefore, the trajectory of contributions—of workers with different skill levels. In addition, these new technologies favor the generation of

1. This chapter was prepared by Pablo Brassiolo and Manuel Toledo, with the research assistance of Matías Italia and Julián Martinez-Correa.

modalities of employment that differ from the traditional ones, posing unique challenges for the design of social protection systems.

This chapter reviews the structural characteristics of labor markets in the context of demographic transition and technological advances. It then estimates the potential revenues that improving the levels of coverage targeting the working-age population may generate for the sustainability of social protection systems. This could be achieved with a higher degree of formalization of employment and increased participation of women in the labor force. The chapter concludes with a review of some policy guidelines that may help achieve better coverage and avoid potential disruptions caused by technological advances.

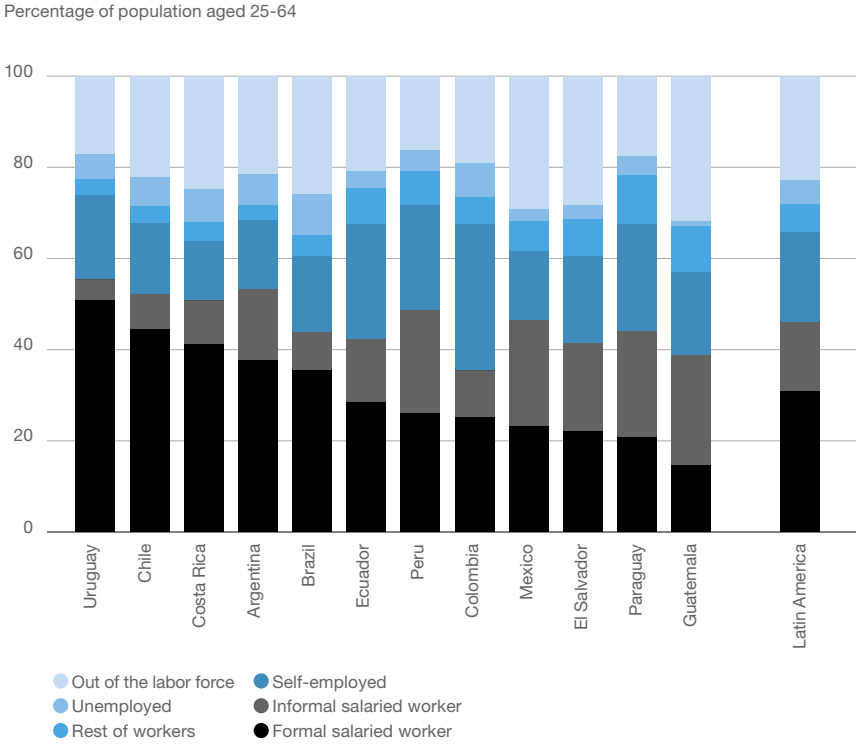
Structural characteristics of labor markets in Latin America and coverage for the working-age population

A fundamental aspect of social protection systems in most countries across the region is that access to benefits and system funding are closely related to the employment condition of workers. Overall, social protection systems cover salaried workers, who are entitled to social benefits (especially health insurance and pensions for older adults) mostly funded with contributions from employers and employees. This package of benefits and how they are funded is called contributive social protection. In some countries, coverage extends to workers who do not have paid employment jobs—typically the self-employed—and employers, in which case benefit funding normally originates from mandatory or voluntary contributions by these same actors, as we will see in this chapter.

Out of the entire population aged 25-64, just 31% have a paid employment job and are entitled to social security benefits (formal salaried workers).

As a result of the configuration of social protection systems, added to structural characteristics of Latin American labor markets, a relatively low proportion of working-age individuals is covered by them. Out of the entire population aged 25-64, just 31% have a paid employment job with the right to social security benefits (formal salaried employees). The rest are (informal) salaried employees not covered by labor regulations (15%), self-employed and other employed persons who may or may not be covered (20% and 6%, respectively), unemployed (5%) and people out of the labor force (23%). The number of people in this age range who have a formal paid employment job comprises from 51% in Uruguay to 15% in Guatemala (Figure 2.1).

Figure 2.1
Population aged 25-64 according to employment situation, 2018



Notes: Latin America data is the simple average of the countries included in the figure. Salaried workers are divided into formal and informal, according to whether or not they are entitled to social security benefits. The category called 'Rest of workers' includes employers and unpaid workers.

Source: Authors based on LABLAC data (CEDLAS and the World Bank, 2020).

Social security coverage can be expanded with a combination of a higher degree of labor force participation, reduced unemployment, and higher rates of formal employment. The structural characteristics of labor markets across the region are also relevant to determine the sufficiency of benefits and the financial sustainability of systems. In particular, salary levels are important because they form the basis to calculate the sum of contributions. In addition, the degree of employment mobility across the formal and informal segments of the labor market is key not only because of its impact on human capital accumulation and labor income but also because of its consequences for the ability to accumulate the minimum number of years of contributions required to be entitled to a retirement pension.

Social security coverage can be expanded with a combination of a higher degree of labor force participation, in addition to reduced unemployment and informal employment.

An analysis of these regional drivers within the context of the demographic changes described in Chapter 1 is shown below.

Labor force participation: gender gaps and activity in adult life

A first driver that determines social protection system coverage is the proportion of the population that forms part of the workforce. This can be examined from a perspective of gender, age, and educational level.

The average labor force participation rate in Latin America is above the rate in OECD countries.

An analysis of the working-age population (aged 15 and over) shows that the average labor participation rate in Latin America is above that in OECD countries. Using the most recent available data for each country, Table 2.1 shows that the participation rate in Latin America is 64.2%, while in the OECD it is 61.7%, revealing a 2.5 percentage points difference. However, if older adults are excluded (over 65), on average, Latin America is 6.3 percentage points below developed countries. This results mainly from the difference in the percentage of people over 65 who continue to work, which is more significant in Latin America than in the OECD, with a 19 percentage-point gap.

Table 2.1
Labor force participation rate by age groups

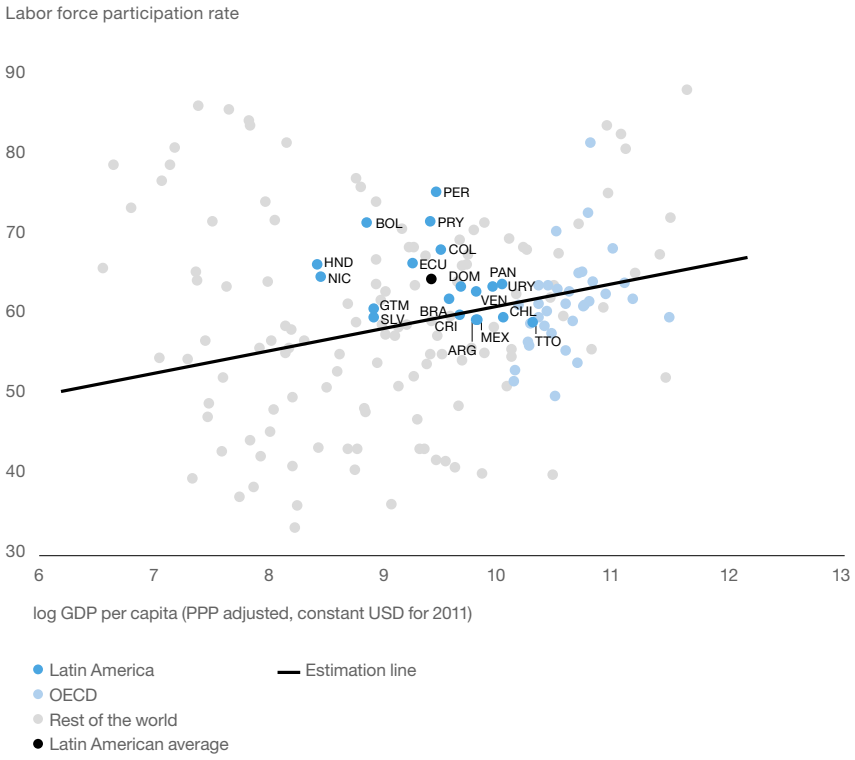
Country	Year	Population percentage		
		>15	15-64	>65
Argentina	2019	60.3	69.0	17.4
Bolivia	2018	71.8	74.1	54.3
Brazil	2019	62.6	70.1	15.7
Chile	2019	59.6	67.6	25.3
Colombia	2019	67.5	72.7	28.4
Costa Rica	2019	62.3	69.8	18.2
Ecuador	2019	66.2	69.9	40.7
El Salvador	2018	59.8	64.4	28.9
Guatemala	2017	60.9	63.2	38.7
Honduras	2018	66.5	69.5	41.4
Mexico	2019	60.1	64.5	27.2
Nicaragua	2014	65.0	67.8	34.2
Panama	2018	64.0	69.7	28.5
Paraguay	2019	72.4	75.8	38.5
Peru	2019	69.4	74.5	30.9
Dominican Republic	2018	63.8	68.9	27.2
Trinidad and Tobago	2016	59.3	68.2	8.0
Uruguay	2019	60.2	70.6	12.7
Venezuela	2012	63.1	66.7	25.0
Average:				
Latin America		64.2	69.4	29.6
OECD		61.7	75.7	11.3

Notes: Most recent year available for each country included. The Latin American average is for the countries and years shown. The OECD average excludes Chile, Colombia, and Mexico.

Source: Authors based on ILO data (2020).

The labor force participation rate for working-age adults is high not only in terms of the OECD but also in relation to countries with a similar per capita income, as shown in Figure 2.2. Of the 18 countries of the region included in the sample, only three (Argentina, Chile, and Mexico) are below the regression line, with lower participation rates than the average country with an equal level of income. The rest of Latin American countries are level with this line (Costa Rica) or are above the line.

Figure 2.2
Labor force participation rate of the working-age population and GDP per capita



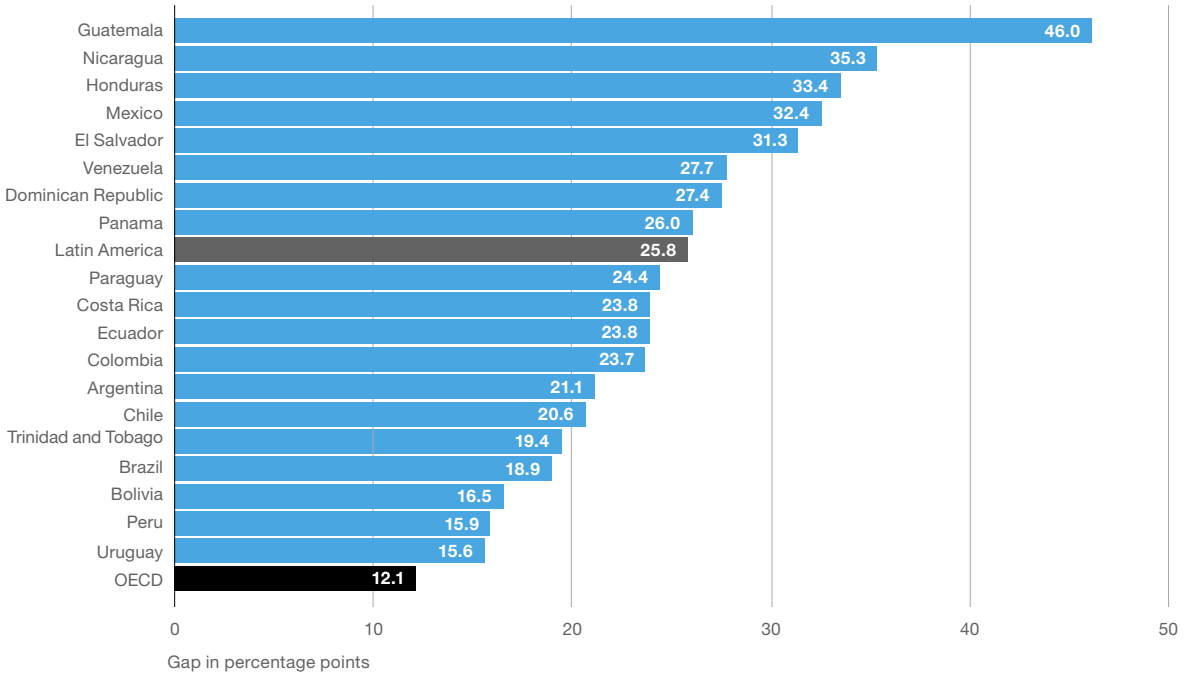
Notes: The estimation line reflects all estimates for a regression model with fixed effects per country, over the period 2000-2018. This line specifically reflects the average fixed effect. The points shown in the figure reflect the most recent available data for each country in the sample: 2018 for all Latin American countries, except for Guatemala (2017), Nicaragua (2014), and Venezuela (2012).

Source: Authors based on ILO data (2020).

These aggregate labor force participation rates disguise large disparities. One of them is the labor force participation gap between men and women. Figure 2.3 shows the average gender gap in Latin America, reaching almost 26 percentage points, while in OECD countries this gap is 12.1 percentage points. The wide gap results from low labor participation among women and high

labor participation among men in the region. While the labor force participation rate of working-age women and men in OECD countries is 55.8% and 67.9%, respectively, the rates in Latin America are 51.8% for women and 77.6% for men. However, when women's participation in the labor market is compared across Latin American countries with similar income economies, the region is slightly above average (see Figure 2.4).

Figure 2.3
Labor market participation gender gap in Latin America



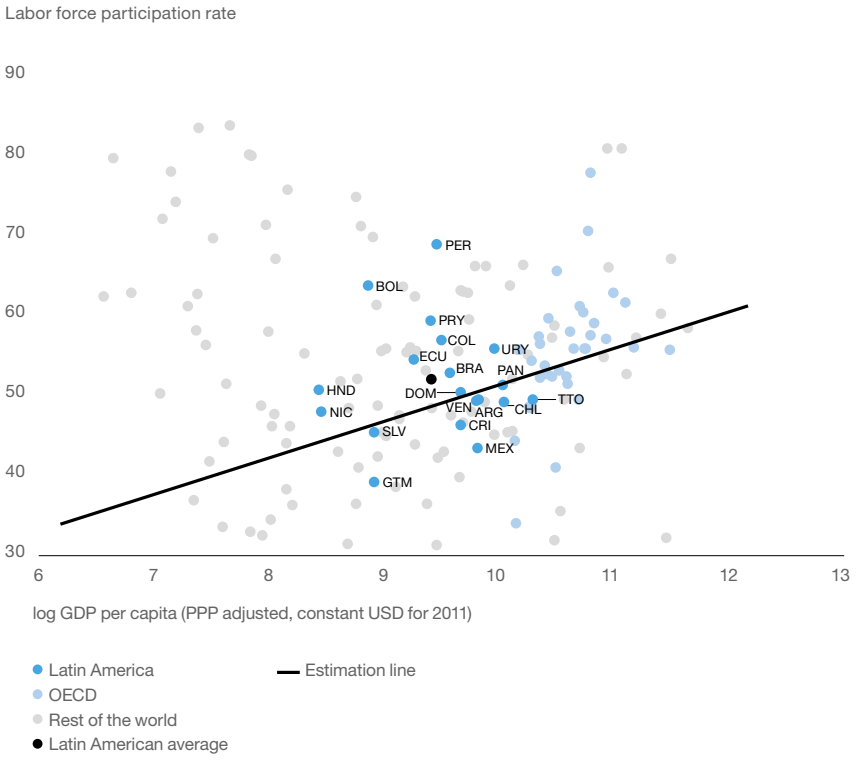
Notes: The Latin American average was calculated using the countries from the region that are shown in the figure, while the OECD average excludes Chile, Colombia, and Mexico. All data for Latin American countries are for 2019, except for Bolivia, El Salvador, Honduras, Panama and the Dominican Republic (2018), Guatemala (2017), Nicaragua (2014), and Venezuela (2012).

Source: Authors based on ILO data (2020).

The regional average of labor market participation among women hides a large heterogeneity across countries. For example, in Bolivia and Peru, labor force participation rates among women are 64% and 69%, higher than in OECD countries, while in Guatemala and Mexico these rates are 39% and 43%, respectively.[2] Therefore, to a greater or lesser extent, the region's countries could increase social security coverage if they foster women's participation in the labor market.

2. Data corresponds to 2018, except Guatemala (2017).

Figure 2.4
Labor force participation rate of working-age women and GDP per capita



Notes: The estimation line reflects all estimates for a regression model with fixed effects per country, over the period 2000-2018. This line specifically reflects the average fixed effect. The points shown in the figure reflect the most recent available data for each country in the sample: 2018 for all Latin American countries, except for Guatemala (2017), Nicaragua (2014) and, Venezuela (2012).

Source: Authors based on ILO data (2020).

Education is another large source of labor market participation disparity. Table 2.2 displays labor force participation rates for three levels of education: basic (or lower), intermediate and advanced.[3] It shows the positive relationship between the level of education and the labor force participation rate, both in Latin America and the OECD. For example, on average, across the region, 57% of the working-age population that has just completed a basic level of education participates in the labor market, while the rates for people who have completed intermediate and advanced levels of education climb to 70%

3. These levels of education match the aggregate education categories used by the ILO. The basic level includes primary and lower secondary education, matching levels 1 and 2 of the International Standard Classification of Education 2011 (ISCED-11). Therefore, out-of-school children or those who completed early-childhood education programs (pre-schooling) are included in the basic (or lower) level of education. The intermediate level includes upper secondary education and post-secondary non-tertiary education (levels 3 and 4 of ISCED-11). Finally, the advanced level comprises tertiary education (levels 5-8 of ISCED-11).

and 81%, respectively. This means that higher levels of schooling could be accompanied by a higher labor market participation rate, leading to higher levels of social protection system coverage.[4]

Table 2.2
Labor force participation rate by level of education

Country	Year	Labor force participation rate (percentage) by level of education		
		Basic	Intermediate	Advanced
Argentina	2019	47.7	66.4	80.4
Bolivia	2018	71.9	66.7	79.5
Brazil	2019	46.5	74.5	81.4
Chile	2019	44.5	65.5	83.2
Colombia	2019	58.9	72.8	77.1
Costa Rica	2019	56.7	68.9	78.7
Ecuador	2019	61.6	69.3	78.3
El Salvador	2018	55.0	65.9	85.5
Guatemala	2017	58.6	73.1	82.1
Honduras	2018	63.7	73.1	86.3
Mexico	2019	55.4	63.8	77.5
Nicaragua	2014	62.2	67.3	85.6
Panama	2018	55.3	70.6	82.8
Paraguay	2017	64.9	77.0	86.8
Peru	2019	51.3	70.1	83.7
Dominican Republic	2018	56.9	71.1	83.5
Trinidad and Tobago	2016	42.5	72.3	71.4
Uruguay	2019	58.0	72.0	76.9
Venezuela	2012	60.5	63.0	70.1
Latin America		57.2	69.5	81.1
OECD		37.6	65.1	78.8

Notes: Most recent year available for each country included. The Latin American average is for the countries and years shown. The OECD average excludes Chile, Colombia, and Mexico.

Source: Authors based on ILO data (2020).

If labor force participation rates are also broken down by gender, as shown in Table 2.3, it is apparent that the largest gender gap in labor market participation in Latin America mainly originates from the differences observed among the workers

4. General equilibrium effects that could revert or at least mitigate this impact were not considered.

with lower levels of education. The gender gap among workers with a basic level of education completed is 30.7 percentage points in Latin America, while this figure is 17.3 percentage points in the OECD. For those who completed an intermediate level education, the gap in Latin America narrows to 23 percentage points, i.e., 9.7 points above OECD countries. Finally, for workers who completed advanced levels of education, the gap in Latin America reaches almost 10 percentage points, which is 5 points above the OECD. Therefore, not only does the gender gap in Latin America narrow with the levels of education, but it also gets closer to the gap in developed countries. This suggests that the causes for a larger gender gap in Latin America affect people with lower schooling levels significantly more.

Table 2.3
Labor force participation rate of the working-age population by gender and level of education

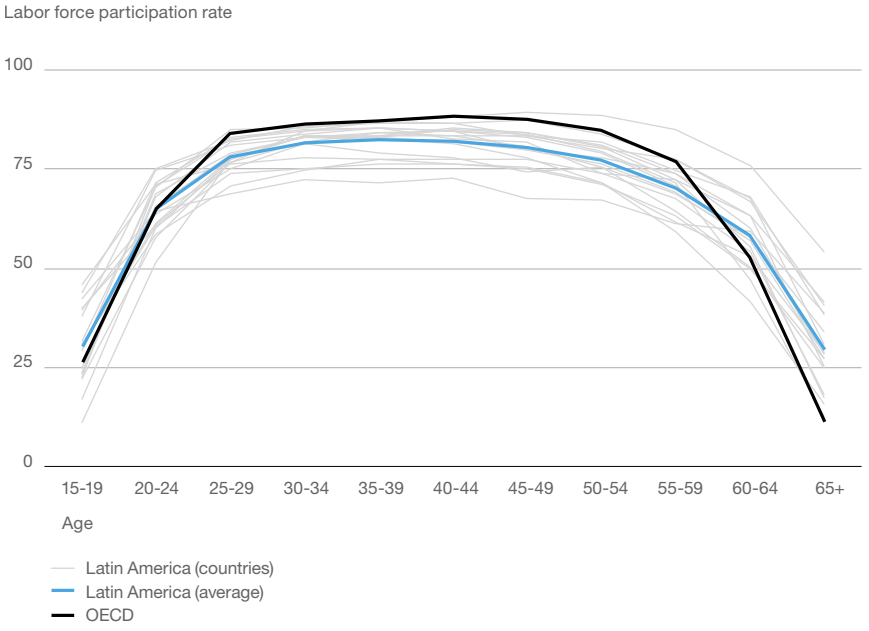
Country	Year	Disaggregated participation rate (percentage)						Percentage points		
		Women			Men			Gender gap		
		Basic	Intermediate	Advanced	Basic	Intermediate	Advanced	Basic	Intermediate	Advanced
Argentina	2019	33.4	55.8	76.3	61.8	78.2	86.7	28.5	22.5	10.4
Bolivia	2018	65.1	55.2	72.9	80.2	76.8	87.0	15.1	21.6	14.1
Brazil	2019	33.7	65.8	77.4	59.5	84.2	86.8	25.8	18.3	9.4
Chile	2019	31.4	56.0	78.7	57.6	75.3	87.7	26.3	19.3	9.0
Colombia	2019	42.1	61.0	73.4	75.2	85.5	81.6	33.1	24.5	8.2
Costa Rica	2019	41.0	60.4	74.8	71.3	78.4	83.1	30.3	18.0	8.3
Ecuador	2019	49.3	55.1	74.6	74.5	83.3	82.7	25.3	28.2	8.1
El Salvador	2018	38.7	54.2	83.5	74.9	78.8	87.8	36.2	24.6	4.4
Guatemala	2017	35.5	60.5	74.3	85.0	86.7	88.7	49.5	26.2	14.4
Honduras	2018	45.0	64.5	83.6	83.7	84.3	90.1	38.7	19.8	6.5
Mexico	2019	38.1	50.0	70.7	74.8	79.7	84.4	36.7	29.7	13.8
Nicaragua	2014	41.9	56.0	81.6	82.9	82.7	91.1	41.0	26.7	9.5
Panama	2018	38.0	59.3	78.3	71.8	83.0	89.9	33.8	23.7	11.5
Paraguay	2017	48.7	64.2	82.7	80.6	88.8	92.4	31.9	24.7	9.6
Peru	2019	45.5	61.0	78.6	59.0	79.1	89.6	13.5	18.0	11.0
Dominican Rep.	2018	39.1	59.7	79.8	73.5	84.8	90.1	34.4	25.1	10.3
Trinidad and Tobago	2016	29.8	61.0	70.6	55.1	82.1	72.4	25.3	21.1	1.8
Uruguay	2019	49.6	66.1	73.4	66.7	79.0	82.8	17.1	12.9	9.5
Venezuela	2012	41.4	47.3	66.1	77.5	78.1	75.7	36.1	30.9	9.6
Latin America		42.1	58.5	76.7	72.8	81.5	86.6	30.7	23.0	9.9
OECD		29.1	58.2	76.5	46.3	71.5	81.5	17.3	13.3	4.9

Notes: Most recent year available for each country included. The Latin American average is for the countries and years shown. The OECD average excludes Chile, Colombia, and Mexico.

Source: Authors based on ILO data (2020).

Another way of looking at labor market participation is by studying its evolution during an individual's life cycle. On average, the highest labor market participation rate in Latin America is reached between the ages of 35 and 39. This average is approximately five years below the OECD average, where the peak is reached between the ages of 40 and 44. This can be seen in Figure 2.5. In addition, Table 2.4 shows that heterogeneity is large in the region: Bolivia and Peru attain their highest labor market participation between the ages of 45 and 49, while Brazil, Chile, Honduras, and Nicaragua do so much earlier, between the ages of 30 and 34.

Figure 2.5
Participation rate by age group



Notes: The average for Latin America includes: Argentina (2019), Bolivia (2018), Brazil (2019), Chile (2019), Colombia (2019), Costa Rica (2019), Ecuador (2019), El Salvador (2018), Guatemala (2017), Honduras (2018), Mexico (2019), Nicaragua (2014), Panama (2018), Paraguay (2019), Peru (2019), the Dominican Republic (2018), Uruguay (2019), and Venezuela (2012). The OECD average excludes Chile, Colombia, and Mexico.

Source: Authors based on ILO data (2020).

Although in Latin America the labor force participation rate peaks on average at a younger age than in developed countries, its decline toward the end of an individual's working life is not as sharp. Therefore, between 60 and 64 years of age the participation rate in Latin America is higher than in the OECD, with 58.3% compared to 52.7%. The gap is even wider among individuals over 65, with a participation rate of 29.6% in Latin America and 11.3% in OECD countries (Figure 2.6).

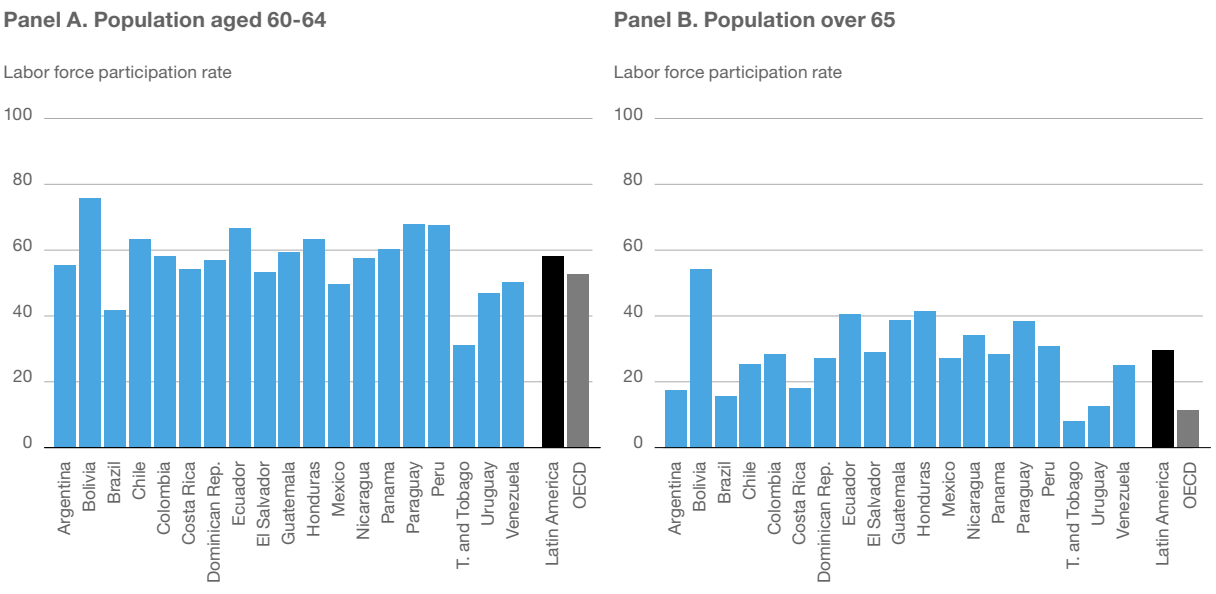
Table 2.4
Oldest labor market participation age in 2018

Country (year)	Age	Participation rate (percentage)	Country (year)	Age	Participation rate (percentage)
Trinidad and Tobago (2019)	30-34	85.3	Ecuador (2019)	40-44	83.4
Brazil (2019)	30-34	83.0	Guatemala (2017)	40-44	72.6
Chile (2019)	30-34	83.7	Mexico (2019)	40-44	76.2
Honduras (2018)	30-34	77.8	Panama (2018)	40-44	85.0
Nicaragua (2014)	30-34	81.3	Paraguay (2019)	40-44	86.8
Colombia (2019)	35-39	85.5	Dominican Rep. (2018)	40-44	84.8
Costa Rica (2019)	35-39	85.5	Bolivia (2018)	45-49	89.5
El Salvador (2018)	35-39	77.4	Peru (2019)	45-49	87.3
Uruguay (2019)	35-39	85.3	**Average:**		
Venezuela (2012)	35-39	84.1	Latin America	35-39	82.4
Argentina (2019)	40-44	85.7	OECD	40-44	88.4

Notes: Most recent year available for each country included. The Latin American average is for the countries and years shown. The OECD average excludes Chile, Colombia, and Mexico.

Source: Authors based on ILO data (2020).

Figure 2.6
Labor force participation rate among individuals over 60



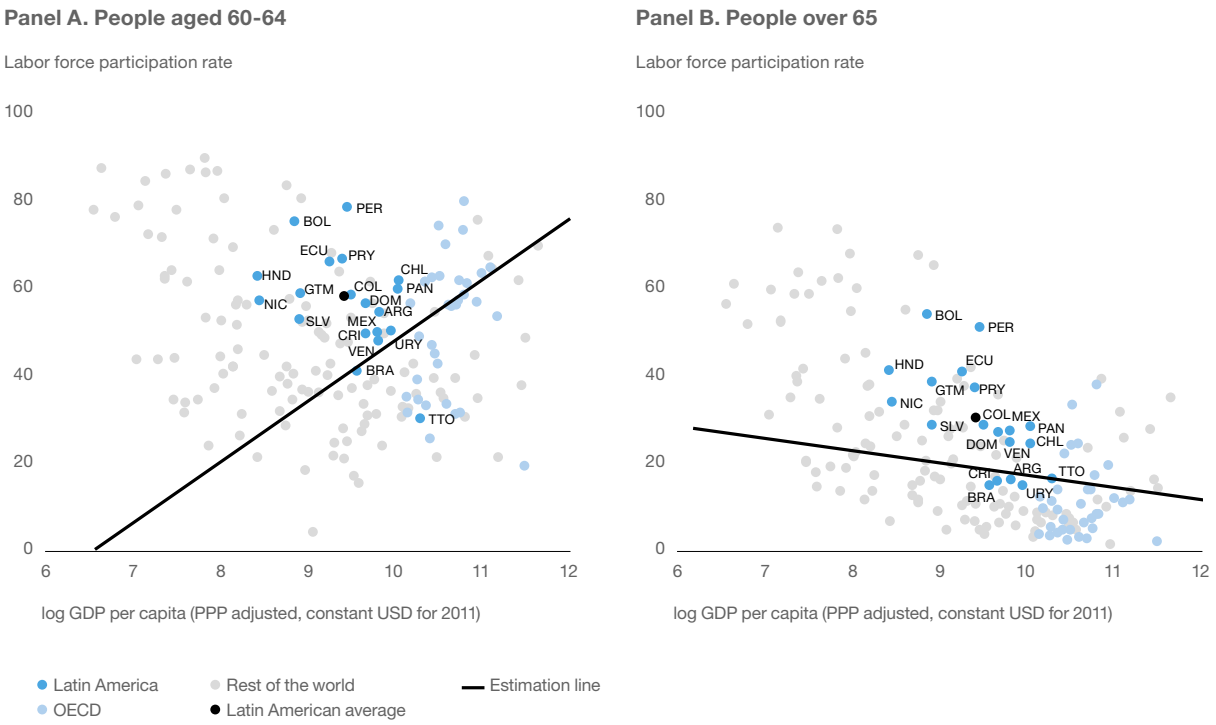
Notes: The Latin American average was calculated based on the region's countries shown in the figure, while the OECD average excludes Chile, Colombia, and Mexico. All data are for 2019, except for Bolivia, El Salvador, Honduras, Panama, and the Dominican Republic (2018), Guatemala (2017), Nicaragua (2014), and Venezuela (2012).

Source: Authors based on ILO data (2020).

The lack of job opportunities for young people can have negative effects on their work history tied to social security.

Labor force participation rates close to the retirement age observed in Latin America are also high compared to countries with similar levels of income. This is shown in Figure 2.7, where most countries in Latin America and the average for the region are above the regression line, both for people aged 60-64 and people over 65. Brazil is the only country below the regression line in both age groups. Argentina, Costa Rica, and Uruguay are below the regression line in the case of people over 65. This suggests that, in general, there is little space in Latin America to increase labor force participation rates among older workers, particularly those who are over 65.

Figure 2.7
Labor force participation rate of individuals over 60 and GDP per capita, 2018



Notes: The estimation line reflects all estimates for a regression model with fixed effects per country, over the period 2000-2018. This line specifically reflects the average fixed effect. The points shown in the figure reflect the most recent available data for each country in the sample. All data are for 2018, except for Guatemala (2017), Nicaragua (2014), and Venezuela (2012).

Source: Authors based on ILO data (2020).

Unemployment: differences between countries and the situation of young people

Over the past two decades, particularly in the 2000s, the growth of many Latin American economies during the commodity boom led to lower unemployment levels. The average unemployment rate in the region dropped to 6% of the labor force in 2018, the average of OECD countries for the same year (Table 2.5). Over the period 2000-2018, unemployment fell in most countries. By the end of the period, the rate had fallen to single digits in 17 of the 18 countries under study; Brazil was the exception.

These numbers may lead us to believe that unemployment is no longer one of the main structural drivers of the limited coverage offered by social protection contributory systems. However, it may be too early to draw this conclusion. Unemployment varies considerably both among countries and among workers in the same country.

Regarding the former, low-unemployment countries and high-unemployment countries can be distinguished. The first group includes Bolivia, Ecuador, Guatemala, Mexico, Panama, and Peru, with an average unemployment rate not exceeding 4% over the 2000-2018 period. The second group includes Argentina, Brazil, Colombia, Uruguay, and Venezuela, with an average unemployment rate of around 10% over the same period.

With respect to differences in unemployment according to each worker's background, age is a relevant factor. Disaggregating the unemployment rate by age group reveals the great difficulty encountered by young people to enter the labor market. In Latin America, the unemployment rate for young people aged 15-24 reached 14.3%, three times above the unemployment rate for people aged 25 or older. That year, in countries like Argentina, Brazil, Costa Rica, and Uruguay, unemployment hit 25% of young people aged 15-24 in the labor force.

The lack of job opportunities for young people can have negative effects on their work history tied to social security.

Although this problem is not unique to Latin America (countries like Spain, Italy, and Greece have even higher levels of youth unemployment), the lack of job opportunities for young people entering the labor market can have long-term negative effects on their work history tied to social security. Examples include increased likelihood of future unemployment, more informal employment, or lower wages (Cruces, Ham, and Viollaz, 2012; Bassi and Galiani, 2009).

Table 2.5
Unemployment rate, 2000 and 2018

	Population over 15 (percentage)				Unemployment by age (percentage), 2018	
	2000	2018	Var. 2000–2018 (percentage points)	Average 2000-2018	Aged 15-24	Over 25
Argentina	15.0	9.2	-5.8	10.4	24.0	6.9
Bolivia	2.9	3.5	0.6	2.8	6.8	2.8
Brazil	9.9	12.3	2.4	9.0	28.3	8.9
Chile	10.5	7.2	-3.3	8.5	18.2	6.0
Colombia	20.5	9.1	-11.4	11.6	18.6	7.1
Costa Rica	5.1	9.6	4.6	7.4	25.9	6.8
Dominican Rep.	6.4	5.7	-0.7	6.3	13.4	4.2
Ecuador	4.8	3.5	-1.3	4.0	7.9	2.6
El Salvador	7.0	4.0	-3.0	5.4	9.5	2.6
Guatemala	2.8	2.4	-0.4	2.9	4.9	1.4
Honduras	3.9	5.6	1.7	4.6	10.6	3.9
Mexico	2.6	3.3	0.7	4.0	6.8	2.5
Nicaragua	7.5	5.2	-2.3	5.9	10.3	3.9
Panama	3.7	3.9	0.2	3.4	10.4	2.7
Paraguay	9.3	4.5	-4.8	5.7	10.7	2.8
Peru	5.7	3.4	-2.3	4.1	8.6	2.3
Trinidad and Tobago	n.a.	3.4	n.a.	3.4	8.9	2.7
Uruguay	12.6	8.3	-4.3	9.8	26.3	5.3
Venezuela	14.0	7.2	-6.8	9.4	16.3	5.8
Latin America [a]	8.0	6.0	-2.0	6.4	14.3	4.4
OECD [b]	7.8	6.0	-1.7	7.7	13.6	5.2

Notes: [a] The numbers for Latin America reflect the simple average of the countries in the table. [b] OECD data exclude Chile, Colombia, and Mexico. n.a. means "not applicable".

Source: Authors based on data from ILO (2020) and CEDLAS (2020).

Labor market informality —a long-standing problem

One of the most salient features of labor markets in Latin America is the large informal employment. This results in a high proportion of workers who are not covered by contributory social protection systems. As shown in Table 2.6, on average, almost 63% of all employed individuals in Latin America have informal jobs, with informal employment rates ranging from approximately 30% in Chile and Uruguay to 80% in Bolivia, Guatemala, Honduras, and Nicaragua.

Informal employment in Latin American countries is high even when compared to countries with similar per capita income. Figure 2.8 shows that all Latin American countries, except for Uruguay, have informal employment rates above the regression line, which reflects the average rate for each level of income. Mexico, Panama, and Paraguay rank first, with informal employment rates of 28, 24, and 23 percentage points, respectively, above the expected average based on their per capita incomes. Other countries, however, are also relatively far from the figures their income levels would suggest, like Argentina, Colombia, Ecuador, Peru, and the Dominican Republic, where informal employment rates stand close to 20 percentage points above the expected level.

On average, around 60% of workers in Latin America have informal jobs.

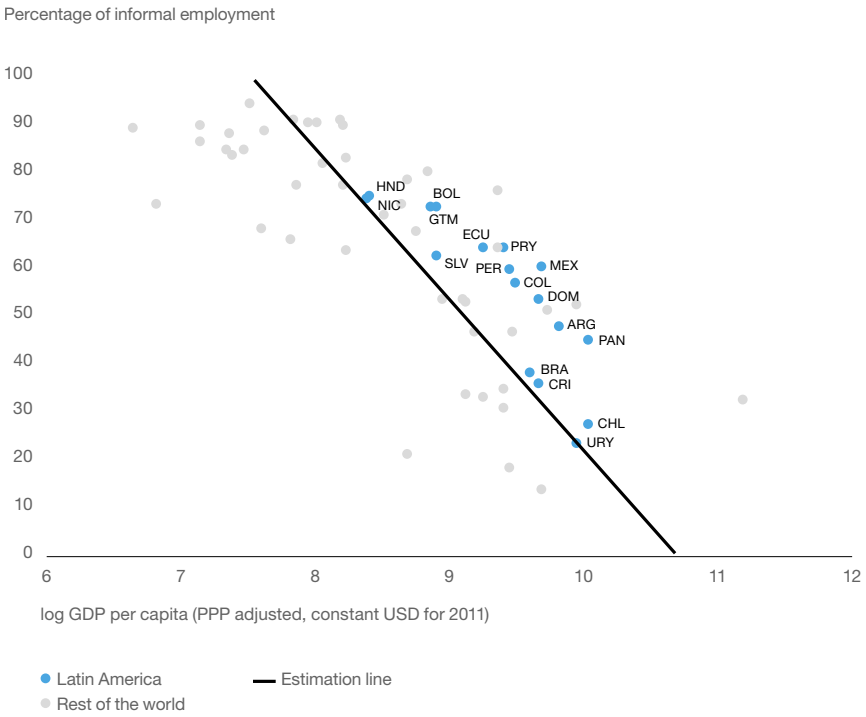
Table 2.6
Informal employment rate in Latin America

Country	Year	ILO[a] (percentage)	Year	CEDLAS (percentage)
Argentina	2018	48.1	2018 [b]	50.7
Bolivia	2018	73.2	2018 [c]	81.4
Brazil	2015	38.3	2015 [c]	41.1
Chile	2018	27.7	2017 [c]	31.8
Colombia	2018	57.3	2018 [c]	63.2
Costa Rica	2018	36.0	2017 [c]	38.0
Ecuador	2018	64.8	2017 [b]	71.1
El Salvador	2018	62.9	2017 [c]	71.1
Guatemala	2017	72.8	2014 [c]	81.1
Honduras	2017	75.6	2017 [c]	82.4
Mexico	2004	60.7	2018 [b]	72.4
Nicaragua	2012	74.9	2014 [c]	77.6
Panama	2018	45.3	n.a.	n.d.
Paraguay	2018	64.5	2015 [c]	77.8
Peru	2018	59.8	2018 [b]	79.2
Dominican Rep.	2018	53.6	2016 [b]	55.2
Uruguay	2018	23.5	2017 [c]	28.6
Average		55.2		62.7

Notes: The table reflects the most recent year available for each source. a The ILO indicator shows informal employment as a percentage of total non-agricultural employment. b The calculation covers all self-employed workers as informal workers. c The calculation recognizes that self-employed workers are also classified into formal and informal workers. n.a. means “not applicable”.

Source: Authors based on data from ILO (2020) and CEDLAS (2020).

Figure 2.8
Informal employment rate and GDP per capita



Notes: The estimation line reflects all estimates for a regression model with fixed effects per country, over the period 2000-2018. This line specifically reflects the average fixed effect. The points shown in the figure reflect the most recent available data for each country in the sample. Data for all Latin American countries are for 2018, except for Brazil (2015), Guatemala (2017), Honduras (2017), Nicaragua (2012), and Mexico (2004).

Source: Authors based on ILO data (2020).

The high incidence of informality in Latin America is the result of many structural factors in the region's economies. One of them is the low proportion of paid employment jobs.

This high incidence of informal employment in Latin America results from many structural factors in the region's economies, like the low proportion of paid employment jobs—the employment relationship par excellence in Bismarck-type social security systems—compared with developed countries. On average, 60% of workers in the region are salaried employees, a figure below the 85% registered in OECD countries (Table 2.7). This situation has barely improved in recent decades (increasing 3.5 percentage points from 2000 to 2016), which reveals the structural character of this problem. The reality is also quite heterogeneous across countries. While in some cases at least two out of three employed persons have paid employment jobs (Argentina, Brazil, Chile, Costa Rica, Mexico, and Uruguay), in other cases, this proportion falls by about one-half (Colombia, Ecuador, and Honduras) and can be as low as one out of three employed persons (Bolivia).

Table 2.7
Paid employment jobs

Country	Salaried workers (percentage)		
	Circa 2000	*Circa* 2016	Difference (percentage points)
Argentina	72.1	74.7	2.6
Bolivia	31	35.2	4.3
Brazil	61.8	68.1	6.2
Chile	74.6	77.6	3
Colombia	49.3	48.7	-0.6
Costa Rica	70.8	76.1	5.3
Ecuador	53.3	51.3	-2
El Salvador	56.7	58.8	2.1
Guatemala	46.7	58.2	11.5
Honduras	45.8	50	4.3
Mexico	65.6	72.6	7
Panama	66.5	63.4	-3.1
Paraguay	44.9	55.6	10.7
Peru	37.4	44.6	7.2
Dominican Republic	56.6	57	0.3
Uruguay	72.8	71.9	-0.9
Venezuela	56.3	58.3	1.9
Latin America	56.6	60.1	3.5
OECD	82.9	85.1	2.2

Notes: Workers without a paid employment job include employers, self-employed workers, and unpaid family workers. Data for Latin America is the average for the countries in the table. OECD data exclude Chile, Colombia, and Mexico.

Source: Authors based on CEDLAS data (2020) and OECD Statistics (OECD, 2020d).

There is great diversity in the different types of non-salaried jobs, which range from employers in large and small businesses, non-salaried professionals, and self-employed middle and low-skill workers, to unpaid family workers. Of these categories, self-employment comprises the highest percentage, accounting for almost 70% of workers without a paid employment job.

This diversity is reflected not only in labor-market outcomes, like the level of income, but also in the access to social security benefits. Social security coverage for workers without a paid employment job is usually based on mandatory or voluntary contributory systems offering dissimilar benefits. This is both an in-country and cross-country situation.

In most countries, informality for non-salaried employment is very high.

Even if at the expense of oversimplification, Table 2.8 shows information about coverage (either mandatory or voluntary) and informality for non-salaried employment in a group of countries. Informality in this case is understood as the proportion of non-salaried workers who do not contribute to the social security system. In most countries, labor informality among non-salaried workers is very high, even more so among the self-employed than among employers.

Table 2.8
Informal employment for non-salaried workers

Country	Type of system		No social security contributions (percentage)	
	Mandatory	Voluntary	Employer	Self-employed
Argentina	X		28	66
Bolivia		X	94	97
Brazil	X		28	71
Chile	X		55	82
Colombia	X		79	90
Ecuador	X		56	85
Mexico		X	n.a.	n.a.
Panama	X		n.a.	n.a.
Paraguay		X	98	99.7
Peru		X	n.a.	n.a.
Uruguay	X		11	67

Notes: Contribution data are for the following years: Argentina, 2015; Bolivia, 2014; Brazil, 2015; Chile, 2015; Colombia 2015, Ecuador 2019, Paraguay 2015, and Uruguay 2015. Data for Argentina were taken from the National Social Security and Protection Survey (ENAPROSS for its acronym in Spanish) and is representative of the City of Buenos Aires, Greater Buenos Aires, and the provinces of Chaco, Catamarca, Corrientes, Jujuy, and Rio Negro. Data for Ecuador were taken from the National Survey on Employment, Unemployment, and Underemployment (ENEMDU for its acronym in Spanish). "n.a." means data are unavailable.

Source: Authors based on each country's legislation and data from ENEMDU (INEC, 2019), ENAPROSS (Ministry of Labor, Employment and Social Security of Argentina, 2015), and CEDLAS (2020).

Workers without a paid employment job are not the only ones who may not be covered by contributory social protection systems. In practice, many salaried employment relationships are illegal or informal; thus, many salaried employees do not make social security contributions and are not covered by social protection systems. Even though the rate of informal employment has dropped in the past decades (falling almost 9 percentage points from 2005 to 2018), it continues to be very high. In 2018, the average rate of informal salaried employment in the region's countries was 43%, with a very wide range from just 12% (Uruguay) to values close to or above 60% (Guatemala, Honduras, Mexico, Nicaragua, and Paraguay) (Table 2.9).

Table 2.9
Informal salaried employment

Country	Salaried workers not making social security contributions (percentage)		
	Circa 2005	*Circa* 2018	Difference (percentage points)
Argentina	47	33	-14.2
Bolivia	60	53	-7.3
Brazil	35	22	-12.4
Chile	20	16	-4.3
Colombia	44	34	-9.1
Costa Rica	32	25	-7.8
Ecuador	67	45	-22.3
El Salvador	52	52	0.5
Guatemala	62	71	9.3
Honduras	64	66	1.7
Mexico	61	62	1.6
Nicaragua	66	59	-7.0
Paraguay	71	62	-9.4
Peru	70	53	-17.2
Dominican Republic	53	21	-32.5
Uruguay	22	12	-10
Average	**52**	**43**	**-8.8**

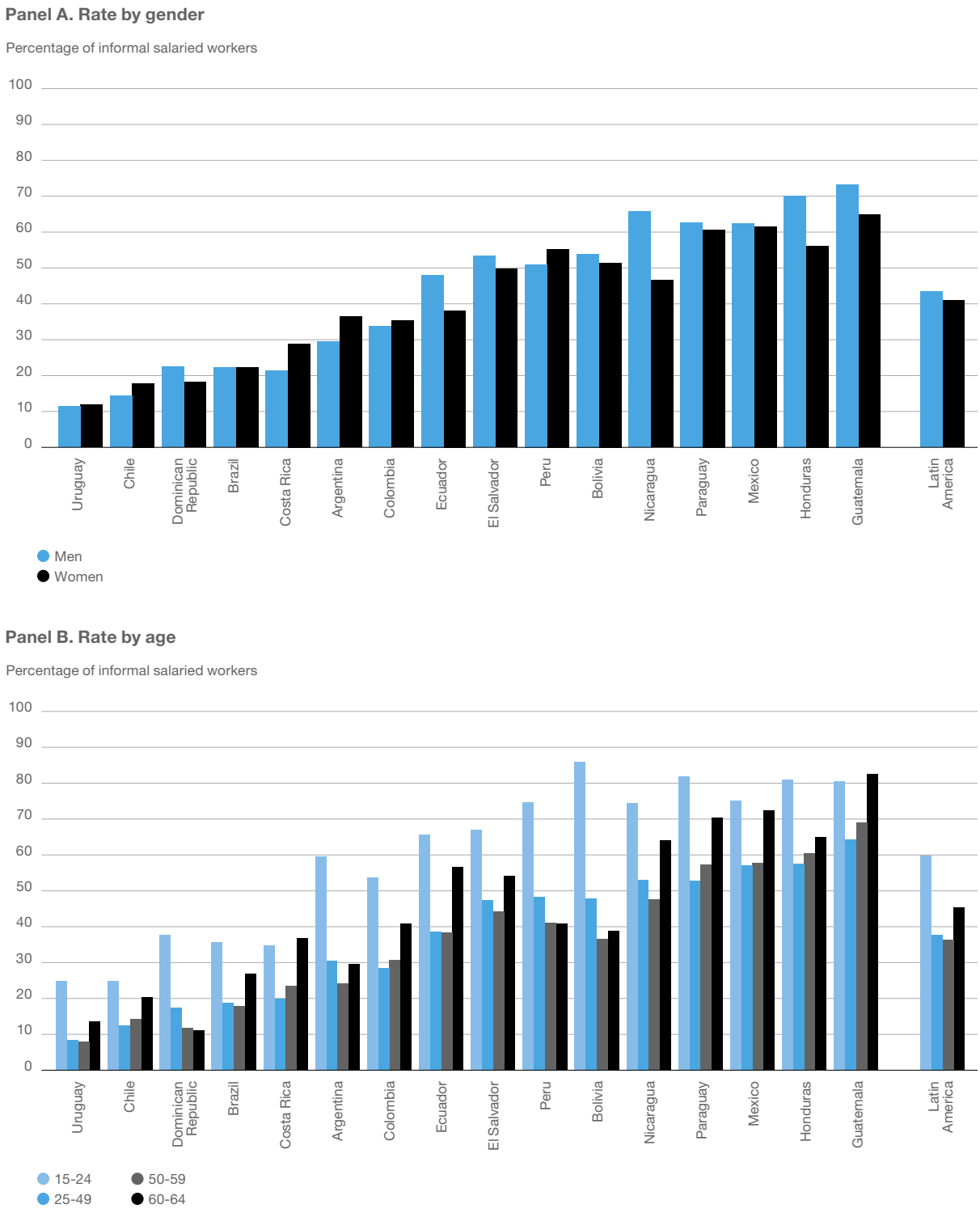
Source: Authors based on CEDLAS data (2020).

It is important to highlight that in countries where unemployment is lower (see Table 2.5, page 100) informal employment tends to be relatively high, while in countries with higher unemployment rates, informal employment is lower, in general. Both phenomena, unemployment and informal employment, erode the taxpayer base as a proportion of the working-age population.

In 2018, the average rate of informal salaried employment in the region's countries was 43%.

Heterogeneity in the level of informality of salaried employment not only exists between countries but also within them. The incidence of informal employment varies according to demographic characteristics among workers, like gender and age, and socioeconomic traits, like their level of education and income, as shown in Figure 2.9.

Figure 2.9
Rate of informal salaried employment according to sociodemographic characteristics, circa 2018



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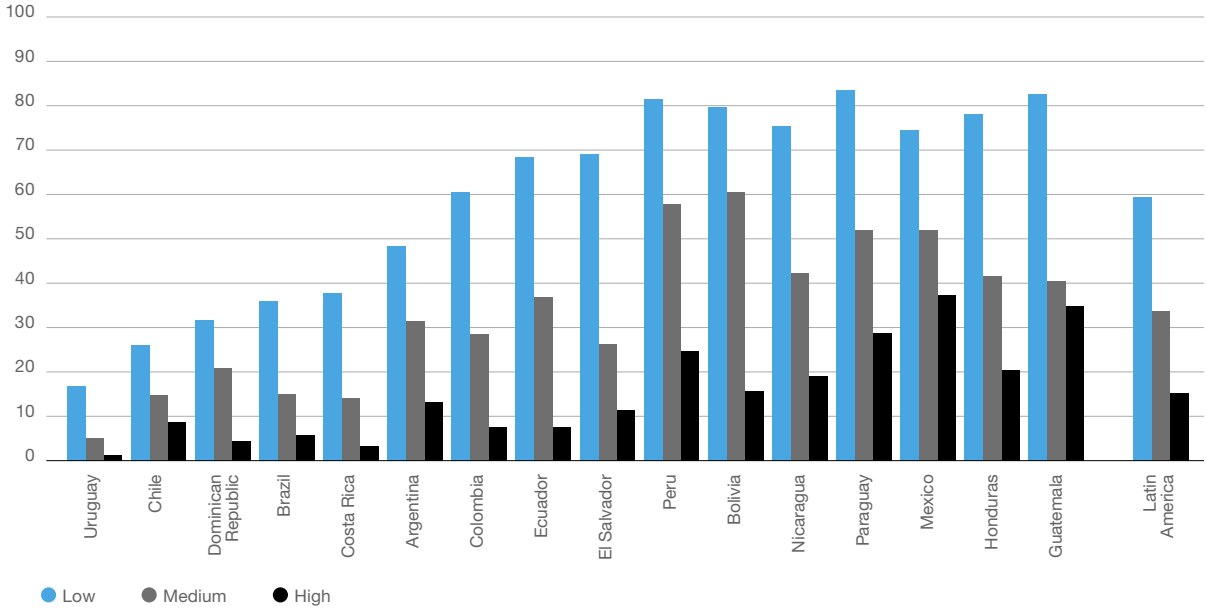
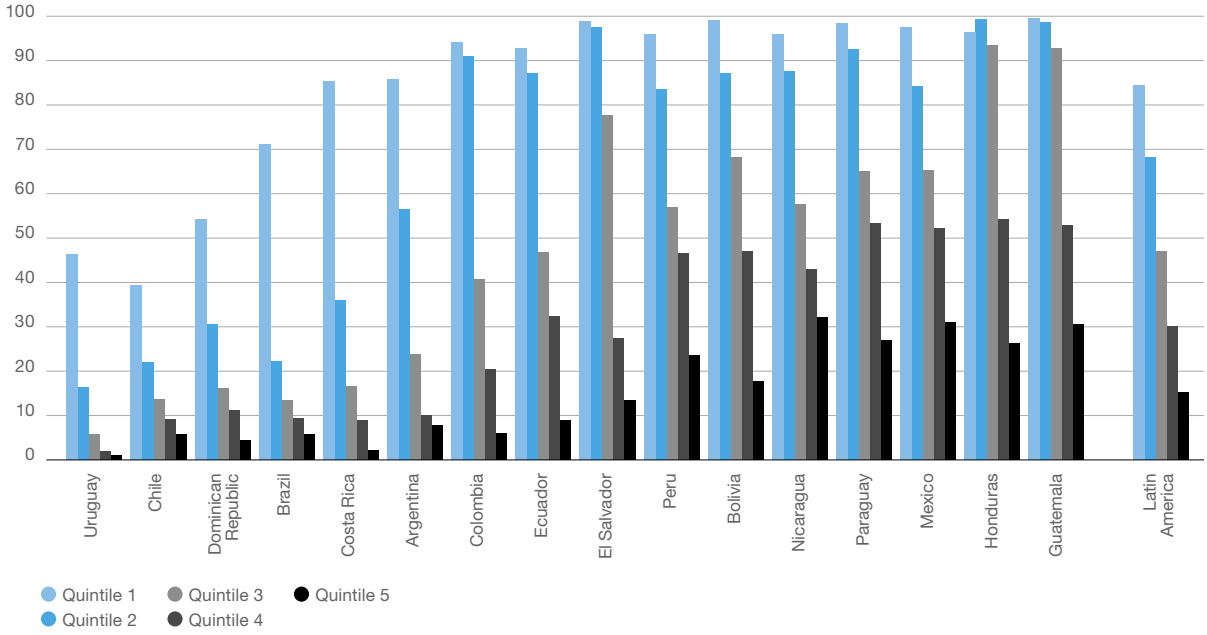
Panel C. Rate by level of education

Percentage of informal salaried workers



Panel D. Rate by level of income

Percentage of informal salaried workers



Source: Authors based on CEDLAS data (2020).

Youth labor market integration problems do not only manifest in a lack of employment opportunities but also in difficulties to find quality jobs. In general, informal employment has a U-shape relationship with age, with a particularly high peak at younger ages. The average rate of informal employment for wage earners aged 15-24 is 60% in Latin America and even above 80% in countries like Bolivia, Guatemala, Honduras, and Paraguay. In terms of gender, the sign and magnitude of the gap in the rate of informal employment between men and women vary across countries. For example, while the rate of informal employment in Costa Rica among women is 8 percentage points above that of men, it is 19 percentage points lower in Nicaragua.

Informal employment varies according to the education and income levels of workers. The average rate of informal employment for salaried employees with a college education in Latin America is 15%, with cross-country variations ranging from 1% in Uruguay up to 37% in Mexico. On the opposite end, the average rate of informal employment among salaried employees who did not complete secondary education is 59% across the region, while in almost half of the countries under analysis (seven out of 16) it is over 75% of employees. As expected, the relationship between informality and labor income is similar to that with education. The average rate of informal employment in the top income quintile is 15%, and in half of the region's countries, it is below 10%. Conversely, the average rate of informal employment in the bottom income quintile is 86%, with countries where almost all salaried employees in the poorest quintile have an informal job.

Finally, even though informal employment is more prominent in micro-enterprises, it is also found in larger businesses. In Latin America, one out of four informal salaried workers works for companies with 10 or more workers, while eight out of 100 informal salaried workers work for companies with at least 100 workers. In terms of the incidence by industry, informal employment reaches 35% of paid employment jobs in manufacturing, with higher levels in sectors like agriculture and construction, where over 60% of employees have an informal job.

The dynamics of social security contributions and access to a pension in old age

Coverage for the working-age population is also important because of its incidence on the probability of access to a retirement pension.

In the above section, the proportion of the working-age population covered by the social security system at a given point in time was reviewed in terms of the fraction of the population that participates in the labor market, the level of unemployment, and the rate of formality of those who are employed. Increasing coverage during working life is a policy goal because it provides tax benefits and insurance against contemporary risks like losing the job or becoming ill. Coverage for the working-age population is also important because of its incidence on the probability of access to a retirement pension and healthcare services at affordable costs. In most countries in the region, access to retirement benefits and the monetary amount of benefits is determined according to combined requirements of age and the number of years of social security contributions made.

To examine the relationship between working life coverage and access to retirement benefits, it is necessary to switch from the static approach used in the previous section to the analysis of the dynamics of social security contributions throughout the working life. To understand why this is key, consider, for instance, the percentage of employed individuals under social security coverage in the region's countries, which, according to Table 2.6 (see page 101) is about 40% on average. This figure may be consistent with different levels of access to retirement benefits according to the degree of employment mobility. On one end there is full segmentation: 40% of workers spend all their working lives in jobs under social protection, while the rest has jobs without social security coverage. In this context, the former will have access to retirement benefits, while the latter will not. On the opposite end, there is total mobility: 40% of workers fall under social security coverage at all times but are switching constantly to and from covered and non-covered situations. In this case, only those who accumulate the required number of years of social security contributions will have access to retirement benefits.

This is particularly relevant for Latin American economies, characterized by the coexistence of jobs that require social security contributions with others that do not, as shown in the previous section, and by a high volume of workers crossing back and forth between situations of covered and non-covered employment, unemployment and inactivity, as will be described later in this chapter. In this context, the level of coverage (social security contributors) received by the working-age population at a given point in time is a weak indicator of the proportion of workers who will have access to retirement benefits.

Occupational mobility between covered and non-covered situations under contributory social protection systems can be studied using household survey data to follow a person over time (CAF, 2018). In this type of analysis, a relatively high proportion of formal salaried workers switch to a job without social security coverage from one year to the next (see Box 2.1). However, accurate analysis of the dynamics of social security contributions during an individual's life cycle is hindered by the short duration of household survey panels, which normally follow the same individual up to one or two years.

Box 2.1
Job rotation in Latin American countries based on household surveys

In some countries, household surveys reveal the situation of a person at different points in time and, therefore, provide a measure of employment mobility not only between job types, but also between employment, unemployment, and inactivity. Table 1 shows mobility patterns between forms of occupation with and without coverage by contributory programs for a group of countries. The category covered par excellence is that of formal salaried workers, while typically non-covered categories are informal salaried workers, the rest of workers,[a] and people without work (unemployed or inactive). As can be observed, from 13% (Argentina) to 25% (Mexico) of formal salaried workers in one year move to a non-covered form of occupation in the following year. In addition, from 11% (Peru) to 29% (Brazil) of informal salaried workers in one year get a formal job in the following year. Mobility from other forms of occupation to formal employment is similar, though of a smaller magnitude.

Table 1
Annual transitions between forms of occupation

	Rates of transition (percentage)				
	Formal salaried workers	**Informal salaried workers**	**Rest of workers [a]**	**People without work [b]**	**Total**
Argentina 2003-2015					
Formal salaried workers	87	5	3	5	100
Informal salaried workers	14	53	11	22	100
Rest of workers [a]	5	12	66	17	100
People without work [b]	3	9	5	83	100
Brazil 2009-2015					
Formal salaried workers	83	3	4	10	100
Informal salaried workers	29	39	11	22	100
Rest of workers [a]	10	5	71	14	100
People without work [b]	7	4	4	86	100
Chile 2011-2019					
Formal salaried workers	84	5	3	9	100
Informal salaried workers	26	35	14	26	100
Rest of workers [a]	7	7	66	19	100
People without work [b]	7	5	6	82	100
Ecuador 2007-2019					
Formal salaried workers	82	6	5	7	100
Informal salaried workers	15	52	19	14	100
Rest of workers [a]	4	10	70	16	100
People without work [b]	5	9	14	72	100
Peru 2008-2015					
Formal salaried workers	80	9	6	5	100
Informal salaried workers	11	52	24	13	100
Rest of workers [a]	2	11	77	11	100
People without work [b]	3	11	18	67	100
Mexico 2005-2017					
Formal salaried workers	75	15	3	7	100
Informal salaried workers	15	56	13	17	100
Rest of workers [a]	2	14	64	20	100
People without work [b]	3	9	9	79	100

Notes: [a] Including employers, the self-employed and unpaid workers. [b] Including unemployed and inactive individuals.

Source: Authors based on data from CEDLAS (2020) and *ENEMDU Matrices de transición de 2007-2019* (INEC, 2019).

Household survey data show certain mobility between situations with and without coverage of the contributory social protection system. However, due to the short duration of data panels, it is not possible to draw conclusions about the dynamics of social security contributions during an individual's life cycle.

a. Although in some countries a fraction of these workers can access social protection benefits as a result of mandatory or voluntary contributions, these workers are considered to be "non-covered" because, in general, they represent a smaller share of employment and this information is not available for all the countries under analysis.

Fortunately, in recent years, a growing number of countries in the region have made available to researchers data on work histories from the administrative records of social security systems. Several papers have used this data to study the dynamics of social security contributions during the working life and estimate the proportion of workers who, at retirement age, would have the minimum number of qualifying years to be entitled to a retirement pension (de Melo *et al.*, 2019; Bucheli, Forteza and Rossi, 2010; Forteza *et al.*, 2009; Berstein, Larrain and Pino, 2006). As will be discussed further on, the conclusions from this type of analysis are less optimistic than those from household surveys.

Based on the methodology developed in the aforementioned studies and labor history information from administrative records, we analyze the contribution patterns during labor trajectories in four countries: Argentina, Brazil, Ecuador, and Uruguay. Data have been collected monthly, while the time window for data varies by country, from 13 years in Brazil (2005-2017) and Ecuador (2006-2018) to 20 years in Argentina and Uruguay (in both cases 1996-2015). Workers included in the data are those who, during the observation window, had at least one contribution term.[5]

Every month throughout their working life, a worker may appear in the data as registered or unregistered with social security. The parameters under which a worker is reported as registered vary from country to country. In Uruguay and Ecuador, a worker has a registered status at a certain month if, during this term, they have a paid employment job in the public or private sector or are non-salaried workers who make their social security contributions to the system. If they have an informal job, non-salaried job for which they do not make any social security contributions, or if they are unemployed or inactive, they will be entered as unregistered. In Brazil, a worker is registered if, during the period under analysis, they have a paid employment job, either in the public or the private sector, and as unregistered if they are working in any other condition. The case of Argentina is the most restricted in terms of social security coverage because a worker is registered for a given period only if they have a paid employment job in the private sector during that period. Public employees, informal salaried workers, non-salaried employment, unemployed or inactive workers are not registered.[6]

With the above in mind, we will now examine the patterns of social security contributions over working life, highlighting: i) the portion of covered work history periods; ii) the mobility between covered and non-covered employment; iii) the rate of formal employment along a life cycle; and iv) the projected number of qualifying years of social security contributions at retirement age.

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5. See Alves, Brassiolo, and Martinez-Correa (2020) for more information on the methodology and other information characteristics.

6. The results for Argentina should be interpreted cautiously because the Argentine public sector accounts for about 20% of total employment (Gasparini et al., 2015). In addition, there is also a mandatory social security contribution for non-salaried employment. Therefore, the available information tends to underestimate the level of formal employment at a certain point in time.

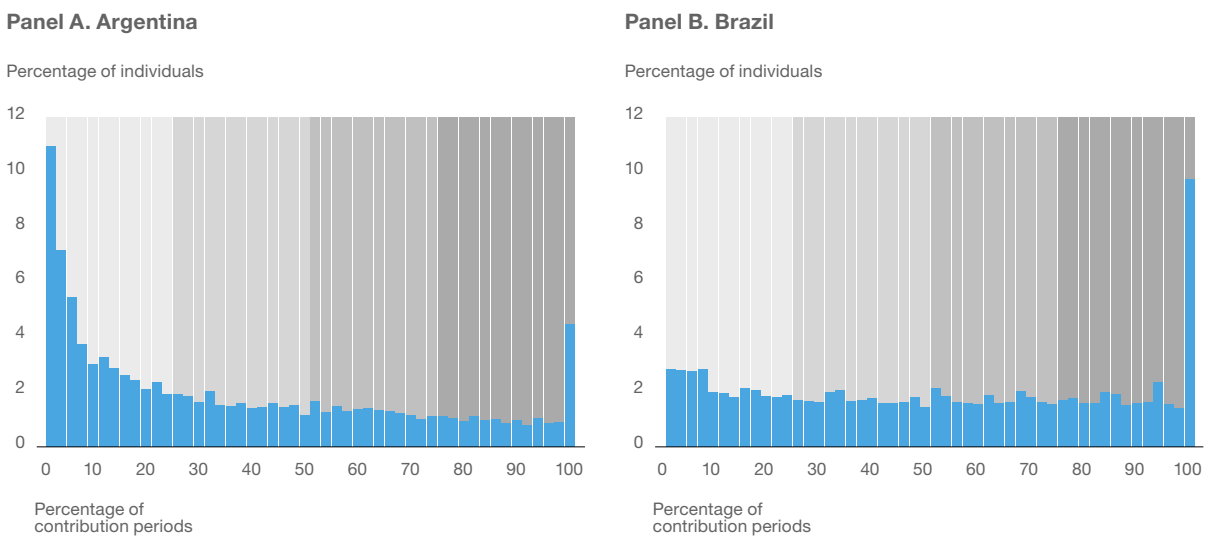
Proportion of social security contribution periods: a few pay almost all the time, while many pay for a short term

A first indicator of social security contribution patterns during working life is the proportion of contribution periods over the total number of periods a worker is observed in the data. Figure 2.10 shows the distribution of workers according to the proportion of time during which they made social security contributions. The blue bars represent the percentage of people with a certain proportion of contributions, while the areas in different shades of gray indicate the quartiles in that distribution. The first quartile, i.e., the working lives with contributions during a quarter of the time or less, comprise 50% of the working-age population in Argentina, 34% in Ecuador, 30% in Uruguay, and 28% in Brazil. On the opposite end, the proportion of workers who made social security contributions for at least three-quarters of their working lives—the fourth quartile—is 15% in Argentina, 23% in Ecuador, 27% in Uruguay, and 29% in Brazil.

The working life of most individuals combines contribution periods with non-contribution periods.

Two aspects are worth highlighting. The first one is that most people combine contribution periods and non-contribution periods throughout their working lives. Therefore, access to retirement benefits is contingent upon the fact that contribution periods over their working lives reach the minimum number required by law. The second is that distribution is bimodal, with a larger volume on the opposite ends of low and high contribution proportions. In brief, persons who make a small number of social security contributions during their working lives and those who make contributions over the major portion of their working lives predominate.

Figure 2.10
Density of social security contributions



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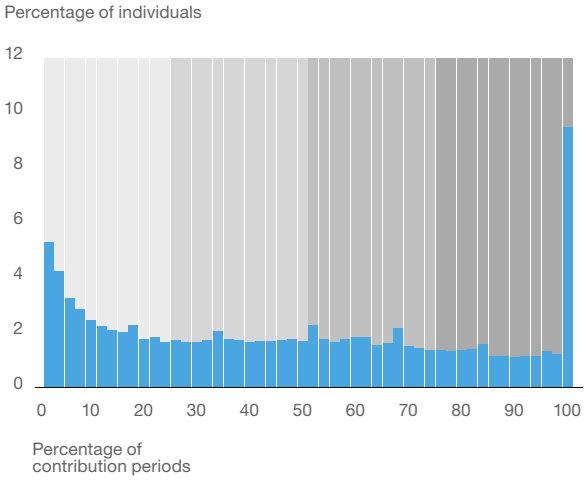
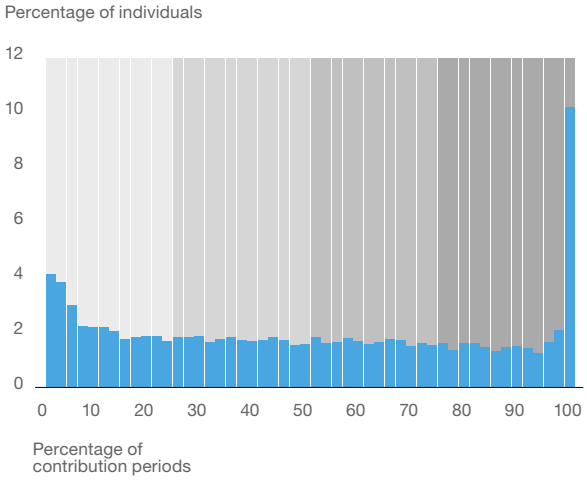
Panel C. Ecuador



Panel D. Uruguay



Source: Authors based on the social security administrative records of each country.

Table 2.10 shows how the proportion of contributions varies according to workers' characteristics. The average worker is registered and makes contributions for 35% of their working life in Argentina, 51% in Brazil, 47% in Ecuador, and 50% in Uruguay. Although the average is not very telling when the variable has a bimodal distribution, it can be helpful to analyze variations in terms of the characteristics of individuals.

In general, this means the proportion of contribution periods is higher among men than among women, and has an inverted U-shape curve for age, with core active age individuals contributing during a longer time fraction. In addition, the proportion of contributions increases with the level of income, with different gradients among countries: while in Brazil and Uruguay the proportion of contribution periods in the wealthiest quintile is about twice that of the poorest quintile, in Ecuador this ratio is 3.5 times, and in Argentina, it can be as high as over 4 times. In terms of the public and private sectors, public sector workers contribute a larger portion than their counterparts in the private sector.

These results suggest that, under the current circumstances, an important portion of the workforce may not reach the minimum number of qualifying years to be entitled to a contributory pension upon retirement. And the fact that this is more likely to occur in the case of low-income workers, whose contribution density is smaller, clearly shows that a high number of minimum qualifying years may be a regressive element in contributory pension systems.

Under the current circumstances, an important portion of the workforce may not reach the minimum number of qualifying years to be entitled to a contributory pension upon retirement.

Table 2.10
Mean proportion of contributions according to workers' characteristics

	Contribution periods (percentage)			
	Argentina	**Brazil**	**Ecuador**	**Uruguay**
Total	35	51	47	50
Gender				
Women	30	50	46	48
Men	38	53	47	51
Age group				
18-30	31	47	35	43
31-40	42	54	50	56
41-50	42	57	55	60
51-60	42	54	60	62
61-70	26	35	48	33
Level of income				
Quintile 1	14	35	20	31
Quintile 2	22	42	40	37
Quintile 3	33	49	46	47
Quintile 4	48	60	58	62
Quintile 5	60	71	69	71
Sector				
Public employee	n.a.	68	61	67
Private employee	35	48	44	46
Self-employed	n.a.	n.a.	42	53

Notes: Workers are grouped by sectors based on the sector to which workers have contributed most of their working life. n.a. means that data are not available.

Source: Authors based on the social security administrative records of each country.

Mobility during the working life: frequent change between covered and non-covered employment and short duration of contribution periods

Working lives are characterized by a high volume of workers moving between covered and non-covered employment. Table 2.11 shows the probabilities of mobility between these conditions. Out of the total number of individuals who are not registered with the social security system in a given month, the proportion who is registered in the following month varies according to the country, from 1.6% (Argentina) to 3.1% (Uruguay). In addition, of the total

number of persons registered with the system at a given period, between 2.7% (Ecuador) and 3.7% (Argentina) are non-registered in the following period.[7] These are monthly rates, their annual equivalents being of a considerable magnitude. Over any one year, from one-fifth (Argentina) to one-third (Uruguay) of workers will shift to covered employment. Also, during that same period, close to one-third of covered workers will be excluded from social security coverage.

Over any one year, close to one-third of covered workers face a non-covered condition.

Table 2.11
Transition rates between employment conditions in the social security system by country

	Transition toward coverage (percentage)		Transition toward non-coverage (percentage)	
	Monthly	**Annual**	**Monthly**	**Annual**
Argentina	1.63	17.94	3.66	36.10
Brazil	2.53	26.49	2.82	29.04
Ecuador	2.16	23.03	2.70	28.00
Uruguay	3.07	31.21	3.46	34.50

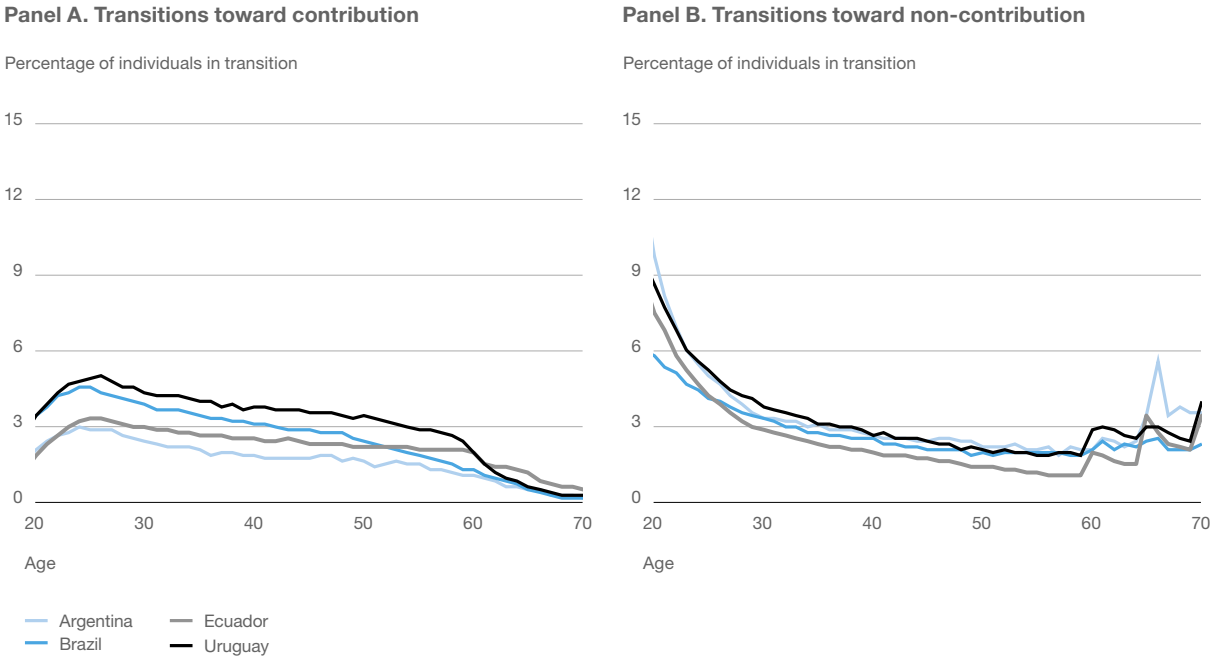
Notes: The table shows the transition rates between social security covered and non-covered employment. Each rate has been calculated as a proportion of the individuals who change their employment status at a given time over the total number of individuals in the same employment status during the same period. As these are monthly data, rates are initially calculated for each month, and the equivalent annual rate is obtained as $1-(1-m)$,[12] where m is the monthly rate.

Source: Authors based on the social security administrative records of each country.

Figure 2.11 shows monthly transitions toward contributory conditions (panel A) and non-contributory conditions (panel B) according to the age of workers for the four countries under analysis. In general terms, transition patterns throughout a life cycle are similar across countries, with differences in the absolute level of rates. Transitions toward contributory conditions increase until about the age of 25, probably as a result of the growing incorporation of individuals into the labor market, with 3% monthly peaks in Argentina and Ecuador, and 5% monthly peaks in Brazil and Uruguay. After 25 years of age, transition rates toward contributory conditions gradually decrease. Conversely, transitions toward non-coverage conditions follow a decreasing pattern—which is more pronounced at younger ages—in all countries until the retirement age, when discrete leaps are observed in the probability of shifting from a condition of coverage to non-coverage.

7. Levy (2019) documents a similarly frequent change scenario for Mexico.

Figure 2.11
Transition rates between employment conditions in the social security system by employee age



Notes: Panel A shows transition rates from a non-contributory condition to a contributory condition according to the age of employees, while Panel B shows transition rates in the opposite direction. For each employee age, the level of each transition rate reflects the monthly average of the probability of switching conditions.

Source: Authors based on the social security administrative records of each country.

Half of all coverage spells last for just six months in Argentina and Uruguay, and 12 months in Brazil and Ecuador.

This frequent change between contributory and non-contributory conditions translates into a large number of relatively short spells. The average contributory spell lasts 26 months in Argentina, 27 months in Uruguay, 29 months in Brazil, and 32 months in Ecuador. However, half of all coverage spells last for just six months in Argentina and Uruguay, and 12 months in Brazil and Ecuador. Once again, these data show Latin America's typical labor market instability. Non-coverage spells tend to last more than coverage spells in Argentina and Ecuador, while they have a similar duration in Brazil and Uruguay. For example, half of the non-coverage spells last at least 15 and 18 months in Argentina and Ecuador, respectively (Table 2.12).

Table 2.12
Duration of contributory and non-contributory spells by country (months)

	Average	Percentile 25	Percentile 50	Percentile 75
		Consecutive contributory spells		
Argentina	26	2	6	25
Brazil	29	5	12	35
Ecuador	32	4	12	43
Uruguay	27	2	6	25
		Consecutive non-contributory spells		
Argentina	41	3	15	59
Brazil	26	5	12	34
Ecuador	33	5	18	52
Uruguay	26	2	6	26

Source: Authors based on the social security administrative records of each country.

Formal employment during a person's working life: an inverted U-shape curve

The behavior of the formal employment rate during a life cycle is an interesting indicator. This rate is defined as the proportion of individuals of a certain age who contribute to social security over the total number of individuals of the same age.

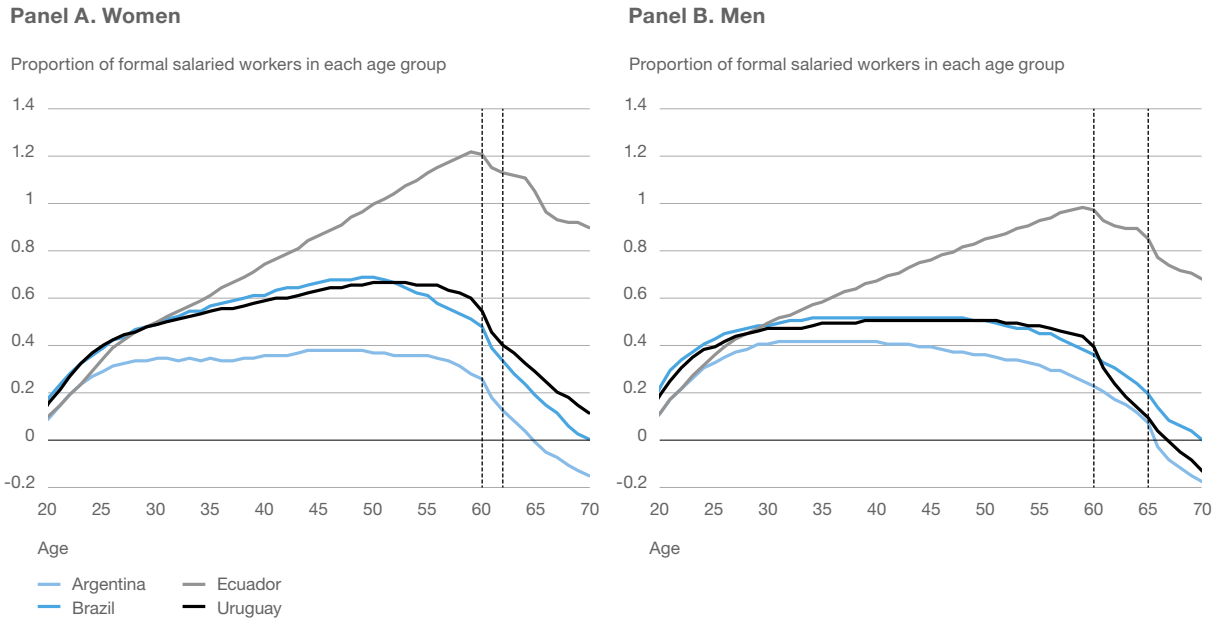
In previous sections, it has already been shown that the proportion of contributions during a person's work history is distributed as an inverted U-shaped pattern during the working life, i.e., it rises until the age of 25 and then starts to decrease gradually. In principle, at a certain point in time, the rate of formal employment could be expected to follow a similar pattern over a life cycle (that could be interpreted as the probability that a typical worker has covered employment at that time). However, based on the characteristics of the information that was used, the simple observation of the relationship between the rates of formal employment and age does not suffice to verify this pattern, since the effects of the birth cohort and the economic cycle could be mixed up.[8]

One way to isolate the relationship between the rate of formal employment and age is to calculate the mean proportion of contributions for each age, controlled by the characteristics of individuals that will not change over time and by calendar effects. As shown, the rate of formal employment grows in all countries until about the age of 25, when it starts to follow different trajectories.

8. Data observation windows are relatively short. Therefore, formal employment rates at older ages are only observed in older cohorts, while formal employment rates for younger ages are only found in younger cohorts. As a result, the age effect tends to mix with the birth cohort effect. In addition, the relationship between formal employment and age will also be affected by macroeconomic or regulatory changes that impact the formal employment rate.

While in Argentina it remains at this level until some years before retirement age, in Brazil and Uruguay it continues to rise—although at lower rates—until after the age of 50, whereas in Ecuador, the trend continues to grow sharply until almost the age of 60. Finally, in all the countries under analysis, the formal employment rate plummets as the retirement age approaches.

Figure 2.12
Formal employment rate per age in four Latin American countries



Notes: Each country curve shows the estimated ratios in an ordinary least squares regression model, where the dependent variable is the proportion of individuals under coverage and the independent variables of interest are a set of binary variables for each age. Year fixed effects and individual fixed effects were used as controls. Vertical lines indicate (minimum) retirement ages in each country: 60 for women and 65 for men in Argentina; 62 and 65 for women and men, respectively, in Brazil; and 60 for women and men in Ecuador and Uruguay.

Source: Authors based on the social security administrative records of each country.

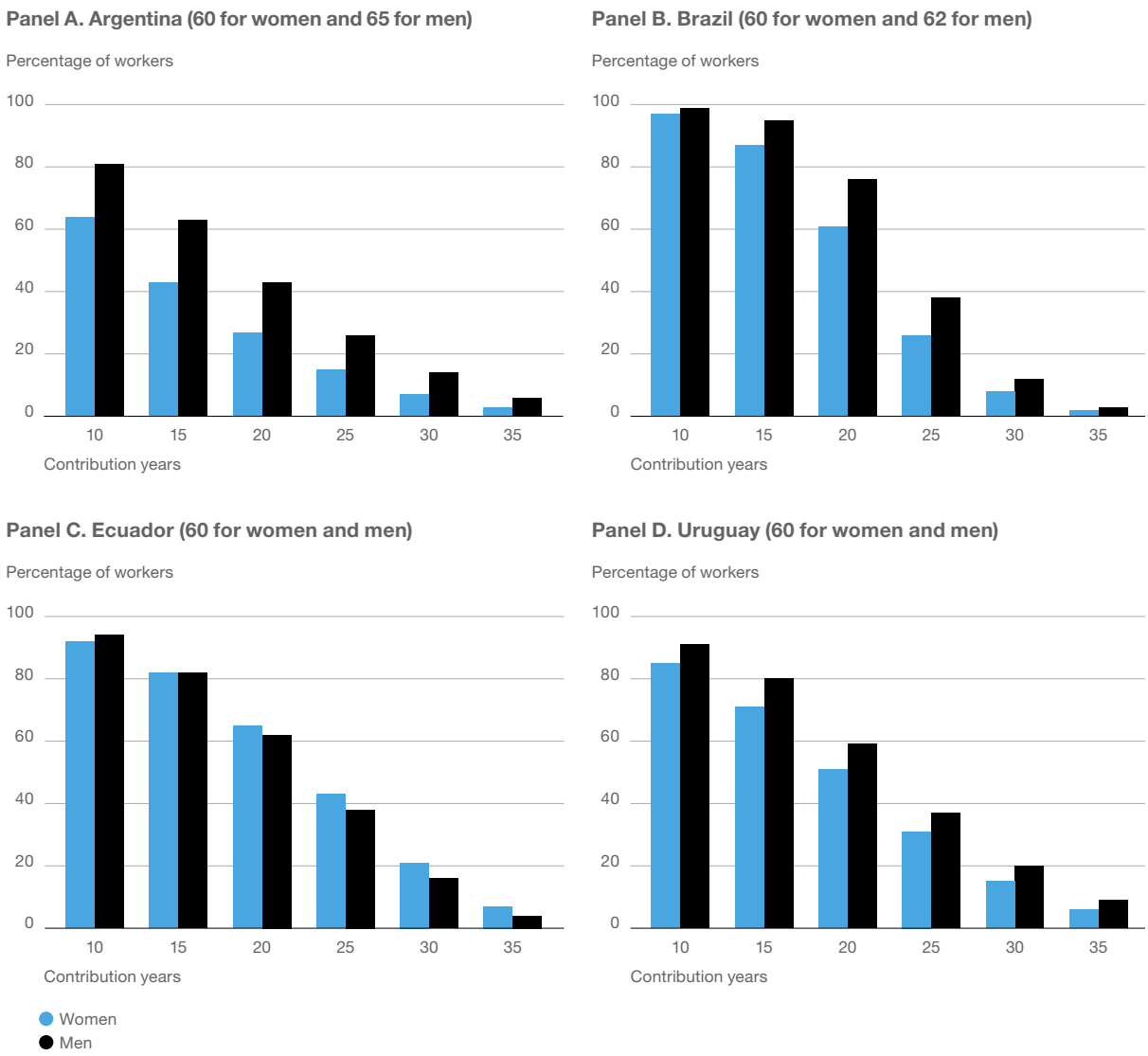
Projections: with how many years of contributions is retirement age reached?

Results shown so far confirm that a typical employment history combines contributory and non-contributory periods as a result of the high probability of shifting back and forth between contributory and non-contributory conditions. Therefore, contributory spells tend to be brief. Many workers, then, may not be able to reach the number of qualifying years they need to access a retirement pension.

In fact, using the above results as input, it is possible to estimate the proportion of workers who will have accumulated a given number of contribution years when they reach the minimum retirement age in each country, as shown in

Figure 2.13.[9] As an example, just 7% of women and 13% of men will have 30 years of contributions to the system at the retirement age in force in Argentina. These figures are, respectively, 8% and 12% for Brazil, 21% and 6% for Ecuador, and 15% and 20% for Uruguay.

Figure 2.13
Workers per number of contribution years at (minimum) retirement age in each country by gender



Source: Authors based on the social security administrative records of each country.

9. Chapter 3 will delve into the restrictions imposed by a high number of years of contributions made throughout the working life to access a contributory pension.

A considerable fraction of the workforce, particularly the low-income portion, may be excluded from the benefit of receiving a contributory pension upon retirement.

Whether this pace of contribution accrual is sufficient or not to access a contributory pension will depend on the legislation of each country. This is analyzed in Chapter 3. However, it is possible to anticipate that a considerable fraction of the workforce, particularly the low-income portion, may be excluded from the benefit of receiving a contributory pension upon retirement. This shows that the requirement of a high minimum number of years of contributions may be a regressive element in contributory pension systems. In addition, findings reveal the huge challenges faced by contributory pension systems in the region to protect the most vulnerable workers and ensure they receive a minimum income at old age.

Trends I: an aging labor force

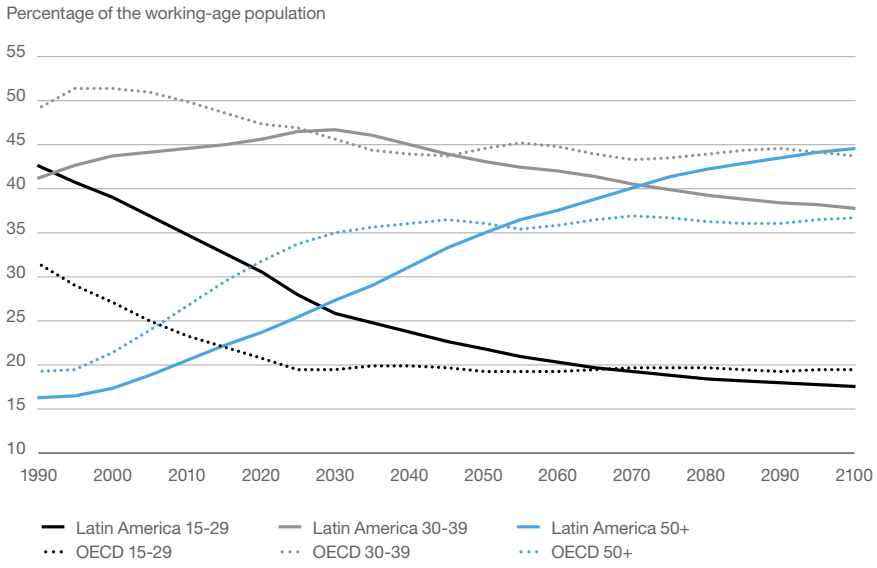
Demographic changes in Latin America are having a significant impact on the age composition of the workforce, as shown in Figure 2.14. In the year 2000, 39% of the workforce in the region was under the age of 30, while 17% of this group was over 50. In 2020, these figures are expected to reach 30% and 24%,[10] respectively, while the projections for 2050 are 22% and 35%.[11] These changes mean that in about two generations (from 2000 to 2050), the region's average worker will be 8 years older, from 36 years of age in 2000 to 44 years of age in 2050.

If these figures are projected beyond 2050, several interesting findings emerge. First, by 2055, the proportion of workers over 50 in Latin America is expected to exceed that of OECD countries, which is projected to stabilize around 37% from mid-century onwards. In Latin America, this proportion is expected to continue to increase to around 45% in 2100. In addition, the fraction of young workers in the OECD is expected to remain stable at around 20% from the present on. On the contrary, in Latin America, this proportion will continue to fall until reaching 18% in 2100. These long-term trends suggest that the mean age of Latin American workers would rise from 44 years by 2050 (practically the same as in OECD countries) to 47 by 2100 (three years older than the age for OECD countries).

10. These figures for 2020 did not take into account the effects of COVID-19.

11. The ILO offers participation in the labor market projections by age and gender until 2030. After that year, labor force participation rates remain constant. In this exercise, the United Nation's population projections by age and gender were also used.

Figure 2.14
Age distribution of the working-age population in Latin America and the OECD, 1990-2100



Notes: Average figures are shown for each country group. The average for Latin America includes Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, and Uruguay. The OECD average excludes Chile, Colombia, and Mexico. The percentage of workers in each age group is based on population estimates by the United Nations and labor force participation rates by the ILO by age and gender. ILO estimates cover until 2030. From that year onwards, labor force participation rates remain unchanged by 2030.

Sources: Authors based on data from ILO (2020) and United Nations (2019b).

Demographic changes in the general population and the labor force have significant implications for social protection systems in the region's countries.[12] To illustrate this point, it is helpful to examine the evolution of the ratio between the labor force and the older adults population (65 years of age and over), which is shown in Table 2.13 and Figure 2.15. On average, Latin America had close to eight working-age individuals per older adult in 2000, while it now has slightly less than six. By 2050, this ratio is expected to fall by half, to 2.8 working-age individuals per older adult, a figure moderately above the current average in OECD countries. Based on this indicator, Latin America is going through a demographic transition, which lags 30 to 35 years behind developed countries. However, by 2100, both groups of countries, on average, are expected to show the same ratio of 1.3 working-age individuals per older adult.

Latin America, as a whole, is going through demographic transition and is from 30 to 35 years behind developed countries as per the ratio between working-age individuals and older adults.

12. Chapter 1 shows some implications of demographic transition and aging for economic growth and productivity and highlights several social protection challenges.

Table 2.13
Ratio of working-age individuals to older adults

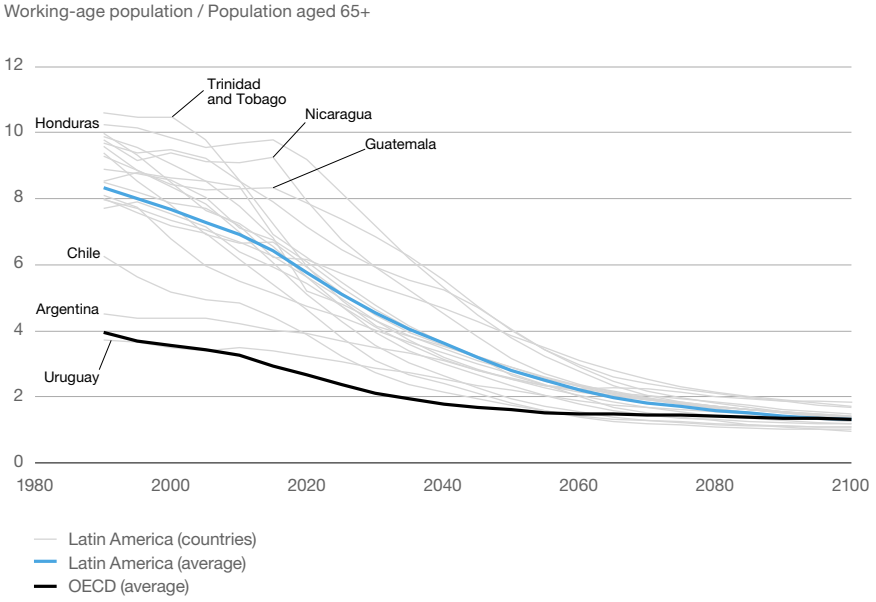
Country	2000	2020	2050	2100
Argentina	4.4	3.9	2.6	1.4
Bolivia	7.9	6.1	3.9	1.7
Brazil	8.4	5.1	1.9	1.1
Chile	5.2	3.9	1.8	1.1
Colombia	8.5	5.6	2.3	1.2
Costa Rica	7.2	4.6	1.8	1.0
Ecuador	8.6	6.1	2.9	1.4
El Salvador	6.8	4.7	2.7	1.0
Guatemala	8.4	7.9	4.0	1.4
Honduras	9.9	9.2	3.8	1.4
Mexico	7.4	5.6	2.5	1.2
Nicaragua	9.4	7.9	3.2	1.3
Panama	7.6	5.4	2.5	1.4
Paraguay	9.5	7.2	4.0	1.7
Peru	8.6	6.2	2.8	1.5
Dominican Republic	7.8	5.9	2.9	1.3
Trinidad and Tobago	10.5	5.9	2.7	1.9
Uruguay	3.5	3.2	2.2	1.3
Venezuela	9.1	5.2	2.8	1.4
Averages:				
Latin America	7.7	5.8	2.8	1.3
OECD	3.5	2.7	1.6	1.3

Notes: Figures represent the ratio between working-age individuals and the population aged 65 and over.
Source: Authors based on data from ILO (2020) and United Nations (2019b).

However, the regional average hides significant differences across countries. On the one hand, the Southern Cone countries (Argentina, Chile, and Uruguay) currently have from three to four workers per older adult. On the opposite end, in Central American countries (Honduras, Guatemala, and Nicaragua) these figures range from eight to 10 workers per older adult. This means that the region's countries are going through very different demographic transition stages, as explained in Chapter 1.

Despite the above, as indicated in Figure 2.15, country gaps in the number of workers per older adult are progressively narrowing. For example, the current gap between maximum and minimum values is almost six workers (if Honduras and Uruguay are compared), while by 2050 this figure would drop to 2.3 (difference between Paraguay and Chile), and to less than one (if comparing Bolivia and El Salvador) by 2100. This means that the expected changes to be sustained by the countries currently going through earlier stages of their demographic transition—like Guatemala, Honduras, and Nicaragua—will unfold much faster in the next 50 years, which poses an additional challenge.

Figure 2.15
Ratio of working-age individuals to older adults, 1990-2100



Notes: Average figures are shown for each country group. The average for Latin America includes Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela. The OECD average excludes Chile, Colombia, and Mexico.

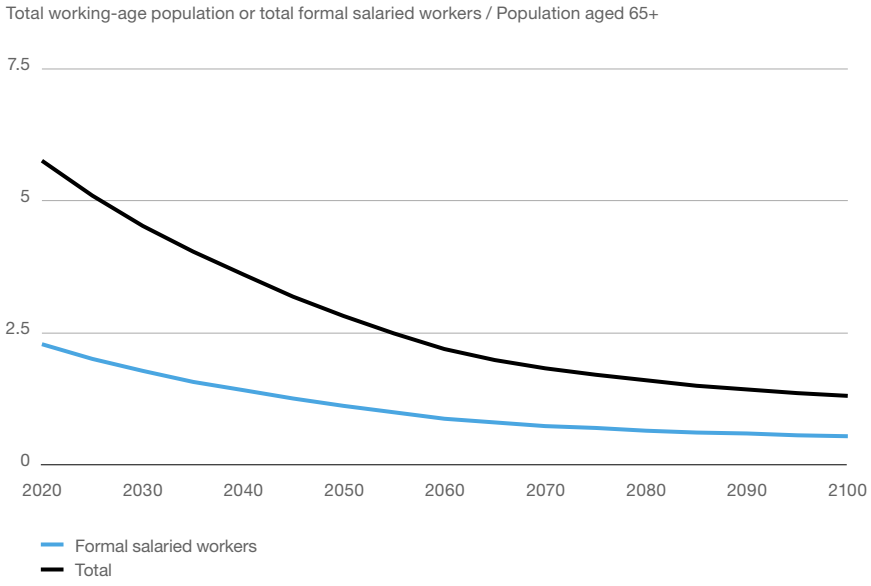
Sources: Authors based on data from ILO (2020) and United Nations (2019b).

An indicator that may be more relevant for the sustainability of social protection systems and, particularly, pensions, includes workers who contribute to these systems. Along these lines, the outlook for the region changes significantly if the ratio between the working-age population and older adults is adjusted for by the formal employment rate—i.e., the ratio between the working-age population with formal employment (making social security contributions) and older adults. As shown in Figure 2.16, at present there are 2.4 formal workers per older adult in Latin America, which takes the region to levels that are similar to those observed in OECD countries.[13] By 2050, this ratio is expected to decrease even more, to 1.2. To put these figures into perspective, Japan, one of the countries with the oldest populations in the world, has approximately 1.7 working-age individuals per older adult, while this ratio will be 1.1 by 2050.

At present, there are 2.4 formal salaried workers per older adult in Latin America, which takes the region to levels that are similar to those observed in OECD countries.

13. The levels of informal employment in OECD countries are low, judging from the size of the underground economy, estimated to be between 7% and 15% of GDP on average, according to Gyomai and van de Ven (2014), and Medina and Schneider (2018).

Figure 2.16
Ratio of working-age individuals to older adults adjusted for by informal employment in Latin America, 2020-2100



Notes: The black line shows the ratio between the working-age population and older adults, while the blue line indicates the ratio between formal salaried workers and older adults. The second calculation adjusts the first one for informal employment. To do this, the most recent available data for each country on informal employment is used. Both lines indicate Latin America's average figures, comprising Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, and Uruguay.

Sources: Authors based on data from ILO (2020) and United Nations (2019b).

Trends II: technological advances, impact on employment, and contribution history

Technological advances can have effects on the labor market that are relevant for the design of social protection systems through two channels. On the one hand, in addition to increasing productivity and boosting economic growth, technological developments can bring about distributive consequences as they tend to improve the employment and salaries—and, therefore, contributions—of workers who take advantage of it (e.g., industrial design). However, they also tend to undermine the wellbeing (employment and salaries) of workers doing other jobs that are negatively affected by technological progress (e.g., administrative tasks). On the other hand, technological innovation facilitates the generation of opportunities for non-standard forms of employment. Both effects pose new challenges and

require a response from social protection systems. These two aspects and their implications will be analyzed below.

Automation and digitalization, polarization and consequences for social protection

Digitalization, robotics, and artificial intelligence enhance the efficient use of productive resources, fostering economic growth. Growth, in turn, increases income from work and consumption, along with creating new needs, which, sooner or later, translates into additional employment opportunities. However, these technological advances can negatively affect employment for many workers. A legitimate concern is that technological progress may lead to accelerated job destruction, skill obsolescence, meager salary expectations for the least skilled workers, and more income inequality.

From the point of view of social protection, which is the focus of this report, the interest is to understand the implications of technological changes for the employment history of individuals with different skill levels. The increasing incorporation of technology to productive processes impacts skill demand, altering employment perspectives—either for good or for bad—for workers with varied skills.

To understand the effects of technological progress on employment, it is helpful to think of an occupation as a series of varied tasks. According to this approach, technological progress can favor the replacement of human workers by machines to perform routine tasks, increase the productivity of some workers in non-routine tasks, and expand job opportunities to enable new tasks (see Box 2.2). In addition, the combination of the first two mechanisms leads to a polarization of the job market. To a certain extent, this means that every job in an economy will be affected by technological progress, either directly or indirectly.

Studies for developed countries confirm the polarization hypothesis: technological development increases the proportion of high-skill, high-wage jobs (e.g., managers, professionals, and technical experts), and that of low-skill, low-wage jobs (e.g., personal service workers, construction workers, and salespeople). At the same time, it reduces employment in middle-skill and middle-wage jobs (e.g., assembly line operators, clerical, and office workers). This phenomenon can be observed in the U.S. (Acemoglu and Autor, 2011; Autor and Dorn, 2013) and also in European countries (Goos, Manning, and Salomons, 2014).

One consequence of job polarization is increased wage inequality. While high-skill workers benefit from technology—supplementing their skills and making them more productive—and earn higher wages, the income of middle and low-skill workers is stagnated and even decreases (Autor, 2015). This process is partly due to the shift of middle-skill workers to positions that require lower skill levels.

Box 2.2
Occupation as a set of tasks and the polarization hypothesis

The task-based approach considers occupations as sets of tasks and analyzes the mechanisms by which technological innovations affect the perspectives of workers on such tasks. The mechanisms are three: i) the replacement of human workers by machines to do some tasks; ii) the complementarity of human skills and abilities with technology to do other tasks; and iii) the generation of new tasks where human work is needed (Autor, Levy, and Murnane, 2003; Autor, 2010).

The first mechanism consists of replacing human workers with machines to perform routine tasks, i.e., tasks that are repetitive and can be fulfilled by following precise instructions. When these instructions can be coded and an algorithm can execute them, tasks can be automated. Routine jobs can require cognitive or manual skills. Typical examples are the activities performed by office workers or assembly-line workers at factories. In this case, technology saves up labor. Then, when the replaced tasks make up a large proportion of all the tasks in an occupation, technology can lead to job loss.

The second mechanism is the complementarity between skills and technological developments. Technology makes workers more productive to perform non-routine tasks, which are harder to automate. When such tasks require complex cognitive and socio-emotional skills (creativity, critical thinking, adaptive capacity, teamwork, problem solving), the degree of complementarity is high. This could be the case of civil engineers who use computer-assisted design software to create works faster and more precisely. When tasks require non-routine manual skills and abilities, as is the case of hairdressing, the degree of complementarity is low or null, and technology barely affects the worker's tasks. Technological change is skill-biased because it brings relatively more benefits to workers who use more complex skills in their jobs.

These two mechanisms—replacement and complementarity—bring about polarization in labor markets, that is, more employment and higher wages in high and low-skill (and income) levels, coupled with less employment and lower wages in middle-skill occupations. One consequence of polarization is that it increases income inequality, as the positive impact on the wages of high-skill individuals is more significant than on other categories of workers.

The third mechanism is the generation of new tasks where human work has an edge on machines. This channel, which operates by increasing job opportunities, usually goes unnoticed in the debate about the future of work, which often focuses more on the effects it will have on current occupations. However, throughout history, the generation of new tasks as a consequence of technological development has been quantitatively important (Autor, 2015; Mokyr, Vickers, and Ziebarth, 2015).

The evidence for Latin America shows that the process of job polarization is still incipient. Although the region's countries have reduced labor market participation in occupations that demand middle-skill levels, a polarization process similar to the developed world is only seen in Brazil and Venezuela (CAF, 2016). One reason for this could be that low labor costs—relative to capital costs—discourage automation (Maloney and Molina, 2016). It could also be due to the low adoption rate of digital technologies among Latin American businesses (Dutz, Almeida, and Packard, 2018) as well as other factors (for example, the boom of raw materials in the 2000s) that affect the demand for skills in a different way than technological change (Messina and Silva, 2018).

In line with these findings, Latin American countries do not show, at least for now, the increased wage inequality phenomenon seen in developed countries. Recently, wage inequality has even been reduced as a result of growth in labor demand—and wages—in the low-skill sector and a drop in the return to education (Fernández and Messina, 2018; Messina and Silva, 2018).

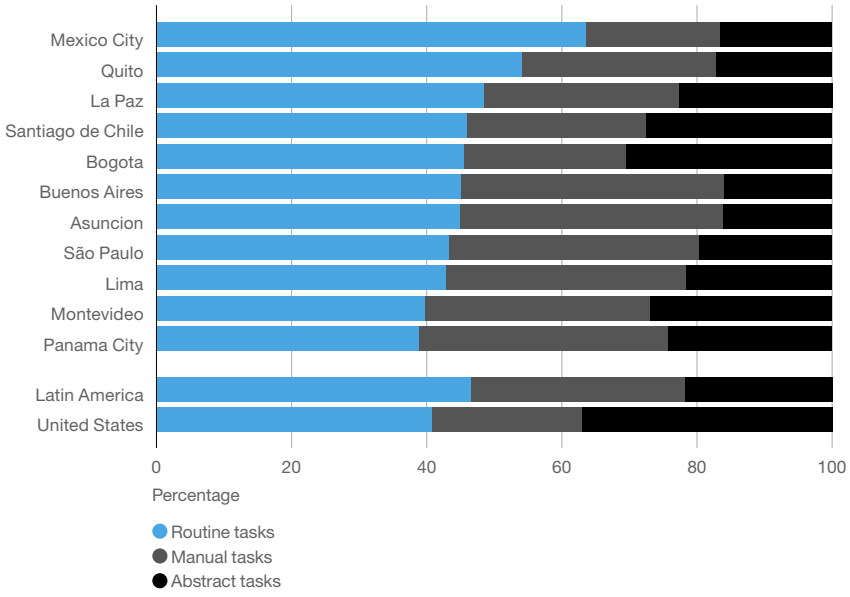
This does not mean that technological advancements are not affecting employment in Latin America, nor does it mean that they will not do so in the future. In fact, although there is no marked job polarization, new technologies seem to be having an impact on the job outlook of workers with certain profiles, in line with the polarization hypothesis. In Brazil, the adoption of digital technologies is associated with a decrease in the demand for workers with routine skills and an increase in the demand for workers with cognitive skills, which shifts the composition of skills in the labor force toward non-routine skills (Almeida, Corseuil, and Poole, 2017). Production automation in Chile reduces the demand for highly routine occupations, and this is bad for younger workers, who are more likely to lose their jobs than adults with comparable characteristics. Among young workers, those who are more experienced or skilled manage to migrate to non-routine occupations, while those who are less experienced or skilled become unemployed (Brambilla, César, and Falcone, 2020).[14]

In Latin America, although there is no marked job polarization, new technologies seem to be having an impact on the job outlook of workers with certain profiles, in line with the polarization hypothesis.

What proportion of employment in Latin America involves high-routine occupations? What types of workers are particularly exposed to the consequences of increasing technology use in production processes? According to the CAF 2019 survey, ECAF 2019 (CAF, 2020), almost half of workers in Latin American cities have routine-intensive occupations (47% on average in the region's main cities, compared to 41% in the United States), and around one-third is engaged in non-routine manual occupations (32% compared to 22%, respectively). The flip side of this is a lower weight of employment in complex or abstract cognitive skill-intensive occupations (Figure 2.17).

14. The authors also show that high routine-intensive occupations pay lower wages, which confirms that the demand for employment in such occupations is contracting.

Figure 2.17
Skill content required by occupations in Latin American and US cities



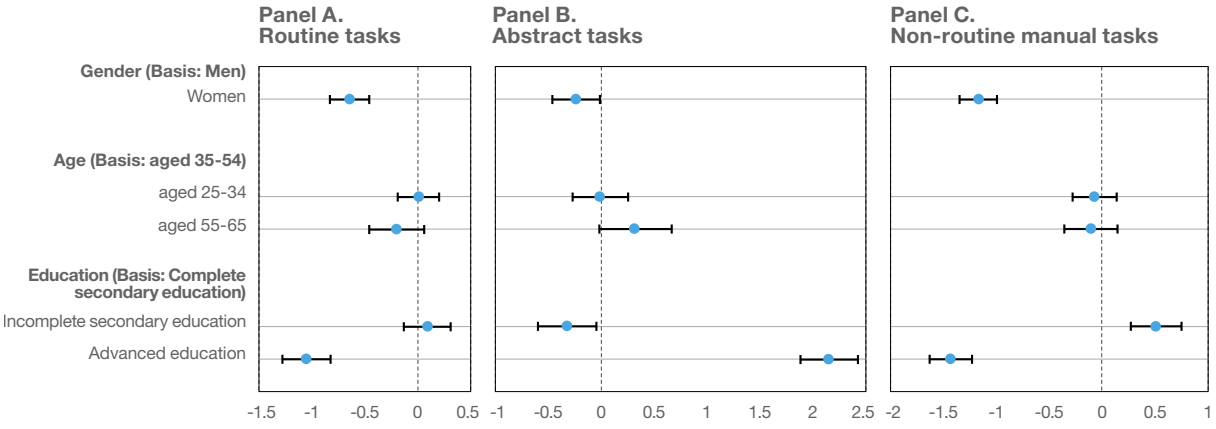
Notes: This classification of occupations and the generation of indicators are based on Acemoglu and Autor (2011), and Hardy (2016).

Source: Authors based on data from O*NET 24.2 (O*NET Resource Center, 2020), ECAF 2019 (CAF, 2020), and Occupational Employment Statistics (U.S. Bureau of Labor Statistics, 2018).

The survey also asked about the characteristics of workers in each type of occupation. As shown in Figure 2.18, education is the factor that is most closely related to job type. Workers who completed the lowest levels of education (high school dropouts) may lose out to automation, either because they are more exposed to routine-intensive occupations and, therefore, face greater risks of having their tasks replaced by machines, or because they work in high non-routine manual-intensive occupations, where wages could stagnate. In contrast, workers who completed advanced education may be the big winners—they tend to have jobs with predominantly abstract tasks and may benefit from a greater incorporation of technology, improving their productivity and wages.

If controlled for level of education, older age is linked to lower participation in high routine-intensive occupations and higher participation in jobs where abstract tasks prevail, although differences are small. Women also tend to be underrepresented in all types of occupations (as a result of the gender gap in labor market participation), although this is less so in abstract occupations. Therefore, in principle, their exposure to the effects of technological change is lower.

Figure 2.18
Content of tasks by sociodemographic characteristics of workers in Latin America's main cities



Notes: The figure shows the estimated ratios by ordinary least squares and confidence intervals (95%) of three regressions where dependent variables are displayed in the header of each panel and independent variables are workers' gender, age group, and education category. All regressions include data from all cities in the survey and dummy variables by city.

Source: Authors based on 2019 CAF Survey (ECAF) data (CAF, 2020).

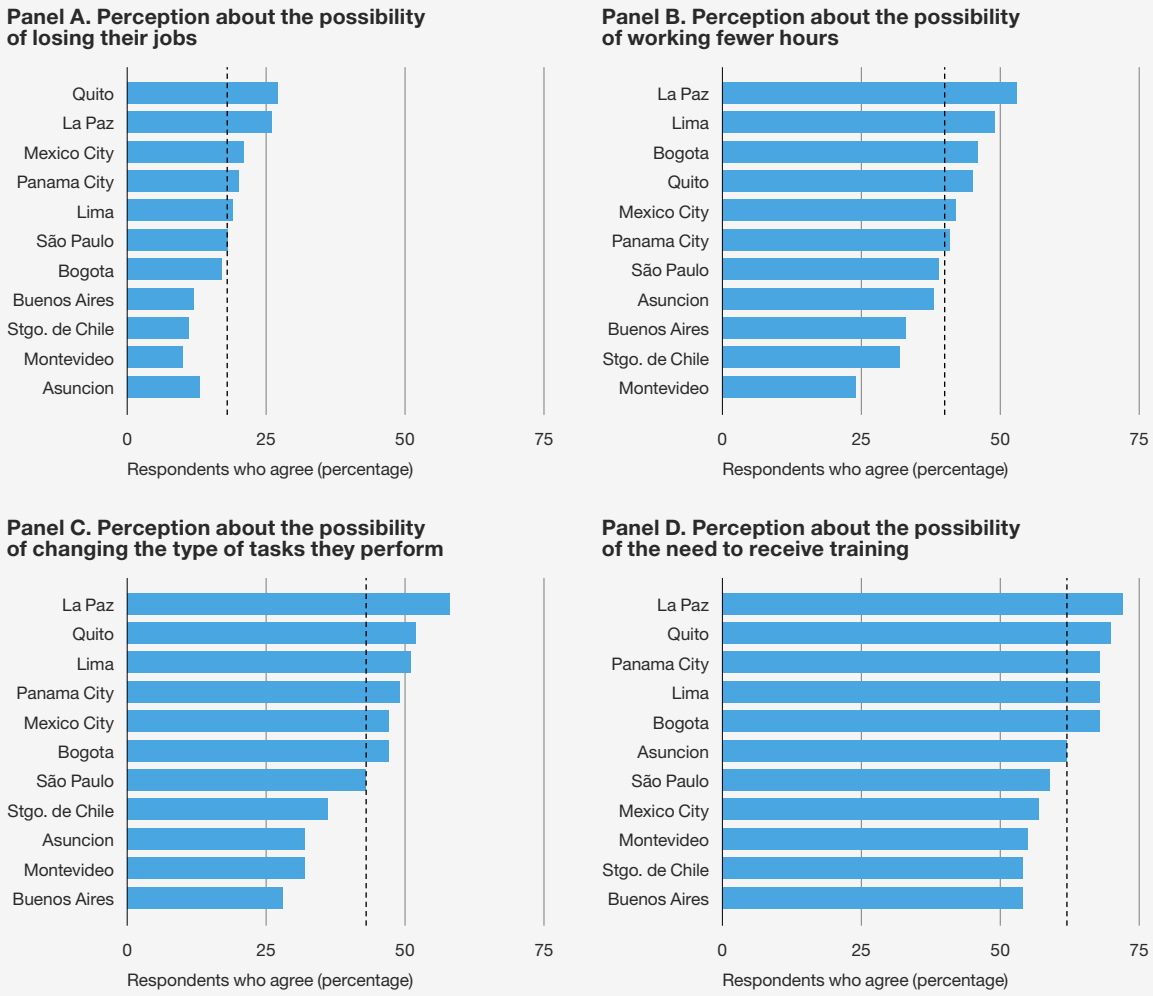
In short, the effects of technological change on employment are less marked in Latin America than in developed countries. However, this does not mean that they will not materialize in the future, as new technologies are introduced into productive processes. Indeed, the potential consequences of technological change on the working life do not go unnoticed among workers in the region, as shown in Box 2.3. For the moment, lower demand for routine skills may spoil job opportunities for the younger workers who completed lower levels of education, eroding the contributory pillar of social protection systems. Therefore, policy options need to be discussed to minimize these adverse effects.

Box 2.3
Workers' perceptions in the face of technological change

ECAF 2019 surveyed the perceptions of workers in Latin America's main cities regarding the consequences of technological change. When asked about the potential impacts of technological advancements over the next five years, the respondents had to indicate to what extent they agreed or disagreed with the following statements: i) I will lose my job; ii) I will keep my job, but I will work fewer hours; iii) I will have to change the type of task that I perform in my job; and iv) I will need to receive training to adapt to technological changes and keep my job.

The responses confirm that Latin American workers expect significant changes in their working lives over the next few years: two out of 10 workers are fearful of (agree or totally agree that they may end up) losing their jobs; four out of 10 workers believe that, although they will keep their jobs, they will work fewer hours; also four out of 10 respondents believe that they will have to change the type of tasks that they perform; and six out of 10 individuals think that they will need to receive training to adapt to changes and keep their jobs (Figure 1).

Figure 1
Technological change and employment: Perceptions of workers in Latin America's main cities



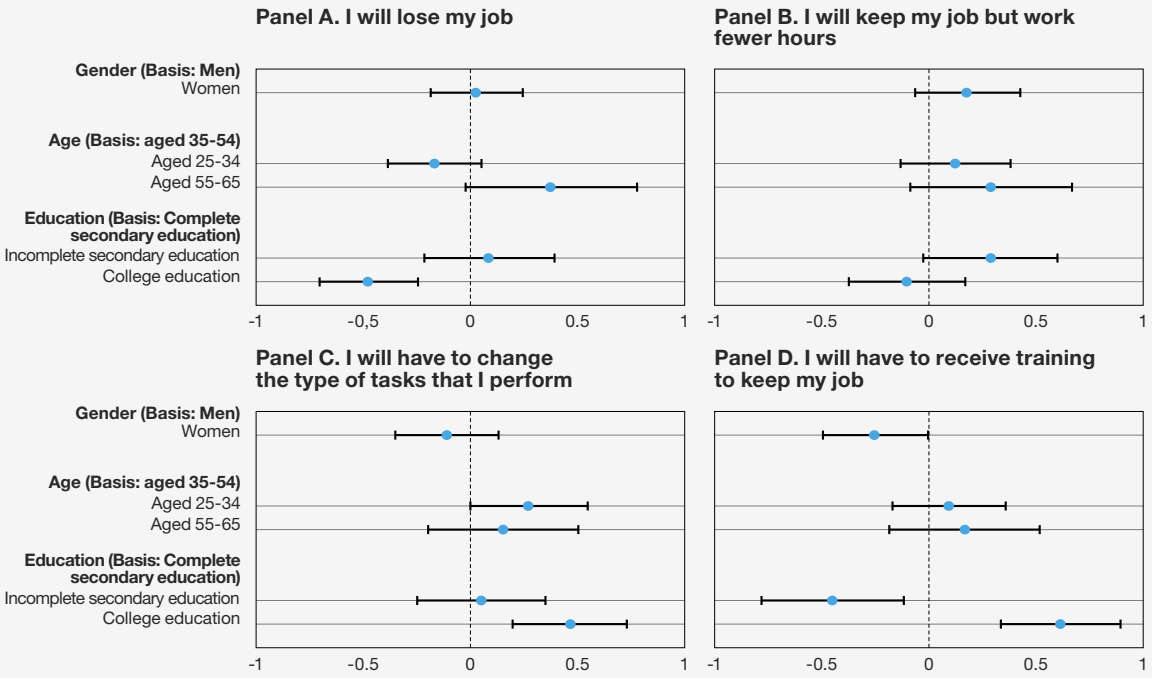
Notes: Each panel shows the percentage of workers who agree or totally agree with the statement that technological advancements could lead them, over the next five years, to: i) lose their jobs; ii) keep their jobs, but work fewer hours; iii) change the type of tasks they perform in their jobs; and iv) receive training to adapt to these changes and keep their jobs. The vertical line reflects the simple average for the cities included in each panel.

Source: Authors based on 2019 CAF Survey (ECAF) data (CAF, 2020).

Perceptions vary based on individual characteristics (Figure 2). Education is one of the characteristics that mostly affect perceptions. Compared to workers who completed intermediate levels of education, those with lower levels of education are more likely to believe that they will keep their jobs but will work fewer hours and less likely to feel that they will need to receive training. By contrast, workers with a college education are not worried about losing their jobs but they do believe that they are likely to change the type of tasks they perform and receive training to adapt to changes. One interpretation of these findings is that a higher level of education is linked to expectations that are less related to risks, such as job loss, and more related to taking advantage of the opportunities that technological change has to offer.

In addition, women are less likely than men to believe that they will need to receive training over the next few years. By contrast, young workers (compared to middle-aged workers) expect the type of tasks they perform to change but are not afraid of losing their jobs, while older workers are concerned that they may lose their jobs.[a]

Figure 2
Perceptions in Latin America's main cities about the impact of technological advancements by workers' characteristics



Notes: The figure shows the estimated ratios by ordinary least squares and confidence intervals (95%) utilizing regressions where dependent variables are displayed in the header of each panel and independent variables are the workers' gender, age group, and level of education. All regressions include data from all cities in the survey and dummy variables by city.

Source: Authors based on 2019 CAF Survey (ECAF) data (0CAF, 2020).

a. As noted, these perceptions are inconsistent with the potential impact of technological change based on age. The (limited) evidence available seems to show that the risk of losing their jobs is greater for younger workers.

Platform-based work and formal employment

Technological innovations enable work opportunities with new employment forms that are far from typical indefinite-term, full-time employer-employee relationships. The characteristics of such forms, and the differences between them, pose a challenge when it comes to designing social protection systems for this type of worker. The discussion has been recently renewed due to the concern for the potential expansion of these employment forms as a consequence of technological progress. Technologies like digitalization, for example, favor the development of online platforms where workers can provide their services remotely.

Before delving into these new employment forms, we need to put the situation into perspective. As indicated in Table 2.7 (see page 103), paid employment jobs have increased in recent years, both in Latin America and in OECD countries. Between 2000 and 2016, the share of salaried employment grew from 57% to 60% in Latin America, and from 83% to 85% in OECD countries. These numbers also suggest that some non-standard forms of employment are not actually new.

This section focuses on digital platform-based work, i.e., activities where the demand for and supply of labor are mediated by online platforms. These platforms include a myriad of contractual arrangements between the various agents involved, going from locally supplied services (where typical examples include transport services like Uber and product delivery services like Rappi) to services that are traded and provided online (where typical examples include the performance of specific tasks like Amazon Mechanical Turk and the provision of specialized services like Upwork). These new employment modalities hold the potential to drive more efficient use of resources and greater flexibility for businesses and workers alike (Cramer and Krueger, 2016; Oyer, 2020). However, they also pose risks for workers, like higher income volatility and deteriorating working conditions, especially in terms of access to social protection.

Platform-based jobs are relatively new and are gaining ground in the employment sphere, although estimates about their importance vary based on the sources of information and the measurement criterion. Based on household surveys, Katz and Krueger (2018) estimate that platform-based jobs account for just 1% of total employment in the United States. However, traditional household surveys tend to underestimate this phenomenon, since they focus on the main job and are not designed to collect accurate information about secondary jobs (Abraham, Haltiwanger, Sandusky, and Spletzer, 2018 and 2019). Using data from tax returns, according to Collins, Garin, Jackson, Koustas, and Payne (2019), platform workers can represent up to 3% of the labor force in big metropolitan areas, with an exponentially increasing participation. Similar results were found by Farrell, Greig, and Hamoudi (2018) based on data from bank transactions. According to the COLLEEM (COLLaborative Economy and EMployment) survey, which was specifically designed to research platform work and conducted in 14 EU Member States, 10% of the adult population has used online platforms at least once for the provision of some type of work service (Pesole, Urzí Brancati, Fernández-Macías, Biagi, and González

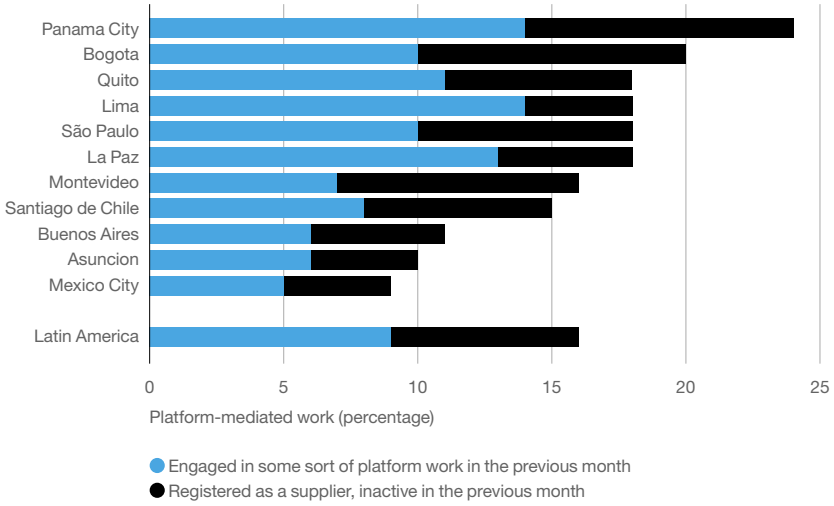
Vázquez, 2018). The 2018 “Freelancing in America” study revealed that 22% of Americans engaged in some type of work online as a freelancer at least once over the previous 12 months.

ECAF 2019 data is presented below to measure and characterize platform work in Latin America’s main cities. The survey included a series of questions to identify workers who provided labor services over a digital platform during the month before the survey and those individuals registered with a platform as service providers but who had not performed any activities during that period.

On average, 9.4% of workers said they had provided a service over a platform in the previous month, while 6.7% had registered with a platform as a supplier but not rendered any services in that period. This means that around 16% of the labor force can be classified as active or potential platform workers. The cities with the highest total peaks in Panama City (23%), Bogota (20%), and Quito (19%) (Figure 2.19).

The ECAF 2019 survey revealed that 9.4% of workers provided services over a platform in the previous month.

Figure 2.19
Incidence of platform-mediated work in Latin America’s main cities



Notes: A platform worker is any individual who provides an affirmative response to any of the following questions: a) Some individuals find short tasks or in-person jobs (for example, using their own vehicle to transport passengers or goods, or to deliver groceries at someone’s door) mediated by digital platforms or web applications that connect them directly with their clients. Does this describe any work you carried out last month? b) Some individuals choose online short tasks or jobs (for example, data entry, translations, website development, software development, or graphic design) by the agency of companies that share task lists on applications or internet sites. Such tasks are performed completely online and companies arrange for payments for the work done. Does this describe any work you did last month? c) Even if you have not carried out any work on a digital platform or web application in the previous month, are you registered with any digital platform or web application as a service supplier or task performer? Data for Latin America indicate the simple averages for each category, for the cities included in the figure.

Source: Authors based on 2019 CAF Survey (ECAF) data (CAF, 2020).

Just as in developed countries, platform work in Latin America coexists with other traditional and non-standard forms of employment. In some cases, individuals earn their main income from paid employment jobs and earn an extra income doing platform-mediated activities. In other cases, non-salaried workers and employers perform part or all of their activities on digital platforms. As shown in Table 2.14, the occupational group with the highest incidence of platform activity in the previous month are employers or business owners with employees (15%), self-employed persons (13%), and salaried workers (6%). Out of all workers that engaged with platforms in the previous month, 60% are self-employed, 27% are salaried workers, 10% are employers, with the remaining 3% formed by unpaid family workers, members of cooperative associations, or domestic employees (in the last column). Finally, among individuals who did some type of platform work in the previous month, 4.4% worked in person, 3.4% worked online, and 1.7% did a combination of the two.

Table 2.14
Incidence of platform work in Latin America's main cities by occupation category

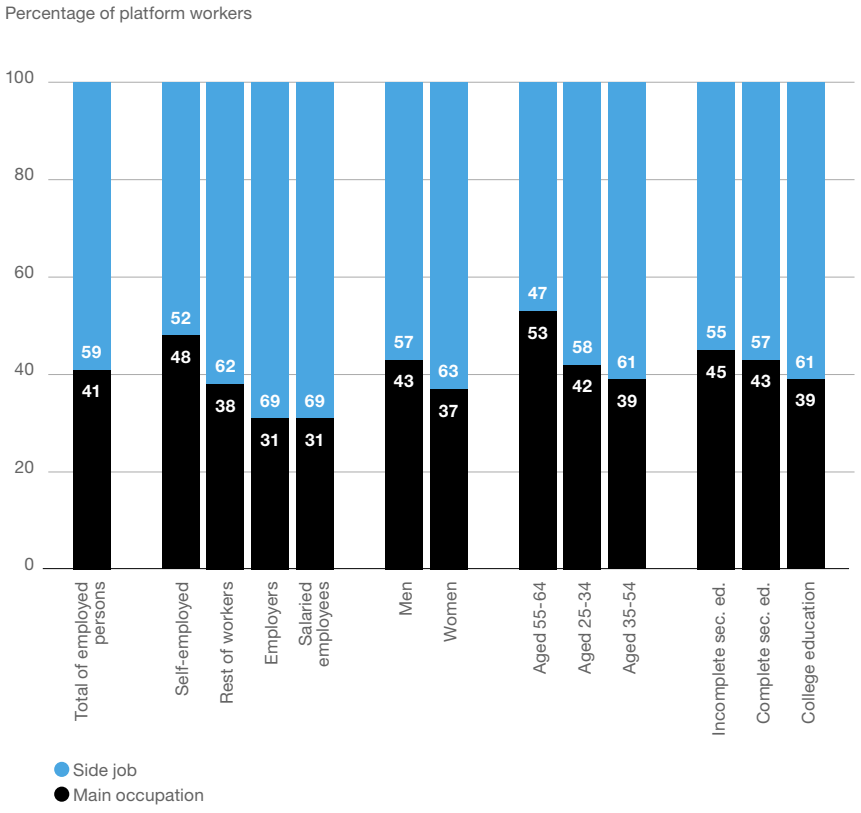
Occupation category	With no platform activity, not registered with a platform as a supplier	Registered as a supplier but inactive in the previous month	With platform activity in the previous month			Total	Platform workers active in the previous month by occupation category
			In-person	Online	In-person and online		
Salaried workers	87%	7%	2.4%	2.6%	0.9%	100%	27%
Self-employed	81%	7%	5.9%	4.2%	2.4%	100%	60%
Employers	75%	10%	7.5%	4.5%	3.1%	100%	10%
Rest of workers	92%	3%	3.7%	1%	0.7%	100%	3%
Total of employed persons	84%	7%	4.4%	3.4%	1.7%	100%	100%

Notes: A worker with platform activity in the previous month is any individual who provides an affirmative response to questions a) or b) of the survey shown in Figure 2.19. A worker with no platform activity but registered as a supplier is an individual who provides a negative response to questions a) and b), and an affirmative response to question c) in the same Figure.

Source: Authors based on 2019 CAF Survey (ECAF) data (CAF, 2020).

Platform workers that engaged with platforms in the month prior to the survey were asked whether their activities constituted their main occupation or side jobs. In all of the occupation categories, platform work was cited as an individual's main activity in 41% of the responses, although this may vary based on workers' category and characteristics. Platform work is more frequent among self-employed persons than in other employment categories; among men than women; among younger and older individuals than among middle-aged persons, and among workers with lower levels of education (Figure 2.20).

Figure 2.20
Distribution of platform work in Latin America's main cities by type of activity



Notes: Platform workers with activity in the previous month who said they had taken on i) short tasks or in-person jobs mediated by digital platforms or web applications that connected them directly with clients, or ii) online short tasks or jobs by the agency of companies that share task lists on applications or internet sites, and arrange for payments for the work done (for activity examples, see note to Figure 2.19 on page 133).

Source: Authors based on data from the 2019 CAF Survey (ECAF) (CAF, 2020).

How do platform workers compare to salaried employees, self-employed individuals, and employers who do not use digital platforms for work? Data in Table 2.15 show that, on average, platform workers tend to be younger than non-platform workers, are generally men, and probably completed higher levels of formal education. It is interesting to note that platform workers are also more likely to have taken part in a vocational training session over the previous 12 months or a course about new technologies.

Table 2.15
Profile of platform workers with activity in the previous month in Latin America's main cities

	Workers with platform activity in the previous month	Salaried employee	Self-employed	Employers
Demographic characteristics				
Women	28%	41%	41%	43%
Aged 25-34	41%	35%	25%	25%
Aged 35-54	52%	55%	56%	61%
Aged 55-65	8%	11%	18%	13%
Highest level of education attained				
Incomplete secondary education	15%	22%	35%	22%
Complete secondary education	27%	34%	36%	42%
Advanced education	58%	44%	29%	36%
Training (over the previous 12 months)				
Received training	53%	42%	19%	21%
Received training on new technologies	39%	21%	9%	8%

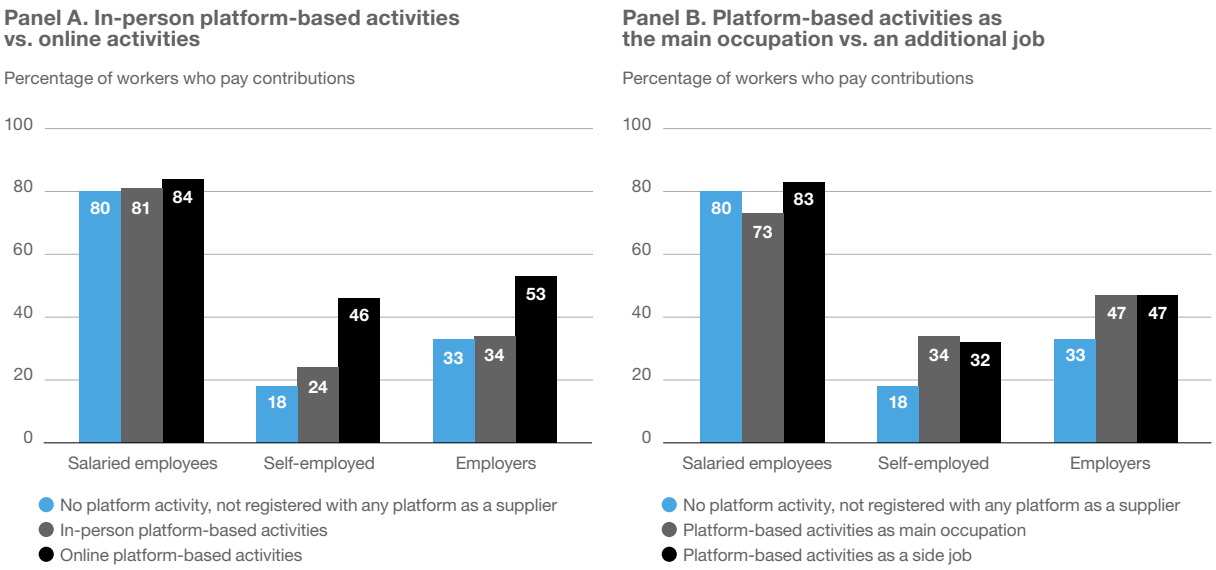
Notes: A worker with platform activity in the previous month is any individual who provides an affirmative response to questions a) or b) of the survey shown in Figure 2.19 (see page 133).

Source: Authors based on 2019 CAF Survey (ECAF) data (CAF, 2020).

A key question for this chapter is how these new forms of employment relate to traditional social protection systems. One way to approach this topic is to compare the degree of formal employment for people who carry out work on digital platforms and those who do not. Figure 2.21 shows the formal employment rate for both groups. Formal employment varies greatly depending on the worker's occupation category. Therefore, the information is presented in such a way that the formal employment rate of workers with and without platform activity in the same occupation category can be compared.[15] In addition, panel A breaks up platform workers according to whether they performed activities in person or online, while panel B separates them by whether these activities were their main occupation or a side job.

15. Workers registered with a platform as suppliers but who have not provided any service in the previous month are excluded for comparison clarity purposes. Anyway, the main conclusions hold true if these individuals are included in the analysis.

Figure 2.21
Formal employment rate of platform jobs in Latin America's main cities



Notes: Each bar shows the percentage of workers who pay social security contributions. Panel A does not include workers who said they performed platform-based activities in-person and online because there were very few cases (1.7%).

Source: Authors based on 2019 CAF Survey (ECAF) data (CAF, 2020).

This figure shows two results. First, in the same occupation category, formal employment levels tend to be higher among platform workers than among non-platform workers. This is apparent in the case of the self-employed and employers, and, to a lesser extent, paid employment jobs. Second, differences can be identified in the levels of formal employment among different groups of platform workers. In particular, formal employment rates are higher for individuals who work online vs. those who deliver or perform their services in person. Conversely, there are no clear differences between platform workers when the job is their main occupation or a side job.

In the same occupation category, formal employment levels tend to be higher among platform workers than among non-platform workers.

What reasons can account for the higher formal employment level of platform-based work? On the one hand, these workers tend to have completed a higher level of education than workers who do not use platforms (Table 2.15). It has already been discussed that formal education is strongly associated with formal employment (for example, a higher level of education increases productivity, which relieves the burden of formal employment costs). However, these differences still hold if we compare individuals with the same level of education and other socioeconomic characteristics.[16] Therefore, there seems

16. The likelihood of contributing to social security is 6 percentage points higher for platform vs. non-platform workers, contingent upon the occupation category, the level of education, the age group, gender, and the worker's city of residence.

to be something else behind this enhanced formal employment. In part, this difference can be attributed to the fact that digital platform-mediated activities are easier to audit, as discussed in the section "Employment organization changes: platforms as an opportunity" section.

Margins to increase coverage: formality and gender dividends

As shown in "Labor market informality—a long-standing problem," typically, Latin American workers receive limited coverage from social protection systems. This has an impact not only on the role played by these systems in society and their effectiveness but also on their financial sustainability. The question that follows then is how coverage can be increased. An analysis of the structural characteristics of labor markets in Latin America reveals two clear margins in this regard: formal employment and women's participation in the labor market.

To assess the potential contribution of these two margins to social security coverage, this section will estimate the impact of changes in the formal employment rate and the participation of women in the labor market on the revenues of pension and healthcare systems. Employing counterfactual exercises, it is possible to calculate social security contributions in multiple hypothetical scenarios for the 2015-2065 period. We do this for a group of eight countries in the region for which we could access the necessary information: Argentina, Brazil, Colombia, Ecuador, Mexico, Paraguay, Peru, and Uruguay.

In these exercises, the population was divided according to three dimensions: gender, age, and education.[17] The size of each of these groups changes over time in line with the demographic projections for each country. In addition, each group in each country has a set of labor market performance variables associated that define their contribution to the social security system. These performance variables are labor force participation, employment, and formal employment rates, in addition to the level of income or compensation. In the base scenario, the projection of social security contributions is conducted in line with the level of these variables in 2015 (except for Mexico, for which 2016 was considered).[18] Counterfactual exercises, as their name suggests, cover an alternative scenario for the labor force participation or formal employment rates. Any changes associated with these scenarios will occur at the beginning of the analyzed period and are permanent, i.e., they will not revert to the levels

17. Three levels of education were considered: i) up to incomplete secondary education, ii) complete secondary education or up to incomplete college education, and iii) complete college education. In terms of age, some cases consider 5-year age groups (e.g., 15-19, 20-24), while others take individual ages (e.g., 50, 51, 52).

18. Income levels increase over time, but at the same rate as GDP. For more details about the methodology used for income projections in social security systems, see Box 5.1 (see page 314), and Daude and Pena (2020).

of the base scenario. The gains in social security contributions compared to the base projection is what is called dividends.

The formal employment dividend

Informal employment in Latin America comprises almost 63% of workers in the region, as has already been discussed. This has not only significant implications for the income of individuals and other aspects of their working lives, but it also has a direct impact on the funding of social protection systems, since their revenues originate in the contributions made by formal salaried workers.

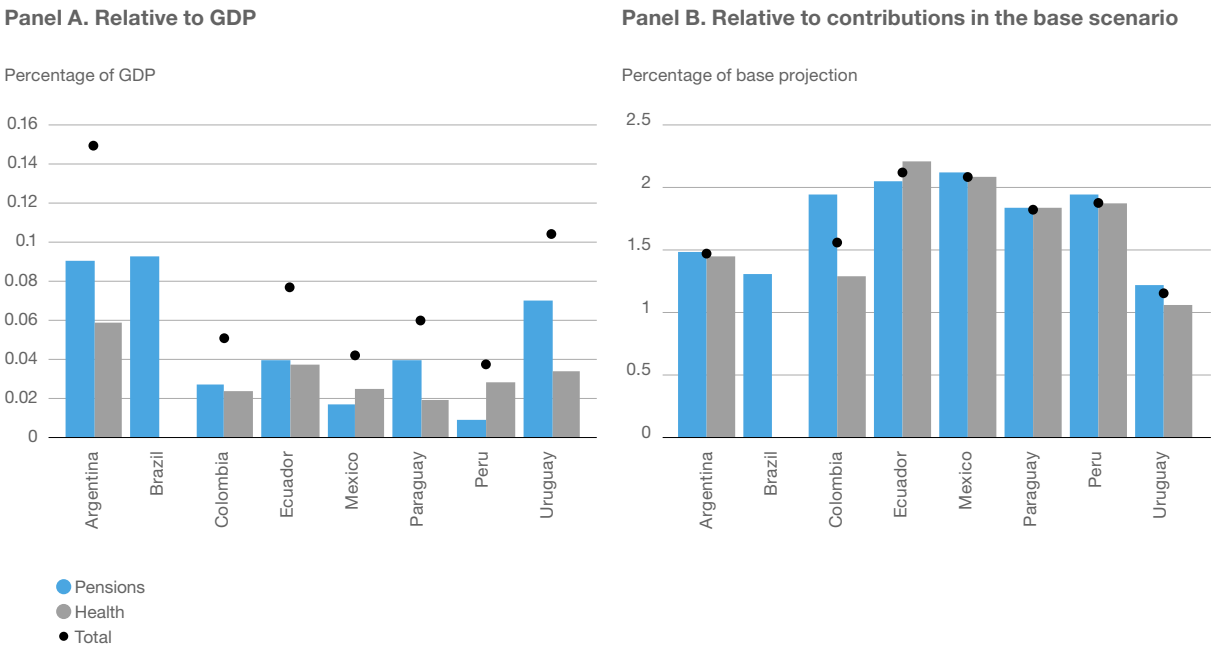
The magnitude of the formality dividend in each country depends on two factors. On the one hand, how much each worker who changes from an informal to a formal job would contribute on average. On the other hand, how much space each country has to actually increase formal employment.

Along these lines, in the first exercise (called E1 to differentiate it from other exercises), the formal employment rate will increase 1 percentage point[19]—to estimate the elasticity of social security contributions—. Then, other scenarios for the formal employment rate are presented. This makes it possible to break up the formality dividend into the elasticity component and the space available in each economy to reduce informal employment.

Figure 2.22 shows the average increase of contributions to the pension and the health systems as well as the whole social security system for the 2016-2065 period, in this first exercise. As panel A shows, a 1 percentage point increase in the formal employment rate causes a rise in total contributions relative to GDP, ranging from 0.04% in Peru and Mexico up to 0.15% in Argentina. These differences arise mainly from differences in the impact on pension contributions, which is about 0.09% of GDP in Argentina and Brazil, whereas in Peru it is just 0.01% of GDP. Contributions to the health system, in turn, rise more uniformly. In six out of the seven countries—Brazil was excluded due to lack of information—these contributions increase from 0.02% to 0.04% of GDP. In Argentina, the increase reach almost 0.06% of GDP.

19. It is assumed that the formal employment rate growth is uniform for each age, gender, and education group, i.e., for each group it increases by exactly 1 percentage point.

Figure 2.22
Formality dividend: 1 percentage point increase in formal employment

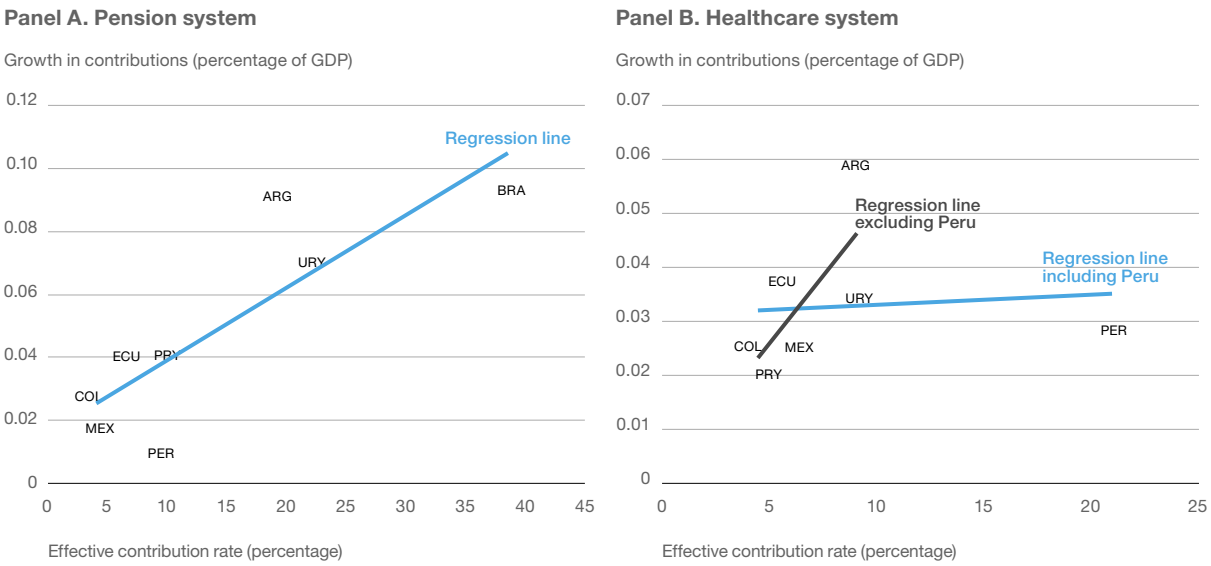


Notes: With regard to Brazil, only pension system data are available.
Source: Authors based on IERAL data (2020) and Crosta *et al.*(2019).

Differences in effective contribution rates across country account for the significant differences in the increase in pension contributions.[20] This is illustrated in panel A of Figure 2.23. For example, contribution rates in Argentina, Brazil, and Uruguay, which show the highest increase in pension contributions, are much higher than in the rest of the countries. In the case of the health system (panel B), this relationship is less clear because of Peru, which does not experience a particularly high increase in contributions relative to GDP but it has the highest effective contribution rate among the analyzed countries—it is more than double than the one observed in the country with the second highest rate. However, if Peru is excluded, a clear positive relationship can be observed.

20. The effective contribution rate is calculated as the revenue registered as a percentage of the formal employment wage bill.

Figure 2.23
Formality dividend as a percentage of GDP in relation to the effective contribution rate



Notes: With regard to Brazil, only pension system data are available.
Source: Authors based on IERAL data (2020) and Crosta *et al.*(2019).

The increase in contributions can also be presented as percentage of contributions in the base scenario, rather than GDP, as shown on panel B in Figure 2.22. Using this metric, total contributions to the social security system rise from 1.2% in Uruguay up to 2.1% in Ecuador and Mexico. That is, per every percentage point that the formal employment rate increases, total contributions to the social security system rise above 1% in all countries and above 1.8% in Ecuador, Mexico, Paraguay, and Peru, which represents a significant impact. In general, pension and health system contributions increase roughly equally in each country, except for Colombia, where they grow 1.9% and 1.3%, respectively. This disparity, significantly larger than what is observed in the other countries, results from the fact that in Colombia the contributions of retirees, whose contributions are not affected by the changes in formal employment rates, relative to those of working-age individuals to the health system are also much larger than in the other countries. In consequence, relative to the base scenario, contributions to the health system in Colombia increase significantly less than pension contributions, which depend solely on the contributions of formal salaried workers.

As indicated above, estimating the formality dividend also requires considering alternative scenarios for the formal employment rate. Along these lines, the following two exercises were carried out. The first one (called F1) assumes that the formal employment rate in each country increases up to its "expected" value according to their respective GDP per capita, as explained in "Labor

market informality—a long-standing problem."[21] The second exercise (F2) consists of reducing the observed informal employment rate by half.[22]

Table 2.16 shows the observed formal employment rates and the formal employment rates under these two scenarios. It is important to highlight that exercise F1 corresponds to a conservative scenario—i.e., it assumes a smaller increase in formal employment than in exercise F2—if the observed formal employment rate is not too far from its expected level. This is the case of all analyzed countries except for Mexico, where the formal employment rate is almost 32 points below what is expected given its level of income, the largest difference of all. For the rest of the countries, the formal employment rate increases in exercise F1 ranges from 2.2 percentage points in Uruguay up to 27.1 points in Peru. In exercise F2, the formal employment rate increases from 13.9 percentage points in Uruguay up to 35.4 in Paraguay.

Table 2.16
Observed and counterfactual formal employment rates

Country	Observed	Exercise	
		F1	F2
Argentina	65.2	72.2	82.6
Brazil	60.4	65.1	80.2
Colombia	39.8	60.9	69.9
Ecuador	40.1	54.9	70.1
Mexico	38.2	69.8	69.1
Paraguay	29.2	55.1	64.6
Peru	31.3	58.5	65.7
Uruguay	72.3	74.5	86.1

Notes: The observed formal employment rate is for 2015, except for Mexico, which is for 2016.
Source: Authors based on data from CEDLAS (2020) and ILO (2020).

21. For each age, gender and education group, the number of informal salaried workers drops in the same proportion as the aggregate informal employment rate should be reduced. This means that the groups with the highest informal employment rates experience a deeper change in the formal employment rate.

22. Specifically in this exercise (F2), the informal employment rate halved for each age, gender, and education group. This means that the aggregate informal employment rate was also halved.

Before analyzing the results of these exercises, it is important to point out that the formal employment rates presented in this section are based on a definition of formal employment different from the one used in Table 2.6 (see page 101). In this section, formal workers are defined as all salaried employees in the public sector, all salaried employees in the private sector who report contributing to social security, self-employed professionals, and employers. On the contrary, informal workers are salaried employees in the private sector who report not contributing to the social security system and the self-employed non-professionals.

On average, per each percentage point that the formal employment rate increases, social security systems receive additional contributions in the order of 0.06% of the GDP.

Given this definition, the informal employment rate in six out of the eight countries under analysis is between the two rates reported in Table 2.6.[23] For the other two countries, Argentina and Ecuador, the informal employment rate is below the two rates shown in the table. In the case of Argentina, the difference ranges from 16 to 13 percentage points, while for Ecuador, it varies from 11 to 5 points. This means that, in a worst-case scenario, the formality dividend is being underestimated in these two countries. In the rest of the countries, the definition of formal employment used here does not entail a significant bias.

Looking at the results of exercises F1 and F2, Table 2.17 shows the average increase in social security contributions in both scenarios for the entire period under analysis. The first interesting result is that the rise in contributions per each percentage point that the formal employment rate increases are the same in both exercises.[24] On average, per each percentage point that the formal employment rate increases, social security systems receive additional contributions in the order of 0.06% of GDP, which is equivalent to 1.4% of total contributions in the base scenario.

23. In this case, we are not taking into account that the years being compared are not the same, except for Brazil. However, these comparisons hold true given the persistence shown by informal employment rates over time and the proximity of the years that were included.

24. On average, these additional contributions per each percentage point that the formal employment increases are almost 80% lower than additional contributions resulting from exercise E1, where the formal employment rate increases exactly 1 percentage point. This is due to the design of exercises F1 and F2 compared to E1. In exercises F1 and F2, the groups of workers with the highest informal employment rates (who tend to receive lower compensations) experience a larger increase informal employment rates. Therefore, these groups are over-represented in the set of informal salaried workers who transition to formal employment. In other words, an average worker who transitions to formal employment will contribute less than an average informal salaried worker. On the contrary, in exercise E1, an average worker who transitions to formal employment is, by design, identical to an average informal worker.

Table 2.17
Formality dividends: results from counterfactual exercises

	Variation of total social security contributions		Variation of the formal employment rate (percentage points)	Var. in contributions/var. in formal employment rate ratio	
	% of GDP	% of base scenario		% of GDP	% of base scenario
	(A)	(B)	(C)	(A/C)	(B/C)
			Exercise F1		
Argentina	0.97	9.5	7.0	0.14	1.4
Colombia	0.88	26.3	21.1	0.04	1.2
Ecuador	1.03	28.3	14.8	0.07	1.9
Mexico	1.14	56.2	31.6	0.04	1.8
Paraguay	1.04	31.4	25.9	0.04	1.2
Peru	0.72	36.1	27.1	0.03	1.3
Uruguay	0.20	2.2	2.2	0.09	1.0
Average	0.85	27.1	18.53	0.06	1.4
			Exercise F2		
Argentina	2.42	23.7	17.4	0.14	1.4
Colombia	1.25	37.6	30.1	0.04	1.2
Ecuador	2.09	57.3	29.9	0.07	1.9
Mexico	1.11	54.9	30.9	0.04	1.8
Paraguay	1.42	42.9	35.4	0.04	1.2
Peru	0.91	45.6	34.3	0.03	1.3
Uruguay	1.24	13.9	13.9	0.09	1.0
Average	1.49	39.4	27.42	0.06	1.4

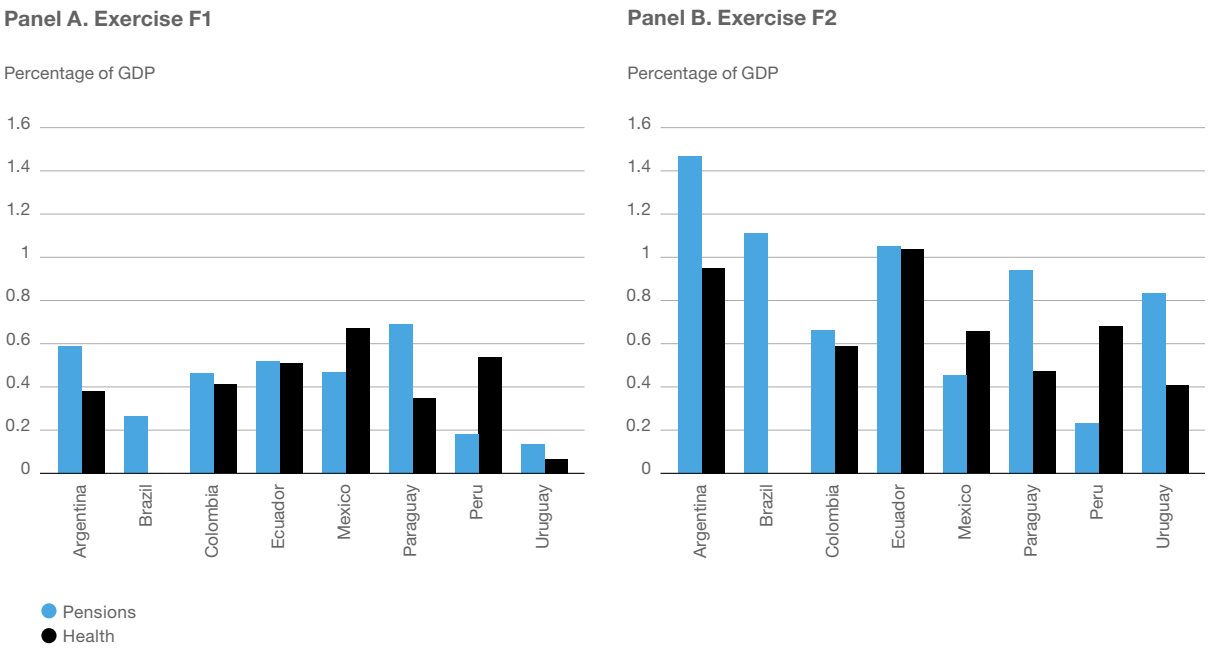
Source: Authors based on IERAL data (2020) and Crosta *et al.*(2019).

Regarding the impact on the whole social security system, significant gains are observed in the conservative exercise (F1). In Ecuador, Mexico, and Paraguay, contributions rise by more than 1% of GDP, which is equivalent to an increase of between 28% and 56% relative to revenues in the base scenario. Colombia and Peru, although their gains relative to GDP are not as high as in the previous countries, also experience a significant increase in contributions relative to the base scenario of 26% and 36%, respectively. In Uruguay, in turn, where the formal employment rate rises by 2.2 percentage points (the smallest increase among the examined countries), social security contributions only rise by 0.2% of GDP, which entails a 2.2% increase relative to the base scenario. On average, countries receive additional social security contributions in the order of 0.85% of GDP, equivalent to a 27% increase relative to the base scenario.

In the most optimistic exercise (F2), where the informal employment rate halves relative to the observed rate, the impact on contributions is naturally larger (except for Mexico, where the formal employment rate grows slightly less than in the previous exercise). Social security contributions increase from 0.9% of GDP in Peru up to 2.4% in Argentina. On average, social protection systems in the analyzed countries receive an additional 39% in contributions, equivalent to 1.5% of GDP.

Figure 2.24 shows the increase in contributions as a percentage of GDP broken down into pensions and healthcare in both exercises. In addition to the countries shown in the previous table, this figure also includes Brazil, which only shows the results for its pension system as the necessary information to calculate healthcare contributions is not available. In exercise F1, which in Brazil involves a rise in the formal employment rate of almost 5 percentage points, pension contributions grow less than 0.3% of GDP, equivalent to 3.2% of revenues in the base scenario. In exercise F2, in turn, where formal employment increases close to 20 percentage points, contributions grow 1.1% of GDP or close to 16% relative to the base scenario.

Figure 2.24
Formality dividend in counterfactual exercises per type of social security system



Notes: With regard to Brazil, only pension system data are available.
Source: Authors based on IERAL data (2020) and Crosta *et al.* (2019).

In addition to the gains in contributions in these hypothetical scenarios, it is interesting to explore in more details the sources of those gains. For that, results are broken down by gender, age, and education. Panel A in Table 2.18 shows the share of each of these groups in the increase in social security contributions.[25] For example, in Argentina, men account for 63.5% of this increase, while workers who completed tertiary level education account for 5.7%.

Table 2.18
Disaggregated formality dividend and distribution of informal salaried workers

Country	Men	Women	15-29	30-49	50+	Incomplete secondary education	Complete secondary education	Complete college education
Panel A. Contribution to the formality dividend (percentage)								
Argentina	63.5	36.5	22.7	48.5	28.7	31.1	63.1	5.7
Brazil	74.4	25.6	13.8	66.0	20.2	39.3	54.7	6.0
Colombia	61.1	38.9	19.0	51.2	29.8	58.2	39.2	2.6
Ecuador	65.3	34.7	19.9	50.8	29.4	67.3	29.8	2.9
Mexico	64.7	35.3	22.7	54.4	22.9	64.9	22.5	12.6
Paraguay	60.3	39.7	26.0	57.0	17.1	42.4	39.0	18.7
Peru	58.6	41.4	16.8	39.2	43.9	33.1	52.4	14.4
Uruguay	67.6	32.4	14.6	53.1	32.2	79.1	19.6	1.3
Panel B. Distribution of informal salaried workers (percentage)								
Argentina	57.2	42.8	27.9	46.1	26.0	34.4	60.8	4.8
Brazil	59.7	40.3	25.6	43.4	31.1	71.2	27.3	1.5
Colombia	57.4	42.6	30.4	41.1	28.5	64.0	34.8	1.2
Ecuador	58.7	41.3	29.0	42.3	28.7	70.9	27.4	1.7
Mexico	57.8	42.2	34.2	42.0	23.9	74.9	19.0	6.1
Paraguay	58.5	41.5	39.1	37.8	23.1	68.8	27.4	3.7
Peru	49.9	50.1	30.3	37.2	32.5	58.1	37.1	4.8
Uruguay	57.3	42.7	23.4	40.4	36.3	85.7	13.7	0.7

Notes: The percentage of increased pension contributions attributed to each group is reported. For all countries. except for Brazil. total contributions are computed (pension and health). For Brazil. only pension contributions are computed.

Source: Authors based on data from IERAL (2020) and Crosta *et al.*(2019).

25. It is important to highlight that the relative share of each demographic group is identical in exercises F1 and F2 because of the design of these exercises. In both, the informal employment rate of each group defined by a combination of gender, age, and education changes in a proportionally equal way to the change in the aggregate informal employment rate. This means that the weight of each of these groups in the total group of workers who hypothetically transition from informal employment to formal employment is the same in the two exercises.

Panel B in Table 2.18, in turn, displays the demographic distribution of informal salaried workers. This is important because the relative contribution of each of these groups depends on both their size and their relative income. Thus, groups with a higher income, like men, middle-aged workers (30-49), and workers with higher education level, contribute more than what their size would indicate, which is important for the design of public policies aiming at increasing formal employment in order to raise social security revenues.

The gender dividend

Latin America is characterized by a wide gap in the labor market participation of men and women, as shown in "Labor participation: gender and activity gaps in adult life." Among working-age individuals (15 years of age and over), this gap is almost 26 percentage points across Latin American countries, compared to close to 12 percentage points across OECD countries. If the age range is restricted to people aged 15-64, which better represents the portion of the population that contributes to social security systems, the gender gap is 25 percentage points in Latin America, while it is 10 percentage points in the OECD. This 15-point difference can be accounted for by the low women's labor force participation rate in the region, which is almost 14 percentage points lower than the one observed in OECD countries.[26]

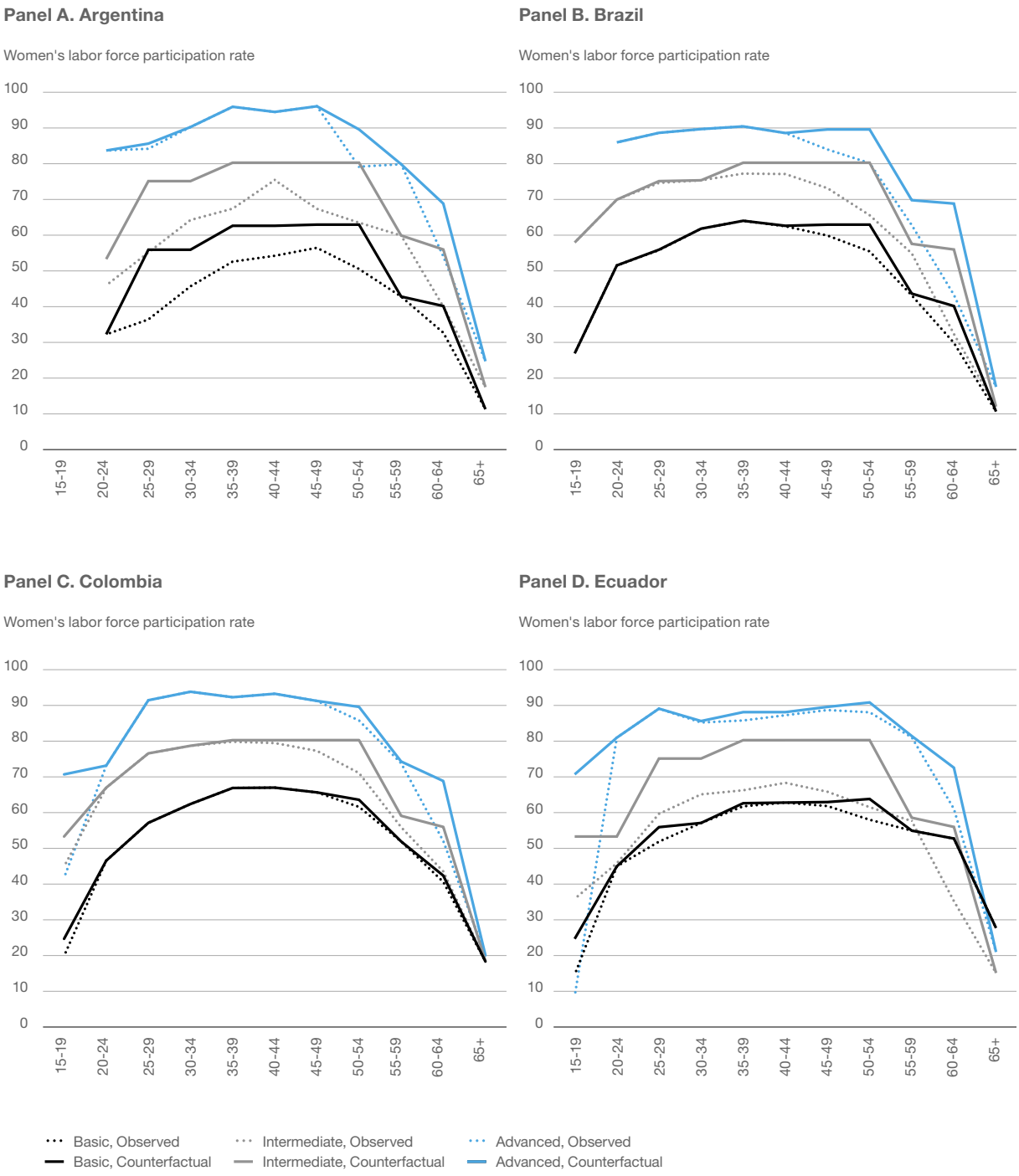
To estimate the increase in social security revenues resulting from increased women labor market participation in Latin America, a counterfactual exercise is conducted where participation rates for some women groups are equated to OECD levels. More precisely, for each group defined by a combination of age and level of education, if the observed participation rate is below the OECD rate, the former is equated with the latter; otherwise, it remains unchanged.

Figure 2.25 illustrates these changes in the participation rate of women for each country. Thus, in general, the major changes were experienced by women with an intermediate level of education and by those over 50 years of age.

Table 2.19, in turn, presents the changes in the aggregate women's labor participation and the resulting gender gap. Argentina shows an increase in women's labor participation of 8.8 percentage points, the highest among the analyzed countries, causing the gender gap to narrow by approximately one third. Ecuador and Mexico also experience relatively large increases, of 5.9 and 4.6 percentage points, respectively. The other countries show a relatively small increase, from 1.3 percentage points in Uruguay to 2.8 percentage points in Brazil, which implies that in some of these countries a wide gender gap persists.

26. Authors based on data from ILO (2020).

Figure 2.25
Observed and counterfactual women's labor force participation rate by age and education, 2015



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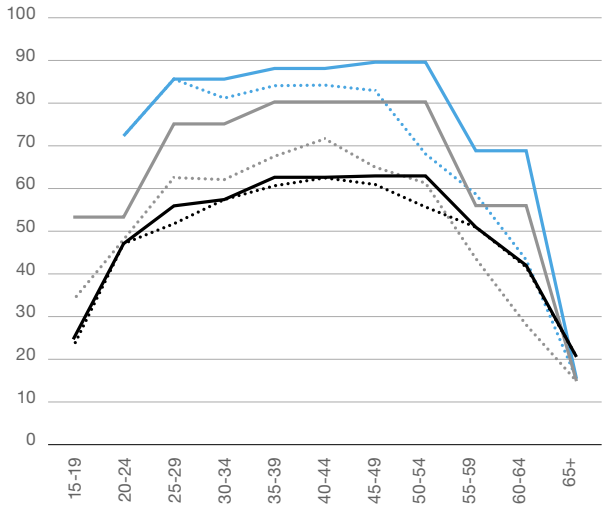
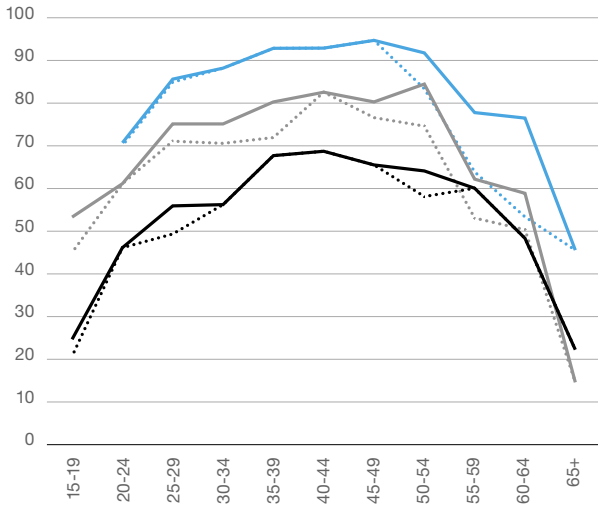
Panel E. Mexico

Women's labor force participation rate



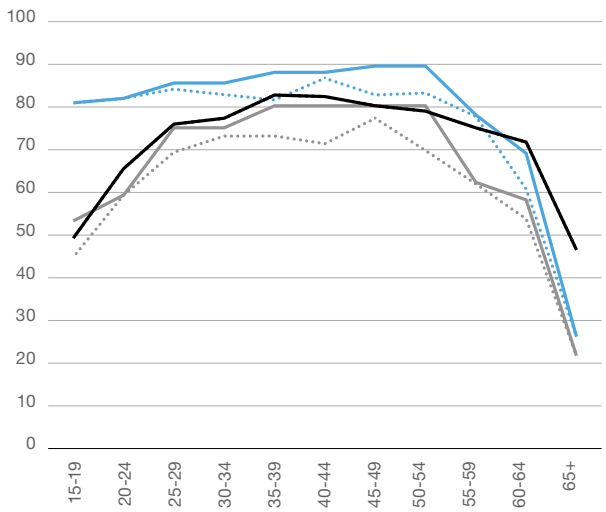
Panel F. Paraguay

Women's labor force participation rate



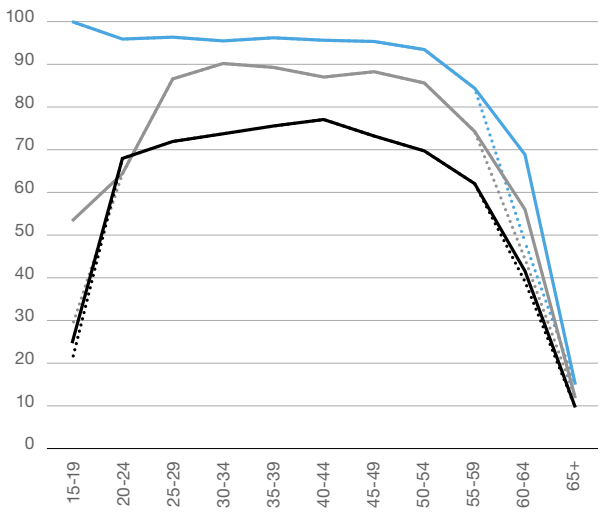
Panel G. Peru

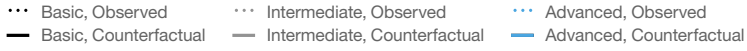
Women's labor force participation rate



Panel H. Uruguay

Women's labor force participation rate





Notes: Mexico data are for 2016.

Source: Authors based on data from CEDLAS (2020) and ILO (2020).

Table 2.19
Women's labor force participation rate and the gender gap

Country	Labor force participation rate (percentage)		Variation (percentage points)	Gender gap (percentage points)	
	Observed	Counterfactual		Observed	Counterfactual
Argentina	62.1	70.9	8.8	25.0	16.2
Brazil	61.1	63.9	2.8	21.3	18.5
Colombia	63.3	64.9	1.6	22.4	20.8
Ecuador	55.6	61.5	5.9	28.2	22.3
Mexico	54.6	59.3	4.6	31.0	26.3
Paraguay	58.9	61.4	2.5	26.9	24.4
Peru	71.1	73.6	2.5	15.0	12.5
Uruguay	68.0	69.3	1.3	15.1	13.8

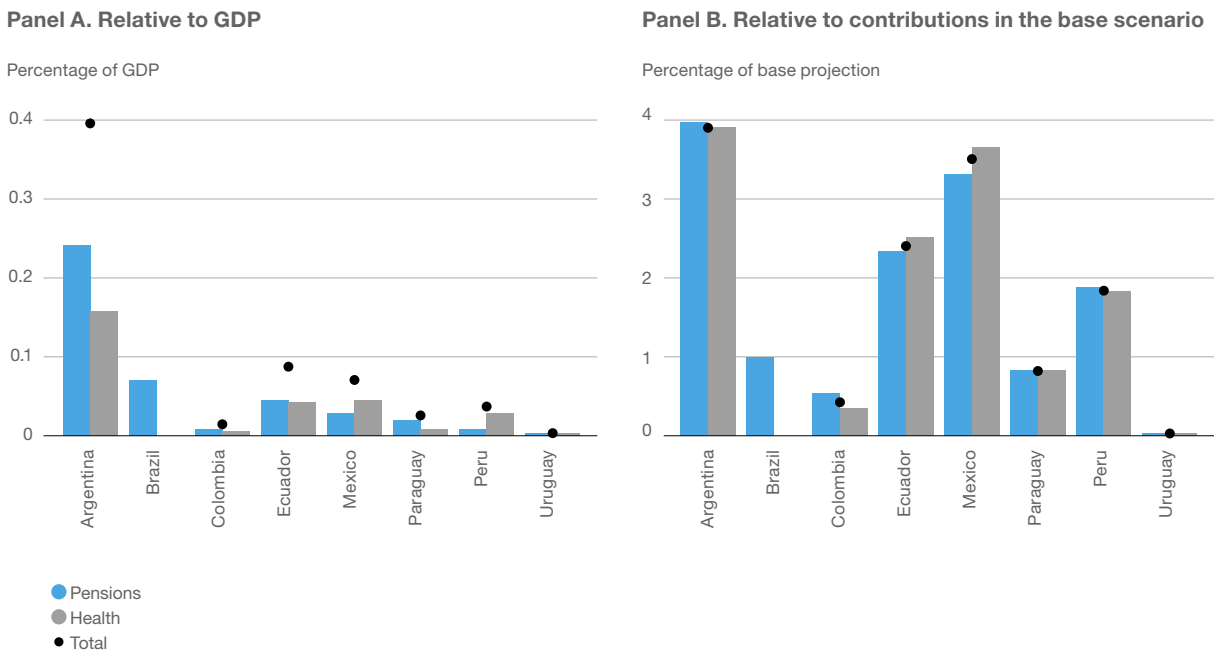
Notes: The observed labor force participation rate is for 2015, except for Mexico, which is for 2016.
Source: Authors based on CEDLAS data (2020).

The overall impact on the gender gap is modest because the restricted participation of women in Latin America results less from their low participation in each age and education group analyzed individually than from the higher proportion of women with lower levels of education who tend to have limited participation in the labor market. For example, the average for the eight countries examined here shows that almost 40% of women aged 15-64 completed no more than a basic level of education (as defined in "Labor participation: gender and activity gaps in adult life"), whereas in the OECD this percentage stands at 13%. On the opposite end, 26% of all women in these eight Latin American countries completed an advanced level of education, while the OECD figure stands at 45%. This bias toward lower levels of education causes the total female participation to remain relatively low, even in the above-described scenario, where each group's participation rates are at least as high as they are in the OECD.

Finally, Figure 2.26 shows the average increase in contributions to social security systems in each country as a result of changes in women's labor market participation. The increase in total contributions goes from 0.4% of GDP in Argentina to almost zero in Uruguay. On average, contributions increase by approximately 0.1% of GDP. Relative to contributions in the base scenario, again Argentina shows the largest increase, with 3.9%, followed by Mexico, with 3.5%. In general, the impact on social security contributions is limited, not only because of a relatively restricted increase in women's labor market participation in most cases but also because a significant proportion of women enter the labor market with an informal job. Informal employment rates

among women in these eight countries range from 27% in Uruguay to 74% in Peru, with an average of 54%. Therefore, for every two women who enter the labor market, only one makes social security contributions.

Figure 2.26
Gender dividend



Notes: With regard to Brazil, only pension system data are available.
Source: Authors based on IERAL data (2020) and Crosta *et al.*(2019).

To put these results into perspective, they are compared with the results from the conservative formal employment scenario, where the formal employment rate rises to its "expected" value (exercise F1). In the case of Argentina, revenues associated with the exercise described above account for 41% of the formality dividend in exercise F1, while, for Brazil, this figure is 27% (in this case, the impact on pension contributions is the only one available). In the other countries, revenues do not attain 10% of the conservative formality dividend.

In conclusion, even though closing the gender gap by increasing women's labor market participation would naturally generate more social security revenues, its contribution to the financial sustainability of the system is still modest.

Policies to enhance coverage to the working-age population: capitalizing on dividends and avoiding disruption

The difficult mission of increasing formal employment

Informal jobs may be the major weak point in the structure of Latin American labor markets. In addition to the dead weight this represents for productivity growth (CAF, 2018), informal employment is the main barrier to improve the effectiveness of contributory social protection systems across the countries in the region. Fostering formal employment, in addition to expanding social security coverage, would improve the financial sustainability outlook of these systems, as shown in the section called “Formality dividends”.

Like any complex situation, informal employment has many causes. Multiple factors determine incentives and limitations, both on the business and workers’ sides, for the creation of formal jobs. Therefore, an analysis of policy alternatives to support formal employment growth should begin by identifying these factors.

On the business side, formal employment involves running into higher payroll and non-payroll costs. The former includes costs imposed by regulations on minimum wages and salaries and complementary payments, while labor-related taxes and social security contributions stand out among the latter, including bigger hiring and dismissal costs. In exchange for these bigger costs, formal employment can incentivize businesses in terms of better access to loans and a greater variety of suppliers and clients, along with a lower risk of penalties for non-compliance with regulations in force. Among the limitations, the problem of access to loans is one of the major ones, especially for young and small enterprises (CAF, 2018).

The causes leading to informal employment include the high costs associated with formal personnel hiring, which shows the need to reduce payroll taxes and other non-payroll costs.

On the workers’ side, formal employment requires the payment of social security contributions and other labor-related taxes in exchange for a series of benefits, including, among others, coverage against contemporary risks—like unemployment and health insurance—, the possibility of receiving a pension after retirement, protection against the risk of redundancy, in addition to other rights that vary according to each country’s labor legislation. One of the major limitations is the low employability of informal workers.

There are a number of policies that seek to alleviate the factors causing informality. Among these factors, the high costs associated with formal employment, a barrier that has been studied extensively in previous paragraphs is one of the main obstacles for businesses. Policies to reduce payroll taxes and other non-payroll costs are in line with this analytical approach.

It is important to remember that these costs are normally the other side of the coin to funding the benefits received by workers. Therefore, funding alternatives should be found if the level of benefits is to remain unchanged. As an example, Colombia introduced a reform of this type in 2012, reducing payroll contributions by businesses from 29.5% to 16% and increasing the tax rate applicable to business revenues to keep the system's financial balance. This enabled a reduction in the informal employment rate by 5 percentage points (Fernández and Villar, 2016).[27] Other initiatives designed to decrease the cost of formal employment for businesses with positive effects on the level of formal employment are simplified tax regimes for small businesses and non-salaried workers introduced in various countries across the region (Azuara, Azuero, Bosch and Torres, 2019). Finally, it has been claimed that regulations on minimum wages and salaries may increase informal employment because they make formal employment more expensive; however, available empirical studies are not conclusive in this regard (Saltiel and Urzúa, 2017; Broecke and Vandeweyer, 2016).

A second constraint examined is that workers have few incentives to look for a formal job since they do not value its benefits as much. As workers assume the costs of formal employment in terms of lower net wages, the more workers will value the benefits received in exchange, the more incentives they will have to look for a formal job. In this regard, policies targeting an improvement in the cost-benefit ratio of formal employment for workers may be effective. Evidence is consistent with this hypothesis. A study by Bergolo and Cruces (2014) shows that the expansion of healthcare benefits for formal workers in Uruguay led to an increase in the formal employment rate of about 2 percentage points. In addition, Almeida and Carneiro (2012) found out that formal workers in Brazil are willing to accept lower net wages in exchange for the benefits associated with formal employment.[28]

The cost of formal employment (relative to the benefits) also impacts the decision by non-salaried workers of registering and contributing to social security. Across the region, coverage for non-salaried jobs is based on mandatory or voluntary contributory systems. Even though mandatory registration normally leads to improved formal employment, a limitation to enhance effective coverage that goes beyond the mandatory or voluntary nature of registration is that reports on worked hours and employment-related income are not overseen by third parties (employer) and they are difficult to monitor by inspection authorities. In line with this, improving compliance requires enhancing monitoring and control mechanisms, which can be made easier by adopting new technologies for worker registration, contribution payment, and job inspection tasks.[29] In

27. Other studies of this same reform confirm the positive impact on formal employment levels (Kugler and Kugler, 2015; Bernal, Eslava, Meléndez and Pinzón, 2017).

28. Nevertheless, this adjustment mechanism does not impact the bottom portion of the distribution of wages and salaries owing to the downward rigidity caused by minimum wage and salary regulations.

29. Multiple initiatives for the formalization of workers based on the use of new technologies have been recently implemented in several countries of the region. In general, these tools are designed to foster formal employment through transaction cost reduction—for workers' registration and the payment of contributions—and the strengthening of accountability mechanisms. Among these initiatives, electronic workers' records like *eSocial* in Brazil and *Planilla Electrónica* in Peru can be mentioned, in addition to electronic simplification programs for the payment of social security contributions, like the *Planilla Integrada de Liquidación de Aportes* (PILA) in Colombia, and applications to improve job inspection, like the *Simplificación Registral* program in Argentina.

addition, sending reminders about the obligation to contribute and the benefits of registration may lead to better compliance by non-salaried workers, as shown in the study by Bosch, Fernandes, and Villa (2015) regarding a similar initiative implemented in Brazil in 2014.

It should be kept in mind that the potential loss of the right to receive cash transfers or other non-contributory social benefits is a non-explicit but relevant cost of formality shouldered by workers. In recent decades, many governments launched non-contributory programs to transfer income to unemployed workers and provide them with health and pension coverage upon retirement. These programs, which are effective in reducing the vulnerability of lower-income families, may disincentivize formal employment, either because they discourage participation in the labor market and employment, or because they act as a disincentive to seek formal employment. This is because both unemployed and informally employed people can access benefits without being subject to income taxes.[30]

Non-contributory programs incentivize informal employment and decrease the number of formal workers in the labor force.

Studies show that non-contributory programs incentivize informal employment and decrease the number of formal workers in the labor force. In Argentina, the introduction of the *Asignación Universal por Hijo* (AUH), a program that provides unemployed and informal workers with a benefit (a monetary allowance per child under 18) that was previously restricted to formal workers, reduced the probability of the incorporation of beneficiaries to the formal employment market (Garganta and Gasparini, 2015).[31] In Mexico, the *Seguro Popular* program, which extended health coverage to informal workers with no direct cost involved for the beneficiaries, caused a reduction in formal employment (Bosch and Campos-Vazquez, 2014). In Colombia, expanding health coverage through a mechanism known as *Régimen Subsidiado* to low-income households regardless of the employment condition of their members led to a reallocation of formal and informal jobs (Camacho, Conover and Hoyos, 2014). Other social benefits, like conditional cash transfer programs, broadly adopted in the region, particularly when the condition of a beneficiary is related to a formal employment situation, have similar effects. In Uruguay, the conditional cash transfer program targeting minors in vulnerable households made formal employment plummet by about 8 percentage points (Bergolo and Cruces, 2016). Therefore, even though non-contributory income support mechanisms benefit people who have no job or who hold informal positions, they should be used with caution because they can also alter incentives in the labor market, leading to a reallocation of employment from the formal to the informal sector.

30. In addition, in the context of an aging population, and because these programs are funded with general revenue, the burden on fiscal accounts may rise and jeopardize the financial sustainability of these systems. This can be made even worse by the lack of a direct link between beneficiaries and funding costs, which creates political pressures and incentives to expand the coverage and generosity of benefits (Levy and Schady, 2013).

31. It is important to highlight that the authors have not found evidence that the program incentivizes formal workers to join the informal employment market.

Finally, one of the main causes of informal employment in the region is the low employability of the labor force, which reveals the need to increase worker education and training investments. Moreover, reducing informal employment by improving labor force skills may be more effective in the long term than policies aimed at improving compliance with labor regulations, tax cuts for small enterprises, or an amendment of minimum wage and salary regulations (Haanwinckel and Soares, 2017, 2020).

One of the causes of informal employment in the region is the low employability of many workers, which points to the need for more investment in worker education and training.

Irrespective of the clear implications that the above may have for educational systems, different interventions oriented to updating or reinforcing workers' skills should be considered. Available evidence shows that on-the-job training policies may be very effective to increase formal employment in the medium and long term (Escudero, Kluve, Mourelo, and Pignatti, 2019). Some proven successful cases in the region are the *Jóvenes en Acción* program from Colombia (Attanasio, Guarín, Medina, and Meghir, 2017), the *Programa Primer Paso* in Argentina (Berniell and de la Mata, 2017), the *Juventud y Empleo* program in the Dominican Republic (Ibarrarán, Kluve, Ripani, and Rosas Shady, 2019) and the program *Yo Estudio y Trabajo* in Uruguay (Araya and Rivero, 2017). While these policies are especially beneficial for young people because they generate useful information for their working life, training policies can also help workers of all ages adapt to changes in labor demand.

Women's participation in the labor market: lifting the barriers

One of the reasons for the low coverage provided by contributory social protection systems to the working-age population is the limited relative participation of women in the labor market, as shown in "Labor participation: gender and activity gaps in adult life." Moreover, this gender gap is present across the entire age range of the working-age population. It is not restricted to the extensive margin (between participation and non-participation) but affects working hours or the probability of working part-time (Marchionni, Gasparini and Edo, 2019).[32] Based on the sections above, it may be concluded that closing this gap would bring about gains in access to social benefits for current workers and—albeit to a lesser extent—fiscal sustainability of social protection systems.

32. The cited study shows that, on average, Latin American women work 40 hours a week in total, against 48 hours for men. Moreover, while 24% of women work part-time, only 8% of men do so.

The difficulties to reconcile family life and professional development, along with the gender gap in formal education, are two factors that restrict women's participation in the labor market.

To introduce policies that can further contribute to increasing women's participation, it is helpful to identify the major restrictions faced by women to enter and make progress in the labor market. The drivers for women's participation are multiple and their detailed analysis is beyond the scope of this section. The study by Marchionni, Gasparini, and Edo (2019) points out two major factors: the difficulties to reconcile family life and professional development, and the gender gap in formal education. Regarding the first factor, the study reveals that the labor force participation rate of women who live with their partners is substantially lower than the rate of women who are heads of household in single-parent families, which clearly shows an existing interdependence between labor force participation decisions and the distribution of household responsibilities and chores. Concerning the second factor, the labor force participation gender gap is particularly wide among people with a low level of education, narrowing with higher levels of education.

In terms of the first conditioning factor, the question arises as to what policies could alleviate restrictions to make family and work more compatible. Marchionni, Gasparini, and Edo (2019) highlight two groups of policies that could help achieve this goal. First, an expanded supply of caregiving services and a longer school day to reduce the opportunity cost of childbearing. Similar initiatives have proven effective in other contexts, and they are good candidates in Latin America because of the low levels of current coverage and quality. Basic and transport infrastructure policies could also help.

Second, maternity and paternity leaves can also play their part. The referred to study has analyzed available evidence regarding the effectiveness of this type of policy to close labor participation gaps, concluding that it depends on the context and the design of interventions. More specifically, it is important to take into account that these initiatives are often linked to formal employment, so their effectiveness could be more limited in many countries of the region where informal employment is high.

In connection with the importance of the level of formal education as a driver of women's labor force participation, apart from the clear need of building upon educational achievements, it is particularly relevant to take care of the situation of the most vulnerable women. This becomes even more relevant in the context of the recent deceleration of the upward trend in women's labor force participation since the second half of the twentieth century. Gasparini and Marchionni (2017) suggest that this deceleration was more pronounced among women with lower levels of education, which could be explained, in a context of strong economic growth, by the increase in household income and the expansion of the coverage and generosity of non-contributory social benefits. Along these lines, active policies in the labor market, including women's entrepreneurship support programs, may be effective to improve the work outlook for women with a low level of education and drive their participation in the labor market, especially to the extent that these programs foster productive development in the formal economy.

Labor policies for technological change: skill development and market entry support

Investment in education and training, and mechanisms that can mitigate the effects of income losses caused by unemployment help meet the impact of technological change.

As described in the "Automation and digitalization, polarization and consequences for social protection" section, technological change impacts job opportunities for workers with different skill levels. Although technological change tends to reduce the demand for some skills, leading to job losses in occupations requiring intensive use of those skills, it also increases demand for some other capacities that complement technological innovations. Even if this transformation is not yet overt in Latin American countries as intensely as in developed economies, it may happen as the pace of adoption of new technologies accelerates. Policy responses to these potential effects are basically of two types: i) investments in education and training to provide workers with the required skills so that they can meet the impact of technological change, and ii) mechanisms that can mitigate the effects of income losses during unemployment periods.[33]

The first group of policy alternatives includes interventions to update or reinforce the skills of unemployed workers or workers at a high risk of losing their jobs, as discussed in the section "The difficult mission of increasing formal employment." This category also includes job search assistance programs and subsidies for private employment and temporary work in the public sector. Although they are not initiatives specifically designed to address skill development, they do help match workers' skills to jobs or improve the quality, thus favoring on-the-job learning and acquisition of skills. In a previous edition of the Report on Economics and Development (CAF, 2016), a list of these types of policies in Latin America was compiled, with an analysis of their main features and a review of available data regarding their effectiveness. The impact of these interventions varies according to program type and design, the time horizon, the macroeconomic context, and beneficiary characteristics. In general, results were positive but modest—better in the case of skill development programs—only appearing a few years after the program is completed (Card, Kluve, and Weber, 2018; Kluve *et al.*, 2019).

The second type of policy response comprises initiatives to remedy any potential adverse effects caused by technological change, like a fall in income from work as a consequence of job loss. These programs may be contributory or non-contributory.

33. An obvious strategy to anticipate and get ready to harness the future of work, an analysis of which is beyond the scope of this chapter, is to improve schooling and advanced studies completion rates. Among other challenges, this means dealing with financial obstacles, information barriers, and low school performance and deficient academic preparation problems that currently discourage many potential students (J-PAL Evidence Review, 2019).

Unemployment insurance is the main response from contributory systems to income losses resulting from joblessness. Severance payments are also part of this group. Thanks to these mechanisms, workers can look for a job for longer periods until they find an alternative that best fits their skills. Unemployment insurance coverage in Latin American countries is remarkably lower than in developed countries. This is partly due to the high level of existing informal employment.[34] Strengthening these insurance mechanisms is key to facing any potential disruptive effects of technological change.

For workers who do not have a job in the formal employment sector and who, then, are not eligible to receive these benefits, many governments have launched non-contributory programs aimed at transferring income to unemployed workers and providing workers with health and pension coverage upon retirement. Even if these initiatives meet the purpose of covering workers against the risk of income losses as a result of unemployment, they do not make a significant contribution to improving occupational integration perspectives because they do not include a skill development component. In addition, they may alter labor market incentives by inducing employment reallocation from the formal to the informal sector.

Employment organization changes: platforms as an opportunity

The accelerated pace of growth of platform-based employment makes it increasingly necessary to rethink social protection institutions and how they can be adjusted to the characteristics of today's labor market.

Platform-mediated jobs can be a source of efficiency gains and benefits for workers and businesses, which can take advantage of enhanced flexibility. However, they can also pose risks for workers, like more financial volatility and less access to the occupational benefit and protection network in place for salaried employees. Even if these drawbacks are not exclusive of platform-mediated jobs (the most traditional form of self-employment has similar risks), the accelerated pace of the growth of these new forms of employment makes it increasingly necessary to rethink social protection institutions and how they can be adjusted to the characteristics of today's labor market.

The flexibility offered by platform-mediated jobs—regarding time management, work hours, location, and other job organization aspects—may encourage the participation of worker groups who value this benefit. This may be the case of people who wish to balance work in the labor market with family or care responsibilities, and, in general, of those who have reservation wages that may vary according to the day of the week or even the hour of the day.[35] A study that has used trip data from the Uber platform found that reservation wages for drivers vary from one hour to the next, so the main benefit provided by flexibility is to allow drivers to work only in the hours when expected income is higher than that minimum wage. More importantly, results suggest that if drivers were to decide day after day whether to work one full eight-hour shift at the current fees during the hours when income is expected to be higher or

34. It has been shown that in contexts where informal employment is high, it is optimal to reduce the duration of unemployment insurance (Álvarez-Parra and Sánchez, 2009).

35. The reservation wage is the lowest wage rate at which a worker would be willing to accept a particular type of job in a market.

not to work, the number of service hours they would offer would decrease by two-thirds. In addition, if the decision were to be made between working at a specific time for an entire month or not working at all, the number of service hours offered at the current fees would reduce practically to nil (Chen, Chevalier, Rossi, and Oehlsen, 2019).

The flip side to this advantage of platform-mediated jobs is less access to social protection system benefits. By and large, platform workers are considered to be non-salaried workers and, therefore, are not covered by the social benefits available in paid employment jobs. In some cases, this has been the object of debate, especially when platforms are strong drivers of price setting and other service organization aspects, even creating controversies leading to high-profile litigations.[36]

The possibility of considering platform jobs as full employment where the platform plays the role of employer under a traditional work arrangement presents some restrictive facets. On the one hand, platform-mediated jobs and the links between workers, platforms, and customers are highly diverse, so it is very difficult to conceive a single overarching system for these multiple realities. For example, the possibility for platform workers to be treated as platform employees seems more feasible for homogeneous services (like Uber) than for differentiated services where the platform role just facilitates contact between a supplier and a customer (like Upwork). On the other hand, even in the former case, there are challenges to be faced, like many workers providing services through multiple platforms at the same time, activities being sporadic or being performed for relatively short periods (Oyer, 2016).[37, 38]

Classified as non-salaried workers, platform workers find challenges to access social benefits in the same way as traditional non-salaried workers do. One of the first of these challenges is that, as there is no clear employment condition between an employee and an employer, and there is no established salary, it is difficult to figure out a monetary basis to calculate the sum of contributions. The income of platform workers, as is the case with non-salaried workers in general, may cover the capital invested to perform their tasks (for example, the income received by an Uber driver will pay not only for their work hours but also for the use of their own vehicle). A second challenge is that, even when an objective criterion can be set to determine the income portion that represents work compensation to be used as the monetary basis to calculate system contributions, workers themselves are required to report this portion, which means that a possible framework of this type entails risks of underreporting of income or activities.

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36. The cases of Pimlico Plumbers in the United Kingdom, Uber in several countries, Foodora riders in Italy, Take Eat Easy in France or Dynamex in California can be mentioned as examples.

37. Over 10% of Uber drivers will stop working for the company within the first month of service, while more than half will abandon within the first year. In 2015, the typical length of Upwork service contracts was below 60 work hours (Oyer, 2016).

38. Harris and Krueger (2015) suggest the alternative of creating a new legal category of workers comprising digital platform-mediated employment, providing access to some of the benefits received by salaried workers.

Technology could become an ally to incorporate platform workers to formal employment that is not present in the case of traditional self-employment.

Mandatory contributions to the social security system could favor a larger coverage, but monitoring costs and inspection difficulties restrain these potential benefits. Along these lines, technology could become an ally to incorporate platform workers to formal employment that is not present in the case of traditional self-employment. To the extent that work activities and the income they generate can be traced on digital platforms, this information may be used as a monetary basis to calculate contributions. In addition, electronic procedures can streamline contribution registration and payment processes. For example, in Uruguay, a smartphone app can automatically calculate social security contributions by transport sector platform workers (Uber, Cabify, and EasyGo). Initiatives of this kind seem to be promising, but further rigorous studies are needed to assess their results.

Voluntary insurance programs also have limitations, even when surveys suggest that access to social protection system benefits is strongly preferred by platform workers (Boeri, Giupponi, Krueger, and Machin, 2020). One problem is that these workers could have limited incentives to make additional contributions if, as is frequently the case, they already have access to social protection benefits through traditional employment and platform-mediated activities are just a side job. At the same time, these voluntary programs are subject to typical insurance incentive problems, like adverse selection (described in Chapter 1), which, in this case, either leads to a downward spiral of rising premia and falling coverage, or additional costs in the system (OECD, 2018c).

The implementation of contribution portability benefits is one aspect that could help incentivize individuals to contribute to the system. Platform jobs are attractive for workers because they offer flexibility and are a source of income in situations where it is not possible to access a standard job. This suggests that entering and leaving this type of work arrangement is an asset for many workers. An alternative to provide social benefits with no restrictions on this flexibility would be for workers to transfer benefits across jobs. If rights are isolated from specific employers and coupled to individual contributions, it would be easier for workers not only to change jobs but also to move in and out of self-employment and full-time jobs.[39]

Finally, it is important to highlight that a necessary condition to supplement the discussion about labor policies applicable to platform-mediated employment is the generation of more and better data to measure and characterize this type of activity more accurately.

39. In 2003, Austria replaced severance payments with a system of corporate pension accounts for wage and salaried workers, which can be transferred from one company or another when workers change jobs. Given that pension accounts are linked to an individual and employers contribute a fixed rate of the individual's income, this program was expanded in 2008 to include independent contractors (OECD, 2018c). See Oyer (2016) for a general discussion.

Keys to expanding social protection coverage and reducing the pressure of aging on coverage funding

1 Social protection in the region is closely tied to the employment status of workers. The high proportion of non-standard dependent employment, mostly informal; a large number of informal salaried workers; and the low participation of women in the labor force pose serious challenges to extend coverage to the population and ensure sufficiency of benefits along with the system's financial sustainability.

2 On average, 63% of employed persons in the region have jobs that offer no access to traditional social protection systems. This is partly explained by the high proportion of self-employed individuals (40% of employed persons) and the high level of informal employment (43% on average). Progress achieved on both margins over the past decades, although important, is inadequate and reveals the structural nature of this problem.

3 Demographic trends in Latin America are having a significant impact on the region's labor force. The average age of workers in the region is expected to rise from 36 in 2000 to 44 in 2050 and 47 in 2100. In addition, the ratio of working-age population to older adult population (aged 65 and over) is expected to drop from about six at present to 2.8 in 2050 and 1.3 in 2100, which exerts tremendous pressure on social protection systems.

4 New technologies affect employment opportunities for workers with different skill levels, although the impact on the regions' labor markets remains uncertain. The decreased demand for skilled workers to do routine tasks could negatively affect younger workers. In particular, those who are less experienced and completed fewer levels of education face a higher risk of unemployment, which tends to erode the coverage offered by social protection systems.

5 New technologies enable the emergence of new forms of employment, among which digital platform jobs can be highlighted. These employment arrangements have the potential to lead to a more efficient use of resources and provide flexibility to both businesses and workers. However, they also pose risks for the latter, like more income volatility and a deterioration of employment conditions, particularly in terms of social protection access. On average, 9.4% of workers in Latin America's main cities said they provided a platform-mediated service in the previous month, while 6.7% had registered with a platform as a supplier and had no activity over the same period.

6 A large reduction of informal employment could alleviate the pressure that demographic changes will exert on the funding of social security and health systems across the region. For example, a drop in the informal employment rate to levels consistent with per capita income, which involves a decrease close to 20 percentage points on average, would rise pension system revenues in the order of 27%. In a more optimistic scenario, where informal employment is reduced by half, revenue gains would reach 40%.

7 Although the labor force participation gap between men and women is broad in Latin America, a reasonable narrowing of this difference will have a modest impact on the total revenues of social protection systems. If women's labor force participation rose to the levels observed in OECD countries, revenues would increase at most 4%.

8 Labor force participation of older adults in Latin America is significantly higher than in OECD countries. This is a margin that could play a very limited role to improve the financial sustainability of social protection systems across the region.

9 Fostering formal employment requires acting on the drivers of incentives and limitations found by businesses and workers to generate formal employment. Cutting on formal employment costs, improving the benefits offered workers by formal employment, strengthening inspection resources and enhancing labor force education and training are some policies that could prove to be effective.

10 Mitigating potential disruptions in labor markets and in the access to social protection resulting from technological change requires investing in education and training, along with mechanisms that can mitigate the effects of income losses during joblessness periods. Unemployment insurance is limited by informal employment, while non-contributory alternatives involving income transfers, although they can cover for risks, do not improve the outlook for occupational integration and may distort formal employment incentives. Active labor market policies may help, but with limited effectiveness.

11 The recent growth of platform-based employment makes it necessary to rethink social protection institutions and how they can be adapted to today's labor market. Platform workers find it challenging to access social benefits in much the same way as traditional non-salaried workers. In this regard, technology could become an ally for the registration of activities and contribution payments.

Pension systems in Latin America

3

Pension systems in Latin America[1]

Public pension systems are a relatively recent creation in the history of humanity. Although in ancient times certain specific workers—generally the military—enjoyed lifelong income once their active working life was over, it was not until the end of the nineteenth century, under the leadership of Otto Von Bismarck in Germany, that the first public pension system was created. That first system ensured income for those over 70, financed by a tax on active workers.

Pension systems then spread around the globe in the first half of the twentieth century. In Latin America, pioneers included Uruguay, which established a non-contributory pension system in 1919, and Chile, where a mandatory social security system was introduced in 1924. In Argentina, the first social security funds appeared in the early 1900s and expanded between 1916 and 1930. The mass expansion of social security systems in the region, including in these pioneering countries, happened in the mid-twentieth century.[2]

Two major and inter-related changes—one demographic and the other economic—fostered the rise and mass expansion of public pension systems in the late nineteenth and early twentieth centuries. In terms of demographics, increased life expectancy drove the demand for income in old age when people's labor potential declines. At the same time, the existence of high ratios of active workers compared to passive ones, typical in times of demographic transition, facilitated pension financing through contributions from active workers. In economic terms, economic growth at unprecedented rates enabled the generation of surpluses to cover that need for income in old age. As will be discussed below, both factors have begun to face challenges more recently.

There is consensus that a pension system should meet three conditions: coverage, that is, that all older adults receive an income; sufficiency, meaning that the income is an adequate amount; and financial sustainability, that the system's current and future expenses can be covered, either with the pension system's revenue or with reasonable amounts from general taxation.

Two major factors, one demographic and the other economic, make it difficult for pension systems in Latin America to meet these three conditions. The first of these factors is aging. As presented in Chapte 1, all of the countries in the region are in some measure going through advanced phases of the demographic transition, characterized by a sharp fall in birth rates combined

1. This chapter was written by Lian Allub and Guillermo Alves, with research assistance from Paula López.
2. See Arenas de Mesa (2019) for a more detailed description of the history of the pension systems in the region.

with increasing life expectancy, generating a reduced number of taxpayers and more beneficiaries. It is for this reason, and in marked contrast to the demographic conditions present when the pension systems were created, that it is becoming increasingly more costly to sustain adequate and sufficient levels of coverage in these new phases.

The second factor is the informal labor market, a structural characteristic of the region that, as analyzed in Chapter 2, may potentially be further compounded by certain technological trends currently underway. Informality has a direct, negative effect on pension systems in that it restricts their capacity to increase revenue. Moreover, the changes in the workplace associated with technological progress are putting at risk the employer/employee structure that most pension systems were designed to fit. Declining participation in salaried employment in favor of new forms of work makes it harder to save for retirement, at least in the traditional systems based on contributions from salaried jobs.

This chapter addresses the challenges brought by aging, the structural characteristics, and the changes afoot in the workplace for the pension systems of the region at the beginning of the twenty-first century.[3] The chapter first presents a brief discussion of the economics of pensions and the architecture of the pension systems in the region, to then focus on an assessment of each one of the three conditions (coverage, sufficiency, and financial sustainability) that the systems of the region should meet. Based on this assessment, the chapter concludes with a discussion of policy design proposals for pension systems in Latin America.

Objectives of pension systems and the role of public policy

Pension systems can be said to have two major objectives. The first is to enable people to have an income during old age in exchange for contributing to the system during their working life. Given that a series of adverse circumstances may render these savings insufficient to meet minimum levels of well-being in old age, a second objective is to prevent poverty and reduce levels of income inequality among older adults.

3. A key difference between the effect of population aging and labor market characteristics is that aging is for the most part inevitable, while labor market phenomena like informality can be improved through policy initiatives. Chapter 2 of this book already discussed these aspects of the labor market, and for the purposes of this chapter, the majority of these factors will be taken as a given, except for aspects of the labor market that depend directly upon the design of the pension systems (e.g., some aspects of informal labor).

The first objective clearly has a savings component, but also includes an insurance component. This insurance is provided to the extent that the contributions ensure that people will have an income in old age, which, in part, protects them from the negative impact that adverse events during their working life may have on their savings. Such events include periods of unemployment or labor informality, as well as low wages.[4]

Pensions systems aim to enable individuals to save for retirement and avoid poverty in this stage of life.

As seen in Chapter 1, a series of market failures justify the State taking a necessary, active role in the management of pension savings funds and payouts, either through direct public administration or through market regulation of retirement savings markets.[5] Likewise, evidence indicates that individuals do not make the best decisions when it comes to saving for retirement. This is due to the complexity of estimating returns on investment,[6] for instance, and how difficult it is for people to make consistent decisions involving uncertain circumstances that come to fruition in the very long term. This results in the State assuming a paternalistic role, requiring individuals to save during their working life.[7]

Figure 3.1, based on official household surveys in the different countries, illustrates this first objective of savings and insurance, showing how pension income gains importance compared to wage income in homes with a head of household aged 65 or older in comparison to homes with a head of household aged 41-64. The replacement of wage income with pension income that comes with aging is stronger in countries like Argentina, Brazil, and Uruguay, which have pension systems with higher levels of coverage and sufficiency.[8]

4. This insurance component materializes to the extent that retirement pensions are not, in general, strictly proportionate to contributions. Another component of insurance is attributable to the uncertainty regarding longevity at the time of retirement, a risk that, in capitalization systems, is covered by taking out what is called annuity insurance.

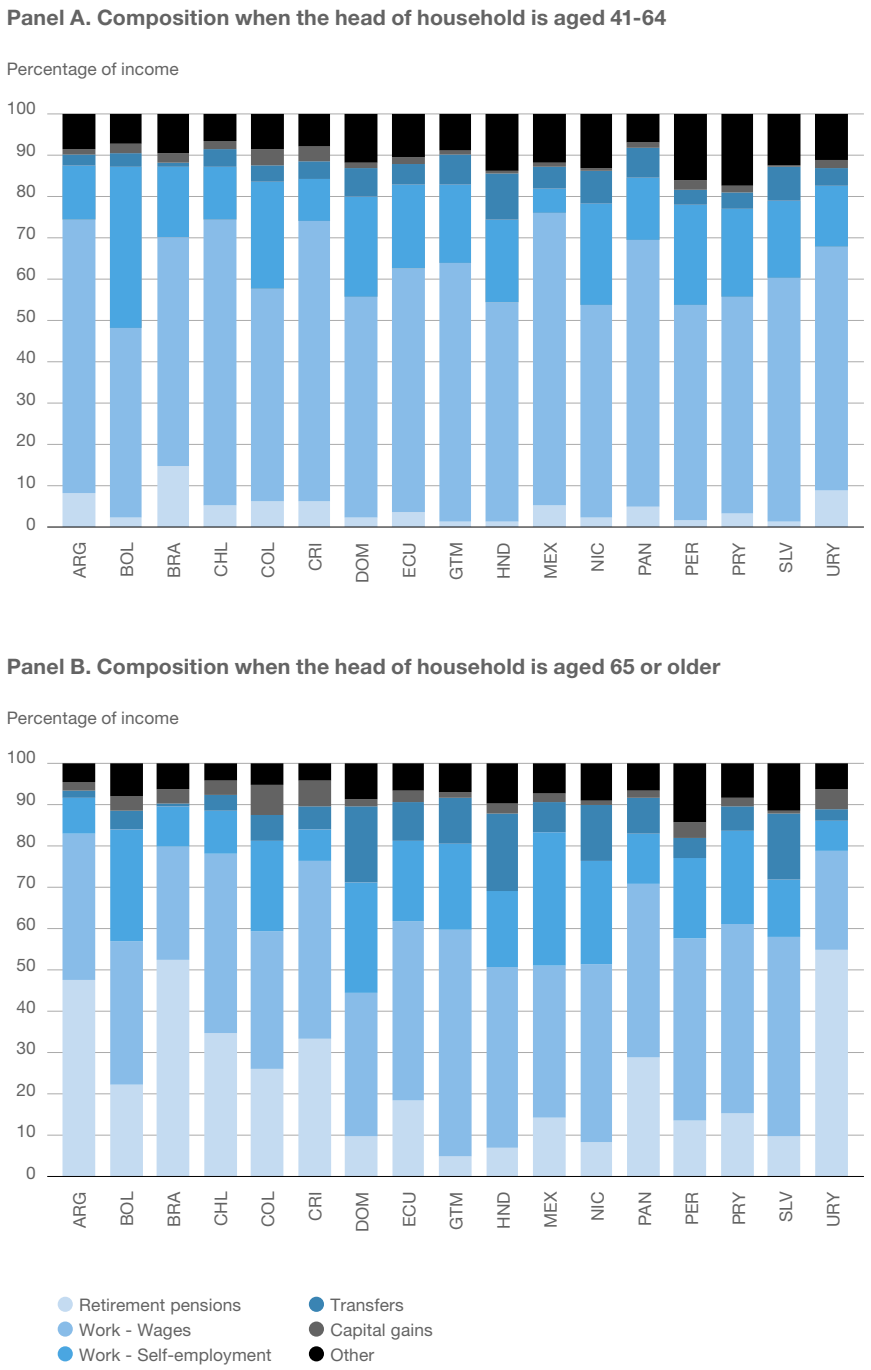
5. Several issues justify the broad set of interventions observed in practice. For one, as is typical in insurance markets, problems related to adverse selection compel the State to establish mandatory participation in insurance in many cases (Dahlby, 1981). This is one more reason in addition to behavioral bias for the State to make retirement savings mandatory in the case of pensions. Furthermore, analogous to what happens in banking systems, problems arising from the moral risk of investment funds that manage pensions and the insurers that pay them force the State to take on an active role as regulator in these markets.

6. According to CAF's financial capacities surveys in six countries in the region, the average rate of correct responses to questions about calculating interest rates and risk is approximately 35%, with Chile as the country with the greatest percentage of correct answers (41%) and Peru with the lowest (30%). More concerning still is the fact that less than 5% of those surveyed responded correctly to all questions related to interest and risk (see CAF, 2018).

7. See Benartzi and Thaler (2007) for a discussion of the different difficulties people have when it comes to making good decisions about retirement savings.

8. At the same time, in countries with more fragile pension systems, transfers between households are a more significant source of income in old age. This is clear, for instance, in El Salvador, Honduras, and the Dominican Republic (see Figure 3.1).

Figure 3.1
Composition of income sources according to the age of head of household



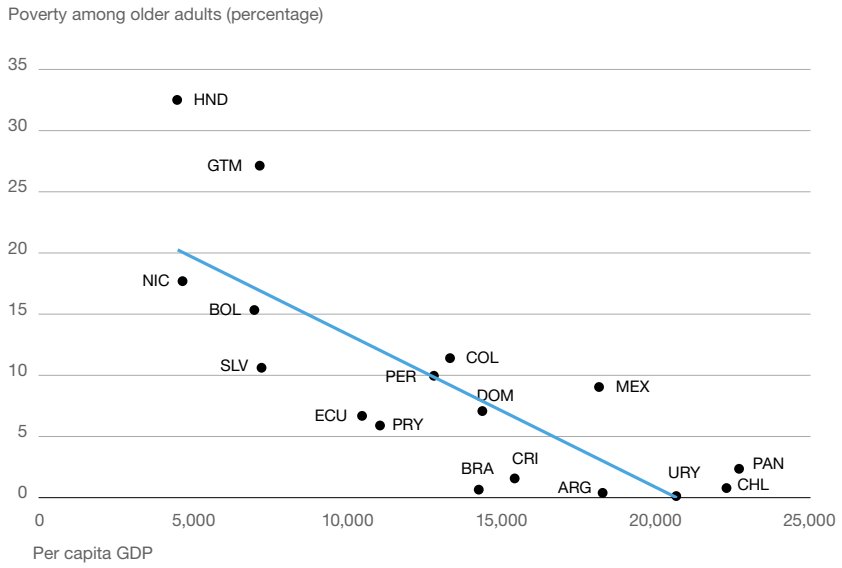
Note: The category "Other" includes employers, other employment income, and other non-employment income.

Source: Authors based on data from CEDLAS (2020).

The second objective is the reduction of poverty and inequality among senior citizens.[9] For different reasons, the savings that people make over their working life may not be enough to prevent poverty in old age, something that a pension system can prevent by providing income. In addition to this logic of reducing poverty by setting contributions and benefits, pension systems are usually one part of an entire set of redistributive tools in different societies.

Figure 3.2 shows the proportion of adults aged 65 or over living in poverty and per capita GDP in the different countries. This allows for an examination of how well countries do in terms of reducing poverty given their economic capacity measured by GDP per capita. The figure points to major differences in poverty rates among countries with similar per capita GDP levels, such as Bolivia compared to Guatemala and Honduras, or Brazil and Costa Rica compared to Colombia, Mexico, Peru, and the Dominican Republic. How these differences are related to the quality of coverage and sufficiency of the different countries' pension systems will be discussed throughout this chapter. The set of countries with relatively high levels of poverty among older adults for their level of wealth have more room to improve their pension systems.

Figure 3.2
Poverty rate among adults aged 65 or over and per capita GDP, 2018



Notes: Based on a poverty line of 4 USD, valued according to PPA, constant US dollars for 2011.
Source: Authors based on data from CEDLAS (2020).

9. The objective of redistribution can be expressed in part as one of insurance. Redistribution amounts to an insurance mechanism especially when individuals are behind the "veil of ignorance." (Tirole, 2017).

The different types of State intervention in terms of these two objectives (savings or insurance and redistribution) mean that pension systems can be conceived based on three pillars. The first pillar seeks to guarantee the objective of reducing poverty through basic pensions where prior contributions made by workers (which may be very low or inexistent) do not determine the level of benefits received in retirement. A second pillar seeks to address the lack of household savings incentives during an individual's working life and includes a component of mandatory contributions that provide the right to a pension linked to the contributions made. Finally, voluntary savings constitutes the third pillar, and here the role of the State is primarily limited to the regulation of savings mechanisms and, in some cases, providing an incentive for this type of saving through more favorable tax measures.

As seen throughout the chapter, meeting these objectives comes up against several dilemmas and restrictions that must be considered in the design of pension systems. On one hand, there is a potential conflict, in practice, among the three desirable conditions of coverage, sufficiency, and financial sustainability. For instance, given a level of financial sustainability, greater coverage can be achieved by reducing the sufficiency of pension amounts. On the other, the design of pension systems comes up against restrictions and dilemmas associated with its impact on labor and financial markets. The financial balance of a pension system, for example, can be improved by increasing the contributions made by the working-age population. This could, however, have negative impacts on formal employment and even on economic growth.

Finally, historical and cultural aspects and social preferences of the different countries also involve dilemmas and restrictions that the design of each country's system must take into account. Particularly relevant in this sense are the preferences for redistribution in each society, an aspect that can be reflected in the size of mandatory contributions made by workers, as well as the pension amounts received by older adults.

Basic architecture of pension systems in the region

There are several ways to organize a pension system to meet the two objectives of retirement savings and redistribution. This goes hand in hand with a diverse array of institutional designs of these systems in the different countries. The architecture of each system depends on several basic dimensions that allow us to describe their fundamental aspects. As seen throughout the chapter, a typology arises from these dimensions, presented in Table 3.1, which proves very useful for characterizing and differentiating between systems.

A first dimension distinguishes between contributory and non-contributory pensions. While contributory pensions are associated with monetary contributions made during an individual's working life, non-contributory pensions are not related to those contributions but are instead usually linked to the criteria of insufficient income during old age.

Table 3.1
Characterization of contributory pension systems in Latin America

Countries	Contributory system			Non-contributory system		
	Pay-as-you-go	Capitalization		Universal	Targeted	
		Public funds	Private funds		No other pension drawn	Low income
Argentina	X				X	
Brazil	X		X			X
Bolivia		X		X		
Chile			X			X
Colombia	X		X			X
Costa Rica	X	X	X			X
Ecuador	X					X
Mexico			X	X		
Panama	X		X			X
Paraguay	X					X
Peru	X		X			X
Dominican Republic			X			
Trinidad and Tobago	X		X			X
Uruguay	X	X	X			X
Venezuela	X				X	

Notes: Public funds and private funds refer to the management of investment funds under the capitalization component of these systems. In the cases of Costa Rica and Uruguay, both types of funds coexist in competition. In Bolivia, a reform passed in 2010 established a transition of that system's capitalization component from private to public administration, however, this has still not happened.

Source: Authors based on IERAL (2020) data on contributory pensions, Rofman, Apella, and Vezza (2013) and ECLAC (2018) for non-contributory pensions.

On both ends of the spectrum, the challenge is to find the best combination for each country. Economies with high rates of labor market participation and formal employment will be able to give more weight to contributory pensions, while economies with high rates of informality, low labor market participation, or high unemployment will have to consider giving more importance to non-contributory pensions.

Within contributory pensions, there is a distinction between defined-benefit or defined-contribution systems, depending on the relationship between the pension amount and the contributions made during the person's working life. In defined-benefit systems, the pension is calculated using a formula that may depend on the years of contributions and past salaries but is not necessarily closely linked to the total amount contributed. In contrast, the pension in defined-contribution systems depends strictly on the amount contributed.

In the region, there are countries with pensions funded with individual capitalization accounts, others with pay-as-you-go systems, and still others with mixed systems.

The defined-benefit and defined-contribution systems have opposite implications in terms of risk coverage for their beneficiaries. In purely defined-contribution systems, the risk of experiencing periods without contributions, either due to inactivity, informality, or unemployment, as well as periods of

low wages, is assumed by the individual.[10] Another significant risk assumed by individuals in these systems is the financial yield of their savings. With defined-benefit, the pension system assumes, in general, the entirety of the risk associated with the financial yield of savings, and to some extent, the risk of periods without contributions and low wages, depending on each system. This risk assumption means that these systems are riskier than defined-contribution systems in terms of financial sustainability.

Every country in the region, except for the Dominican Republic, has non-contributory pensions.

From a pension-financing perspective, the region's systems can be classified as either pay-as-you-go or funded with individual capitalization accounts. In the first, following the Bismarckian tradition, contributions by active workers go toward paying current pensions. In capitalization schemes, pensions are financed with the financial yields of contributions made by pensioners during their working life. These contributions are organized into investment funds, which may be under public or private management.

In practice, in every country in the region, pensions stemming from defined-benefit plans have pay-as-you-go funding, and the ones based on defined-contribution plans have capitalization funding. This association between defined benefit and pay-as-you-go, on the one hand, and defined contribution and capitalization, on the other, also applies worldwide, but there are some variants. For example, in the notional accounts systems in some European countries, pay-as-you-go funding is combined with a system for calculating pension amounts based on past contributions.

Pension architectures with pay-as-you-go or capitalization funding involve fundamental differences in terms of financial sustainability. In full-capitalization systems, pension amounts are tied to contributions and, as such, these systems do not present de-funding risks. In pay-as-you-go schemes, in contrast, the disassociation between contributions and benefits can generate significant fiscal risks.

Aging and technological change pose different challenges for systems with different designs. In defined-contribution systems with individual capitalization, greater life expectancy and possible lower contributions during working age due to new forms of employment translate fundamentally into challenges for sufficiency. In contrast, in defined-benefit systems, these phenomena fundamentally pose financial sustainability challenges.

Table 3.1 sums up the principal dimensions of the architecture of the region's pension systems, contributory and non-contributory systems alike. Regarding the first, elements of pay-as-you-go and capitalization coexist in the vast majority of pension systems in the region. The exceptions are Bolivia, Chile, Mexico, and the Dominican Republic, which have purely capitalization

10. See Barr and Diamond (2009). In defined-contribution plans, individuals share the longevity risk when the payment into the pension fund is done through an annuity contract and is assumed individually when payment is a lump sum.

systems,[11] and Argentina, Ecuador, Paraguay, and Venezuela, which have fully pay-as-you-go systems. In the cases of countries with mixed systems, the components of capitalization and pay-as-you-go can be exclusionary in the sense that workers must choose one over the other, or complementary, where workers can contribute to the two components and then their pensions are financed with income from both. Colombia and Peru's mixed system is an example of the former, while Costa Rica, Panama and Uruguay are an example of the latter. In addition to these key dimensions, every country in the region, in general, has special plans for specific groups of workers (see Box 3.1).

For non-contributory pensions, Box 3.1 shows that every country in the region offers this type of pension, except for the Dominican Republic. The majority of countries have targeted non-contributory pensions, with low-income criteria that older adults must meet to receive them (Brazil, Chile, Colombia, Panama, Paraguay, Trinidad and Tobago, and Uruguay) or not draw other pensions (Argentina and Venezuela). Exceptions are Bolivia and Mexico, where all adults over age 60 in Bolivia, and over 65 in Mexico, are entitled to a non-contributory pension.

Box 3.1
Special pension plans in the region

Every country has special pension plans with access conditions and more generous benefits for certain groups of workers. Although the type of workers who benefit and the generosity of the benefits vary greatly between countries, these special plans are common for certain professions and public employees, particularly military and police personnel.

Due to the heterogeneity and idiosyncrasy of these special plans, any analysis of them is beyond the scope of this report. However, eventual social security reforms must consider these programs and, in general, aim to include them within the general pension system, given that their existence poses several disadvantages. First, a special plan is not desirable from the point of view of the insurance objective, since they often separate lower-risk workers from the larger set of taxpayers paying into the general system. And second, special plans are often more generous than the general system, which may not be desirable from a redistribution perspective, in addition to posing risks to financial sustainability.

11. In the case of Chile, the 2008 reform introduced a non-contributory supplement, the Solidarity Benefit Contribution (*Aporte Previsional Solidario*), for pensions for persons belonging to the 60% of lower-income households (Arenas de Mesa, 2019).

Coverage challenges

Levels of pension coverage for older adults in the region

A pension system's level of coverage is defined by the proportion of older adults receiving a pension. Figure 3.3 shows the broad heterogeneity in terms of this proportion across the countries in the region and reveals a clear distinction among three groups. The first group—Argentina, Bolivia, Brazil, Chile, Ecuador, Mexico, Panama, Uruguay, and Venezuela[12]—is characterized by the highest levels of coverage in the region, surpassing 70% of people over 65. Although the levels of coverage in the countries in this group are high, only Bolivia, and to a lesser extent Argentina, have levels of coverage above 95% like in the developed world (ILO, 2017). For this reason, achieving greater levels of intermediate coverage is still a challenge for most of the countries in this first group. The second group, with an intermediate level of coverage, includes Colombia, Costa Rica, Peru, and Paraguay, where between 45% and 60% of seniors receive a pension. In the third group—El Salvador, Guatemala, Honduras, Nicaragua, and the Dominican Republic—coverage is very low with less than a third of seniors receiving a pension.

Lower levels of pension coverage are associated with higher poverty in old age and greater differences of coverage between women and men and among workers with different levels of education.

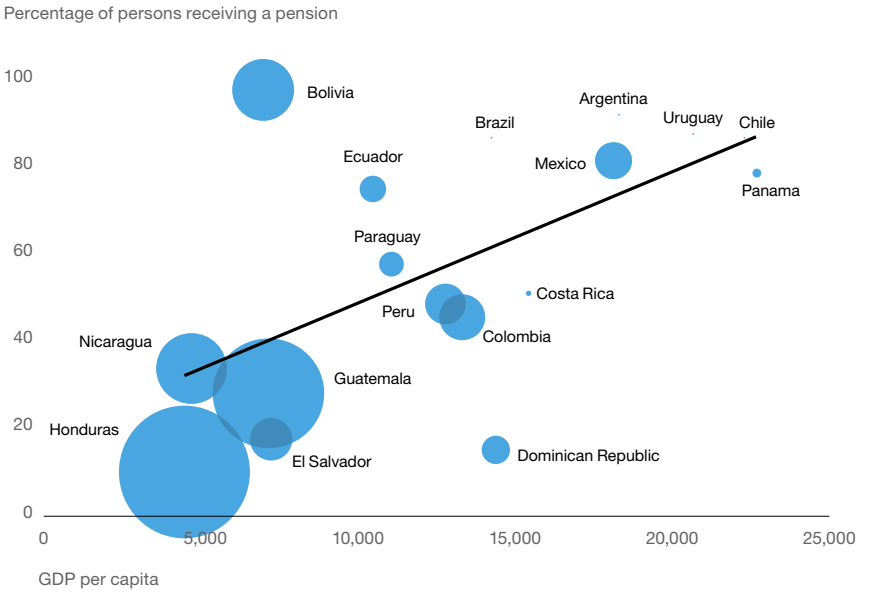
Greater levels of average wealth in a country allow, in general, for higher levels of coverage. Figure 3.3 illustrates a clear positive correlation between pension coverage and per capita GDP in the countries of the region. Nevertheless, it also shows significant variation in coverage levels among countries of similar wealth, indicating the relevance of specific factors of institutional design in each country that transcend the level of income per inhabitant. In particular, Bolivia stands out with a per capita GDP similar to that of the countries in the group with the lowest coverage, but due to its non-contributory universal pension system, it has the highest level of coverage in the region.

Figure 3.3 also shows the incidence of poverty among older adults (reflected in the size of the circles) and illustrates how differences in coverage among countries of similar wealth, such as Bolivia in comparison to Guatemala, Honduras, and Nicaragua, or Brazil compared to Colombia and Peru, strongly correlate with the proportion of older adults living below the poverty line. This connection between greater levels of coverage and lower levels of poverty highlights the key role played by coverage in meeting the objective for pensions systems to reduce levels of poverty among older adults.[13]

12. Venezuela has not been included in Figure 3.3. due to a lack of data on poverty rates in 2018. According to Arenas de Mesa (2019), the proportion of adults over 65 collecting a pension in that country was 70.3% in 2017.

13. El Salvador registers lower levels of poverty than countries with similar per capita GDP, like Bolivia or Guatemala, without a high level of pension coverage. Looking again at Figure 3.1, this could be related to a greater share of transfers between households in the income of seniors in that country.

Figure 3.3
Proportion of persons 65 or older receiving a pension, per capita GDP and poverty rate in the same age group, 2018



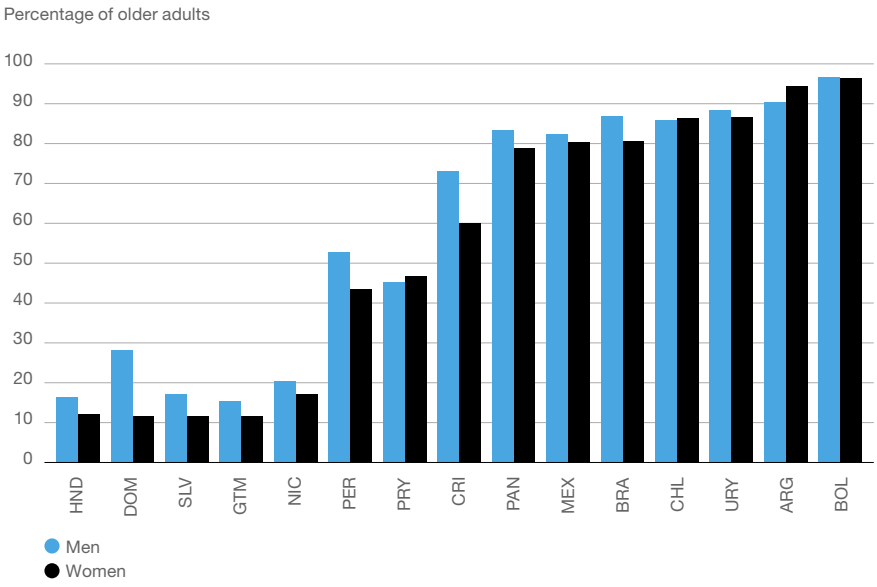
Notes: GDP data are in constant USD, PPP 2011. The size of the circles reflects the poverty rate among older adults in each country.

Source: Authors based on administrative data on pension coverage reported in Arenas de Mesa (2019), data on poverty rates obtained from CEDLAS (2020), and GDP per capita from the World Bank (2020).

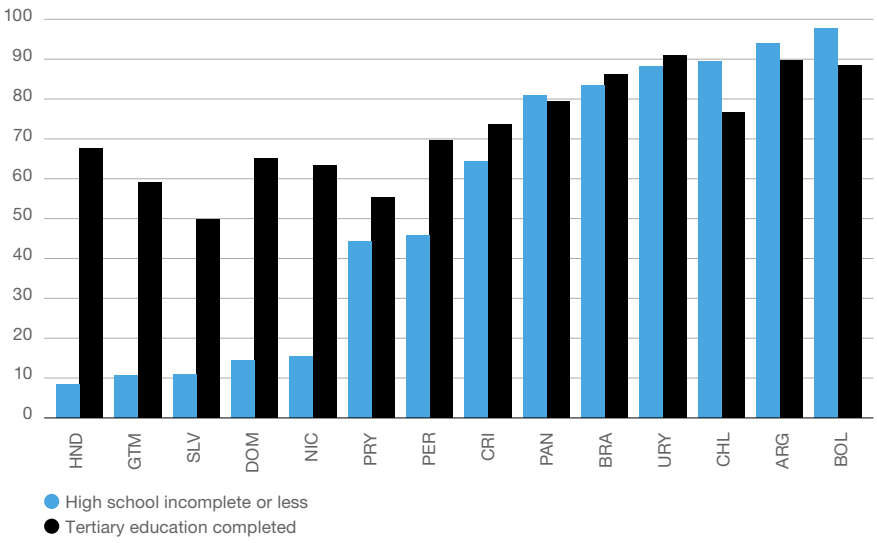
The levels of coverage shown in Figure 3.3 are not homogeneous within the countries. As seen in Chapter 2, workers of different gender and level of education display important differences in their rates of contribution to pension systems, these differences carry over to unequal levels of pension coverage. Figure 3.4 shows levels of coverage broken down by men and women (Panel A) and education (Panel B). One common aspect of both figures is that, in the group of countries with high coverage, these levels are relatively homogeneous across gender and education level. The significant differences in terms of this disaggregation appear in the majority of countries with intermediate and low coverage. For instance, in Costa Rica, the Dominican Republic, and Peru, women have substantially lower levels of coverage than men. In the case of differences by education level, the rates of coverage are incredibly unequal in the group of countries with lower coverage. There are also major differences among countries with intermediate levels of coverage, although to a lesser degree compared to the disparities observed in the group with the lowest coverage. For this reason, the countries with deficient coverage in the region not only have problems of average coverage, but they also have serious problems when it comes to the disparity of coverage.

Figure 3.4
Proportion of people 65 and older receiving a pension, circa 2018

Panel A. Proportion of people by gender



Panel B. Proportion of people by education level



Notes: In Panel A, the countries are listed in order based on the proportion of coverage among women. In Panel B, the groups 'High school completed' and 'Tertiary education incomplete' are omitted. Countries are listed in order based on the proportion of coverage among older adults with incomplete high school or less.

Source: Authors based on CEDLAS (2020) data, except for data for Mexico taken from Arenas de Mesa (2019).

Determinants of contributory pension coverage for salaried workers

As for the causes of pension coverage problems in the region, labor informality, as discussed in Chapter 2, is the leading determinant of low and unequal coverage in contributory pension systems. Countries with greater contributory pension coverage are those that have less labor informality (Table 2.6, see page 101). However, labor informality does not necessarily mean lower coverage, but could simply manifest as lower pension amounts. The key link between labor informality and low coverage in the region is mainly due to the minimum years of contributions required to access contributory pensions in most countries of the region.

Table 3.2 sums up the prerequisites of minimum age and years of contributions to access a contributory pension in the different countries and shows that in all of them, there is a requirement for a minimum number of years of contributions, except Chile. In contexts of high labor informality, the requirement for minimum years of contributions must be more flexible to improve coverage by contributory components. Indeed, the two countries that expanded coverage by more than 30 points for contributory pensions in the past two decades, Argentina and Venezuela, did so by making this component flexible.

Table 3.2
Conditions for accessing contributory pensions

Country	Retirement age		Years of contribution
	Men	Women	
Argentina	65	60	30
Brazil	65	62	20 for men, 15 for women
Bolivia	58	58 (1 year less for each child until age 55)	10
Chile	65	60	No requirement
Colombia	62	57	25 in pay-as-you-go; no requirement in capitalization
Ecuador	60, with 30 years; 65, with 15 years; 70, with 10 years; any age, with 40 years contributions		
Mexico	65	65	24 in the private sector; 25 in public
Panama	62	57	At least 20 years
Paraguay	60, with minimum of 25 years; 55, with minimum of 30 years		
Peru	65	65	Minimum 20 years in the public sector
Trinidad and Tobago	Between 60 and 65		Between 14 and 15
Uruguay	60		30 (women compute 1 extra year per child, up to 5 max.)
Venezuela	60	55	Minimum 15

Source: Authors based on IERAL (2020).

The restrictive effects of the minimum number of qualifying years to be entitled to a contributory pension is analyzed with a simulation exercise using administrative data, expanding on what was presented in Chapter 2.[14] Table 3.3 shows the proportion of all workers that would reach 10, 15, 20 and 30 years of contributions by age 65 in Argentina, Brazil, Ecuador, and Uruguay.

Table 3.3
Simulation of the proportion of workers who will reach different years of contributions by age 65

		Years contributing			
		10	**15**	**20**	**30**
Argentina	All	76.5	57.8	39.3	12.8
	Men	80.7	62.7	43.1	13.8
	Women	68.5	48.4	32.1	10.9
	1st quintile	57.5	35.0	19.3	5.1
	5th quintile	83.0	77.7	46.3	14.1
Brazil	All	97.6	91.0	75.6	28.7
	Men	98.4	92.9	77.7	28.5
	Women	96.5	88.5	72.8	28.9
	1st quintile	95.8	84.2	60.9	12.0
	5th quintile	99.6	98.8	95.0	63.0
Ecuador	All	95.1	87.5	74.0	31.8
	Men	95.2	87.5	72.8	28.7
	Women	94.9	87.7	75.8	36.5
	1st quintile	88.9	75.4	56.3	15.6
	5th quintile	99.0	96.6	91.4	56.9
Uruguay	All	93.0	85.5	71.8	33.4
	Men	91.0	82.3	67.9	30.9
	Women	95.0	88.2	75.0	35.6
	1st quintile	81.0	65.0	46.6	16.5
	5th quintile	98.0	96.6	91.4	54.8

Notes: See Alves, Brassiolo, and Martínez-Correa (2020) for more details on data sources and methodology. The proportions reported are based on identical methodology applied to all countries. Alternative methodologies have shown greater or lesser proportions according to country, but all maintain the qualitative conclusion that the requirement of 30 years of contributions would exclude a significant proportion of workers from contributory pensions (see Forteza *et al*. (2009) and de Melo *et al.* (2019)).

Source: Authors based on social security administration data.

14. The exercise is explained in detail in Alves, Brassiolo, and Martínez-Correa (2020).

In Argentina and Uruguay, the current requirement of 30 years of contributions into the main pension system[15] is clearly much too high, in that it leaves a huge number of workers without coverage.[16] In the case of Brazil, its recent pension system reform established minimums of 20 years for men and 15 for women, whereby, according to our simulations, a significant proportion (nearly 20% of men and 10% of women) will still not qualify for a contributory pension under the current rules. In Ecuador, the existence of different minimum requirements per age (see Table 3.2) means that 95% of workers would be able to retire by age 70 and 88% by 65. This exercise indicates that the minimum number of qualifying years do not significantly restrict coverage in Ecuador.

Labor informality and a high minimum number of qualifying years of contributions are the main determinants of coverage problems for contributory pensions in the region

Given the existing minimum years of contributions to qualify for a contributory pension, the differences in cumulative years of contributions in the simulations in Table 3.3 between men and women, and between workers in the first and fifth wage quintiles, help to explain the patterns of inequality of coverage seen in Figure 3.4. In particular, the table shows that a relatively low requirement of only 10 years of contributions at age 65 would largely minimize the wage and gender differences in contributory pension coverage.

Determinants of pension coverage for self-employed workers

Another fundamental reason behind pension coverage problems in the region is the number of older adults who spent part or all of their working lives as self-employed workers. As shown in Chapter 2, this is a historical structural problem in Latin America, but one that acquires particular relevance due to the technological and organizational change underway in today's labor markets. Moreover, the proportion of self-employed workers contributing to social security is just 35% in eight Latin American countries with available data, and two of them—Bolivia and Paraguay—do not exceed 5% (see Table 2.8, page 104). Even in Chile and Uruguay, two of the countries in the region with the highest levels of income, only 28% and 33%, respectively, of self-employed workers contribute to the system. The coverage problems for these workers pose a lack of equity in coverage. Although this is a diverse group including high-income professionals, the majority of self-employed workers in the region fall under the category of low income.[17]

Low rates of contributions by self-employed workers manifest in differences in the years of contributions to social security made by these workers. According

15. Both countries have retirement plans for older adults that offer less generous amounts, requiring 10 years of contributions by age 70.

16. Due to a restriction related to available data, the estimate for Argentina is based solely on private-sector, salaried employment, leaving out public-sector employees and the self-employed. Table 3.1 in the Appendix to this chapter presents the simulated contributions for Brazil and Ecuador, based only on salaried employees in the private sector. The table shows an underestimation of the proportion of workers with 30 years of contributions at 5.6 points in Brazil and 12.6 points in Ecuador, magnitudes that, when applied to the Argentine case, support the conclusion that the required number of qualifying years of contributions is too high. Another conclusion drawn from the table is that the proportion is significantly greater in these countries than in Argentina and thus reflects a specific problem of contributions in Argentina.

17. Moreover, self-employed professionals often have specific pension programs that only cover professional workers.

to data from the 2019 ECAF Survey, self-employed workers from the main cities in ten countries in the region have, on average, significantly fewer qualifying years of contributions than private salaried employees (see Table 3.4). Among workers aged 45 and over, these differences go from a minimum of 6-7 years of contributions in Buenos Aires, La Paz, and São Paulo to highs of 10 years or more in Quito, Mexico City, Lima, and Santiago, Chile.

There is a correlation between the differences across these countries and the institutional design of their pension systems. For example, in Argentina and Brazil, self-employed contributions have been mandatory since the introduction of the simplified tax (*monotributo*) in Argentina in 1998, and the Integrated System of SMME Contributions and Tax Payments (SIMPLES, in Portuguese) in Brazil in 1996. In contrast, self-employed workers in Mexico and Peru are not required to contribute.[18]

Table 3.4
Years of contributions and retirement expectations according to type of occupation in the main cities of the region, 2019

	Buenos Aires	La Paz	São Paulo	Bogotá	Quito	Mexico City	Panama City	Lima	Montevideo	Santiago	Asuncion
Years of contributions by workers aged 45 and over											
Self-employed	10.5	2.3	10.4	9.2	4.2	3.8	13.4	11.2	4.1	10.6	2.9
Private salaried	13.1	4.4	14.3	11.8	8.5	9.5	15.9	14.0	11.7	15.8	6.4
Public salaried	13.3	10.7	16.3	14.8	11.4	13.0	18.9	17.9	10.0	20.6	13.4
Expects to receive a retirement pension											
Self-employed	88.2	50.9	78.5	54.1	46.8	47.2	80.5	69.9	41.7	85.4	62.0
Private salaried	98.2	76.6	82.8	77.5	84.7	91.6	94.6	89.1	86.0	97.0	89.1
Public salaried	100.0	96.1	92.9	79.0	81.0	87.0	98.5	95.4	78.3	98.5	95.7
Does not plan to stop working											
Self-employed	37.4	36.8	33.9	27.4	35.6	24.6	36.6	39.9	33.0	58.2	23.5
Private salaried	19.5	14.9	32.4	16.8	17.1	11.0	15.1	22.8	11.4	25.7	15.6
Public salaried	15.0	8.8	25.8	16.5	18.6	4.2	2.2	24.5	12.6	4.9	1.7

Source: Authors based on ECAF 2019 (CAF, 2020)

18. Table A 3.2 in the Appendix to this chapter sums up the contribution conditions for self-employed workers in each country.

When self-employed workers in these ten cities were asked if they expect to receive retirement benefits in the future, the proportion answering affirmatively is, on average, 23 percentage points less than salaried workers of similar age, education, and gender. Aside from this average, Table 3.4 shows significant heterogeneity in this proportion across countries, which is consistent with the data for years contributed and the compulsory nature of contributions. In particular, in Buenos Aires and São Paulo, the difference between the proportion of salaried and self-employed workers who expect to receive a pension is less than 10 percentage points, while in Peru and Mexico it is above 40 points.

Another consequence of the coverage issue for self-employed workers is that they put off the decision to stop working. On average, a third of them do not ever plan to stop working, compared to approximately a fifth of salaried workers.[19] While there are clear differences for this indicator between salaried and self-employed workers in all the countries, the proportion of self-employed who do not plan to stop working is very similar in Buenos Aires, La Paz, Lima, Montevideo, Panama City, Quito, and São Paulo. This could be a consequence of the fact that, even though self-employed workers must pay into the system and therefore have greater expectations of receiving a pension, what little they contribute makes their pensions very low and, as a result, they plan to keep working after reaching retirement age. Something similar occurs in Chile, where low contributions made by self-employed individuals during their working life generate very low pensions, with Santiago ranking as the city with the highest proportion of self-employed workers who do not plan to retire.

Self-employed workers accumulate 6–10 fewer years of contributions at the end of their working life than those with salaries. The difference is greater in countries where the self-employed individuals are not required to pay into the pension system.

One aspect to highlight about independent workers in some of the countries analyzed, which partially explains the low contribution rates among these workers, is that, in Bolivia, Mexico, Paraguay and Peru, they are not required to pay into the system. In Colombia, although it is mandatory, independent workers are required to have income equal to or greater than the minimum wage, which in practice excludes a good portion of them. More generally speaking, even in the countries where self-employed workers are required to pay in, oversight of this requirement is very costly. The final section of this chapter will revisit the challenges for designing pension systems for the self-employed.

Coverage determinants for non-contributory pensions

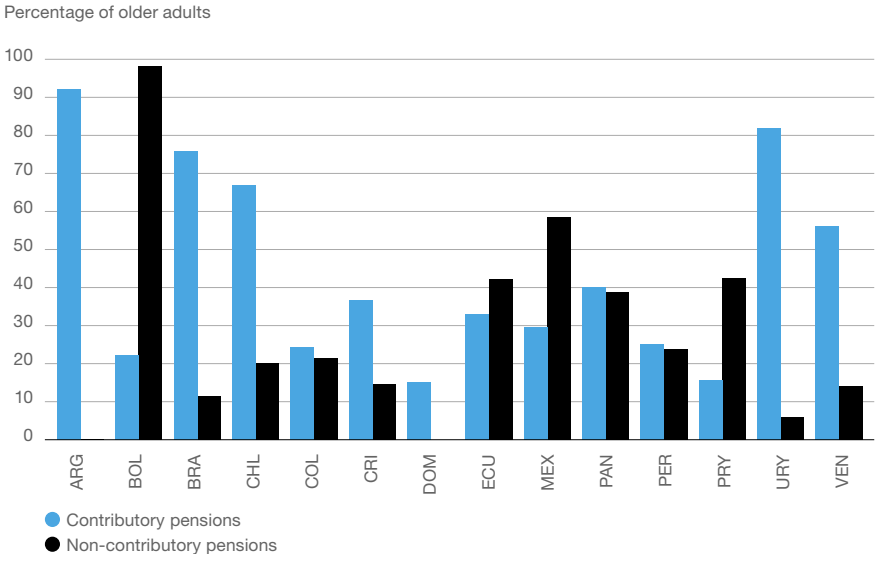
Although significant coverage gaps persist in some countries, the current state of pension coverage in the region is the result of huge improvements brought about in the past two decades. The case of Mexico is without a doubt the most noteworthy, in that it has increased coverage from around one-fifth [of the population aged 65 and over] in 2000 to approximately four-fifths in 2018 (Arenas de Mesa, 2019). Argentina, Bolivia, Colombia, Costa Rica, Ecuador, Panama,

19. This difference between salaried and self-employed workers is also observed in a regression analysis that provides a comparison of workers with the same gender, city, education, and income level. In this case, the difference in the proportion of workers who say they do not plan to retire reaches 11.7 percentage points and is statistically significant at conventional levels.

Paraguay, Peru, and Venezuela also recorded improvements in coverage, with increases of over 20 percentage points in the same period (ECLAC, 2018).[20]

While the increase in labor formality and introduction of reforms to requirements to qualify for contributory pensions contributed to this improvement, the main explanation for the increased levels of coverage achieved in the region since 2000 is the expansion of non-contributory pensions.[21,22] While only six countries had non-contributory pensions in 1980 (Argentina, Brazil, Chile, Cuba, Costa Rica, and Uruguay) with only one country joining that list 20 years later in 2000, by 2016 the number of countries with this type of pension was 26. Only four countries (Haiti, Honduras, the Dominican Republic, and Nicaragua) do not currently have non-contributory pensions (ECLAC, 2018; Arenas de Mesa, 2019).[23] Moreover, the small group of countries that had contributory pensions in 1980 expanded coverage under their non-contributory systems.

Figure 3.5
Coverage by contributory and non-contributory pensions for persons 65 and older, 2017



Notes: In the case of Argentina, pensions that stem from the different moratoriums are classified as contributory.
Source: Authors based on administrative data reported in Arenas de Mesa (2019).

20. The high level of coverage by contributory pensions in Argentina is due to repeated pension moratoriums, whereby access to a pension is allowed without having attained the minimum number of qualifying years of contributions, in exchange for making the missing contributions through pension discounts.

21. See Rofman, Apella, and Vezza (2013), ECLAC (2018), and Arenas de Mesa (2019).

22. In practice, Argentina and Uruguay have implemented diverse ad hoc flexibility for the minimum number of qualifying years of contributions. This is key to reconcile the high level of contributory pension coverage shown in Figure 3.5 with the low proportion of workers who would reach the minimum number of qualifying years in Table 3.3.

23. Rofman *et al.*(2013) provide a detailed analysis of the process of expanding non-contributory pensions in the region.

Figure 3.5 shows the relevance of contributory and non-contributory pensions in the different countries. Bolivia's non-contributory pension program, *Renta Dignidad*, introduced in 2008, stands out for its nearly universal coverage. Although to a lesser degree than Bolivia, non-contributory pensions are also very important in Ecuador, Mexico, Panama, and Paraguay. Revisiting the classification of countries in three groups of coverage, and considering the extremely low coverage under contributory pensions in these countries due to high levels of labor informality, it can be concluded that non-contributory pensions are the reason why these countries are in the group with the highest coverage level.[24]

The expansion of non-contributory pensions was fundamental for the improvements observed in pension coverage.

The challenge in countries with high coverage levels for non-contributory pensions but low coverage for contributory pensions lies, in general, in pension amounts, as discussed in greater detail in the analysis of sufficiency. This is clearly the case in Mexico, which has achieved high levels of coverage, but, as illustrated in Figure 3.2, still faces high poverty rates given its GDP per capita.

Sufficiency of pension payouts

The sufficiency of pension benefits can be evaluated from the point of view of the first of the objectives mentioned previously, namely, generating savings for retirement, or the second, reducing poverty among older adults. According to the first criterion, pensions should enable a recipient to maintain a standard of living in retirement comparable to that enjoyed in working life. Given the difficulty of attaining consumption data throughout the life cycle of individuals, one common approximation for evaluating sufficiency according to this first objective is to present pension amount in relation to individual employment income. According to the second criteria, pension amounts should be enough for older adults to attain minimum levels of wellbeing, which can be evaluated by linking pension amounts to poverty indicators.

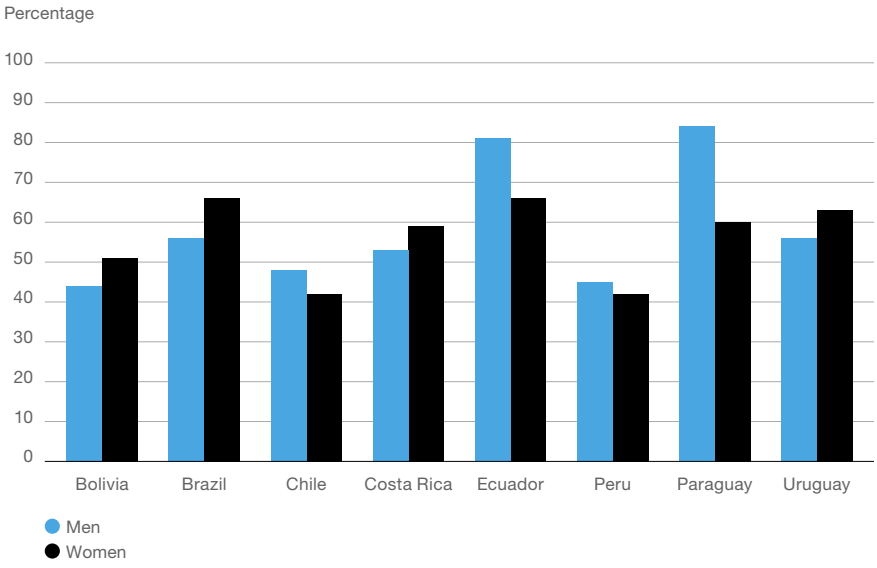
In keeping with the first objective, a commonly used indicator is the replacement rate, defined as the proportion represented by the first pension received compared to employment income before retirement. In this way, this indicator shows whether the purchasing power provided by the pension is similar to that provided by the salary. The ideal measure of the replacement rate would require access to panel data linking salaries and pensions for the same individual. Given that this type of data does not exist in most countries, an explanation is provided below of two alternative and complementary measures for replacement rates that offer a good lens on the relationship between pensions and salaries in the region.

Figure 3.6 presents the first type of replacement rates, which can be called empirical and are built based on wages for workers age 55-59 and the contributory pensions of older adults age 65-69 reported in the official household surveys in

24. Paraguay is classified in the group of intermediate coverage but shares this characteristic.

the different countries. These are net replacement rates because they are based on wages and pensions after taxes and contributions. Figure 3.6 shows a stylized fact on replacement rates in the region: these are significantly higher in countries with pension systems with defined-benefit, pay-as-you-go architecture (in the figure, Brazil, Ecuador, Paraguay, and Uruguay) compared to countries with defined contribution and capitalization funding (Bolivia and Chile).[25] Among the countries with defined-benefit schemes, Ecuador and Paraguay stand out for their particularly high replacement rates.

Figure 3.6
Average net replacement rates for salaried workers, 2018



Notes: Net replacement rate is calculated as the average pension for persons aged 65-69 in relation to the salary of persons aged 55-59. Net salaries and pensions are taken for this calculation (after taxes and contributions).

Source: Authors based on data from CEDLAS (2020).

Table 3.5 presents the second type of estimated net replacement rates, called simulated rates. These are obtained by applying the rules for calculating pensions to each country's most significant pension program considering employment income, employment rates and labor formality observed in household surveys.

25. Similar conclusions on replacement rates in both types of systems are also reported in OECD, World Bank, and IDB (2015) and IMF (2018b). Although Uruguay has a mixed system, as shown in 3.1, in general, the average pension payout stems exclusively from its pay-as-you-go component.

This exercise requires a set of assumptions regarding wage growth, interest rates, life expectancy, and survival of spouse, among others, described in detail in the Appendix to the chapter.[26]

Table 3.5
Simulated net replacement rates for wage-earners and the self-employed retiring at the minimum age for each country, 2020

	Years of Contributions	Wage-earners		Self-employed	
		Men	Women	Men	Women
Argentina	Always	81.2	85.0	66.4	87.5
	Minimum	66.6	72.1	66.6	87.3
Brazil	Always	65.9	72.1	50.4	78.8
	Average	48.1	45.8	49.2	78.7
Chile	Always	40.1	41.3	46.7	41.7
	Average	34.3	22.0	24.5	40.1
Colombia (DB)	Always	86.0	87.9	109.4	154.1
	Minimum	57.0	65.3	96.3	151.4
Colombia (DC)	Always	33.1	40.6	97.8	154.1
	Average	31.9	40.6	96.3	151.4
Ecuador	Always	111.9	119.3	114.5	107.1
	Minimum	82.9	87.1	85.3	80.3
Mexico	Always	22.5	29.5		
	Minimum	21.6	29.9		
Peru (DB)	Always	46.3	43.9	96.6	134.7
	Minimum	45.9	44.5	56.3	74.9
Peru (DC)	Always	38.1	29.1	46.8	78.7
	Average	22.4	21.3	44.9	74.9
Panama	Always	60.8	61.9		
	Minimum	44.8	32.3		
Uruguay	Always	51.8	54.5	51.5	59.7
	Minimum	46.3	46.5	44.2	66.3

Notes: The calculation for self-employed in Argentina is based on the simplified tax (monotributo), Category B. For Colombia and Peru, defined-benefit (DB) and defined-contribution (DC) systems are calculated separately.

Source: Authors based on Allub, Alves, and López (2020).

Simulated replacement rates allow us to evaluate the sufficiency of pensions generated in the main contributory system in each country. For purposes of reference, this type of simulated net replacement rate is 59% on average

26. This type of replacement rate is the most common in the literature, presented in Forteza and Ourens (2012), OEDC, World Bank and IBD (2015), IMF (2018b), and OECD (2019a), among others. The details of the calculation, as well as more detailed analysis, are presented in the Appendix to this chapter and in Allub, Alves, and López (2020).

for high-income OECD countries, with major variation among countries and standard deviation of 18 percentage points, and minimums of 38% and 37% in the United Kingdom and Japan, respectively, and maximums around 90% in Austria, Italy, Luxemburg, and Portugal (OECD, 2019a). These simulated net replacement rates for the OECD are formulated based on individuals who contribute throughout their working life. Although this assumption is clearly inadequate for an analysis of the reality in Latin America, the results are provided based on this assumption (along with others) so they can be compared with the OECD figures.

Replacement rates are in general greater in pay-as-you-go than in capitalization systems.

Table 3.5 presents eight simulated replacement rates for each country that stem from the interaction of three binary classifications: men and women, wage earners and self-employed, and workers who contribute throughout their working lives versus those who contribute according to average rates of employment and formal employment in their country (when these reach the minimum number of years required for retirement).[27] The inclusion of the cases of self-employed workers and workers who do not contribute continuously throughout their working life is an innovation compared to available precedents. This innovation is key, given the relevance of self-employment and informality in the region.

Table 3.5 delivers various conclusions. In the first place, the pattern shown in empirical replacement rates is confirmed in the case of salaried employees, which proved to be greater in programs with a predominant pay-as-you-go, defined-benefit component (Argentina, Brazil,[28] and Ecuador) than in those with a predominant capitalization, defined-contribution component (Chile and Mexico), while countries with mixed, complementary systems (Panama and Uruguay) fall in an intermediate position.[29] The highest replacement rates for defined benefit (opposed to defined contribution) are also clearly observed in Colombia and Peru, the two countries that have mixed systems with an exclusionary nature.

In the three countries with purely pay-as-you-go schemes, and in the pay-as-you-go component in Colombia, the majority of replacement rates are above the 59% OECD average.[30] Therefore, using the replacement rate as a measure of sufficiency, one could conclude that sufficiency is not a problem in these countries; on the contrary, the calculations carried out for this report suggest that pay-as-you-go, defined-benefit plans in the region are much more generous than the average in developed countries.

27. If the years of contributions resulting from average employment and formality rates do not meet the minimum qualifying years of contribution, the minimum number of qualifying years is used.

28. In Table 3.1 (see page 173), Brazil figures with a pension architecture that includes pay-as-you-go and capitalization elements. Considering that the capitalization component in that country is voluntary with low coverage (Arenas de Mesa, 2019), Brazil is included here within the group of countries with a predominantly pay-as-you-go model.

29. This pattern is not clearly observed among OECD countries. The average replacement rates in countries with defined-benefit plans are the same as those with defined-contribution plans or points or notional systems. Only two countries have purely defined-contribution plans: Australia, with a replacement rate of 41%, and Denmark, with 71%.

30. The OECD rates correspond specifically to workers who contribute throughout their life. In the case of Brazil, the rates are calculated with the current rules in place after the 2019 pension reform.

As for defined-contribution schemes, although both Chile and Mexico fall well below the OECD average in all cases, Chile shows higher replacement rates than Mexico due to the pension subsidy system for lower amounts installed in the 2008 reform.[31] Of particular concern in Chile and in the defined-contribution component in Peru is the case of women contributing the average number of years, who have the lowest replacement rates—around 20%—according to Table 3.5. This is due to a combination of factors that differentiate the situation of women from men in this type of system: the lower number of years of contributions associated with patterns of activity, employment and formality, lower wages, greater life expectancy, and a lower minimum retirement age.

The replacement rates for capitalization schemes with defined contributions are relatively lower due to several factors. First, high informality—which generates coverage problems in defined-benefit systems—implies fewer contributions to individual capitalization accounts, and therefore, problems of sufficiency. A high level of informality in young workers in particular (CAF, 2016) limits the potential of compound interest to increase the pension amount in these systems. Furthermore, contribution rates in all these systems are relatively low in comparison to the OECD (see Figure 3.11, page 195), thus contributing to lower replacement rates.

The comparison between salaried employees who always contribute and those who contribute the minimum years required, or the average number of years, shows significant differences in favor of the former, which is healthy from a contribution incentive perspective. These differences underscore the importance of the original contribution of this report in terms of making this type of comparison possible. In the case of replacement rates for self-employed workers, their amounts do not pose challenges of sufficiency from the perspective of maintaining quality of life levels from working age into old age, except for men who contribute the average number of years in Chile. However, an important problem from the point of view of incentives lies in the fact that, in Argentina, Brazil, Chile (women), Colombia, and Peru (defined-contribution), replacement rates among lifelong contributors barely surpass the rates for those who contribute the minimum or average [32, 33]

One limitation of the replacement rate as a measure of sufficiency is that it does not contemplate the evolution of pensions over time. In the region in general, the rules of adjustment for pension amounts beyond the first year oscillate between two extremes.[34] On one end is the case of countries like Brazil, where the recently approved reform established that pensions must

31. For a detailed description of the 2008 reform in Chile, see Arenas de Mesa (2019).

32. Dean, Fleitas, and Zerpa (2020) show how self-employed workers in Uruguay effectively react to the incentives provided by the method for calculating retirement pensions.

33. Replacement rates among self-employed women in Argentina and Brazil are 20-30 percentage points higher than for men. This is because pension amounts are set based on a basic minimum pension and income for self-employed women is lower than it is for men in this employment category.

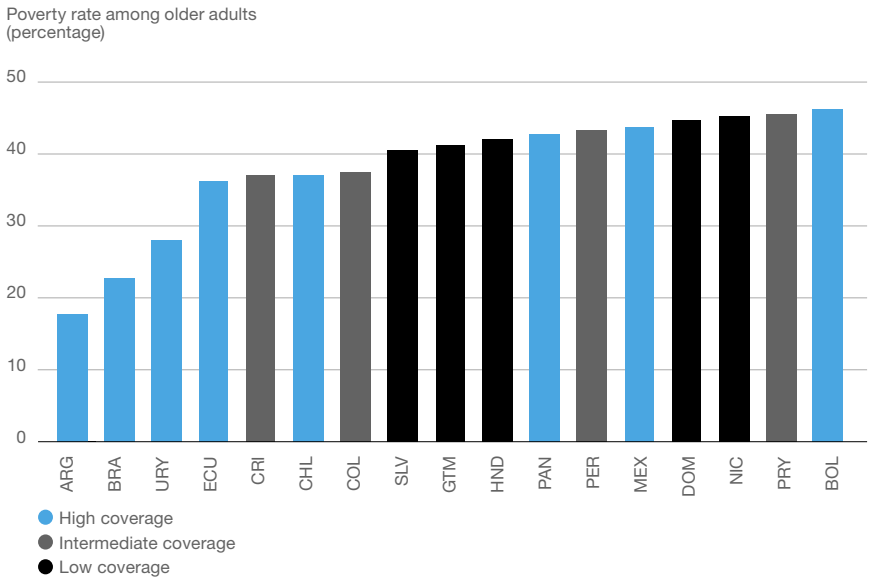
34. Table A 3.5 in the Appendix to this chapter shows the methods for calculation and adjustment of defined-benefit systems.

adjust for inflation. On the opposite end is the case of Uruguay, whose pensions are adjusted according to the average evolution of wages.

The consequences of either adjustment mechanism are very relevant in terms of financial sustainability, which will be discussed in the next section. However, from a sufficiency standpoint, both mechanisms have advantages and disadvantages, depending on the country's macroeconomic evolution. On one hand, adjustment for inflation has an advantage over adjustment for wages in that it protects consumption capacity in the event of macroeconomic shocks that generate a fall in real wages. On the other, in contexts of real wage growth, adjusting for inflation instead of wages can mean significant declines in pension amounts compared to wages and, therefore, cause the income of retirees to lag behind that of the working-age population.

With regard to the assessment of the sufficiency of pensions from the standpoint of reducing poverty among older adults, Figure 3.2 showed the poverty rate based on a poverty line of USD 4 per day. Figure 3.7 introduces the poverty rate in relative terms, with a threshold equivalent to half the median household income per capita in each country. While the poverty rate in both figures is influenced not only by the level of sufficiency but also the level of pension coverage, conclusions regarding sufficiency can be extrapolated by comparing countries with similar coverage levels.

Figure 3.7
Rate of relative poverty among persons over age 65 according to level of pension coverage, circa 2018



Notes: The relative poverty line corresponds to 50% of median household per capita income. The countries are listed from lowest to highest poverty rate and colored according to the level of pension coverage.

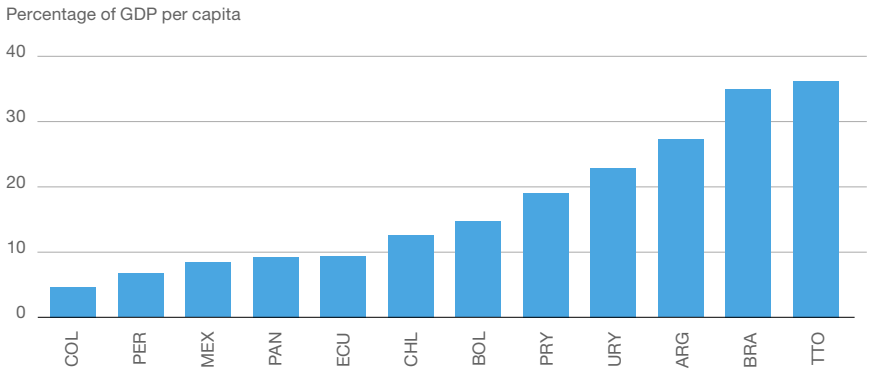
Source: Authors based on data from CEDLAS (2020).

Taking the three groups of countries proposed earlier based on their coverage, the comparison of poverty rates (absolute and relative) within the first group suggests that Argentina, Brazil, and Uruguay have adequate sufficiency levels, while Bolivia, Chile, Ecuador, Mexico, and Panama have pension amounts that may be too low on average. In the second group of countries classified by coverage, there are no significant differences in relative poverty like the ones seen in the first group, but there are in terms of absolute poverty (see Figure 3.2), considering that Paraguay, and especially Costa Rica, show lower levels of poverty than Colombia and Peru.

Non-contributory pension amounts differ significantly among countries and are key for determining poverty levels in old age.

In the evaluation of pension sufficiency according to the objective of reducing poverty, the role of non-contributory pensions is particularly relevant. Figure 3.8 shows significant dispersion in non-contributory pension payouts in relation to GDP per capita in the different countries. Returning to the conclusions regarding the general sufficiency of pensions mentioned above, a close relationship can be confirmed between that general assessment of sufficiency and the payout amounts of non-contributory pensions. On one hand, countries with high coverage and low poverty rates among older adults (Argentina, Brazil, and Uruguay) have non-contributory pensions that are some of the highest in the region. On the other, the countries with sufficiency problems due to their level of coverage, such as Bolivia, Chile, Ecuador, and Panama, have relatively low non-contributory pension payouts.[35] The same thing occurs among countries in the second group of countries by coverage: Paraguay has less poverty among older adults and higher non-contributory pensions than Colombia and Peru.

Figure 3.8
Non-contributory pension amounts in relation to GDP per capita, 2018



Notes: The data are from 2018, except for Mexico, which is from 2019. In the case of Colombia, the amounts vary by municipality. The highest amount is taken, without considering Bogotá, given that this is the most common amount among the municipalities. In the case of Trinidad and Tobago, the amount varies depending on income and the highest amount is taken as reference. In Ecuador, the amount corresponds to *Pension para Adultos Mayores*, the non-contributory program for older adults with the largest number of beneficiaries.

Source: Authors based on official websites for each country with data on pension amounts; GDP per capita based on World Bank (2020).

35. There is another important contributory program in Ecuador called *Mis Mejores Años* (My Best Years), which offers twice the amount in Figure 3.8. However, at least until 2018 (date of the Figure), it had less coverage than the more general Pensión para Adultos Mayores (Pension for Older Adults) program.

Financial sustainability

Financial sustainability refers to the balance between revenue and expenditures of pension systems over time. In the same way that the previous sections evaluated the degree of coverage and sufficiency of the pension systems, taking financial sustainability as a given, this section analyzes the financial balance between revenues and expenditures, given the current rules in place that determine the levels of coverage and sufficiency.

As revealed in the description of the architecture of the region's pension systems, the financial sustainability analysis is especially relevant in countries with sizeable pay-as-you-go components in their pension systems. In contexts of accelerated aging like those facing the region, the revenue and payouts of a pay-as-you-go system may be balanced in the present, but may not be in ten years unless key parameters, such as the replacement rate or minimum age of retirement, are adjusted for aging. Although the main focus of this section will be on pay-as-you-go systems, it bears mentioning that the capitalization systems in the region have subsidy and minimum pension components, as seen in the previous sections. This means that those systems are not necessarily financially balanced, as would be the case in pure capitalization systems.

Current financial situation of pension systems

To begin looking at the current financial situation of the pension systems in the region, Figure 3.9 shows the level of revenue and payouts for the systems in each country in 2015, as well as distinguishing payouts from contributory as opposed to non-contributory pensions. Considering the objective of financial sustainability analysis in this section, Figure 3.9 does not include revenue and expenditure from the capitalization components of the pension systems, since they are balanced by definition.

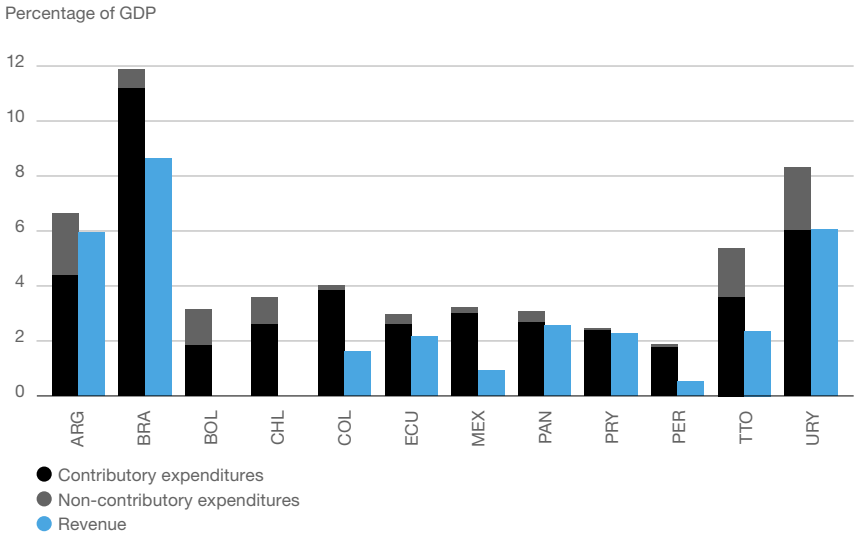
From the standpoint of payouts, Figure 3.9 shows significant heterogeneity across countries, with Argentina, Brazil, and Uruguay on one extreme with expenditures above 6% of GDP, and Peru on the other, with less than 2%. These highly heterogeneous levels of expenditure stem from the interaction of three elements, some of which have already been analyzed in this chapter.

Public spending on pensions is higher in countries with pay-as-you-go systems, an older population, and pensions with more coverage and higher amounts.

The first element is the architecture of pension systems. Capitalization systems, like those in Chile and Bolivia, will have relatively low contributory benefit payments, while all payouts in pay-as-you-go systems like those in Argentina and Brazil are the result of public system expenditures.

The second element is the level of population aging in each country. Figure 3.9 shows that countries like Argentina and Uruguay, where 11% and 14% of their respective populations are 65 or older, are among those with the highest levels of expenditure. On the opposite extreme are Bolivia, Colombia, Mexico, Panama, Paraguay, and Peru, with less than 8% of their population in that age range, making the total level of pension expenditure less in those countries.

Figure 3.9
Pension system revenue and benefit payments and expenditures in relation to GDP, 2015



Notes: In the case of Argentina, retirement benefit payments stemming from the different social security moratoriums are calculated as a contributory expenditure. In the case of Mexico, amounts correspond to 2016.

Source: Authors based on data from IERAL (2020).

In third place, the higher the coverage and pension amounts (topics examined earlier in the chapter), the greater the expenditure. Figure 3.10 provides data to evaluate this dimension by comparing the level of expenditure among countries with a proportion of adults over 65 and architecture that are similar. For instance, in comparing the levels of expenditure among the group of countries with relatively younger populations, the Brazilian system's elevated expenditure stands out, which, as mentioned earlier, is characterized by relatively high pension coverage and benefit payments.[36] Even among the rest of the countries with relatively young populations, there are important differences. As seen in the figure, Colombia's expenditure exceeds that of Peru by more than two percentage points, and Ecuador, Panama, and Paraguay, by one point.

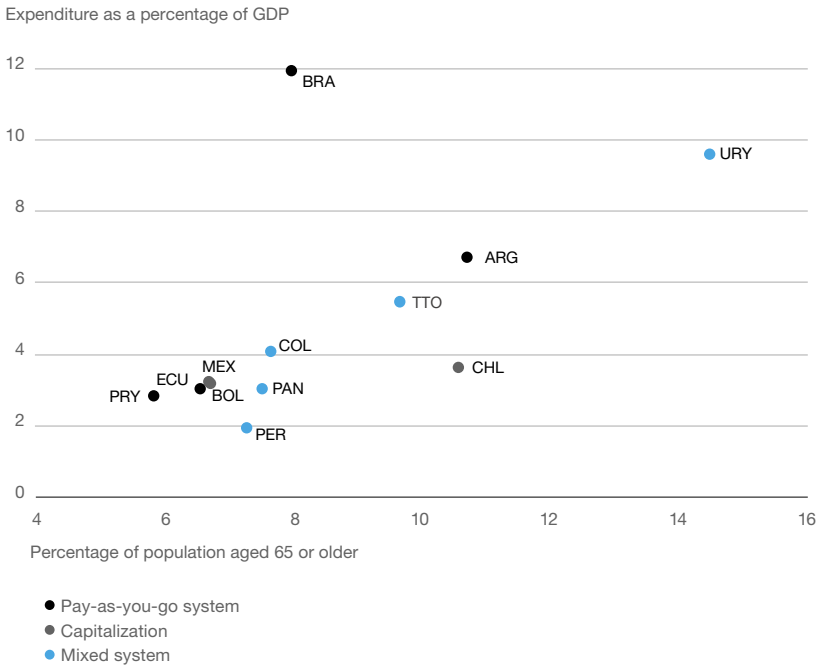
In summary, the financial sustainability analysis, combined with the previous analyses of coverage and sufficiency, indicate that, of the three countries with the highest levels of pension expenditure, Brazil's is attributable not so much to its level of aging as it is to the relatively high coverage and especially to high benefit payments; Uruguay, at the same time, stands out as the country with

36. In the case of Brazil, current expenditures correspond to pension coverage and amounts generated prior to the 2019 reform, so the expenditure is expected to decrease over the next decades as pensions generated under the new system become more significant.

Pension system revenue is greater in countries with a higher proportion of the working-age population, labor formality, and contribution rates.

the highest proportion of older adults in the region, and Argentina in second place, followed by Brazil in terms of the proportion of older adults as well as the level of expenditure given its level of aging. Furthermore, in the group of countries situated in the lower left quadrant of Figure 3.10, the levels of expenditure are relatively low, which is associated with both a relatively young population as well as different combinations of low coverage or pension amounts. In the case of Chile, the existence of a mature capitalization system and a non-contributory component that is not too generous (see Figure 3.8) explain the low level of public expenditure, despite having one of the largest proportions of older adults in the total population.

Figure 3.10
Public expenditure on pensions and aging, 2015

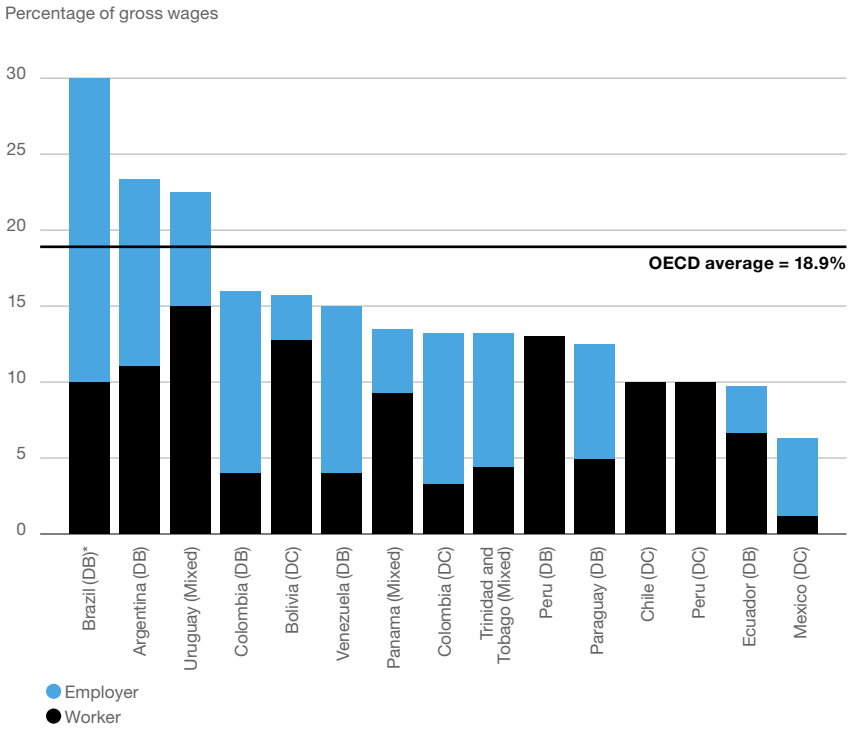


Notes: In the case of Mexico, amounts correspond to 2016.
Source: Authors based on United Nations (2019b) population projections and IERAL (2020) fiscal data.

From the perspective of which factors affect the revenue of public pension systems (Figure 3.9), the three most significant variables are contribution rates, which determine how much each working-age person contributes, informality rates, which determine what proportion of working-age persons contribute to the system, and demographic structure, which determines how many potential working-age persons there are in the country.

With regard to contribution rates, Figure 3.11 shows that the majority of countries have contribution rates well below OECD levels with an average of 18.9%. However, the countries with the largest deficits, such as Argentina, Brazil, and Uruguay, have contribution levels that are already relatively high, placing them above the median for OECD countries.

Figure 3.11
Contributions as a percentage of gross wages for salaried employees, 2020



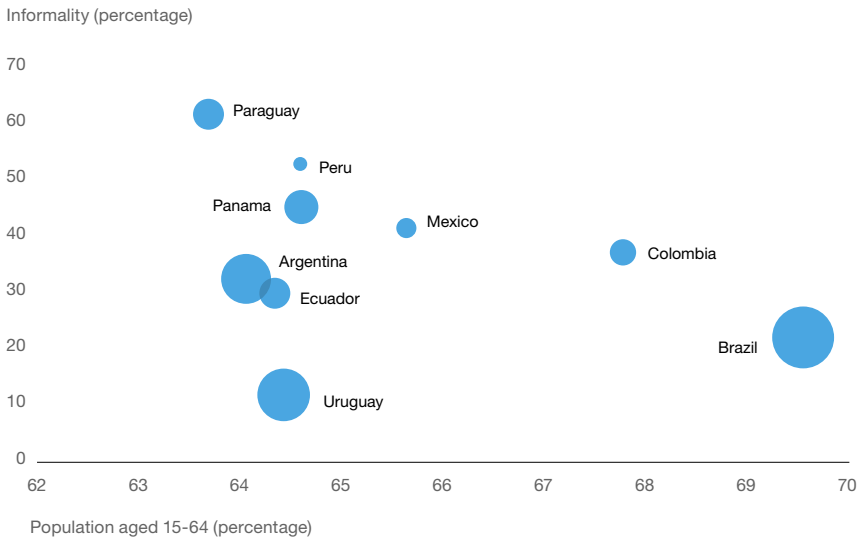
Notes: In Brazil, the worker contribution rate varies according to salary level. This percentage corresponds to average income wage-earners. The average rate for the OECD corresponds to the effective rate over average income in 2018 for 29 countries, which do not include Chile or Mexico.

Source: Authors based on data from official websites for each Latin American country and OECD (2019a) for the average among the countries of that organization.

Figure 3.12 introduces the role of two other forces determining the level of revenue of these systems: demographics and informality. Revenue in the graphic is represented by the size of the circles and the role of demographics by the proportion of the population aged 15-64, the range in which levels of employment are highest. The proportion of the population in this age range is between 64% and 68% in the majority of the countries of the region and, of those, Argentina and Uruguay stand out as the countries with the highest revenue, attributable to their relatively high rates of contribution and relatively low labor informality (especially in Uruguay). On the other extreme, Peru and Mexico are countries with high informality and low contributions, which

manifest as very low revenue. In the cases of Paraguay and Panama, their relatively low revenue is mainly associated with a high incidence of informality. With a proportion of the population aged 15-64 of approximately 69%, Brazil is the country with the highest potential revenue from a demographic standpoint. This, associated with one of the highest rates of contribution and labor formality in Latin America, make Brazil the country with the highest revenue in relation to GDP in the region.

Figure 3.12
Pension system revenue, informality and working-age population, 2015



Notes: The size of the circles represents revenue in terms of GDP. In the case of Mexico, revenue amounts correspond to 2016.

Source: Authors based on data from CEDLAS (2020) on informality, IERAL (2020) for revenue, and United Nations (2019b) for population.

Actuarial balance between revenues and benefit payments as the foundation of financial sustainability

The pattern of financial sustainability of contributory systems depends fundamentally on the relationship between the total amount a worker receives as pension benefit payments during retirement and the total amount that person made in contributions throughout their working life. In particular, in contexts of demographic aging, high ratios of benefits in relation to contributions would indicate severe problems of financial sustainability that, as pointed out earlier, especially impact pay-as-you-go, defined-benefit systems.[37]

37. In addition to being useful from the point of view of financial sustainability, these ratios are informative in terms of the incentives offered by the contributory system from the perspective of return on the worker's contributions.

As part of the previous exercise for the simulated replacement rates, Table 3.6 shows this relationship between the total amount paid in and the total amount received (both expressed for the same moment in time via a discount rate) for the combination of eight categories of workers according to gender, occupation and years of contributions. At the same time, to assess the effects of aging, the table provides the ratio between benefits and contributions given life expectancy in 2020 and how much said ratio would increase with life expectancy projections for 2065.

One important factor to bear in mind when interpreting these results is that, while they are presented for a considerable number of cases, these data are not representative of all workers. It could happen that ratios for workers according to other characteristics (for example, income levels) bear different conclusions for the overall sustainability of the system. Notwithstanding the aforementioned, it is clear that the joint consideration of the ratios and the rules for paying into the system and calculating pensions are indicative of a significant financial imbalance in some systems.

In most countries, workers receive cumulative pension benefit payments that exceed the sum of cumulative contributions. This pattern is more pronounced for women and especially self-employed individuals.

Several conclusions emerge from Table 3.6 concerning the financial sustainability of the different categories and systems. In the first place, the ratio for salaried employees in 2020 shows significant differences across countries. The systems of Brazil, and Peru's capitalization component, present ratios that do not suggest important sustainability issues at present insofar as they figure generally under or around 100%.[38] The systems of Argentina, Chile, and Uruguay, for their part, fall into an intermediate position, with ratios between 10 and 40 percentage points above 100%. While in principle the ratio in capitalization systems, like Chile's, should be 100% by definition, in all cases there are supplements paid by the State when pensions do not reach certain minimum amounts. The remaining systems, especially Ecuador and Colombia's defined-benefit component, show ratios with significant imbalances that suggest the need for adjustments to the formulas for calculating pensions. In those cases, the results are directly linked to the high replacement rates presented in the section on sufficiency.

As a second conclusion, higher ratios, in general, are observed for women than for men. This applies both to salaried employees and self-employed workers and is due to three factors. First, Argentina, Brazil, Chile, Colombia, and Panama have lower minimum ages of retirement for women, meaning fewer years of contributions and more years of benefits. Second, women have a higher life expectancy than men in all the countries, which translates into more benefits received. Finally, the fact that women have a lower density of contributions and lower salaries makes the total amount of their contributions normally lower. Although in a pure capitalization system, this would not imply a lower ratio, as commented earlier, these systems have minimums for contributory pensions that result in ratios above 100%.

38. In the case of Brazil, these calculations correspond to the new retirement regulations and contributions established under the 2019 reform.

Table 3.6

Ratio between total benefits and contributions for salaried employees and self-employed workers, 2020 and projections for 2065

	Years of contributions		Salaried employees		Self-employed	
			2020	Extra in 2065	2020	Extra in 2065
Argentina	Always	Men	102.6	17.0	620.1	103.0
		Women	141.3	18.2	818.1	105.3
	Minimum	Men	123.1	20.4	939.1	155.9
		Women	156.5	20.1	1099.8	141.5
Brazil	Always	Men	87.0	9.9	737.5	83.5
		Women	98.2	11.1	802.6	90.9
	Average	Men	92.3	10.4	1671.2	189.2
		Women	119.1	13.5	2249.6	254.7
Chile	Always	Men	117.0	6.3	139.3	9.2
		Women	143.2	8.2	134.9	14.3
	Average	Men	133.8	8.4	307.3	38.9
		Women	135.2	14.4	815.4	86.8
Colombia (DB)	Always	Men	266.7	24.2	543.0	49.3
		Woman	289.3	24.8	1110.4	95.0
	Average	Men	279.9	25.4	911.5	82.8
		Women	312.7	26.8	2233.8	191.2
Colombia (DC)	Always	Men	135.1	11.3	664.4	59.4
		Women	174.2	13.9	1513.4	128.5
	Average	Men	203.4	17.5	1243.4	112.0
		Women	284.5	23.4	3040.1	259.2
Ecuador	Always	Men	503.1	63.5	382.2	48.0
		Women	534.1	58.6	604.2	66.3
	Minimum	Men	495.2	62.2	382.5	48.1
		Women	528.3	58.0	565.1	62.0
Mexico	Always	Men	107.9	12.3	n.a.	n.a.
		Woman	135.7	14.0	n.a.	n.a.
	Minimum	Men	194.6	23.5	n.a.	n.a.
		Panama	235.8	27.1	n.a.	n.a.
Peru (DB)	Always	Men	90.2	13.2	167.2	24.4
		Women	112.1	15.0	218.7	29.2
	Average/Minimum	Men	142.0	20.7	227.7	33.3
		Women	231.9	31.0	285.1	38.1
Peru (DC)	Always	Men	100.0	0.0	108.9	14.6
		Women	100.0	0.0	169.5	21.5
	Minimum	Men	100.0	5.3	239.9	33.8
		Women	149.6	18.8	374.1	48.8
Panama	Always	Men	159.8	11.5	n.a.	n.a.
		Women	198.2	12.4	n.a.	n.a.
	Minimum	Men	247.2	17.8	n.a.	n.a.
		Women	255.1	16.9	n.a.	n.a.
Uruguay	Always	Men	117.4	19.1	645.2	105.2
		Women	116.0	16.4	545.5	77.1
	Minimum	Men	128.7	21.0	743.3	121.2
		Women	130.4	18.4	731.5	103.5

Notes: Separate data are provided for defined benefit (DB) and defined contribution (DC) in the cases of Colombia and Peru. The DB ratios for the latter correspond to the average years of contributions in the case of salaried employees and the minimum years of contributions in the case of the self-employed. n.a. indicates data do not apply.

Source: Authors based on Allub, Alves, and López (2020).

The third conclusion is that, in all the countries, the ratios of self-employed workers are incredibly unbalanced. Given that, as seen in the section about sufficiency, the replacement rates for these workers fall within relatively reasonable ranges, the explosive nature of the ratios is attributable to the fact that contributions by these workers are very low.

In fourth place, and in the preamble to the simulations on the aggregate impact of aging on the deficits in these pension systems, Table 3.6 shows that the ratio between benefits and contributions grows significantly in all the countries when using the United Nations life expectancy projections for 2065. The increase in the ratio toward 2065 stems from the multiplication of the increase in life expectancy and the existing pension amounts, implying that programs that currently have more imbalanced ratios will also undergo a greater increase looking ahead to 2065. Taking the case of salaried employees, where the magnitudes are more manageable, the countries with more balanced ratios currently (Brazil, Chile, and the defined-contribution component in Peru) undergo increases toward 2065 of approximately 10 percentage points (significant, in any case), while the countries with more imbalanced ratios (Ecuador and the defined-benefit component in Colombia) show increases of more than 25 points.

Financial sustainability and aging

A simulated fiscal scenario is presented below to analyze the aggregate effects of aging on the financial sustainability of the countries in the region. This scenario takes the values of wages, pensions, and contribution and pension coverage by age and gender observed in 2015 and interacts them with U.N. population projections by age and gender projected up to 2065.[39] Some countries, like Mexico, Panama, and Uruguay, undertook important reforms in recent decades, and for this reason, the pensions observed at present correspond, in part, to programs that will no longer be in effect in 2065. The simulation exercise took this element into account, calculating pensions for 2065 based on the program in effect now. The results of this estimate thus illustrate pension system revenues and expenditures in 2065 if the institutional design remains unchanged.[40]

Figure 3.13 presents the simulated variation of revenue, expenditure, and fiscal result for the different countries between 2015 and 2065. Although the figure shows significant differences in the evolution of these indicators across countries, a general first conclusion is that changes in expenditures are the dominant force and changes in revenue play a lesser role in explaining the changes in fiscal results. The main reason behind said predominance is that the scale of the increases in the proportion of the population over 65 is much greater than the scale of reduction in the proportion of the working-age population. While the average increase in the former is 15.1 percentage

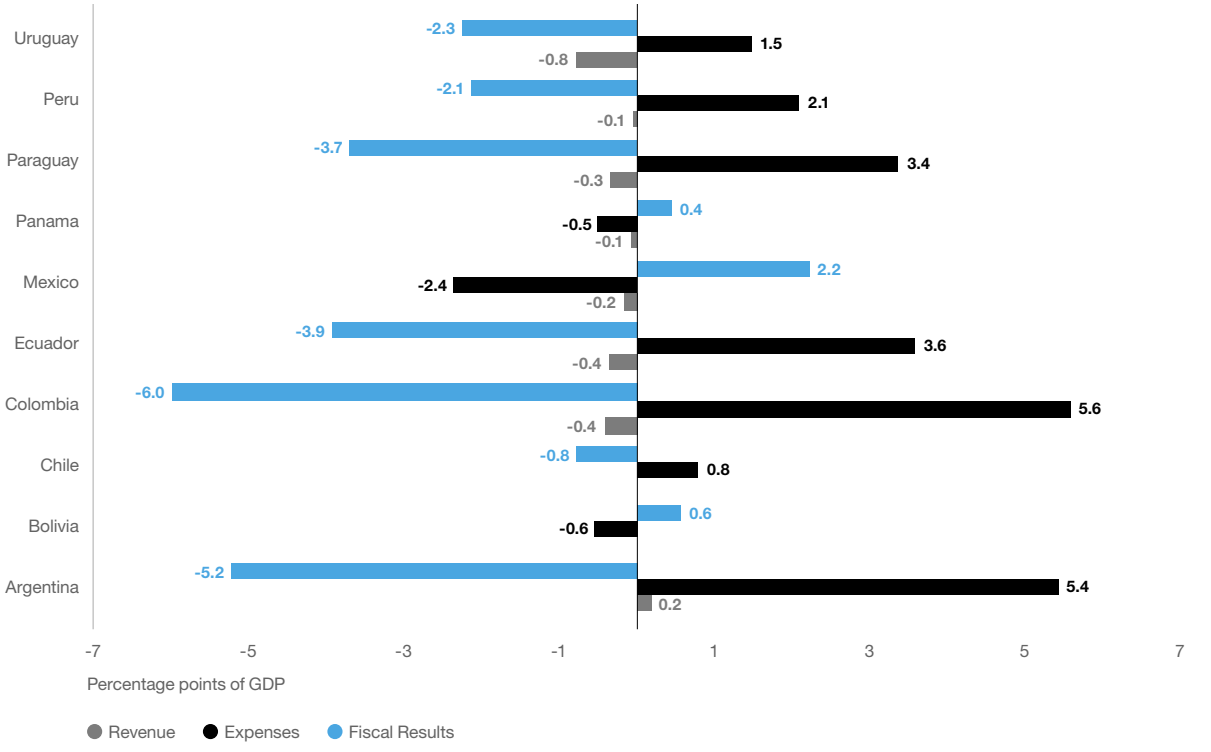
39. Daude and Pena (2020) present this simulation methodology in detail.

40. The methodology used to construct future scenarios is an aggregate and accounting simulation (not behavioral), in the sense that it does not incorporate simulations at the individual level. This type of methodology has been previously used in IMF (2018b) and Izquierdo, Pessino, and Vuletin (2018), among others.

points, the average reduction of the latter is 4.8 points (see details by country in Table A 3.4 of the Appendix).[41]

The results shown in Figure 3.13 allow us to clearly distinguish two groups of countries according to the evolution of deficit in their pension systems toward 2065.[42] On the one hand, aging in Argentina, Colombia, Ecuador, Paraguay, Peru, and Uruguay increases the deficit in their pension systems significantly. Among this first group of countries, Argentina and Uruguay have lower increases in the proportion of the population over 65, while Colombia, Ecuador, Paraguay, and Peru show greater increases (see Table A 3.4 in the Appendix). Therefore, the explosion in expenditure in the former group is associated in large measure with the relatively generous nature of their systems, while the demographic factor plays a greater role in the second group.

Figure 3.13
Variation in revenue, expenditures, and deficit as a result of projected aging between 2014 and 2065



Notes: The horizontal axis measures the difference (in percentage points of GDP) of the revenue, expenditure, and deficit of pension systems from 2015 through 2065. Expenditure includes contributory and non-contributory pensions.

Source: Authors based on data from IERAL (2020).

41. The only country where the change in revenue is more significant is Uruguay, which, with relatively high rates of formal labor and contributions, and a major fall in the proportion of the working-age population, registers a decline in projected revenue of 0.8 points of GDP.

42. Brazil was not included in this exercise because it recently approved a major reform and our methodology depends largely on pensions observed in recent years as a basis for future changes in expenditure and revenue.

The second group of countries, made up of Bolivia, Chile, Mexico, and Panama, does not indicate problems of financial sustainability toward 2065. The evolution of the fiscal results in these countries shows negative variations in the case of Chile and even some positive variations in the cases of Bolivia, Mexico, and Panama. Revisiting the analysis of the determinants of current levels of expenditure in the different countries, the architecture of individual capitalization in Bolivia, Chile, and Mexico, as already pointed out, implies that these countries face few financial sustainability risks. In the case of Panama, the introduction of a mixed system in the 2005 reform shows simulated spending around 2065 to be slightly less than what was observed in 2015.

Policy recommendations for the design of pension systems

This last section comes full circle to look at the joint evaluation of the three dimensions of pension system sustainability in the countries under analysis and consider possible changes in their institutional design. For the most part, this analysis takes as a given the general architecture of the pension systems in each country, the institutional framework around their supervision and management, and the political economy of their reforms (some of these issues will be analyzed in Chapter 5).

As seen in this chapter, the challenges of pension systems vary widely across the region and, as such, different countries require different policy responses. Bearing in mind the conceptual framework established in Chapter 1, the design of pension systems must incorporate the incentives that different design alternatives provide to workers. The two most relevant aspects in terms of incentives for the design of pension systems are the decision to contribute throughout working life and the decision as to when to retire. Considering these incentives requires an evaluation of how the costs and benefits of different design alternatives affect workers' decisions about contributions and whether to put off retirement or not. These two aspects of incentives will therefore be cross-cutting in the policy discussion in this section.

Numerous aspects beyond the institutional design of pension systems influence whether workers make contributions and when they decide to retire. First and foremost is the functioning of the labor market, with its regulations and dynamics of job creation and destruction. While this chapter focuses on pension system design, it is important to bear in mind in this analysis that regulations of the job market restrict the design options in some cases.

Given the two objectives of pension systems and the incentive aspects mentioned, the general proposal of this chapter for the design of pension systems in the region is structured around three general elements.

The first element responds to the objective of reducing poverty, whereby pension systems must provide a sufficient minimum income for all older adults

based on certain criteria regarding age and residence in the country.[43] In practice, universal coverage with a sufficient minimum income can be achieved with different designs. The simplest case is the universal non-contributory pension, like the one in Bolivia. But this first element can also be attained if there is a non-contributory pension for those older adults who do not have a contributory pension, a program that, as seen in Table 3.1, is already in place in most countries of the region.

Pension systems should guarantee a minimum income for all older adults.

The second design element responds to the objective of savings or insurance and also incorporates the aspects of incentives mentioned before, which prove to be critical to reach the levels of contributions needed for financial sustainability. This second design element posits that all categories of workers (salaried employees, self-employed workers, and employers) must pay into the system and that pension amounts should increase according to how much the worker contributes during his or her working life. The amount of these pensions, which by definition are contributory and increase based on the worker's savings, must meet three conditions. First, in order to provide incentives for contributing, the minimum level of these contributory pensions must be greater than the minimum pension established in the first element. Second, the relationship between the pension amount and contributions must provide sufficient incentives for contributing. Third, the minimum level of these contributory pensions and their rate of increase with respect to contributions must ensure a financial balance between contributions and benefits to guarantee the financial sustainability of the system.

The third element introduces two tools often used by the countries of the region as a prerequisite for access to these contributory pensions: the minimum years of contributions and minimum age of retirement. These tools are necessary to reinforce the incentives to contribute, thereby ensuring the financial sustainability of the system, in a context in which the existence of the minimum pension induces many individuals to contribute to the system for just a few years or retire sooner.

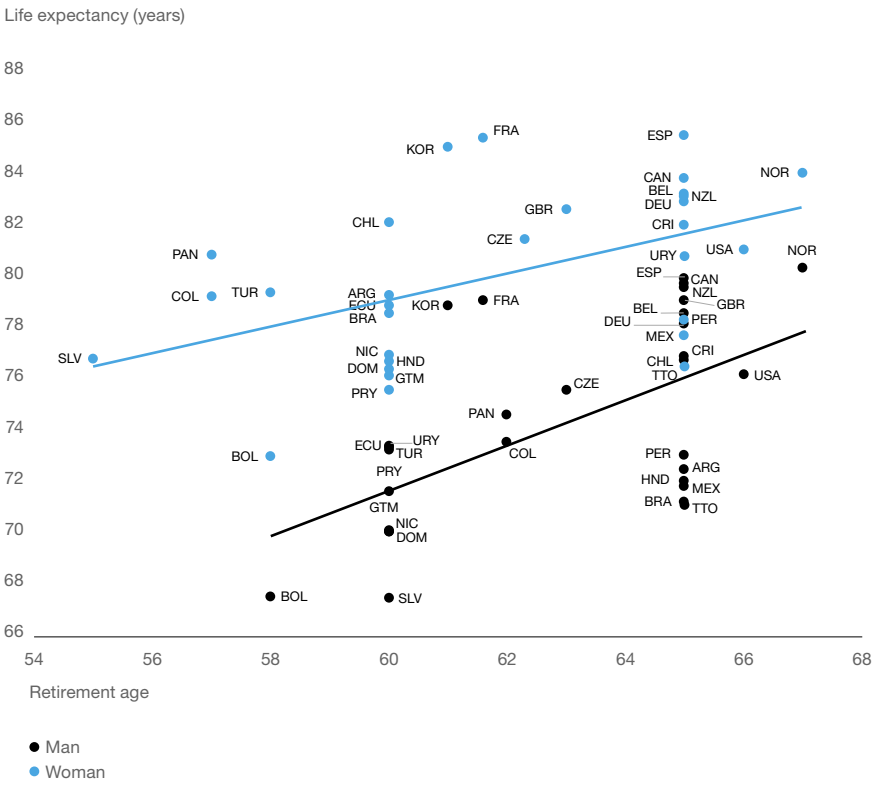
We will now present the implications of these three design elements for the different countries, focusing on five aspects of pension policy design: minimum retirement age and the incentives to postpone retirement age; minimum years of contributions; contributory pension benefit payments; contributions made by salaried employees and the self-employed; and finally, the amount and coverage of non-contributory pensions.

43. This approach is promoted, for instance, by the International Labour Organization (ILO) as part of its Social Protection Floors Recommendations (ILO, 2012) and by the World Bank in its multiple-pillar model proposal (Holzmann and Hinz, 2005). Both institutions have laid out their agreement on this component in the concept note, "The World Bank and ILO Universal Social Protection Initiative" (ILO and World Bank, 2015).

Retirement age: minimums and incentives for postponing it

Retirement age is a factor of the first order for the financial sustainability of pension systems in contexts of aging. Putting retirement off for one year means an additional year of contributions and one year less of pension payouts. This logic implies that, as countries age and life expectancy increases, maintaining financial sustainability for certain levels of coverage and sufficiency requires that the effective age of retirement increases. At the same time, as seen in Chapter 2, aging can mean an extension of workers' productivity potential in relation to their age, making an increase in retirement age possible.

Figure 3.14
Life expectancy and minimum ages of retirement according to worker gender



Source: Authors based on IERAL (2020).

The minimum age for retirement is a primary factor affecting the retirement ages observed, insofar as it establishes when individuals can cease working. Figure 3.14 presents the minimum ages for retirement and life expectancy for

men and women in the region and a set of countries selected for comparison. Considering all the countries in the figure, there is a positive correlation in general between both variables, wherein the countries with greater life expectancy also have higher minimum retirement ages. The cases of Ecuador, Paraguay, and Uruguay are exceptions, with low minimum retirement ages considering their life expectancy; therefore, increasing these minimum ages could be a relevant policy option in those countries. Among the set of demographically younger countries, such as Bolivia, El Salvador, Guatemala, or Nicaragua, the relatively low minimum ages for retirement might not be problematic at present, but they must increase in the future to keep up with aging.

One aspect that stands out in several countries of the region in comparison to others is having much lower minimum retirement ages for women than for men. This is the case in Argentina, Brazil, Chile, Colombia, and Panama. The policy option for these countries is thus to move toward similar minimum retirement ages for both sexes, as is the case in most developed countries.

Several countries have low minimum retirement ages given their life expectancy, especially for women.

In the countries where minimum retirement ages are relatively low for men and women (Ecuador, Paraguay, and Uruguay), and for women in particular (Argentina, Brazil, Chile, Colombia, and Panama), it bears reflecting on how much of an impact increasing the minimum age for retirement might have in terms of balancing their pension systems' finances. Our tool for simulating the actuarial ratio of benefits in relation to contributions allows us to answer this question. Table 3.7 indicates that postponing retirement by one year reduces said ratio on a scale that in most of the countries ranges from 5 to 10 percentage points for salaried employees and around 40 points for self-employed workers. Said reduction occurs in all the countries except Uruguay, which, as shown in Table A 3.5 of the Appendix, offers a major incentive for postponing retirement age beyond the minimum. These results confirm, therefore, that the tool of minimum retirement age has significant power to impact the financial sustainability of pension systems.

Once the minimum age of retirement establishes the age at which people can retire—and assuming that they reach the minimum contribution periods (see the next section)—the incentives for workers to choose when to retire differ among the pension systems. This leads us to the second element of the general proposal set forth at the beginning of this section, i.e., the relationship between pension benefit amounts and contribution amounts.

Table 3.7
Effect of postponing retirement by one year on the ratio of benefits over contributions

	Contributor		Salaried employees		Self-employed	
			Minimum retirement age	One additional year	Minimum retirement age	One additional year
Argentina	Always	Man	102.6	-6.5	620.1	-34.3
		Woman	141.3	-8.7	818.1	-45.0
	Minimum	Man	123.1	-5.1	939.1	-61.5
		Woman	156.5	-6.8	1099.8	-68.8
Brazil	Always	Man	87.0	-4.9	737.5	-36.3
		Woman	98.2	-5.9	802.6	-40.7
	Average	Man	92.3	-3.0	1671.2	-110.5
		Woman	119.1	-3.7	2249.6	-203.2
Chile	Always	Man	117.0	-2.5	139.3	-3.7
		Woman	143.2	-3.9	134.9	-6.5
	Average	Man	133.8	-1.5	307.3	-12.6
		Woman	135.2	-5.8	815.4	-32.3
Colombia (DB)	Always	Man	266.7	-16.8	543.0	-30.4
		Woman	289.3	-17.8	1110.4	-58.7
	Minimum	Man	279.9	-13.4	911.5	-61.8
		Woman	312.7	-16.5	2233.8	-165.0
Colombia (DC)	Always	Man	135.1	-7.0	664.4	-31.2
		Woman	174.2	-9.1	1513.4	-79.6
	Average	Man	203.4	-12.9	1243.4	-83.8
		Woman	284.5	-19.6	3040.1	-224.0
Ecuador	Always	Man	503.1	-38.2	382.2	-28.2
		Woman	534.1	-37.9	604.2	-31.5
	Minimum	Man	495.2	-33.9	382.5	-25.0
		Woman	528.3	-34.5	565.1	-33.6
Mexico	Always	Man	107.9	-7.1	n.d.	n.d.
		Woman	135.7	-6.1	n.d.	n.d.
	Minimum	Man	194.6	-13.1	n.d.	n.d.
		Woman	235.8	-15.5	n.d.	n.d.
Peru (DB)	Always	Man	90.2	-4.9	167.2	-8.5
		Woman	112.1	-7.0	218.7	-15.9
	Average	Man	142.0	-9.8	227.7	-21.5
		Woman	231.9	-18.9	285.1	-21.4
Peru (DC)	Always	Man	100.0	0.0	108.9	-5.2
		Woman	100.0	0.0	169.5	-8.1
	Minimum	Man	100.0	0.0	239.9	-17.8
		Woman	149.6	-10.2	374.1	-28.7
Panama	Always	Man	159.8	-6.4	n.d.	n.d.
		Woman	198.2	-9.1	n.d.	n.d.
	Minimum	Man	247.2	-9.3	n.d.	n.d.
		Woman	255.1	-2.4	n.d.	n.d.
Uruguay	Always	Man	117.4	0.0	645.2	-3.4
		Woman	116.0	-0.9	545.5	-32.7
	Minimum	Man	128.7	0.1	743.3	-4.0
		Woman	130.4	-0.8	731.5	-50.6

Notes: n.d. means 'no data'.
Source: Authors based on Allub, Alves, and López (2020).

Increasing minimum retirement ages has quantitatively significant impacts on the actuarial balance between benefits and contributions.

With regard to incentives for deciding when to retire, postponement of retirement age beyond the minimum age should not be disincentivized. Likewise, the relationship between a larger pension for working an extra year and the additional contributions the worker makes during that year must be balanced so as to not jeopardize the system's finances. Therefore, in countries that have a reasonable minimum retirement age for their life expectancy, such as Costa Rica, Mexico and Peru for men and women, and Argentina, Brazil, and Chile for men, the design of their systems should aim to ensure that an additional year will not have a major impact either upward or downward on the ratio of benefits over contributions.

The negative impact on the ratio of benefits over contributions in nearly all the countries, reflected in Table 3.7, implies that the amount workers receive as pension payouts in relation to what they paid in is reduced if they decide to work one year more, indicating that there is an incentive to retire at the minimum age. This result is related to various aspects of how pensions are calculated, as reviewed throughout this chapter. On one hand, in defined-benefit schemes, pension increases for one additional year of contributions are around 1-2% (see Table A 3.5 in the Appendix), magnitudes that are low according to our conditions of a discount rate of 2.5% and return on financial assets of 3.5%. In Chile and Mexico, with capitalization schemes that are characterized a priori by balanced ratios regardless of retirement age, the existence of subsidies and minimum pensions also causes ratios to diminish with the postponement of retirement, given that one more year of work means an additional year of contributions, but not necessarily a larger pension, at least in the cases analyzed in Table 3.7.[44]

Looking once again at the second element of the general design proposal for pension systems suggested at the beginning of this section, the specific recommendation in this case is that countries avoid having large numbers of workers who end up in a situation that incentivizes early retirement. In the cases where this is unavoidable, either for reasons of financial sustainability (it is not possible to offer a greater amount) or for reasons of design, the establishment of a minimum retirement age will cover part of the problem of incentives.

Minimum years of contributions

The third element of our general proposal for pension system design indicates that minimum years of contributions can be a valid tool, along with the minimum retirement age, to provide incentives for contributing and to guarantee the financial sustainability of pension systems. However, as seen in the section analyzing coverage, in several countries of the region the minimum qualifying years of contributions are too high, which is problematic because it diminishes the level of pension coverage and it does so regressively.

44. In the case of Mexico, for instance, the minimum pension means that workers with lower income have an incentive to retire as early as possible, considering that, if they continued working, they would make additional contributions but their pension would not increase (Aguila, 2014). Something similar has been documented in the case of Spain (Jiménez-Martín and Sánchez Martín, 2007).

Another problem related to higher minimum qualifying years of contributions is that this reduces or directly eliminates incentives to make contributions for an enormous number of workers. For instance, a 50-year-old worker with 10 years of contributions in a country that requires a minimum of 30 will have little incentive to contribute, considering that to retire by age 70, they must contribute continuously for the remainder of their working life, something that is unlikely given that worker's history. Based on the available administrative data, it is estimated that workers who cannot reach the minimum by age 50, even if they contribute continuously, represent nearly half of all salaried Argentinians in the private sector and nearly a fourth of Uruguayan workers.[45] In contrast, this phenomenon is less common in Ecuador and Brazil; in the first case, because the minimum qualifying years of contributions at 70 is just 10, and in the second, due to the combination of significantly lower minimums than in Argentina (15 years for women and 20 for men) and much higher labor formality rates.

As seen in Table 3.2 with the information regarding the minimum qualifying years of contributions for the different countries (see page 179), Argentina and Uruguay are the cases with the highest requirements.[46] Moreover, the circumstances in Colombia, Paraguay, and Peru are also of concern, given their combination of high rates of labor informality and a high minimum number of qualifying years of contributions. The policy recommendation in these countries is thus to reduce the minimum number of qualifying years of contributions.

Contributory pension amounts

The guidelines for contributory pension amounts were established under the second general design element at the beginning of this section. The amount must always be greater than the minimum non-contributory pension, and the ratio of increase in the pension amount to contributions must provide an incentive for contributing throughout the person's working life without posing a threat to the financial sustainability of the contributory system. As seen in the sections on financial sustainability and sufficiency, the policy challenges when it comes to pension amounts vary according to the type of system. In general, defined-benefit systems have pensions that are too high in relation to contributions and pose problems of financial sustainability, while pensions in defined-contribution systems are excessively low and pose problems of sufficiency.

45. For more detail on these calculations, see Alves, Brassiolo, and Martínez-Correa (2020).

46. The requirement of a high minimum number of qualifying years of contributions leads to ad hoc solutions for workers who do not reach that minimum, which was the case of the social security moratoriums in Argentina. It also occurred in Uruguay. This type of solution introduces incentives that are adverse for labor formality.

The high replacement rate for defined-benefit systems is one of the most firmly established, stylized facts when it comes to the region's pension systems. As pointed out at the beginning, one obstacle in this type of system in the context of aging is that it does not have automatic adjustment mechanisms for pension amounts. While the increase in life expectancy automatically reduces monthly pension amounts in defined-contribution systems, this does not occur in defined-benefit systems. The challenge for defined-benefit systems, therefore, is not only to reduce current replacement rates but also to introduce mechanisms of automatic adjustment that link benefit amounts to the evolution of life expectancy in that country. Even though there is nothing, in principle, to impede the formula for calculating defined-benefit from automatically adjusting according to life expectancy, international experience shows that this adjustment has mainly been brought about through the introduction of defined-contribution components or hybrid versions, such as notional accounts or point systems (OECD, 2011).

Defined-benefit systems face the challenge of how to adjust their amounts so that aging does not compromise their financial sustainability.

The other firmly established, stylized fact in the region is that defined-contribution systems have replacement rates that are too low. The solution to this problem requires not only an increase in contribution rates in some countries where they are insufficient but also calls for subsidizing low-income workers by supplementing the annuity amount from capitalization. Both Bolivia and Chile have made progress in this sense by introducing non-contributory components to pensions that do not achieve certain minimums. The pension amounts in some capitalization systems in the region have also suffered due to the existence of high commissions for pension funds associated with a lack of financial knowledge by workers, which leads them to underreact to high commissions and allow administrators of pension funds to earn large rents.[47]

One common challenge in terms of incentives to contribute in all types of contributory plans is for workers to better understand how the system works and, thus, the consequences of their decisions when it comes to contributing toward their future pension. This generally requires a combination of relatively simple designs and for systems to invest in communication and information strategies. Another related challenge is to make systems predictable to prevent any additional uncertainty with regard to the future consequences of decisions about contributions. It is therefore recommendable to ensure that critical aspects, such as minimum retirement age or pension amounts (or annual increases), do not depend upon administrative decisions of the government in office or subject to frequent revisions.

47. For the case of Mexico, Aguila, Hurd, and Rohwedder (2014) show that the average administrative commissions reduce the benefit amount of individual pension funds by 6%, compared to minimum commissions. Hastings, Hortaçsu, and Syverson (2017) explain that combining measures that increase consumers' awareness about commissions (e.g., financial education measures) with participation by a public actor that operates with lower commissions can be very effective for lowering commission amounts and thus increasing pension payouts. However, only introducing the public actor is not effective without consumer education, since private administrators can continue to exploit the segments of the population with little awareness about commission prices.

Contributions by salaried and self-employed workers

As shown in Figure 3.11, there is room for an increase in rates of contribution by salaried employees where they are very low, especially in Guatemala, Honduras, and Trinidad and Tobago. Likewise, in Mexico and Chile, the increase in contribution rates seems to be a necessary condition for improving levels of sufficiency of pensions under their individual capitalization scheme.[48] On the other hand, in some countries the contribution rates for salaried employees are already higher than the OECD average and, therefore, the margin for increasing them may be very small. This is the case in Argentina, Brazil, and Uruguay. Given that these countries figure among those facing the greatest financial sustainability challenges, the introduction of reforms to improve financial balance must be underpinned mainly by containing expenditures.

Traditional pension systems were designed to fit a concept of work in which the main form was a salaried job. As such, employers were responsible for making contributions for their employees. However, as seen in Chapter 2, Latin America has two characteristics that affect this type of system: high rates of informal labor that make it impossible for the State to collect contributions from those workers, and a high number of self-employed individuals, who are not generally accounted for in such traditional designs. These two features mean that a large number of workers find it difficult to meet the requirements for the minimum number of qualifying years of contributions, or the amounts contributed are insufficient, putting at risk the coverage, sufficiency, and sustainability of the systems in these countries.

Self-employed workers present an additional challenge for the design of pension systems due to their broad heterogeneity. On one hand, there are self-employed professionals with middle to high income, who may often alternate between salaried jobs and self-employment. Then there are the small business-owners engaged in some type of subsistence enterprise. Finally, some business owners hire workers and have a certain level of savings capacity. The design of the pension system presents very different challenges when it comes to incentives for these three types of workers. In the case of self-employed professionals, it is essential that the pension system design does not incentivize contributions by salaried workers over the self-employed. In the case of subsistence enterprises, contribution amounts must be low and the administrative procedures sufficiently simple to incentivize their inclusion. With these workers, as well as for low-income salaried workers, it may be desirable for the State to subsidize or supplement part of their contributions. Furthermore, in the case of small and middle-sized enterprises, the pension system's contribution requirements and administrative procedures must not be an insurmountable obstacle to formal operations.

Another relevant aspect of the pension system design for self-employed workers is the difficulty of determining their income. In general, it is quite difficult to establish the net income of a self-employed person (after deducting

48. At the time of this document's completion, the government of Mexico presented a proposal to raise the contribution rate from 6.5% to 15% over a period of eight years.

operating expenses) and what part of that income should be considered remuneration for work and what part is capital.

The heterogeneity among types of self-employed workers makes it very difficult to design a system that encompasses all the different realities and aligns incentives for each. This problem is not specific to Latin America (see OECD 2019a or Karpowicz, 2019 on the case of the Netherlands). However, as mentioned before, self-employed workers represent a significant portion of the working-age population in the region and, as such, a solution must be found.

Evidence about effective policies for including the self-employed is not extensive. One aspect that stands out is that making contributions mandatory could be a useful tool for bringing these workers into the pension system. By way of example, the introduction of special compulsory regimes for self-employed workers in Argentina, Brazil, Chile, and Uruguay managed to increase the proportion of contributors among this population group. This experience could be taken into account in the countries where the self-employed are still not required to contribute (Bolivia, Mexico, Paraguay, and Peru) and pose this option. A second aspect to highlight is that part of the success in this sense in Argentina, Brazil, and Uruguay was due to the reduction in the costs of contributing by introducing administrative simplifications that unified contributions to the pension system with the rest of taxes. The reduction in administrative costs associated with paying into retirement is thus a second recommendation for countries that have a very low proportion of self-employed workers currently making these contributions.

Mandatory contributions and simplified regimes have been successful tools for increasing the proportion of self-employed workers paying into the system.

Insofar as contributions by the self-employed are concerned, as mentioned before, the amount is the main cause of incredibly imbalanced ratios between benefits and contributions for these workers. This could be an incentive to choose self-employment over salaried positions, thus aggravating the financial sustainability problems in these systems. The design of contributions should seek neutrality between both forms of work. If the implementation of subsidies for low-income workers' contributions proves necessary, such subsidies should exist for salaried as well as self-employed workers.

In order for mandatory contributions to work, the State must make a certain effort to ensure that self-employed workers are registered in the formal labor sector and that they make their contributions. This poses a challenge for States because many self-employed workers have very small-scale operations, which makes fiscal oversight difficult or not profitable. However, this challenge may find an ally in technology, since both the use of apps to carry out transactions that used to be done in person, as well as electronic payment leave proof of the transaction and its amount.

As seen in Chapter 2, one important aspect of self-employment in the region is the high transition rate across jobs. An effective pension system design must first allow for the portability of contributions when the worker changes jobs in order not to penalize these transitions and to help workers meet the required minimum qualifying years of contribution. On this last point, it is once again incumbent upon systems not to benefit one way of working over another to avoid strategic behavior in these transitions.

In the case of self-employed professionals and employers with their own savings capacity, one aspect that could make contributing to pension systems more attractive would be to build in a certain degree of flexibility of fund selection and management. For example, in the Netherlands, it has been documented that these self-employed workers prefer capitalization systems that have various investment alternatives with different levels of risk (Karpowicz, 2019). A system that ensures a minimum pension in exchange for mandatory contributions and has a supplementary component for that income based on voluntary contributions could be reconciled with that kind of flexibility.

Coverage and amount of non-contributory pensions

As indicated in the section on coverage, the notable expansion of non-contributory pensions in the region in the past decades has been key for reducing poverty levels among older adults. The challenges in terms of designing the type of pensions vary from one country to the next. On one hand, in systems that are strongly based on this coverage under this type of pension, like Bolivia and Mexico, the challenge lies in achieving adequate benefit payments. As explained in the section on sufficiency, these countries have non-contributory pension amounts that are relatively low in the regional context. On the other, in countries that have inadequate pension coverage levels and high labor informality, non-contributory pensions are a tool for increasing coverage in the short to medium term, given that labor informality limits the expansion potential of contributory pensions, at least in the short term.

All of this applies especially to the Dominican Republic, one of the few countries of the region that still does not have a non-contributory pension regime. In cases such as Colombia, Costa Rica, and Peru, which already have non-contributory pension systems, there is room for expanding their coverage, considering that they have levels of coverage below the average expected for the level of wealth (Figure 3.3) and non-contributory pension coverage below 25% (Figure 3.5). While Costa Rica has non-contributory pensions of an adequate level, the amounts of these pensions in Colombia and Peru face sufficiency challenges. Chile and Panama have comparatively high levels of coverage, but with challenges in terms of relative poverty among older adults associated with relatively low non-contributory pensions in the regional context.

With regard to ages of access to non-contributory pensions (see Table A 3.3 in the Appendix), all the countries have in general adequate ages, except for Bolivia and Colombia. For these two countries increasing the ages of access to non-contributory pensions could help to provide higher pensions as well as more incentives for the population between ages 60-65 to work.

Keys for adapting pension systems in light of the challenges of aging

1 Pension systems are one of the largest economic components of social protection systems in contemporary societies. Their objective is to provide people with an income after retirement in exchange for their contributions during working life and to prevent situations of poverty in old age. In the context of aging, these systems acquire increasingly greater importance for the welfare and fiscal sustainability of countries.

2 In the region, countries with pension systems with predominantly pay-as-you-go components, such as Argentina, Brazil, Ecuador, and Paraguay, coexist with other systems that are predominantly financed through capitalization, such as Bolivia, Chile, and Paraguay, in addition to others with mixed systems, like Colombia, Costa Rica, Panama, Peru, and Uruguay.

3 More than seven out of 10 people over 65 receive a pension in Argentina, Bolivia, Brazil, Chile, Ecuador, Mexico, Panama, Uruguay, and Venezuela, but only the first two reach nearly universal levels. In Colombia, Costa Rica, Peru, and Paraguay, the proportion is around 5-6 out of 10 older adults. In El Salvador, Guatemala, Honduras, Nicaragua, and the Dominican Republic, less than a third of older adults receive a pension.

4 The main reason for low coverage in the region is the low proportion of workers paying into the pension system, in particular self-employed workers. This means a significant number of workers do not meet the minimum number of years of contributions needed to qualify for a retirement pension; this minimum is also too high in several countries.

5 In a context of high labor informality, it is fundamental to have broad coverage and adequate non-contributory pension amounts to diminish poverty in old age. These amounts remain very low in several countries, in particular in Chile, Colombia, Mexico, Panama, and Peru, while countries like Colombia and Peru should also consider expanding their coverage of this type of pension.

6 The pension systems in Argentina, Brazil, and Uruguay have a high fiscal deficit due to their broad coverage, pension payouts that exceed the minimum criteria of sufficiency, and the predominance of pay-as-you-go components in their architecture. In Brazil, the recent reform is expected to reduce that deficit. Colombia also presents a significant deficit associated with the relatively high amounts of its pay-as-you-go component and relatively low revenues due to informal labor. The rest of the countries in the region currently have deficits of lesser magnitude. In Bolivia and Chile, this is attributable mainly to the predominance of capitalization components in their financing program. In countries like Ecuador, Panama, Paraguay, and Peru, the relatively low deficits are associated, to a greater or lesser degree, with low coverage, low pension benefit payments, and still relatively young populations.

7 Barring modifications to their pension system design, aging will sharply increase the financial deficits of Argentina, Colombia, Ecuador, Paraguay, Peru, and Uruguay. Among the countries that would experience increases in the deficit of more than 4 percentage points of GDP toward 2065, the main reason for the increase in Argentina is the generosity of its system, while in Colombia, Ecuador and Paraguay it is fundamentally due to projected aging. In Peru and Uruguay, the deficit increases toward 2065 are between 2 and 3.5 percentage points of GDP. The rest of the countries do not pose major problems of financial sustainability given the current rules in place due to the predominant capitalization components of their systems.

8 Any potential reforms to the pension systems should follow three general criteria. First, all older adults should have a minimum income, which in general would entail expanding the coverage of non-contributory pensions. Second, contributions to the contributory component should be mandatory for all workers, including the self-employed, and said component should be financially balanced and provide incentives for contributing throughout working life. Third, minimum retirement ages should converge around the standard of 65 years of age for women and men, and the minimum years of contributions should not be excessively high.

Appendix

Table A 3.1
Years contributed considering only salaried employment relationships

Country	Group	10 years	15 years	20 years	30 years
Argentina	All	76.5	57.8	39.3	12.8
	Men	80.7	62.7	43.1	13.8
	Women	68.5	48.4	32.1	10.9
	1st quintile	57.5	35.0	19.3	5.1
	5th quintile	83.0	77.7	46.3	14.1
Brazil	All	97.1	89.2	71.8	23.1
	Men	98.1	91.6	75.4	24.2
	Women	95.6	85.6	66.5	21.4
	1st quintile	95.6	80.8	66.5	21.4
	5th quintile	98.1	98.3	75.4	24.2
Ecuador	All	91.3	76.9	56.5	19.2
	Men	91.0	76.0	54.6	17.4
	Women	91.8	78.4	59.6	22.0
	1st quintile	79.9	56.0	33.2	6.8
	5th quintile	98.0	93.5	83.1	43.6

Notes: See Alves, Brassiolo, and Martínez-Correa (2020) for more detail about data sources and methodology.
Source: Authors based on social security administration records.

Table A 3.2
Contribution conditions for self-employed workers

Country	Name of regime	Target population	Contribution		
			Mandatory	Fixed amount/ rate	Magnitude
Argentina	Monotributo	Small taxpayers according to maximum gross annual income	Yes	Fixed amount	According to income categories
	Autónomos	Persons who regularly work, personally and directly for profit, without a work contract	Yes	Fixed amount	According to income categories
Brazil	SIMPLES	Micro or small enterprises	Yes	Progressive rate	According to invoicing and business sector
	Régimen para Microemprendedor Independiente (MEI)	Micro-entrepreneurs below a certain level of invoicing	Yes	Fixed amount	5% of minimum monthly wage
Bolivia	Sistema Integral de Pensiones (SIP)		No	Rate	14.42%
Chile	Administradoras de Fondos de Pensiones (AFP)	Self-employed workers who earn wages and issue invoices or receive third-party invoices for services.	Yes	Rate	10.75%
Colombia	Sistema General de Pensiones	Self-employed workers, person who lives off the income from investments, business owners and no employment ties to employer and with income equal to or above minimum wage	Yes	Rate	16% RPM
					11.5% RAIS
Ecuador	Seguro General Obligatorio (SGO)	Wage earners without an employment contract or self-employed	Yes	Rate	17.6%
Mexico	Sistema de Ahorro para el Retiro (SAR)	Workers with their own business, not dependent on a boss or manager.	No	Rate	6.5%
Panama	Subsistema Mixto de Ahorro Personal	Self-employed workers who receive fees over a certain amount	Yes	Rate	13.5%
Paraguay	Instituto de Previsión Social (IPS)	Self-employed workers, employers, homemakers and domestic workers	No	Rate	13.0%
Peru	Sistema Nacional de Pensiones (SNP) o Sistema Privado de Administración de Fondos de Pensiones (SPP)	Workers who are self-employed and those insured for elective continuation of employment	No	Rate	13% SNP
					10% SPP
Uruguay	Monotributo	Workers of sole proprietorships and small business activities	Yes	Fixed amount	Amount
	Monotributo Social MIDES	Entrepreneurial ventures of people living in poverty	Yes	Fixed amount	Amount
	Minimum VAT program for small businesses	Small businesses whose annual sales do not exceed a certain amount	Yes	Fixed amount	Amount

Notes: In Colombia, RAIS is the Régimen de Ahorro Individual con Solidaridad [Individual Savings with Solidarity Program] and RPM, Régimen de Prima Media [Average Premium Program].

Source: Authors based on current legislation in each country and IERAL (2020).

Table A 3.3
Non-contributory pension details

Country	Pension	Percentage of GDP per capita	Age from which it is received	Criterion
Argentina	Pensión Universal para el Adulto Mayor (PUAM) [Universal Plan for the Older Adult]	27.2%	65	No other retirement or pension plan
Brazil	Benefício de Prestação Continuada (BPC) [Continuous Benefit Program]	35.1%	65	Per capita household income less than a quarter of the minimum wage
Bolivia	Renta Dignidad [Decent Income]	14.7%	60	Universal
Chile	Pensión Básica Solidaria de Vejez (PBSV) [Basic Old Age Solidarity Pension]	12.6%	65	Belonging to the poorest 60% of the population
Colombia	Programa de Protección Social al Adulto Mayor (PPSAM) ("Colombia Mayor") [Social Protection Program for the Older Adult]	4.6%	Women, 54; men, 59	Be in levels 1 and 2 of the SISBEN survey and have no livelihood
Ecuador	Pensión para Adultos Mayores [Pension for Older Adults]	9.5%	65	No social security coverage
	Pensión Mis Mejores Años [My Best Years]	19%		Without social security coverage and in conditions of extreme poverty
Mexico	Pensión para Adultos Mayores [Pension for Older Adults]	8.2%	Indigenous population, 65; remaining population, 68	Universal
Panama	"120 a los 65" ["120 at 65"]	9.2%	65	No retirement or pension plan, living in conditions of vulnerability, marginalization, social risk, or poverty
Paraguay	Pensión Alimentaria a Adultos Mayores [Food Pension Program for Older Adults]	19.0%	65	Living in a situation of poverty: not receiving a salary, pension, or public or private retirement, without pending cases with the courts
Peru	Pensión 65 [Pension 65]	6.6%	65	In extreme poverty
Trinidad and Tobago	Senior Citizens' Pension (SCP)	36.2%	65	Set criteria for household income below a certain amount
Uruguay	Non-contributory old-age benefit	22.9%	70	Income cannot exceed the amount of the old-age pension

Source: Authors based on current legislation in each country and IERAL (2020).

Table A 3.4
Proportion of population aged 15-64 and over 65

Country	15-64		65 or older	
	2015	2065	2015	2065
Argentina	64.1	61.4	10.7	21.3
Bolivia	60.8	63.7	6.8	17.3
Brazil	69.6	57.6	8	29
Chile	68.8	56.2	10.6	30.4
Ecuador	64.3	61.5	6.6	21.4
Mexico	65.6	61.9	6.7	22.4
Panama	64.6	60.8	7.6	21.7
Peru	64.6	59.8	7.3	24
Paraguay	63.7	63.1	5.9	18.8
Uruguay	64.4	58.8	14.5	25.9
Venezuela	65.3	63.5	6.4	19.4
Colombia	67.8	58.3	7.7	28

Source: Authors based on United Nations (2019b).

Table A 3.5
Rules for calculating pensions in defined-benefit systems

Country	Benefits base rate (BBR)	Years for calculating the BBR	Pension premium for years that pension contributions are paid in	Retirement adjustment mechanism
Argentina	1.5% for each year contributions are made (maximum of 35 years) multiplied by the average salary	10 last years	1% for each year over 30, with a max. of 45	70% IPC, 30% RIPTE
Brazil	60% of average salary	Complete working life	2% for each year in addition to the minimum qualifying years	Inflation: INPC of the IBGE
Ecuador	Sixtieth root of the contributions multiplied by the annual coefficient of years contributed or quoted	Five years of best salary	Contributions made starting at age 41 onwards with a 1.25% increase for each year	Varies according to the pension benefit payment
Panama	60% of the monthly base salary	10 best years	Premium for 12 full installments above the reference installments: • Before reaching the reference age: 1.25% • After reaching reference age: 2%	USD 10 every five years, with the exception of monthly pension benefit payments of USD 1,500 or more
Peru	50% of the reference amount. Bonus of 25% of the usual pension when recipient turns 80	Last 36, 48 and/or 60 months. For electively insured, the last 60 months	2% for men, 2.5% for women for each year in addition to the years of mandatory contributions	By decree
Uruguay	45% of average salary	Last 10 years or best 20	1% for each year that exceeds 30, with a limit of 35; 0.5% for each year that exceeds 35, with a limit of 40; 3% for each year that retirement is deferred; 2% for each year that exceeds 60 as long as retirement eligibility requirements are not met.	IMSN

Notes: RIPTE (Remuneración imponible promedio de los trabajadores estables) [Average Taxable Remuneration of Stable Workers]; IBGE (Instituto Brasileiro de Geografia e Estatistica) [[Brazilian Institute of Geography and Statistics]; IMSN (Índice Medio de Salarios Nominales) [Average Index of Nominal Wages].

Source: Authors based on current legislation in each country and IERAL (2020).

Methodology to calculate simulated replacement rates and actuarial ratios

Calculations of net replacement rates and actuarial ratios are done by applying the most common pension rules to data on average salaries and contributions from official household surveys in the different countries. This exercise uses a series of data and assumptions listed below. Consult Allub, Alves, and López (2020) for more details on the exercise.

- The retirement rules are indicated in Table A 3.5 for the countries with pay-as-you-go or mixed systems and, in the cases of Chile and Mexico, the rules of their respective capitalization systems were used (AFP, in the former, and SAR, in the latter).

- Mortality rates are taken from United Nations Population Prospects (2019b).

- A discount rate of 2.5%, a net return rate on capitalization funds of 3.5%, a net return rate of 2.5% for calculating annuities and real wage growth in all the countries of 2.5% were assumed. Pensions are adjusted for inflation, except in Argentina and Uruguay, where they are adjusted according to the specifications in Table A 3.5.

- It is assumed that individuals have a spouse entitled to a survivorship pension according to the rules in each country. Men are assumed to be 3 years older than women.

- It is assumed that individuals begin working at age 20.

- The year of reference varies for each country, depending on the most recent data available on wages. These years are: Argentina, 2018; Brazil, 2015; Chile, 2017; Ecuador, 2017; Mexico, 2018; Peru, 2018; Panama, 2018, and Uruguay, 2017.

- Two cases are presented for each country: 1) the individual contributes throughout their working life (as of age 20 until the minimum retirement age) and 2) the individual contributes according to a certain probability, which varies by gender and age. Since in most cases for number 2, the average individual does not meet the minimum years of contributions required, the missing years of contributions are spread equally over all the working-age years in that person's life.

- Table A 3.5 shows the total years of supposed contributions for each case. For cases in which the average individual does not meet the minimum years of contributions required and the missing contributions are added, this minimum requirement appears in parentheses.

Table A 3.6

Years of contributions for simulated replacement rates and actuarial ratios

	Years of contributions	Employees		Self-employed	
		Men	Women	Men	Women
Argentina	Always contributes	45	40	45	40
	Does not always contribute	27.9 (30)	20.0 (30)	16.0 (30)	14.1 (30)
Braz il	Always contributes	45	42	45	42
	Does not always contribute	30.1	21.9	12, 6 (20)	9.3 (15)
Chile	Always contributes	45	40	45	40
	Does not always contribute	32.8	21.81	10.35	6.41
Colombia (DB)	Always contributes	42	37	42	37
	Does not always contribute	27.1	19.2 (25)	9, 7 (22)	9.9 (22)
Colombia (DC)	Always contributes	42	37	42	37
	Does not always contribute	27.1	19.2 (22)	9.7 (22)	9.9 (22)
Ecuador	Always contributes	40	40	40	40
	Does not always contribute	23.7 (30)	21.5 (30)	4.7 (30)	4.7 (30)
Mexico	Always contributes	45	45		
	Does not always contribute	18.2 (24)	13.3 (24)		
Peru (DB)	Always contributes	45	45	45	45
	Does not always contribute	27.9	21.5	4.0 (20)	4.0 (20)
Peru (DC)	Always contributes	45	45	45	45
	Does not always contribute	27.9	21.5	4.0 (20)	4.0 (20)
Panama	Always contributes	42	37		
	Does not always contribute	26.6	10.1 (15)		
Uruguay	Always contributes	40	40	40	40
	Does not always contribute	32.1	26.9 (30)	16.7 (30)	18.1 (30)

Notes: For each case, the assumed total years of contribution are shown. When the average individual individual does not reach the minimum required contribution years and the necessary shortfall is added, the minimum requirement is shown in parentheses, minimum requirement is shown in parentheses.

Source: Authors based on Allub, Alves and López (2020).

Health care and long-term care services in response to aging

4

Health care and long-term care services in response to aging[1]

The majority of the population is enjoying an increasingly long and healthy existence thanks to advancements in medical science and improved living conditions (Ford *et al.*, 2007). Longer life expectancy and a simultaneous decline in fertility rates have generated a demographic pattern consolidated in countries around the world: population aging. As explained in Chapter 1, Latin America is no stranger to this trend. The countries in the region began to age later than the more developed ones, but, on the other hand, they do so at a faster rate.

Although the progress observed in the health and longevity of the population represents a milestone in human history, the aging process has raised red flags for its potential impact on the financial sustainability of health systems (and pensions, as described in Chapter 3). A higher proportion of older people among the adult population creates a natural pressure on health spending for two reasons. First, the demand for medical services tends to increase with age. Second, greater longevity without a corresponding increase in the years of a healthy life implies a higher demand for services over a longer period. Furthermore, the aging of the population is accompanied by an epidemiological transition in which the burden of non-communicable diseases, whose treatment is often more expensive, far exceeds that of communicable diseases.

Faced with these trends, a critical challenge for health systems is to guarantee the necessary resources to respond to the increase in demand for health care services and at the same time generate mechanisms to improve spending efficiency. Without changes in public policies, the potential increase in spending will not necessarily be accompanied by an increase in resources at the same rate, as the weight of the economically active population decreases within the total population (as explained in Chapter 5).

There are important reasons why aging may pose greater challenges for Latin American health systems than it does for those in more developed countries. First, there is the speed at which the region is aging, which imposes the need to accelerate the response time. Furthermore, aging comes when most Latin American countries still have a low level of economic development. As will be seen later, the level of development of a country is closely related to the health status of its population and various influencing factors, especially the resources available for health care. Today, Latin American health systems are

1. Dolores de la Mata and Ricardo Estrada are the authors of this chapter. Daniel Fernández and Augusto Caro provided research assistance.

struggling to guarantee effective universal health coverage even though they are, for the most part, in the early stages of demographic transition. Many Latin Americans, especially those with the least resources, cannot effectively access quality health care services, either because they are not available, they are not provided in a timely manner, or they are not affordable. The vast majority of the countries in the region have built fragmented health systems, in which two or more coexisting health subsystems offer differentiated coverage of services (in quantity, quality, and financial coverage) to different segments of the population, with unequal state participation. Fragmentation of the health care sector into subsystems, generally determined by access to formal employment, favors inefficiency and inequity—even within a context of a stable demographic profile of the population. Moreover, fragmentation makes it even more difficult to define and implement the necessary policies to face the challenges of aging.

The increase in the elderly population may also imply changes in the number of people who need long-term care due to physical or intellectual disabilities. An increase in the demand for these types of care services can be expected given the decrease in the size of families and the greater participation of women in the labor market, as the burden of caregiving tends to fall on women. This has already occurred in the most developed countries, where public and private spending on long-term care accounts for a growing part of health spending.

Concern about the effects of aging on health care and long-term care spending is already evident in developed countries, as the natural tension between the objective of providing the population with the broadest and best quality access to these services and that of achieving financial sustainability deepens. Faced with the dilemma of meeting growing demand with limited resources, efforts to improve efficiency in the use of resources will be a key element of public policies in the sector. But unlike other social protection benefits, such as pensions, health expenditures are not unequivocally determined by the government. It is not possible to assign a fixed amount of money to each inhabitant following a specific rule based on the health status of the population. On the contrary, expenses arise from a complex process of interaction between multiple actors (patients, medical service providers, insurers, and the government itself), in which the problems of incentives and imperfect information faced by each of them play a relevant role. Understanding these incentives and information issues is critical to designing better policies in the health care sector.

Aging: changes in demand and health care spending

How does the epidemiological profile change with demographic aging?

The change in the age structure of the population has been accompanied—and is partly the result of—by significant changes in the epidemiological profile of the population, in which the weight of non-communicable diseases has far exceeded that of communicable diseases. Improvements in the quality of life throughout the 20th century (particularly in nutrition and hygiene) and the adoption of effective methods in health systems to combat infectious diseases (vaccination coverage, use of antibiotics, and epidemiological surveillance, mainly) have reduced mortality from communicable diseases, especially infant mortality. These advances have allowed millions of people to live longer. However, at the same time, people are facing greater possibilities of suffering from chronic diseases that appear with age. Other main drivers of the displacement of infectious diseases as the leading cause of morbidity and mortality, in addition to population aging, include greater economic development, urbanization, market integration, and lifestyle changes (Bygbjerg, 2012).

The increase in non-communicable diseases, largely responsible for health expenditures, creates new challenges for health systems.

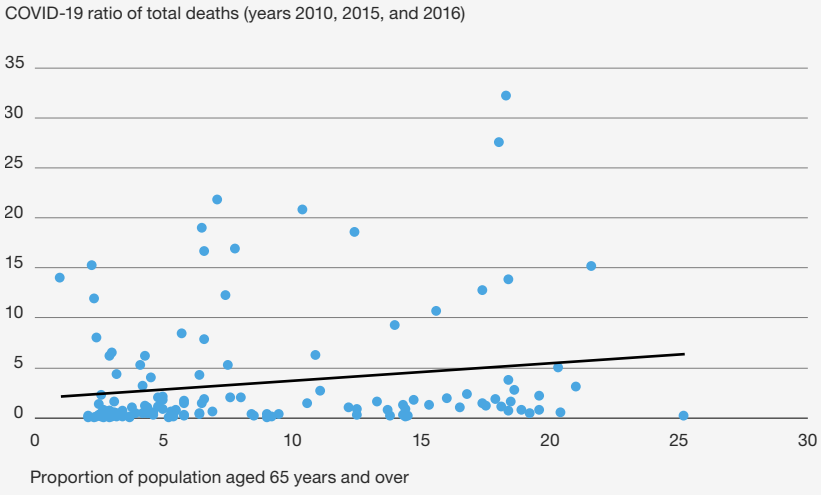
The change in the average age of death and causes of death—shifting from high infant mortality and the prevalence of infectious diseases to increased morbidity and mortality from chronic non-communicable diseases—is called epidemiological transition. This transition has given rise to new challenges within health systems, related to changes in the demand for health care services and the costs associated with it. Non-communicable diseases, such as cancer, diabetes, and circulatory system diseases, whose chronicity and slow progression require permanent contact with the health system, tend to account for a large part of health expenses. The change in the epidemiological profile of the population that has been observed suggests that the relevance of these diseases could be even greater in the coming years, generating an increase in the proportion of total expenditure to combat these diseases. However, fighting infectious diseases is not a closed chapter in human history, and there are several threats, such as those discussed in Box 4.1, that could mitigate these trends.

Box 4.1
The return of infectious diseases?

The recent COVID-19 pandemic showed that infectious diseases still represent a great threat to public health in all countries and that the battle against them is not yet won. The appearance of new infectious diseases (Zika is another recent example, although with a lesser global impact than COVID-19) and the reappearance of others that had been controlled (for example, antibiotic-resistant bacteria) in a context of greater longevity of the population increases the challenges for health systems because their consequences could be more serious for the elderly.

Although the information on mortality caused by COVID-19 is incipient and the consequences of the pandemic are still unknown, the data available to date indicate two interesting facts. First, the number of deaths from COVID-19 from the first death in each country to the present represents, on average, 50% of deaths from communicable diseases and 3.3% of total deaths, using as a baseline the average number of deaths that countries experienced in an equivalent period between the years 2010 and 2016.[a] The first value is even higher in more developed countries, where mortality from communicable diseases was relatively low. In order to interpret these figures, it must also be taken into account that COVID-19 deaths generally occurred in a context of restrictive measures to promote social distancing and prevent its spread. In Latin American countries, deaths from COVID-19 registered to the date of the writing of this report represent, on average, 45% of deaths from communicable diseases and 5.9% of the average total deaths occurred in an equivalent period between 2010 and 2016.

Figure 1
Correlation between aging and mortality due to COVID-19



Notes: To calculate the denominator of the quotient represented on the vertical axis, we compute the average number of deaths in 2010, 2015, and 2016 during a period of time equivalent to that elapsed from the date of the first death from COVID-19 in each country to July 7, 2020. To make this adjustment, we assume a uniform distribution of deaths across the average of deaths that occurred in 2010, 2015, and 2016.

Source: Authors based on data from the European Center for Disease Prevention and Control (CEPCE), official reports of COVID-19 in each country, and the WHO mortality database (2019c).

Second, COVID-19 mortality information available to date corroborates the premise that the severity of communicable diseases can be much greater when the population is older. Figure 1 shows the correlation between the ratio of deaths from COVID-19 and the average total deaths in each country between 2010 and 2016 (using as reference a period equivalent to the number of days that the virus is circulating in each country) and the proportion of the population over 65 years of age, for a set of 156 countries. Despite the great heterogeneity—possibly due to the different response capacity to promote social distancing and the varied capacity of health systems to care for those infected, among other reasons—a positive correlation between the two variables emerges. Moreover, according to the data reported in panel A of Table 1 for a selected group of Latin American countries, COVID-19 is much more lethal for older people. In relation to the average total deaths between 2010 and 2016 (Panel B of Table 1), the incidence of deaths from COVID-19 has been especially high among people aged between 50 and 70.

In summary, the COVID-19 pandemic shows that the impact of new infectious diseases can be quantitatively relevant and their interaction with long-lived members of the population would exacerbate their negative consequences. Therefore, health systems must stay prepared to face similar situations in the future.

Table 1
Incidence of deaths from COVID-19 in relation to total positive cases for COVID-19 and total deaths (average 2010-2015-2016), by age group, in selected Latin American countries

	Panel A. Incidence of deaths from COVID-19 on positive cases				Panel B. Incidence of deaths from COVID over average total deaths (average 2010-2016)*			
	Argentina	**Chile**	**Mexico**	**Peru**	**Argentina**	**Chile**	**Mexico**	**Peru**
0 to 4 years old		0.2%	4.0%			0.3%	0.6%	
5 to 14 years old	0.1%	0.1%	0.4%	0.2%	0.3%	1.1%	0.6%	2.4%
15 to 29 years old		0.1%	1.0%			1.6%	3.9%	
30 to 49 years old	0.4%	0.5%	4.9%	1.7%	1.8%	4.2%	24.8%	28.6%
50 to 59 years old	1.7%	2.8%	15.4%		1.9%	6.8%	35.5%	
60 to 69 years old	5.9%	10.4%	28.0%	13.7%	1.8%	8.7%	29.5%	23.8%
70+ years old	15.8%	44.7%	41.2%		1.5%	6.9%	10.5%	
Total	**2.0%**	**4.4%**	**11.9%**	**3.5%**	**1.5%**	**6.7%**	**17.1%**	**22.2%**

Notes: *The average number of deaths that occurred in the years 2010, 2015, and 2016 are considered. To adjust the data to match a period equivalent to that elapsed from the date of occurrence of the first death from COVID-19 in each country and July 7, 2020, we assume a uniform distribution of total deaths that occurred in the reference years.

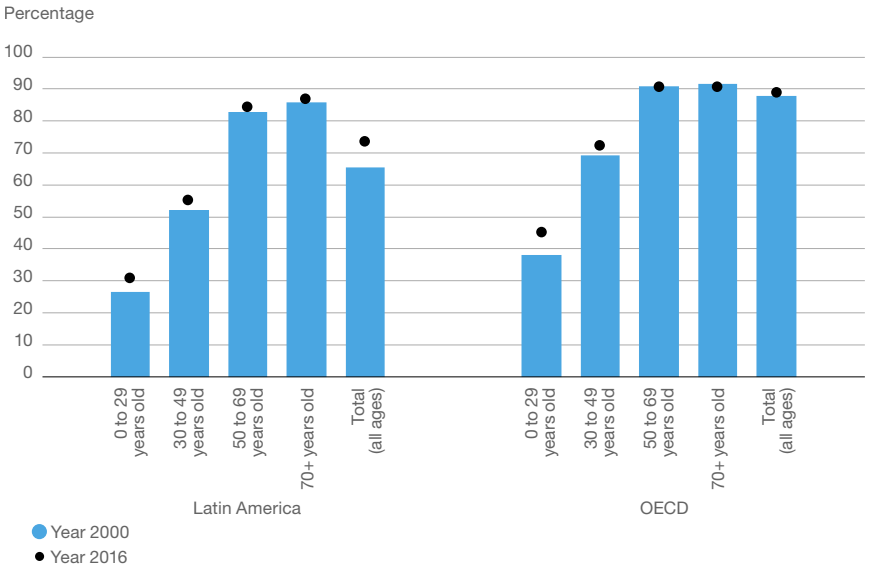
Source: Authors based on data from official reports of COVID-19 in each country and the WHO mortality database (2019c).

a. For this calculation, we compute the number of deaths from communicable diseases and total deaths that occurred in the years 2010, 2015, and 2016, in a period of time equivalent to that elapsed from the date of occurrence of the first death from COVID-19 in the country and July 7, 2020. To make this adjustment, we assume a uniform distribution of deaths over the year in 2010, 2015, and 2016, the latest available years in the WHO mortality database. For the time being, the number of deaths from COVID-19 could be considered a lower bound because there is an excess mortality in many countries that is well above the expected number of deaths for the time of year, of which positive COVID-19 cases do not fully account for.

In Latin America, although the epidemiological transition is at an advanced stage, it is still in progress.

The epidemiological transition in Latin America is at an advanced stage, although it is still in progress. The counterpart of the dramatic decline in mortality rates in the region, which is explained in Chapter 1, is a sustained increase in life expectancy. Figure 4.1 illustrates the change in the composition of the causes of death. On average, 74% of the deaths that occurred in 2016 in Latin American countries were caused by non-communicable diseases, compared to 66% in 2000. By comparison, in 2016, this figure was 89% in OECD countries, where it has remained virtually unchanged since 2000. The contribution of non-communicable diseases to mortality increases with age and is critical in terms of the effects of aging on health systems. While approximately 27% of the deaths of people aged 0–29 registered in 2016 in Latin America are due to these conditions, this figure rises to 86% in people aged 70 years and over. However, it should be noted that the increase in the incidence of deaths from non-communicable diseases observed in the region in recent years is also partly explained by the greater weight that these diseases have even among the youngest people.

Figure 4.1
Mortality from non-communicable diseases in Latin American and OECD countries, total and by age group, 2000 and 2016



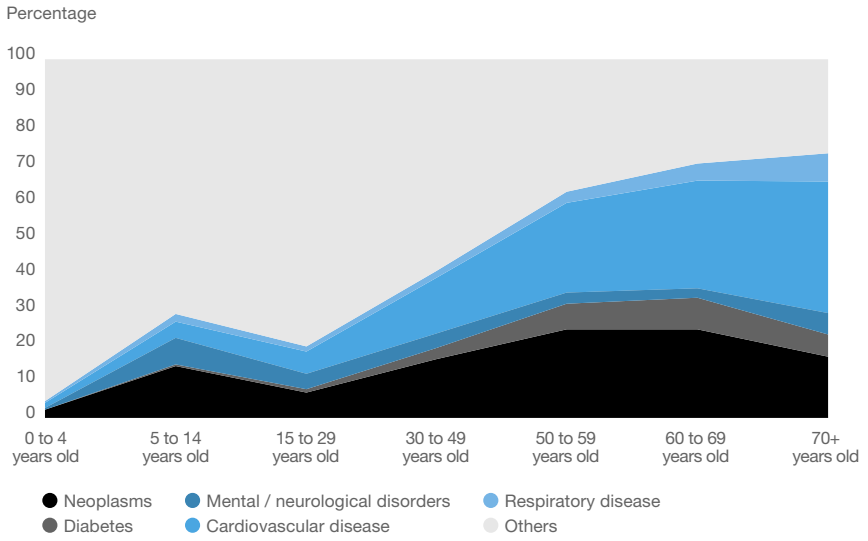
Notes: This figure takes into consideration non-communicable diseases included in categories C00 and R99 of the international classification of diseases ICD-10.

Source: Authors based on WHO data (2019c).

Cardiovascular diseases and neoplasms are among the main causes of death in the region, accounting for 37% and 18%, respectively, of all deaths in 2016, although their incidence is much higher among older people, as observed in Figure 4.2. Diabetes, chronic respiratory diseases, and mental and neurological disorders were responsible for 5.3%, 5.2%, and 4.5%, respectively, of all

deaths in 2016 and their prevalence also increases with age, except for mental and neurological disorders, which have a peak between five and 14 years of age. These five diseases alone currently explain 59% of all deaths in Latin America and 80% of those registered in OECD countries.

Figure 4.2
Incidence of the main causes of death in Latin America by age group, 2016



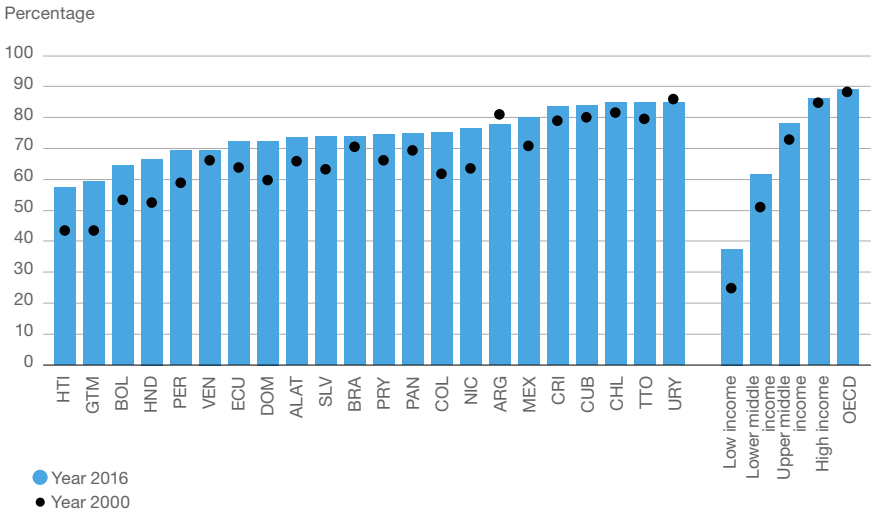
Notes: Based on the ICD-10 catalog, including neoplasms between categories C00 and D48; diabetes between categories E10 and E14; mental and neurological diseases between categories F01 and G98; cardiovascular diseases between categories I00 and I99; and respiratory diseases between categories J00 and J98.

Source: Authors based on WHO data (2019c).

As might be expected, there are important differences within the region in the prevalence and time trends of deaths associated with non-communicable diseases, as can be seen in Figure 4.3. While in countries such as Chile, Costa Rica, Cuba, Mexico, and Uruguay these conditions account for at least 80% of deaths, in Guatemala and Haiti they are responsible for less than 60%. This classification of countries is strongly correlated with the stage in which each one is in terms of demographic transition and level of development, with the first group of countries being the oldest and the second the youngest in the region.

Finally, a distinctive feature that characterizes Latin American countries is that deaths from non-communicable diseases have a relatively lower weight than in countries whose populations have reached similar shares of the elder population, as shown in Figure 4.4. This pattern reflects the “double burden of disease” that the region’s health systems must deal with, in which emerging chronic diseases coexist with a still high incidence of infectious diseases, typical of contexts of high inequality (Bygbjerg, 2012).

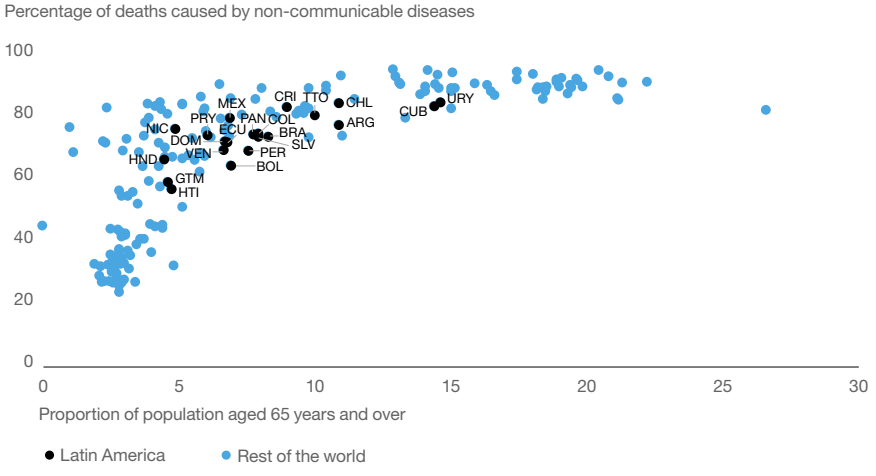
Figure 4.3
Mortality from non-communicable diseases in Latin American countries and the rest of the world, 2000 and 2016



Notes: This figure takes into consideration non-communicable diseases included in categories C00 and R99 in the International Classification of Diseases (ICD-10).

Source: Authors based on WHO data (2019c).

Figure 4.4
Correlation between aging and mortality from non-communicable diseases, 2016



Notes: This figure takes into consideration non-communicable diseases included in categories C00 and R99 in the International Classification of Diseases (ICD-10).

Source: Authors based on WHO (2019c) and the United Nations data (2019b).

How much do the expenditures and demand for health care services change throughout the life cycle?

The increase in per capita health care spending as age increases is a key issue in the context of an aging population. This increase in spending is driven, to a large extent, by the change in the type of medical goods and services that are demanded during the life cycle as a consequence of the incidence of diseases and pathologies that appear with age. As such, the demand for curative care health care services, typically more expensive, is higher as people age than the demand for preventive medical services.

Health care expenditure profiles by age are essential inputs to quantify how public spending in this sector will evolve as a consequence of population aging and feed the debate on how to ensure the fiscal sustainability of health systems. Constructing these expenditure profiles is a complex task given that health spending tends to be financed using multiple sources. Despite its pertinence for public policy, this type of information is limited in the countries of the region due to the scarcity of updated data sources that are representative of their health systems. In several developed countries, the increasing availability of administrative data has made it possible to obtain a detailed description of health expenditures and to construct expenditure profiles by age, gender, and type of medical services, based on individual level information. Recent studies based on this type of data show, for example, that the per capita expenditure on health care of 80-year-olds is on average three to six times higher—depending on the country, gender, and the type of service considered—than that of 30-year-olds (Bakx, O'Donnell and van Doorslaer, 2016; Karlsson, Klein and Ziebarth, 2016; Kelly, Stoye and Vera-Hernández, 2016).[2] The most pronounced increase is observed after the age of 50 and at a faster rate for men than for women.

Unfortunately, the availability of administrative records for health systems in Latin America is still incipient. To help alleviate this information gap, two studies were commissioned for the preparation of this report. The studies use administrative records from Chilean and Colombian health subsystems to construct profiles of per capita health care expenditures by age and gender.[3] In both cases, the information comes from the contributory social security systems. Additionally, in the case of Chile, the information is limited

2. Bakx *et al.* (2016) analyze the distribution of health and long-term care expenditures by age for the entire population of the Netherlands. Karlsson *et al.* (2016) use information on all health expenditures from one of the leading private health insurance companies in Germany. Finally, Kelly *et al.* (2016) study the age distribution of public hospital spending in the UK's National Health Service (NHS).

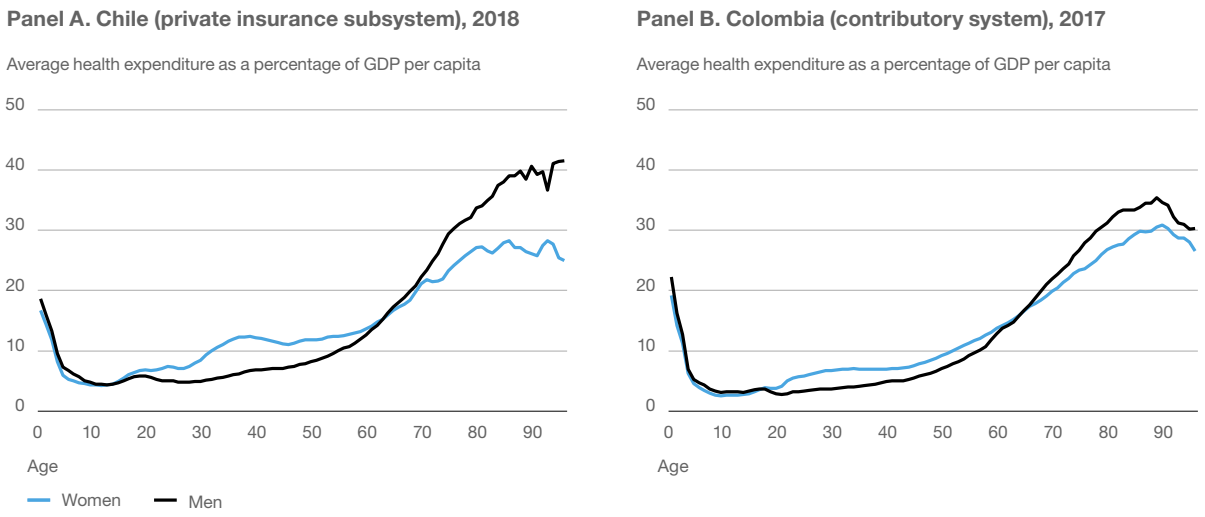
3. de la Mata and Valdés (2020) study the Chilean case and Buitrago and Torres (2020), the Colombian case. The analysis for Chile is performed using the data that the ISAPRES report to the Superintendency of Health of Chile on the use of medical services by their affiliates. This information covers the universe of affiliates of this subsystem, accounting for 24% of the population in 2018. For each health service provided, the total cost is reported, that is, the sum of the amount contributed by the insurer plus the insured copayment. The total cost does not include the insurance premium. In the case of Colombia, the analysis is based on the information that the main health insurers (called *Entidades Promotoras de Salud* or EPS) report to the Ministry of Health on the use of medical services of their affiliates. The EPS cover approximately 80% of the country's contributory regime affiliates. In 2015, the contributory regime covered 47% of the Colombian population. The reported expenditures do not include what the insured person pays as copayments for each recorded health benefit, although it is estimated that these expenses do not represent more than 2% of the total expenditures. In both cases, data is highly reliable.

to the subset of people who opt for private health insurance coverage (*called Instituciones de Salud Previsional* or ISAPRES).[4]

Health expenditure begins to increase rapidly around 50 years of age and to a greater extent for men than for women.

Figure 4.5 presents the age profile of health care expenditure in both countries, which follow the same pattern as that of the developed countries. After the first year of life, spending falls rapidly until it stabilizes around five years. When the reproductive age begins, the expenditure of women exceeds that of men. At around 50 years of age, spending begins to grow rapidly, to a greater extent for men than for women, until it reaches its maximum between 80 and 90 years of age. In Chile, the ratio of per capita health care expenditure in 80-year-olds in relation to per capita health care expenditure in 30-year-olds is 2.7 for women and 6.3 for men, while in Colombia it is 3.9 and 8.5, respectively.

Figure 4.5
Per capita health care expenditure by age and gender in Chile and Colombia



Notes: Expenditure in Chile includes all spending by individuals who contribute to the contributory health care system but voluntarily opt for private coverage (ISAPRES), approximately equivalent to a quarter of Chile's population. It includes both expenditures made by the insurer and spending (in the form of copayments) made by individuals. Expenditure in Colombia includes all the expenditures of individuals affiliated to the main insures of the contributory regime, which covers 47% of the country's population, but not out-of-pocket spending in the form of copayments. The data is smoothed using a moving average of the last three ages.

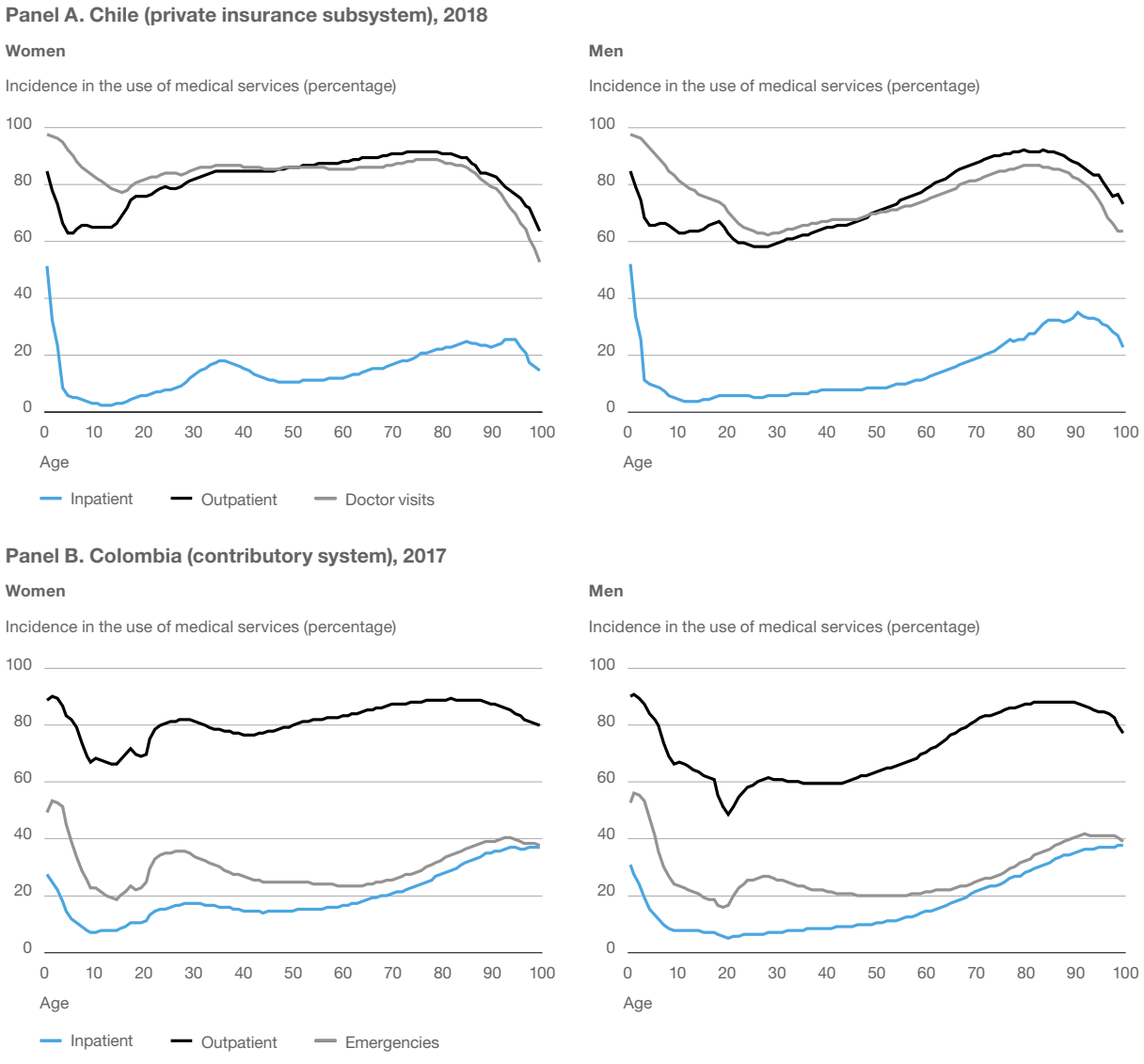
Source: Authors based on de la Mata and Valdés (2020) for Chilean data and Buitrago and Torres (2020) for Colombian data.

What are the main factors behind this increase in spending throughout the life cycle? In the first place, as people age, they make greater use of the health system, both at the extensive (increase in the probability of contact with the system) and the intensive margin (increase in the number of contacts). Figures 4.6 and 4.7 illustrate these aspects in Chile and Colombia.

4. The main characteristics of the Chilean and Colombian health systems are described in greater detail later in the chapter.

Figure 4.6 shows the percentage of people who use the health system by type of service, age, and gender. As can be seen, the pattern is a similar to that found in reported spending. The use of services increases approximately after the age of 50 and does so more rapidly among men than among women.

Figure 4.6
People who used a health service by type of service, age, and gender in Chile and Colombia

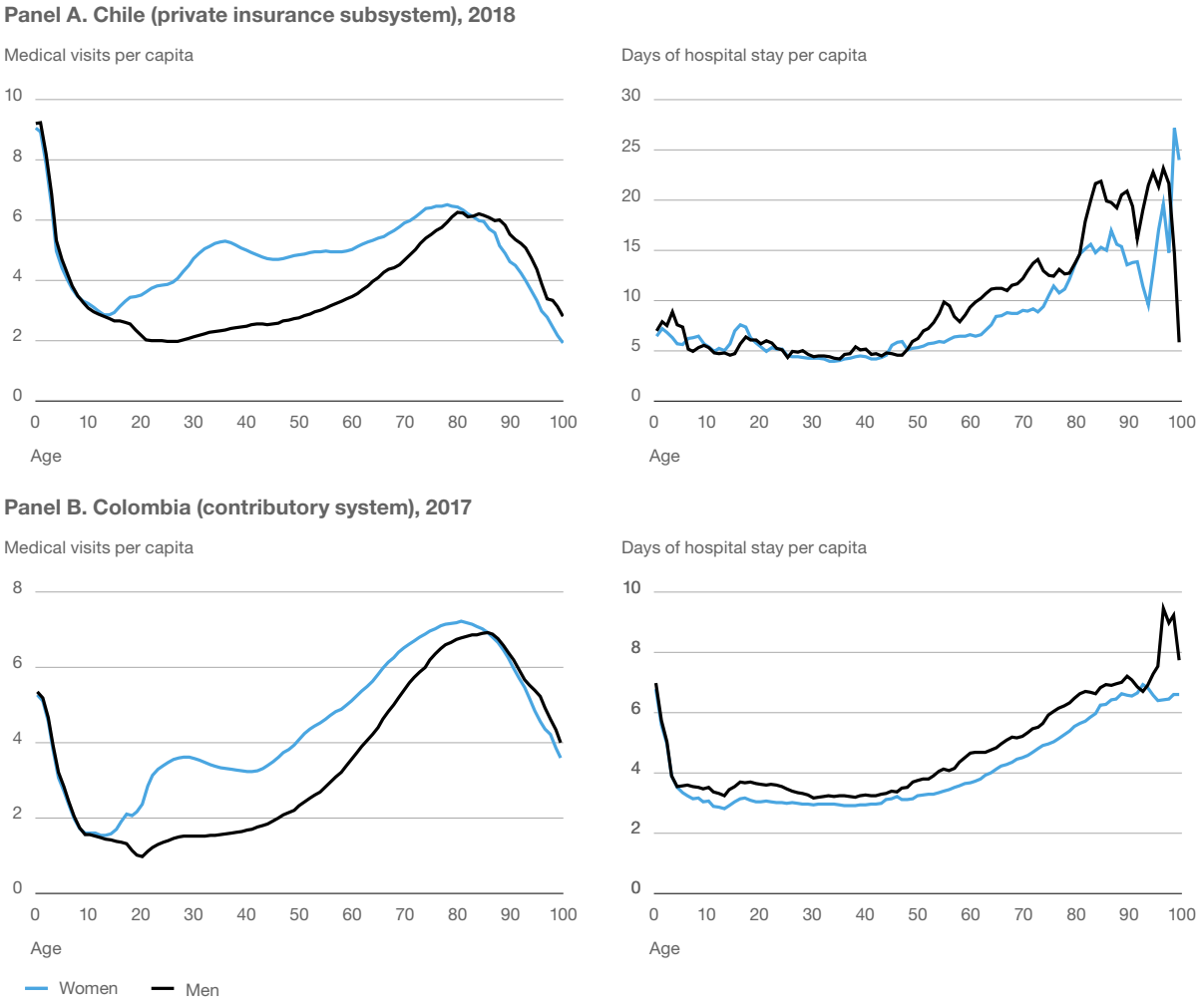


Notes: The incidence is expressed as the percentage of the insured population. Outpatient services include all those benefits related to the diagnosis or treatment of a disease that does not require hospitalization. In the case of Colombia, health care services received in medical emergencies are reported separately. The data is smoothed using a moving average of the last three ages.

Source: de la Mata and Valdés (2020) for Chilean data and Buitrago and Torres (2020) for Colombian data.

Regarding the intensity of use, Figure 4.7 shows averages of the number of medical consultations and days of hospitalization by age and gender. The pattern is clear: except for the first years of life, the frequency of contact with the health system increases with age. It also stands out that during adulthood women have a greater number of medical visits per capita than men, while a similar dynamic to that reported for the profile of spending is observed in the days of hospitalization per capita by age: a faster growth for men over 50 years of age. That is to say, on average, women go to medical consultations more frequently than men during adult life, but in old age, the amount men spend per capita increases faster because they use higher-cost services more frequently.

Figure 4.7
Number of medical consultations and days of hospitalization per capita, by age, and gender in Chile and Colombia

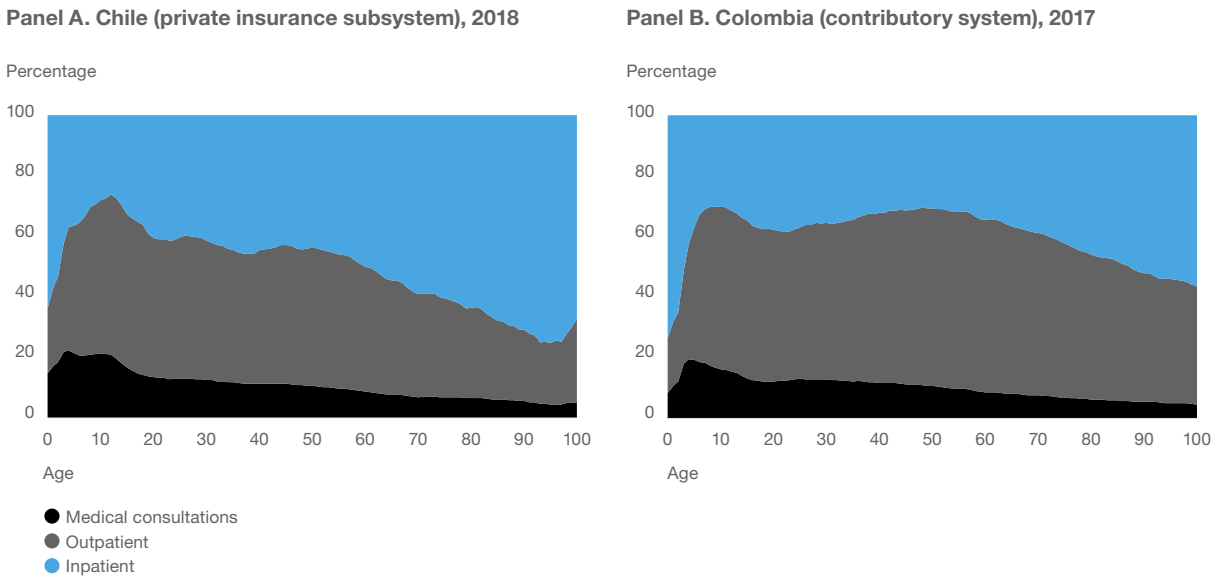


Notes: Average hospitalization days are counted for those individuals who have been hospitalized.
Source: de la Mata and Valdés (2020) for Chilean data and Buitrago and Torres (2020) for Colombian data.

Secondly, the increase in spending throughout the life cycle is associated with a change in the relative importance of the different types of health care services demanded. In particular, the weight of curative and more expensive services (such as hospitalizations) increases sharply, compared to services typically more associated with preventive medicine (such as medical check-ups). The increase in the use of outpatient services (excluding medical visits) and hospitalizations explain the increase in per capita health spending in older people, as shown in Figure 4.8.[5] In both countries, the contribution of medical visits to total spending decreases over the course of a lifetime, even though the intensity of use of this service increases after age 20 approximately. In Chile and Colombia alike, the weight of hospital expenses in total expenditure increases over a person's life, eventually displacing outpatient expenditures as the main source of health spending.

The weight of curative and more expensive services sharply increases throughout the life cycle, compared to services typically associated with preventive care.

Figure 4.8
Composition of per capita health spending by type of service and age in Chile and Colombia



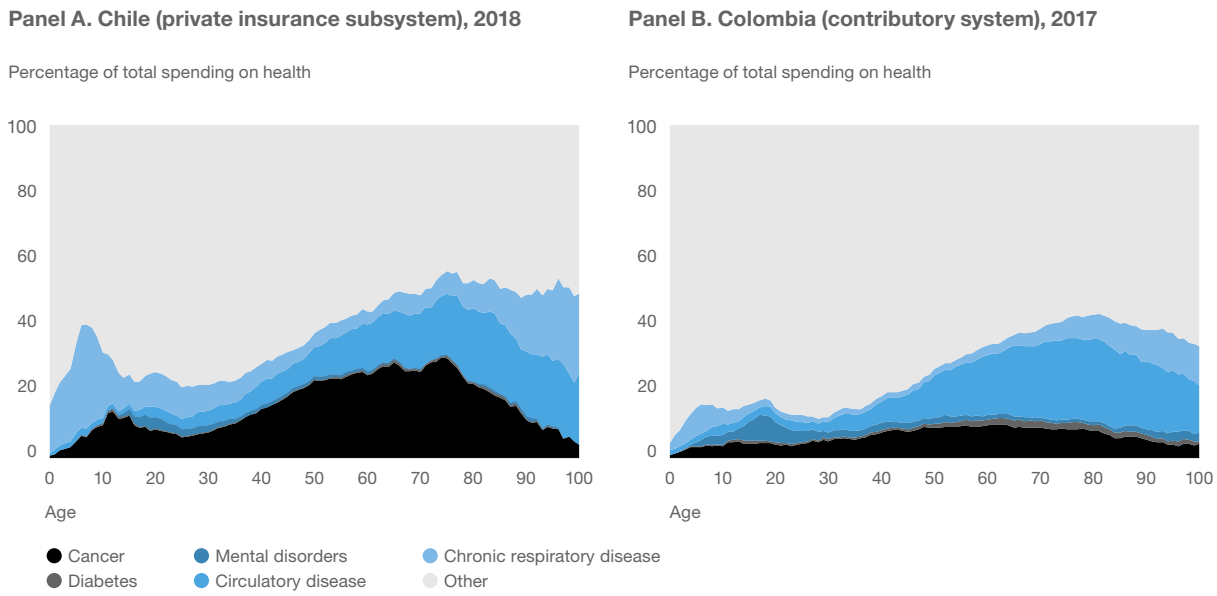
Notes: "Outpatient services" include all those benefits related to the diagnosis or treatment of a disease that does not require hospitalization.
Source: de la Mata and Valdés (2020) for Chilean data and Buitrago and Torres (2020) for Colombian data.

Finally, the increase in spending with age is due to the incidence of more severe pathologies and multimorbidity, which tend to be more frequent, generally chronic, and more expensive in older ages. Figure 4.9 shows that hospital spending generated by some of the major non-communicable diseases

5. "Outpatient services" includes all those benefits related to the diagnosis or treatment of a disease that does not require hospitalization.

(cancer, diabetes, mental disorders, chronic circulatory and respiratory diseases) increases with age. In Chile, these five non-communicable diseases are responsible for half of all hospital expenditures incurred by the population aged 60 and over. In Colombia, they are responsible for approximately 40% of hospital expenditures for the same age group. The evidence shown here illustrates why the advance of chronic diseases is one of the main reasons behind the concern for the financial sustainability of health systems.

Figure 4.9
Composition of hospital spending by type of pathology and age in Chile and Colombia



Notes: In the case of Chile, according to the ICD-10 code, diseases are classified as neoplasms (C00-D48); diabetes (E10-E14); mental disorders (F00-F99); circulatory diseases (I00-I99), and chronic respiratory diseases (J00-J99).

Source: de la Mata and Valdés (2020) for Chilean data and Buitrago and Torres (2020) for Colombian data.

Health care spending on the rise

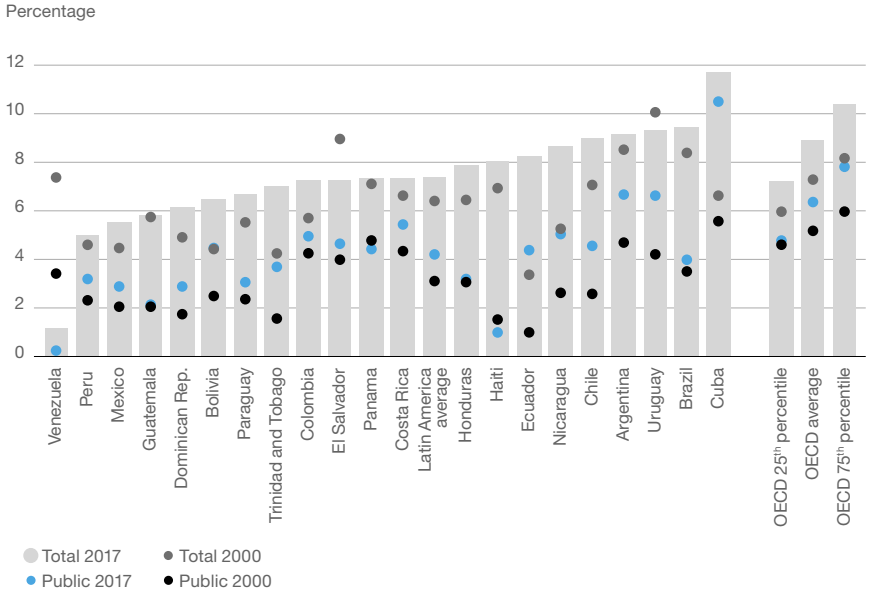
In recent decades, health care spending has shown an upward trend in many countries around the world, including those in Latin America (Chernew and Newhouse, 2011; Marino, Morgan, Lorenzoni and James, 2017). Population aging has been one of the contributing factors to this increase. Demographic factors account for around a quarter of the increase in the share of public health spending relative to gross domestic product (GDP) observed in recent decades in advanced economies (Clements and Coady, 2010) and a little over a third of the increase in Latin American countries in the period 1995-2014 (Panadeiros and Pessino, 2018).

As previously documented, the combination of demographic change and epidemiological change, together with a per capita health expenditure profile that increases with age, puts upward pressure on aggregate spending in the health care sector. Although other non-demographic factors have also been identified as causes of equal or greater relevance than demographic factors in explaining the increase in spending in the past (see Box 4.2), it is natural that Latin American countries find aging a real threat to the fiscal sustainability of their health systems if current trends are expected to continue in the future.

The public sector played an important role in the rise in total health spending, which currently represents 7.4% of GDP.

The average (public and private) total health spending in Latin American countries rose from 6.4% of GDP in 2000 to 7.4% in 2017, as shown in Figure 4.10. This increase occurred in a context of economic expansion. Between 2000 and 2017, the GDP of the countries of the region grew on average 85%; that is, health spending grew at a faster rate than the economy. The evolution of public spending played a decisive role in this expansion of health expenditures. On average, public health spending rose from 3.1% to 4.2% of GDP during the same period. As a result, the share of public spending in total health spending rose from 47% to 55%.

Figure 4.10
Health spending as a percentage of GDP in Latin American countries, 2000 and 2017



Notes: Public health spending finances the public health system, via transfers or subsidies, as well as the mandatory funding that private actors inject into social security systems. Total health spending includes public spending on health, voluntary private spending, copayments for benefits, and net transfers from abroad for the consumption of health care services. The data for Latin America are the simple average of the countries reported in the figure. The OECD data are the simple average of the member countries of the organization, except for Colombia, Chile, and Mexico.

Source: Authors based on WHO data (2019b).

Box 4.2
Why is health spending growing? Additional factors to aging

In addition to aging, various hypotheses have been put forward to explain the sustained increase in health spending—generally at a higher rate than GDP—observed in most countries. These explanations are independent of the organization of their health systems and funding, and include:

- Advances in medical technology. The continuous introduction of technology in the health care sector has been identified as one of the main determinants of the sustained increase in spending in this sector. Chernew and Newhouse (2011) distinguish three types of new medical technologies, characterized by innovations of a diverse nature: 1) new products (for example, drugs) or devices that make it possible to provide a different service; 2) new knowledge that allows an unprecedented application of pre-existing products; 3) process innovation that reduces the cost of existing products. Expenditures may increase if these innovations facilitate the treatment of previously untreated pathologies or reaching a larger number of patients, or if they offer greater benefits than an existing treatment, but at a proportionally higher cost. Innovation can increase spending if complementary services are required as a result. Finally, innovation can improve people's health and prolong their lives but generate higher consumption of medical services over more years. Evidence suggests that the mechanisms through which medical innovations push up health care expenditures (via costs or increased use of all medical services) have dominated those that could reduce them.

- Income growth. As individuals in a country get richer, the share of health spending rises as life becomes more and more valuable (Hall and Jones, 2007). Although there is a correlation between per capita income and the proportion of spending allocated to health, the most recent empirical studies find that although health spending increases with income, in general, it does not do so more rapidly than GDP—once other factors that could be mediating the positive relationship between health spending and income are taken into account (Baltagi, Lagravinese, Moscone and Tosetti, 2017).

- Low productivity growth in the health care sector (known as Baumol's cost disease). Various studies show that productivity growth in the health care sector has been considerably lower than in other sectors. As the health care sector is highly labor-intensive, a greater increase in productivity in the other sectors of the economy is reflected in higher wages and costs in the health care sector.

- Health policies. Due to its importance and complexity, the health care sector is heavily regulated. In addition to defining the public budget allocated to health, public policies for the sector are decisive for aggregate health spending because they tend to have a first-order effect on the supply and demand for health care services and on their costs. In order to guarantee universal health coverage, many countries, including those in Latin America, have greatly expanded coverage, generating an increase in aggregate spending in the sector.

How does Latin America compare to more developed countries? On average, total health spending in the countries of the region, as a percentage of GDP, is just 1.5 percentage points lower than that of the OECD countries and similar to what they recorded in 2000. However, the relative weight of public spending on health in the region is lower in relation to that of the OECD. While public spending represents on average 4.2% of GDP and 57% of total health spending in Latin America, these figures amount to 6.3% and 71%, respectively, in OECD

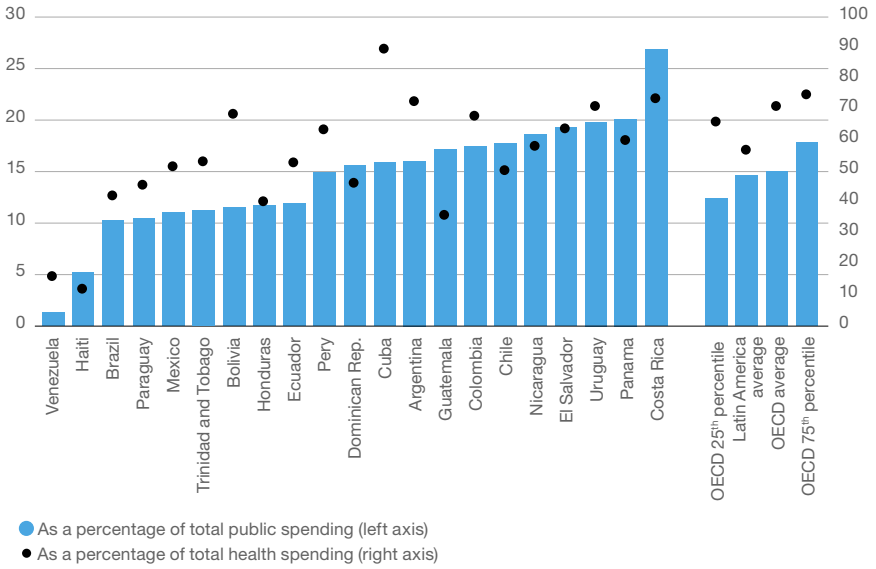
member countries. Although the variation in spending between the two regions is explained in part by differences in aging and the level of development, as documented in Chapter 1, the role of public policy is also important (as discussed later). In particular, health systems in Latin America are less generous than those of the OECD, in terms of the access to different medical goods and services they provide as well as the financial protection they offer.

Of course, within Latin America and the OECD alike, there are important differences in the countries' total health spending, as shown in Figure 4.11. For example, while Argentina, Brazil, Chile, Cuba, and Uruguay spend a higher proportion of their GDP on health than the OECD average, Guatemala, Mexico and Peru spend less than 6%.

Despite the advance in public sector participation, public spending on health in most Latin American countries continues to be below the 6% of GDP recommended by the Pan American Health Organization (PAHO, 2014), with the exception of Argentina, Cuba, and Uruguay. However, when evaluating this expenditure with respect to the total public budget, the effort made to finance the health care sector is high. The share of health in total public spending in Latin America is 15% on average, very similar to that of OECD member countries (Figure 4.11). In countries like Chile, Costa Rica, El Salvador, Nicaragua, Panama, and Uruguay, the weight of health spending within total public spending is such that it would place them within the top 25% of OECD member countries.

Public spending on health as a percentage of the total public budget in Latin American countries is, on average, equal to that of OECD countries.

Figure 4.11
Public spending on health in Latin American and OECD countries, 2017



Notes: The data for Latin America is the simple average of the countries reported in the figure. OECD data is the average of the member countries of the organization, except for Colombia, Chile, and Mexico.

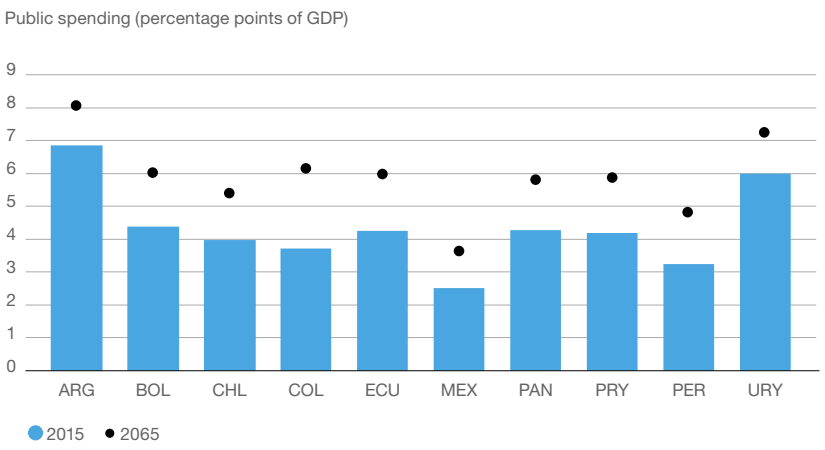
Source: Authors based on WHO data (2019b).

How much can public health spending in Latin America grow with aging?

The evidence presented to date shows that as the population ages in the countries of the region, it is to be expected that health spending will increase. Faced with such a prediction, it is natural to ask, what could be the size of this increase, and, in particular, the increase in public spending? As mentioned, the share of health in total public spending in many of the Latin American countries is already relatively high (similar to that of developed countries). Therefore, a considerable increase in public health spending could put significant pressure on public finances. Is this viable?

The results of a projection exercise carried out in the writing of this report are presented below to illustrate the potential effect of the change in the age structure of the population on the required public spending on health. This analysis is based on the United Nations population aging projections presented in Chapter 1, information on public health spending from the World Health Organization (WHO), and health expenditure profiles by age and gender already seen in this chapter. Since these profiles are only available for Chile and Colombia, an average of these two is used for the rest of the countries. Broadly speaking, the projections show how public spending on health would evolve as a greater proportion of the population reaches ages when per capita spending on health is higher, keeping everything else constant. The evolution of private spending on health and total spending on long-term care services is not included in the analysis, which, as will be seen, may be important for the future.

Figure 4.12
Projections of public health spending in Latin American and OECD countries, 2015 & 2065



Notes: See Daude and Pena (2020) for a detailed description of the projection exercise methodology.

Source: Authors based on WHO data (2019b), Crosta *et al.* (2019), de la Mata and Valdés (2020), Buitrago and Torres (2020), and United Nations population projections by age and gender (2019b).

Figure 4.12 presents the results. As expected, an increase in spending as a percentage of GDP is projected across the board. This increase is higher in countries where aging is less advanced today. How big are these changes? Projections for 2065 indicate increases between 1.2 and 2.4 percentage points of GDP, depending on the country.

When interpreting these results, it must be remembered that they come from an exercise aimed at illustrating the potential effect of aging on health spending in the public sector, based on its current structure. In other words, it is not a forecast of the actual evolution of spending or estimates of its optimal level.

Box 4.3
Will the health care expenditure profile by age change as life expectancy increases?

A central element in the discussion about the effect of aging on health spending is the assumption of whether the current spending profile by age will remain unaltered as the new generations grow older. This depends on whether the overall level of health of the population and the need for the use of medical services at each age will be similar or not to the current one. Is it plausible to expect that there will be no changes in the profile of health spending when the aging process by definition implies an increase in people's life expectancy and, therefore, changes in their health? Broadly speaking, there are two opposing views on this subject.

An optimistic view suggests that the profile of expenses by age could be lower than currently observed. According to this hypothesis, the age of the people does not matter so much as the time they have left in their lives (Felder, 2013). As an important part of health spending occurs in the last years of life, the increase in spending with age reflects the fact that among the elderly there are more individuals close to dying. From this perspective, since population aging is brought about by increases in survival rates, as the population ages, health care expenditures for each age should be lower, since there will be a smaller proportion of people whose lives are coming to an end. Proponents of this hypothesis argue that the change in the age composition of the population will not generate the accelerated increases that are predicted and that aging acts as a "red herring" covering up the real reasons for the rising trend in health care expenditures (technological change, increases in coverage, changes in regulations, inefficiencies, etc.).

Concerning this hypothesis, recent evidence constructed from very precise data from administrative records in developed countries shows that health care expenditures in the last 12 months of life of people who die in a given year, although high, represent a moderate percentage of total health care expenditures: between 6% and 10%, rising to a figure between 8% and 11% if long-term care expenditures are added. (French *et al.*, 2017). This result suggests that the gains generated by improvements in health and higher life expectancy may only moderately flatten the health expenditure curve over the life cycle.

A pessimistic view of aging suggests, on the contrary, that the spending profile by age might be more accentuated in the future than what is currently apparent. The ‘expansion of morbidity’ theory (Gruenberg, 1977) argues that medical progress will increase the survival of the severely ill. As a consequence, this hypothesis suggests that the health of the next cohorts of adults will be, on average, worse than that observed today and the expected health care expenditures for each age group will be higher. If this is the case, expenditure projections based on current profiles underestimate the impact of aging on health care spending.

The projection model takes current per capita spending as a starting point. Nevertheless, as discussed later, this level of spending may be insufficient, even today, to guarantee effective access to sanitary services of quality for the entire population. If this is the case, in the absence of improvements in the productivity of health care services, maintaining the current level of spending in the future may lead to a deterioration in the quality and effective availability of the coverage of these services. On the other hand, the projections do not take into account aging-induced changes in the supply and demand for health care services by age. For example, if treatments that are not widely used today become more readily available, per capita spending at older ages may increase, and with it, aggregate spending (although health benefits would also increase). There is another important factor that can change the current profile of health spending by age: changes in the health status of new generations as they grow older (as discussed in Box 4.3).

Finally, in addition to aging, other spending drivers should be taken into account in any exercise aimed at forecasting future health spending (see Box 4.2).

Aging: changes in the demand and cost of care

How does the need for care increase with age?

The possibility of longer lives poses another challenge: the increase in the number of people who require assistance or major support to perform everyday activities.

In addition to the demand for health care services, the possibility of living longer poses another challenge: an increase in the number of people in a situation of dependency. Dependency refers to the state in which people require significant assistance or support to carry out activities of daily living, for reasons related to the lack or loss of physical, mental, or intellectual autonomy. (Failache *et al.*, 2019). Chronic diseases are an important factor that contributes to this deterioration (Aranco, Stampini, Ibarrarán and Medellín, 2018). In contrast to those who may need support for a certain period due to a momentary situation, dependent people require long-term care (LTC). The growing demand for care associated with dependency is another factor that may put upward pressure on health spending and the resources (monetary and non-monetary) that households dedicate to caring for older adults.

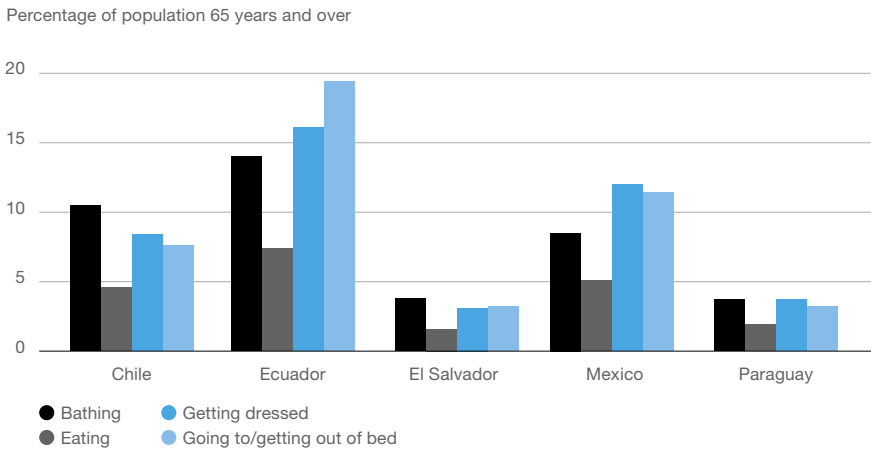
Chapter 1 presented United Nations projections on the evolution of the adult dependency ratio in Latin American countries for the upcoming decades (see Figure 1.17, page 61). This adult dependency rate is the number of people 65 years and older in relation to the number of people between 15 and 64 years old (or the ratio between people over 85 years old, with respect to the population aged 15 to 84 years, according to a second measurement). In other words, it is the number of potential dependent adults for each potential caregiver. As a preliminary approximation, this is a useful indicator for understanding the potential magnitude of dependency, which has the great advantage of using widely available information that is comparable between countries (the age

structure of the population). However, it has important limitations, since not all older adults are dependent.

In Latin America, there is a lack of information sources that would make it possible to know the actual incidence of dependency and to make systematic comparisons between countries. To contribute to alleviating this information gap, in the context of the preparation of this document, the longitudinal social protection surveys carried out in Chile, Colombia, El Salvador, and Paraguay, and the health and aging surveys conducted in Argentina, Ecuador, and Mexico were analyzed, and a relevant report was commissioned (Failache *et al.*, 2019). The results presented below include the largest number of countries analyzed for which information is available for the specific indicator reported. However, caution is advised when making comparisons between countries, since there are usually differences in the questions used to measure the same phenomenon.

Figure 4.13 shows the proportion of people over 65 who have difficulties in carrying out four basic activities of daily living (BADL) on their own in five countries in the region. The figures vary between countries, but between 4% and 14% need help bathing; between 2% and 7%, to eat; between 3% and 16%, to dress; and between 3% and 9%, to go to bed or get out of bed. Of course, some people may require assistance with only one of these activities, while others may require assistance with two or more.

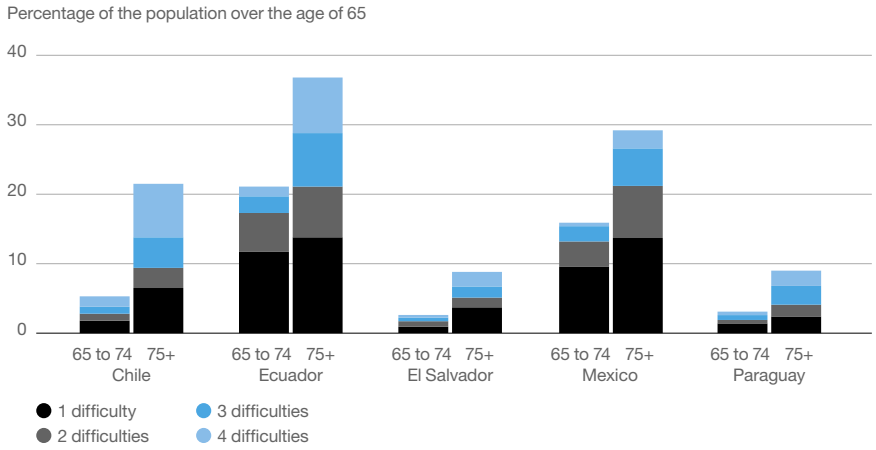
Figure 4.13
Population aged 65 and older with difficulties in performing basic activities of daily living by type of activity in five Latin American countries, 2015 or most recent year



Notes: In Chile, El Salvador, and Paraguay, interviewees are asked whether they "usually need help or have difficulty" in carrying out each of these activities. In Ecuador and Mexico, interviewees are asked whether they "have difficulty" in carrying out the activities.

Sources: Compiled by the authors, based on microdata from the Longitudinal Social Protection Survey in Chile (2015), El Salvador (2013), and Paraguay (2015); the Survey on Health, Well-Being, and Aging in Ecuador (2009); and the National Survey on Health and Aging in Mexico (2015).

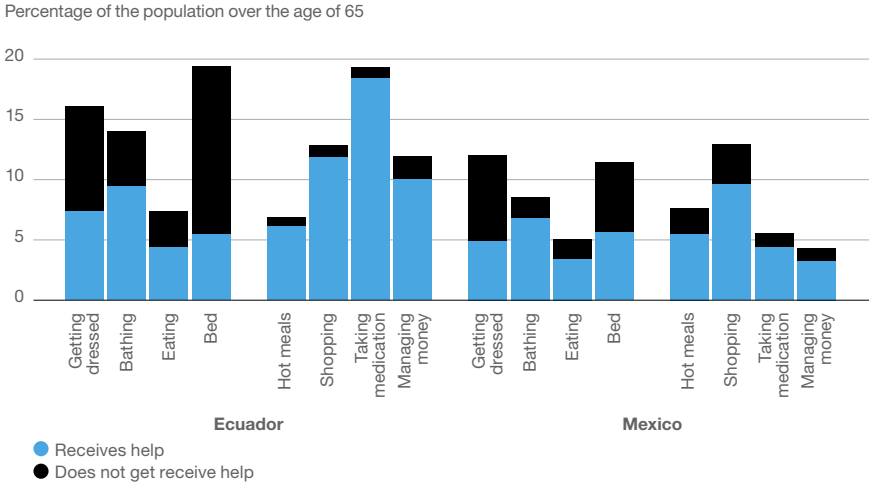
Figure 4.14
Dependency by number of basic activities of daily living for which help is needed in five Latin American countries, 2015 or most recent year



Notes: This figure takes into consideration difficulties to get dressed, bathe, eat, and get into or out of bed. In Chile, El Salvador, and Paraguay, interviewees were asked whether they "usually need help or have difficulty" in carrying out each of these activities. In Ecuador and Mexico, interviewees were asked whether they "have difficulty" in carrying out the activities.

Sources: Authors based on microdata from the Longitudinal Social Protection Survey in Chile (2015), El Salvador (2013), and Paraguay (2015); the Survey on Health, Well-Being, and Aging in Ecuador (2009); and the National Survey on Health and Aging in Mexico (2015).

Figure 4.15
Older population in a situation of dependency and care deficit for basic activities of daily living (BADL) and instrumental activities of daily living (IADL) in Ecuador and Mexico, 2009 and 2015



Sources: Compiled by the authors, based on microdata from the Survey on Health, Well-Being, and Aging in Ecuador (2009); and the National Survey on Health and Aging in Mexico (2015).

As dependency increases with age, it is to be expected that population aging will lead to an increase in the number of people in a situation of dependency.

Figure 4.14 shows the proportion of older adults who have difficulties in carrying out at least one of the activities reported in Figure 4.13, with information broken down by age group and by the number of activities for which they require help. Two patterns stand out. First, dependency increases with age. In all cases, the incidence of dependency is higher among people over 75 than among those between 65 and 74 years of age. The implications of this phenomenon are crucial for the demand for care. As the proportion of older population and the length of life increase, it is expected that the number of people who will need help with basic activities of daily living will also increase. Secondly, a considerable proportion of older adults in a situation of dependency have difficulties in performing two or more of these four basic activities, which is important because the number of BADL difficulties a person has is associated with the intensity of care they need (Failache *et al.*, 2019). When evaluating the information contained in this figure, it is important to take into account that there may be other daily activities for which older adults need support but are not reported here because they are not included in all the surveys analyzed. Therefore, these data probably underestimate the population in a situation of dependency. Even so, a high prevalence of dependency is observed among the population 75 and older in Chile, Ecuador, and Mexico, and even among those aged 65 to 74 in the last two countries.[6]

As might be expected, the limitations in carrying out activities of daily living are reflected in other areas of life. For example, older adults in a situation of dependency have lower labor participation rates than people who do not suffer from these limitations (Failache *et al.*, 2019), which may result in a state of greater economic vulnerability, considering the limited coverage of pensions in the region (see Chapter 3).

The presence of difficulties in carrying out basic activities does not necessarily imply they are receiving help. Figure 4.15 shows the proportion of people 65 and over in Ecuador and Mexico who have difficulties in carrying out at least one of the four BADL already presented. In addition to these, there are four instrumental activities of daily living (IADLs): preparing hot meals, shopping, taking medications, and managing money. The analysis is limited to these two countries because they are the only countries where the surveys allow for this distinction. The inclusion of IADLs shows another, more complex, dimension in which people may find it difficult to function independently.[7] For each activity, the proportion of people who receive and do not receive help even though they need it is shown. Regarding BADL, it is clear that the proportion of people with difficulties is higher than those who receive support. For example, less than half of those who have difficulty dressing themselves receive assistance to do it. In other words, a significant number of older people need help to carry out this group of basic activities of daily living, but do not receive it. This gap is much smaller in instrumental activities (preparing hot meals, shopping, taking medication, and managing money). These gaps suggest the existence of a

6. In El Salvador and Paraguay, there is a low prevalence of difficulties in these four activities. However, the prevalence is more significant in other activities, such as climbing stairs (not reported in the graphs). In Chile, 25% of people over 65 report having difficulty climbing stairs by themselves, while the figures are 43% in Ecuador, 18% in El Salvador, 29% in Mexico, and the 27% in Paraguay.

7. Medellín *et al.* (2018) present a detailed analysis of the measurement of dependency.

care deficit, although it must be recognized that some of these people may not receive support because they can carry out these activities autonomously, overcoming difficulties.

In summary, as the population ages, the number of people who will require long-term care is expected to increase considerably, due to the increase in dependency with age and the high dependency rates prevalent in the region. This expected increase in the demand for care occurs in a context in which today a significant group of people may receive less care than they need to perform basic activities of daily living.

Who takes care of dependent older adults in Latin America?

In the region, family members are the main provider of long-term care for older adults. Care services—home-based and institutional alike—are underdeveloped.

In the region, family members are the main provider of long-term care for older adults. Care services—home-based and institutional alike—are underdeveloped. For example, the limited information available shows that only a minority of older adults live in residential facilities. According to population censuses, less than 1% of the population 65 and over in Brazil, Costa Rica, Ecuador, and Uruguay lives in a residential facility. Although these data are not up-to-date —they are from 2011 (2010 for Brazil)—they are useful for establishing a reference point. If one focuses on the population aged 85 and over, the picture is not very different. The population in this age range that lives in a residential facility is 2.3% in Brazil, 1.3% in Costa Rica, and 0.5% in Ecuador and Uruguay. In comparison, this figure rises on average to 9.8% among those over 80 in OECD countries (2020c).

What is the situation of older adults who reside in their homes and receive long-term care? Table 4.1 presents information in this regard for Argentina, Colombia, and Mexico (specifically, for the main caregiver). In all three countries, unpaid people are the main source of care. More specifically, 77% of the main caregivers in Argentina are family members, while in Mexico they are between 95% and 99%, depending on the type of activity (the data used for Colombia do not permit a similar distinction to be made). In Argentina, where the survey used allows a greater disaggregation of the profile of the caregiver, it is possible to observe that paid care is carried out mainly by non-specialized personnel, and to a lesser extent by specialized personnel.[8]

As in other aspects of elderly care, there is little information about the characteristics of unpaid providers and the scope of their activities. In order to fill this information gap, the 2019 CAF Survey (ECAF) offers new data about unpaid caregivers to older adults in 11 Latin American cities. To interpret the following results, it is important to bear in mind that they are informative about adult care in general, that is, they do not refer exclusively to long-term care for dependent older adults (with difficulties carrying out activities of daily living,

8. In Uruguay, 20% of older adults receiving care receive attention from paid personnel (Failache *et al.,* 2019), which, along with the information reported for Argentina, illustrates the greater presence that paid LTC services can have in countries with older populations. However, in the case of Uruguay, whether they are primary or secondary caregivers cannot be determined.

like those described above). Therefore, the questions used can also cover temporary care and accompaniment services for adults of any age. Moreover, the 2019 ECAF survey covers people between 25 and 64 years of age, that is, it does not include people 65 and older. Omission matters because people in this age range tend to have an active role as caregivers, particularly spouses (López-Ortega and Aranco, 2019).

Table 4.1
Dependent older adults who receive long-term care by type of main caregiver and type of activity of daily living in Argentina (2012), Colombia, and Mexico (2015)

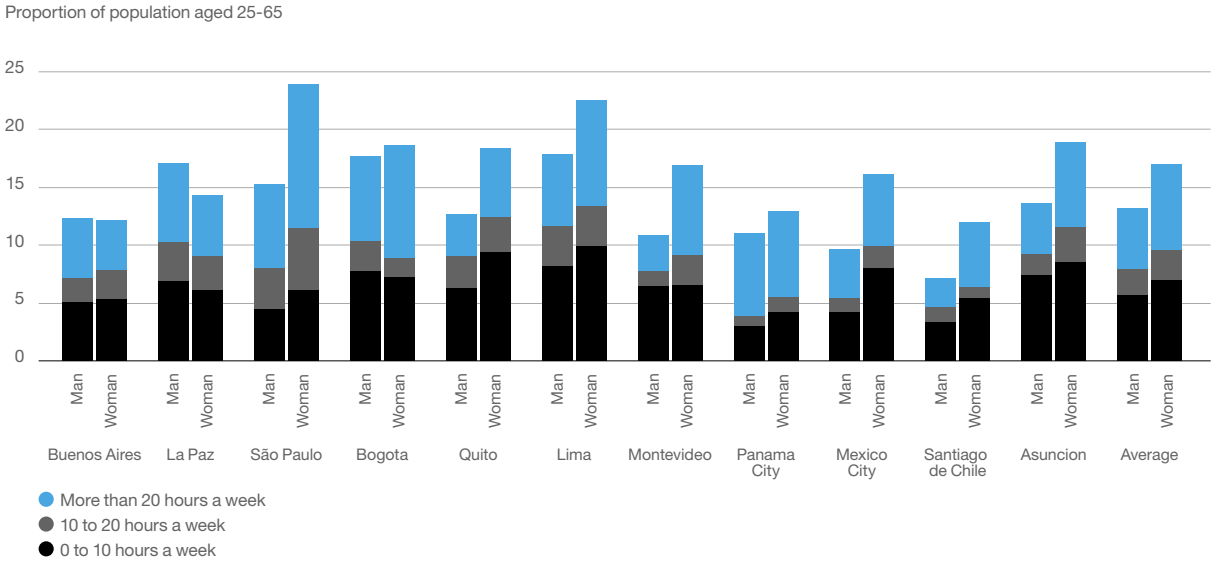
Type of caregiver	Argentina		Colombia	Mexico	
	BADL	IADL		BADL	IADL
Unpaid	**83%**	**81%**	**95%**	**95%**	**99%**
Family	77%	77%		93%	97%
Other	6%	4%		2%	2%
Paid	**17%**	**19%**	**5%**	**5%**	**1%**
Specialized staff	4%	2%			
Unspecialized staff	13%	17%			

Notes: Dressing, bathing, eating, and getting in or out of bed are considered basic activities of daily living (BADL). Preparing hot meals, shopping, taking medications, and managing money are considered instrumental activities of daily living (IADL). For Colombia, the type of activity for which people receive care is not indicated For Mexico, only the first caregiver reported by the interviewee is taken into account for each type of activity.

Source: Failache *et al.* (2019) for Colombia. Complied by authors, based on microdata from the 2012 National Survey on Quality of Life of Older Persons in Argentina and the 2015 National Survey on Health and Aging in Mexico.

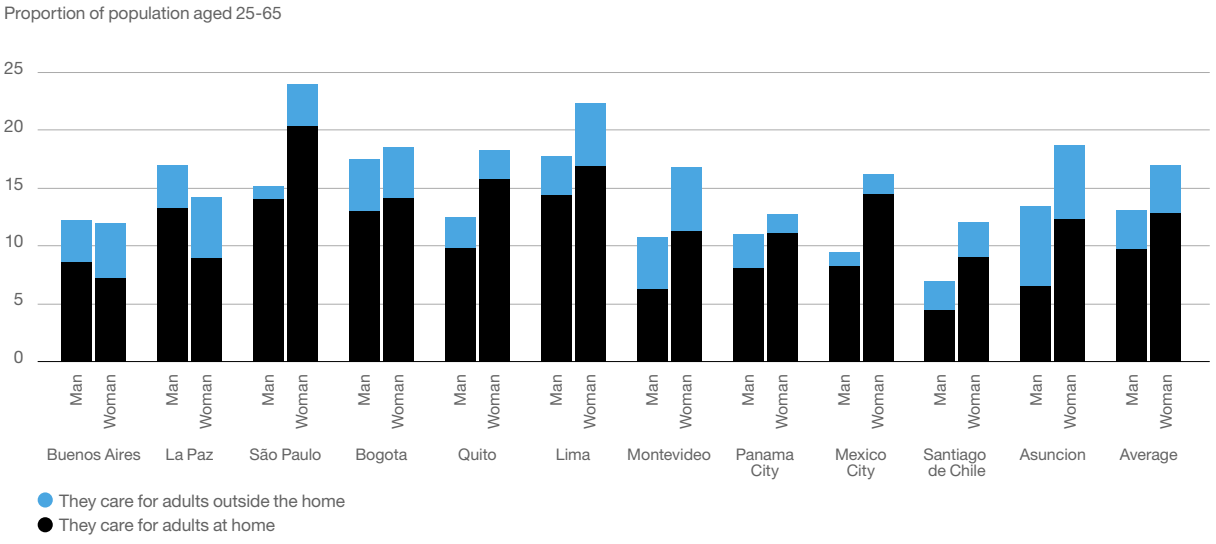
Figure 4.16 shows the percentage of the population in the participating cities in the 2019 ECAF survey that provided an adult with unpaid care in the week prior to the survey. On average, 17% of the respondent women and 13% of the men acted as caregivers of an older adult, a gender gap that is observed in almost all the cities studied. This feminization of care is a generalized pattern, which has been widely documented in the case of childcare (Marchionni, Gasparini, and Edo, 2019). The same figure illustrates the workload of these care tasks, which follows a U-shaped pattern: around 6% of the people in these cities dedicate less than 10 hours a week, 2% between 10 and 19 hours, and 6%, 20 or more hours a week. This pattern suggests the existence of two distinct groups of unpaid caregivers: those who participate but do so moderately and those who dedicate themselves more intensively to care tasks.

Figure 4.16
Population aged 25 to 65 providing unpaid care to adults, according to the number of hours of care, in 11 large cities in Latin America



Source: Authors based on 2019 CAF Survey (ECAF) data (CAF, 2020).

Figure 4.17
Population aged 25 to 65 providing unpaid care to adults by residence status of the care recipient in 11 Latin American cities



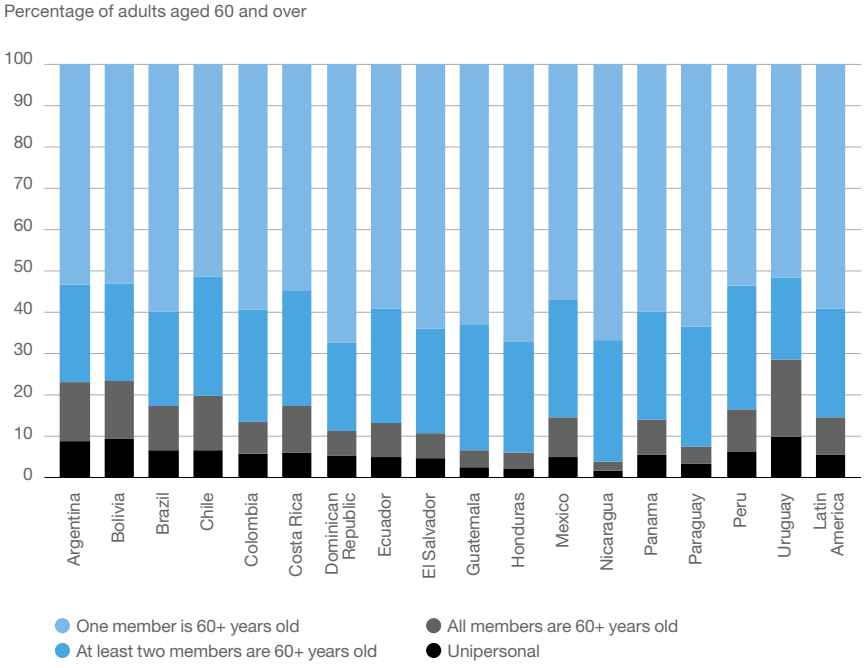
Source: Authors based on 2019 CAF Survey (ECAF) data (CAF, 2020).

As shown in Figure 4.17, the main recipients of the hours of care documented by ECAF in these cities are adults who reside in the same household as the person providing care. On average, 13% of women and 10% of men care for an adult who lives in their home, while only 4% and 3%, respectively, care for an adult residing in another home.

The main recipients of care are adults who reside in the same household as the person providing care.

The workload per caregiver does not necessarily coincide with the number of hours of care that each dependent individual receives on average, since there is usually more than one caregiver per person. In a report commissioned for this book, Failache *et al.*, (2019) examined the number of weekly hours of care received by older adults in situations of dependency in Colombia and Uruguay. Their findings show a provision of intense care by the other people residing in the home. On average, each elderly person in a dependent situation receives 53 hours per week of care in Colombia and 80 hours in Uruguay. The authors also document that the length of time of care increases with the intensity of the limitations.

Figure 4.18
Population aged 60 years and over by the type of household in which they reside in Latin American countries, 2018 or most recent year



Notes: The data for Argentina, Bolivia, Colombia, Mexico, Panama, and Peru are from 2018; for Brazil, Chile, Costa Rica, Ecuador, El Salvador, Honduras, and Uruguay, 2017; for the Dominican Republic, 2016; Paraguay, 2015; and Guatemala and Nicaragua, 2014.

Source: Authors based on CEDLAS data processing (2020).

The prevalence of adult care by members of the same household is closely related to the household structures. Figure 4.18 characterizes the households in which people aged 60 and over reside in Latin America, using national household surveys. On average, 5% of people 60 and over live alone, and 9% reside in multi-person households, made up exclusively of individuals of the same age group. The other 86% of adults live in households where they share a residence with people under 60. As a whole, the information shown in this section suggests that there is a relationship between the structure of households and the care needs of the elderly.

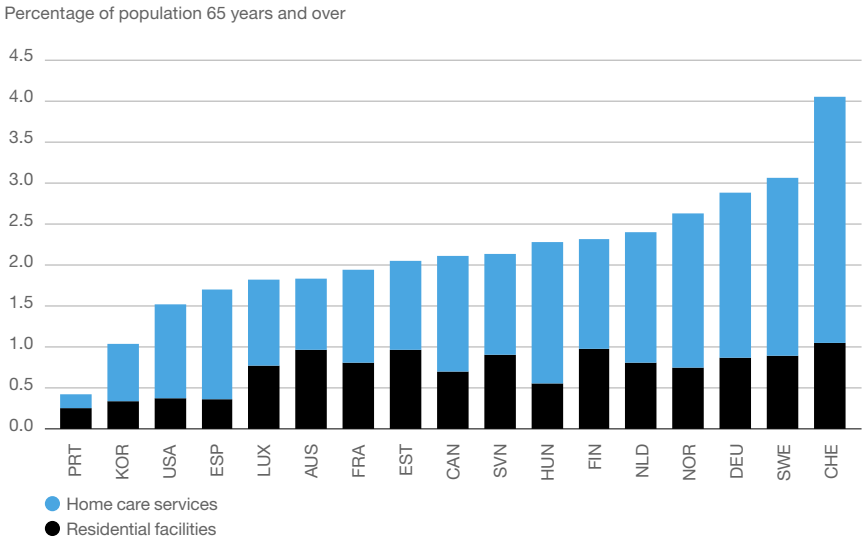
In short, the evidence presented here indicates that the family is the main source of care for older adults in the region. Due to the limited use of formal care services and the still incipient advance of the population aging process, spending on long-term care services is still low in Latin American countries– although this statement must be taken with a piece of salt given the absence of official statistics. In some countries, such as Argentina, there is some presence of paid unspecialized caregivers. Overall, this situation contrasts with what is happening in much of the developed world.

Rising spending on long-term care: the experience of developed countries

Spending on long-term care services in a country is the result of the number of people who use these services and the average spending per user. How widespread is the use of these services in OECD countries today? Figure 4.19 shows the percentage of the population aged 65 and over that receives formal long-term care services and, therefore, does not include informal care, whether paid or not. On average, 12% of older adults receive formal long-term care services (LTC), which is equivalent to 3.6% of the total population in these countries. About two-thirds receive services in an institution (non-hospital), while one-third receives services at home.

Figure 4.20 shows the average expenditure per user on formal long-term care services (as a percentage of GDP per capita) for 17 OECD countries for which data is available. Although there is heterogeneity between countries, it is striking that in eight of the reported cases, expenditure per user is at least 50% of GDP per capita, and in two of these cases (the Netherlands and Norway) it is 100% of GDP per capita. Behind these figures, there are differences in intensity of use, as well as in the quality and price of services. However, its magnitude illustrates the high level of potential per capita expenditure on formal LTC services.

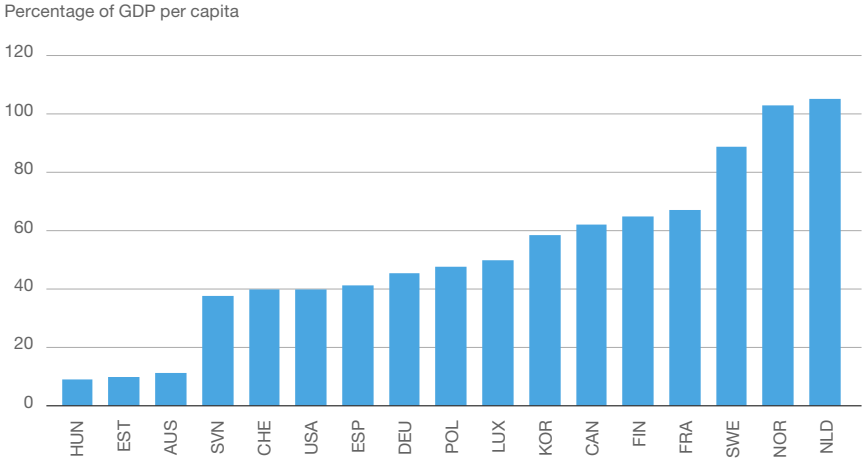
Figure 4.19
Population aged 65 years and over using formal long-term care services by type of service in OECD countries, 2016



Notes: Spending on long-term care includes all expenditures for medical benefits that relieve pain and administer health care services in cases of long-term dependency, as well as the provision of assistance in activities of daily living.

Source: Authors based on OECD data (2020c).

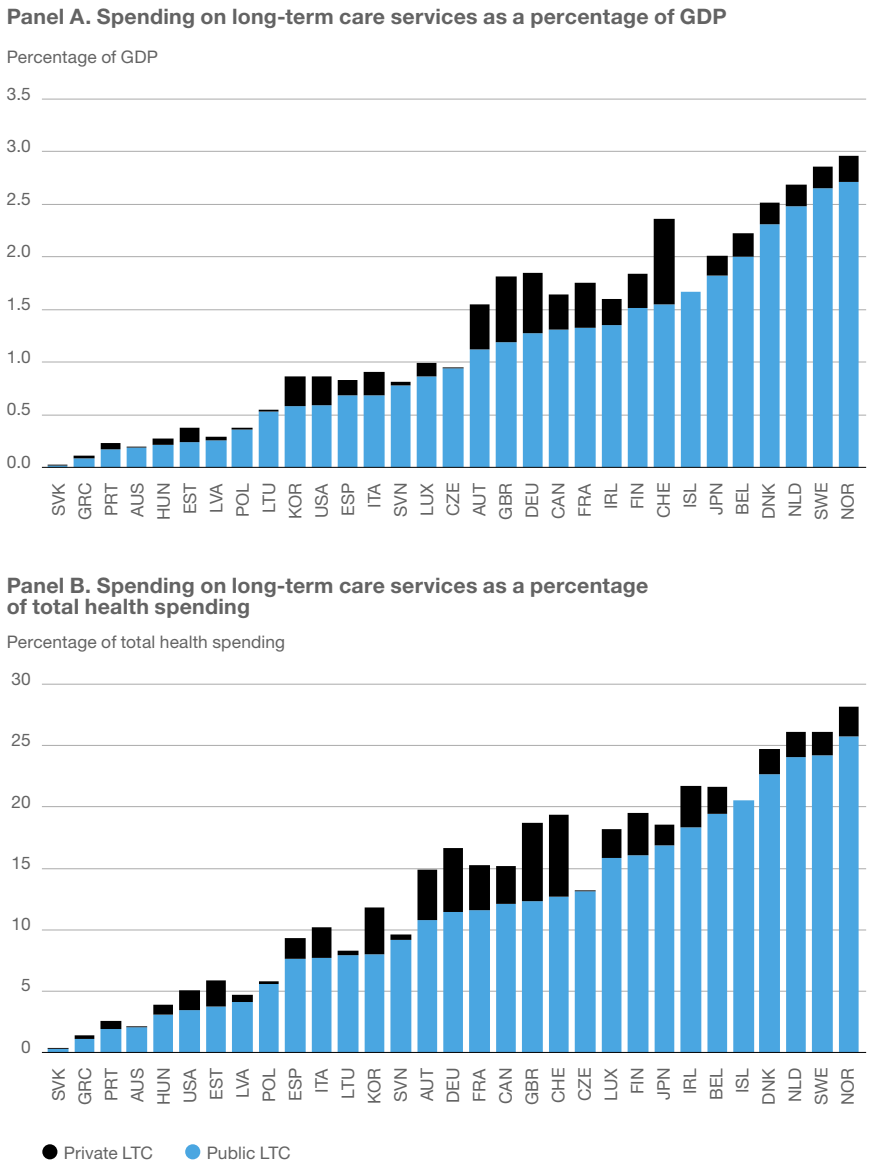
Figure 4.20
Average expenditure per user on formal long-term care services in OECD countries, 2016



Notes: Spending on long-term care includes all expenditures for medical benefits that relieve pain and administer health care services in cases of long-term dependency, as well as the provision of assistance in activities of daily living.

Source: Authors based on OECD data (2020c).

Figure 4.21
Public and private spending on long-term care services in OECD countries, 2016



Notes: Spending on long-term care includes all expenditures for medical benefits that relieve pain and administer health care services in cases of long-term dependency, as well as the provision of assistance in activities of daily living.

Source: Authors based on the OECD database (2020c).

As a consequence, it is not surprising that spending on formal LTC services has reached considerable levels in a significant number of developed countries. As

reported in panel A of Figure 4.21, spending in this area is higher than 1% of GDP in 16 of 31 OECD countries, representing 2% of GDP in seven cases. As the aging process continues, the OECD projects that average spending in these countries will triple by 2050 (Colombo, Llena-Nozal, Mercier, and Tjadens, 2011).

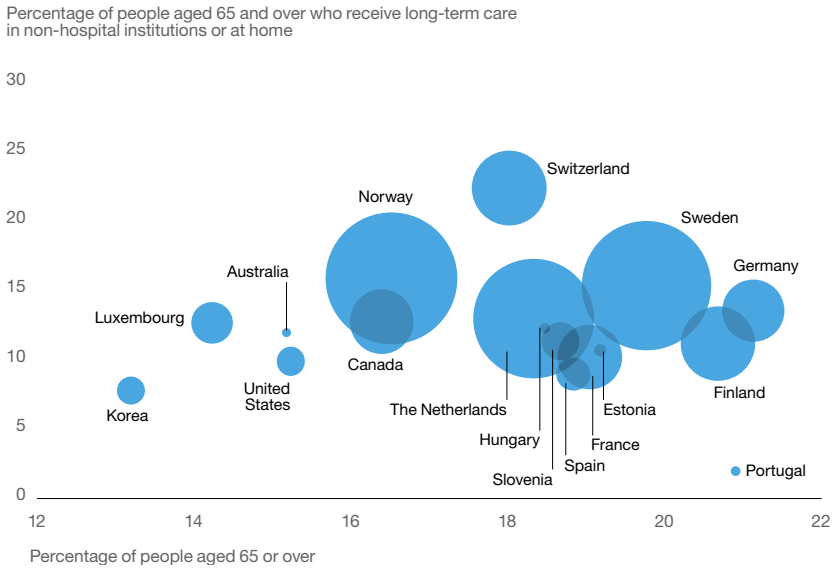
As can be seen in the same figure, the role of public spending in the market for long-term care services is preponderant. On average, public spending represents 87% of total spending on care services in OECD countries. In comparison, public spending contributes to 72% of total health spending in the same countries (see Figure 4.11, page 239). In other words, public spending accounts for more of long-term care services in the market than total health care services.

Another way to assess the significance of spending on long-term care services is by its contribution to total (public and private) health spending of which it is a part. As reported in panel B of Figure 4.21, in half of the OECD countries, spending on long-term care services is at least 15% of health spending, representing around a quarter in the case of Denmark, Sweden, the Netherlands, and Norway. It is also worth noting that the country ranking in panels A and B is similar, suggesting that spending on long-term care services could be a proxy for spending on health care services, particularly spending on critically ill patients (French *et al.*, 2019).

As stated at the beginning of this subsection, spending on LTC services is the product of the number of users of these services and the average expenditure per user. With aging, it is to be expected that both figures will increase, since dependency increases with age, at the extensive and intensive margin alike (more people need more care). But there is another way that this demographic shift can impact LTC spending and use. To the extent that a greater proportion of the population can be found in a situation of dependency, it is to be expected that the supply of services will develop and that governments will implement public policies to support demand. Figure 4.22 presents suggestive evidence of this phenomenon. This figure shows how spending on formal LTC services varies according to aging (horizontal axis) and the use of these services among older adults (vertical axis). As expected, a relationship can be observed between aging (horizontal axis) and LTC spending (represented in the bubbles). But perhaps the most striking pattern is that there is also a positive relationship between aging and the proportion of older adults who use formal LTC services. Although this evidence is only indicative, it is compatible with the hypothesis that aging may increase spending on LTC services, both due to the growth in the number of people who need these services, as well as the proportion who use them.[9]

9. On the contrary, as the market for LTC services develops, it is to be expected that the level of competition in this market will increase and prices will decrease, which could help alleviate the effect of aging on spending on these services. However, the evidence from developed countries does not seem to support this hypothesis so far. In recent decades, the prices of LTC services have followed an upward trend —although it is difficult to say with certainty because during the same period there have been important changes in the quality of these services— (Barczyk and Kredler, 2018).

Figure 4.22
Spending and use of formal long-term care services and aging in OECD countries, 2016



Notes: Spending on long-term care includes all expenditures for medical benefits that relieve pain and administer health care services in cases of long-term dependency, as well as the provision of assistance in activities of daily living.

Source: Authors based on OECD data (2020c).

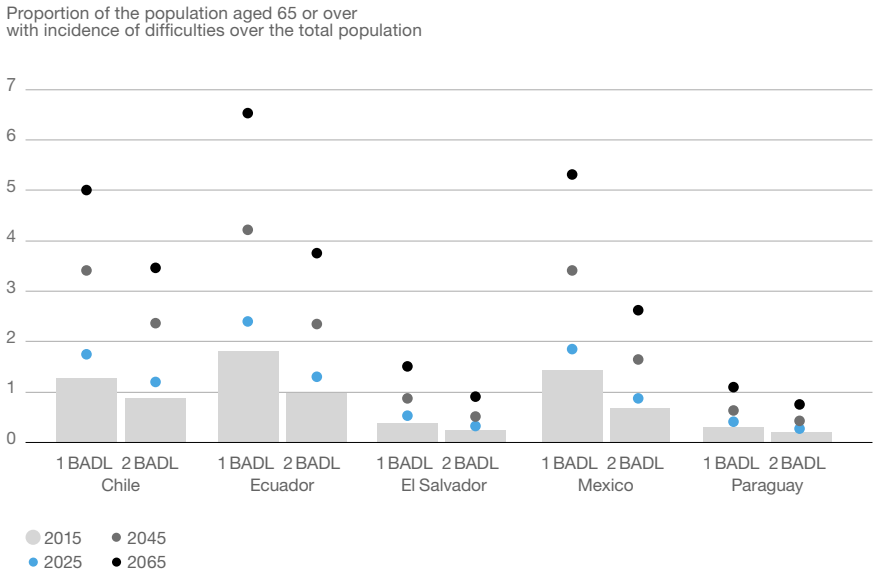
Finally, it is important to note that the prominent role of formal LTC services in many developed countries does not imply the absence of informal caregivers. For example, among adults over 50 who receive long-term care in the United States, 72% are cared for at home exclusively by informal providers and 10.5% by a combination of informal and formal caregivers (4.5% receive care at home provided exclusively by formal workers and 13% in residential facilities for older adults) (Barczyk and Kredler, 2018).

What will lead to an increase in the demand for long-term care in Latin America?

The demand for long-term care (understood as the proportion of the total population that requires this care) depends on the age structure of the population and the incidence of dependency by age. As documented in the previous sections of this chapter, the probability that a person finds themselves in a situation of dependency increases with age, and the proportion of older adults in this situation in Latin America is high, particularly among those over 70. Therefore, it is expected that there will be a significant increase in the demand for long-term care as the aging process of the population in the region advances.

Figure 4.23 presents the results of a simple projection exercise that has the purpose of illustrating the potential dimension of an increase in the demand for long-term care in the region's countries. For this exercise, the United Nations projected changes in the population structure and dependency profiles for BADLs by age were used, both of which were presented on the previous pages. The LTC projections show the expected evolution in the number of dependent people 65 and over as a proportion of the total population, given the current health profile by age and the expected change in the population structure. To provide information on the intensity of dependency, projections of the number of people in need of help to perform at least one or two BADLs are shown.

Figure 4.23
Dependent population aged 65 and older in five Latin American countries, 2015 and projections for 2025, 2045 and 2065



Source: Authors based on microdata from the Longitudinal Social Protection Survey in Chile (2015), El Salvador (2013), and Paraguay (2015); the Survey on Health, Well-Being, and Aging in Ecuador (2009); and the National Survey on Health and Aging in Mexico (2015).

The predictions indicate a large increase in the number of older adults in situation of dependency in the five countries analyzed. These increases are more accelerated in countries where a greater increase in the population of older adults is expected (for example, Chile) or where the incidence of dependency is relatively high starting at age 65 (for example, Ecuador and Mexico). These projections depend on whether or not there are changes in the health of future generations compared to current ones. On the one hand, improvements in nutrition, health care services, and quality of life suggest that when they reach advanced ages, the next generations

could enjoy better health than the current ones, which would render the projections shown here pessimistic. On the other hand, if there is no change in recent increases in chronic disease risk factors, like obesity, or if medical advances increase unhealthy life years, future generations could reach old age in poorer health, making the scenario projected here an underestimate of what will happen in reality. While it is difficult to know which of these scenarios will occur in the future, the strength of demographic change is such that the prudent strategy is to prepare for a significant increase in the demand for long-term care.

The increase in the population requiring long-term care may occur in conjunction with sociodemographic trends that may limit the ability of families to provide care for older adults.

Given these changes, is it feasible to expect that the family will remain the main source of long-term care in the region? Looking ahead, three trends put pressure on families' ability to act as caregivers for older adults. The first, of course, is the aging process of the population itself, which not only implies an increase in the demand for care, but also a reduction in the number of potential caregivers, with a decrease in the average size of families and households. This demographic change is compounded by the increase in the level of education and job opportunities for women, who play a disproportionate role in caregiving tasks (Marchioni, Gasparini, and Edo, 2019). In summary, the increase in the proportion of the population requiring long-term care may occur in conjunction with trends that may limit the main care alternative used in the region.

The provision of care by family members, who frequently reside in the same home, reduces spending on external care services. This care is not without costs, however. These include, notably, the time that families, and in particular women, spend on caregiving activities and a specific household structure. Furthermore, although the majority of dependent people do not require specialized care, there are those who do need the support of qualified personnel due to the intensity of their difficulties. More broadly, it is essential to understand whether the lack of development of long-term formal services is due to potential market or government failures, or both.

Overview of health systems in Latin America

As in most developed countries, in Latin America the role of the government in health insurance and service provision systems is preponderant, either as regulator or direct provider. As discussed in Chapter 1, the market imperfections in the health insurance sector generated by information asymmetries, as well as the access to health as a right that must be guaranteed and equity are the underlying reasons that justify the important government intrvention.[10] As a result of this active role, almost all Latin American citizens have some form of insurance against health risks and

10. All countries in the region have explicit dispositions recognizing the right to health in their constitutions and other legal instruments.

access to a basic floor of services. However, this insurance is far from being homogeneous, not only between countries but also between people within each one of them.

Most of the Latin American countries have built health systems in which two or more subsystems coexist. These subsystems provide coverage to different segments of the population, following the lines marked by access to formal employment, on the one hand, and the level of household income, on the other. Although some countries have advanced toward horizontal integration between these subsystems, significant fragmentation still prevails in most cases, with ample differences in the quantity and quality of goods and services covered, and in the level of financial protection against health events they offer.

In Latin America, health systems are characterized by the coexistence of two or more subsystems that provide differentiated coverage to different segments of the population.

The subsystems present in the countries of the region can be categorized into three main groups: contributory systems (or social security), non-contributory systems (or public health or social protection), and voluntary private insurance.

The first pillar of coverage is the contributory social security systems, which follow a compulsory or Bismarckian insurance model for a specific group of the population: workers in the formal sector of the economy. These systems are generally financed through labor taxes (contributions made by employees and employers) and government contributions. In most countries, the coverage of these systems is extended to direct family members of contributors and to those who are retired under a contributory pension system.

Depending on the country, insurance administration is delegated to private insurers, not-for-profit organizations, or the state's own social security institutes; therefore, the degree of competition in this market is very heterogeneous among countries (see Table 4.2 for the characteristics of a group of selected countries in the region).[11] In some countries, such as Chile, Peru, and Uruguay, the administration of insurance is shared by the public sector and private insurance companies. Social security beneficiaries, typically those with higher salaries, access voluntarily to the later.

11. To get an idea of this heterogeneity, in Argentina, there are more than 300 health insurance organizations operated by trade unions known as *obras sociales*, funded through compulsory worker and employer contributions. In Chile, within the contributory subsystem, those who voluntarily opt for private coverage can choose between six open health insurance companies called ISAPRES. In Colombia, there are 32 authorized public and private health insurers (EPS), which do not compete in price (premium), but in quality to attract affiliates, since the state makes a capitation payment (per affiliate) adjusted by risk (age, gender, and location) (Bardey, 2013; Riascos, Romero and Serna, 2017). In Uruguay, there are 38 private collective medical care institutions (IAMC, also called mutualistas), which receive a capitation payment (per member) adjusted for risk (age and gender). The mobility of members between IAMCs is regulated.

Table 4.2
Health coverage under contributory social security systems in Latin American countries

	Compulsory insurance for:			Optional for:	Insurance administration	Provision of medical services	Minimum guaranteed service basket
	Salaried workers	Retirees	Others				
Argentina	✓	✓	Single tax system taxpayer (*Monotributistas*)		Non-profit organizations and social security institutes for specific groups	Mixed (public, private for-profit, and non-profit), not integrated with insurers for the most part	Mandatory Medical Program (*Plan médico obligatorio*, PMO)
Bolivia	✓	✓			Eight health funds and two comprehensive insurance plans with special regimes	Private. Providers generally not integrated with insurance companies.	
Chile	✓	✓		Self-employed workers	Public (*Fondo Nacional de Salud,* FONASA, groups B, C, D)	Public (institutional modality) and private (free choice modality)	
					Private insurers (ISAPRES), voluntary health insurance	Private. Providers generally not integrated with insurance companies.	Explicit Health Guarantees (*Garantías Explícitas en Salud*, GES) System
Colombia	✓	✓	Self-employed with the ability to pay		Private insurers (ESP)	Private. Providers generally not integrated with insurance companies.	Mandatory Health Plan (*Plan Obligatorio de Salud*, POS)
Ecuador	✓	✓		Self-employed workers	Public (Institute of Social Security and special regimes)	Private	
Mexico	✓	✓		Self-employed workers	Public (Institute of Social Security and special regimes)	Mixed (public and private, for-profit and non-profit)	
Panama	✓	✓		Self-employed workers	Public (Social Security Fund)	Public	
Paraguay	✓	✓			Public (Institute of Social Security and special regimes)	Mixed (public and private)	
Peru	✓	✓			Public (Social Health Insurance, EsSalud)	Public	Essential Health Insurance Plan (PEAS)
					Private insurers (EPS), of voluntary choice	Private. Providers generally not integrated with insurance companies.	
Uruguay	✓	✓		Self-employed workers	Public (Administration of State Health Services [*Administración de Servicios de Salud del Estado* ASSE])	Public and private	
					Private, Non-profit organizations (Collective Medical Care Institutions [*Instituciones de Asistencia Médica Colectiva* IAMC])	Private. Integrated with insurer.	Comprehensive Health Care Plan (*Plan Explícito de Salud*, PIAS)

Source: Authors based on Crosta *et al*. (2019), official web pages of the ministries of health and social security institutes in each country, Lorenzoni *et al.* (2019) and Giedion, Bitrán, and Tristao (2014).

The provision of medical services in the contributory systems is carried out by public and private providers, which are generally not vertically integrated with the entities that administer the insurance. In other words, in most cases, there is a separation between insurance and the provision of health care services. An exception is the case of Uruguay. When the government is not involved in the administration of insurance or provision, it plays the role of regulator of the insurance administration entities or service providers.

The package of essential benefits that the insured population are entitled to is explicitly defined in some of these countries. Explicit health plans are seen as an instrument that allows citizens to demand the fulfillment of their rights of access to these services even though their mere existence does not guarantee effective access to these services. Equally important, explicit benefit plans also help to direct spending toward the most effective interventions with the greatest impact on health, which is especially relevant in the context of upward pressure on the demand for medical services due to aging, changing epidemiological profiles, and continuing technological progress. Likewise, they are a useful tool when the administration of the insurance is transferred to third parties, as is the case of Argentina, Chile, Colombia, Peru, and Uruguay (Giedion, Bitrán, and Tristao, 2014). However, the socioeconomic conditions of each country affect the scope of the basket of services that each country can offer and the level of co-responsibility for payment required of beneficiaries. The more limited the resources, the more common the implicit rationing mechanisms present in all health systems (waiting lists, denial of services at the point of care, and difficulties in receiving authorization for certain treatments) and the greater the difficulties in complying with explicit benefits are.

The second pillar of coverage in the countries of the region is made up of the non-contributory public health or social protection systems (see Table 4.3). In most countries, these systems resemble the universal public insurance or Beveridge models, since access to them is free or highly subsidized, with a public network of hospitals and primary care centers providing services. In some countries, such as Colombia, the beneficiaries of these subsystems may also turn to certain private service providers. Funding for these subsystems usually originates in public resources from general income, supplemented by copayments charged users, where these copayments exist. While access to public health care services may be universal, those who make use of these subsystems are mainly those who are not covered by the contributory social security systems and do not have sufficient financial resources to access the private sector. This population group is made up mostly of informal workers, unemployed individuals, and low-income people. Brazil has a Unified Health System (SUS) financed with general taxes (similar to those of countries such as Canada, Spain, the United Kingdom, and Sweden),[12] making it an exceptional case in the region.

As Table 4.3 shows, many countries have implemented programs designed to guarantee access to explicit benefit packages to strengthen the quality of health coverage for those who do not have protection through the contributory system; these explicit benefits are close to or on a par with those obtained by beneficiaries of contributory systems. These programs are a fundamental tool to guarantee universal health coverage and, in some cases, to generate greater horizontal integration between the various subsystems.

12. Brazil's SUS provides services free of charge, decentralized through its network of clinics and hospitals (mainly for primary care) and contracts with private for-profit and not-for-profit facilities (for secondary and tertiary care). Within the SUS there is a subsystem with restricted access to public officials (civil and military) (Crosta *et al*., 2019).

Table 4.3

Health care coverage under non-contributory systems in selected Latin American countries

Country	Beneficiaries	Coverage/ insurance administration	Provision of medical services	Public health insurance programs		Minimum guaranteed service basket
				Name	Beneficiaries	
Argentina	Universal access	Public	Mixed (public and private)	SUMAR Program	Uninsured pregnant women, children, and adults under 65	Maternal and child services at the first level of care with gradual expansion to other services
				Federal program *Incluir Salud* (PROFE)	Non-contributory pension recipients	
Bolivia	Universal (with an emphasis on the most vulnerable)	Public	Public	Universal Maternal and Infant Insurance (SUMI)	Children under 5 and females aged 5–60	
				Program for the Extension of Coverage to Rural Areas (EXTENSA)	Rural areas	
				Health Insurance for Older Adults	Uninsured adults over 60	
				Unified Health System (SUS)*	The entire population without contributory coverage	
Chile	Vulnerable groups	Public (FONASA)	Public	Fonasa (Group A)	The entire population without contributory coverage	Explicit Health Guarantees (GES) System
Colombia	People without the ability to pay	Public and private (EPS)	Mixed (public and private)	Subsidized plan	The entire population without contributory coverage	Mandatory Health Plan (POS)
Ecuador	Universal (with an emphasis on the most vulnerable)	Public	Public	Universal Health Insurance Program (AUS)		
Mexico	Population not covered by social security	Public	Public	Seguro Popular	The entire population without contributory coverage	Universal List of Essential Health Services (CAUSES) and List of High-Cost Interventions (CIAC)
Panama	Universal (with an emphasis on the most vulnerable)	Public	Public			
Paraguay	Universal (with an emphasis on the most vulnerable)	Public	Public			
Peru	Vulnerable groups	Public	Public	Comprehensive Health Insurance	The entire population without contributory coverage	
Uruguay	Vulnerable uninsured population	Public (Administration of State Health Services [ASSE])	Public	National health insurance	The entire population without contributory coverage	Comprehensive Health Care Plan (PIAS)

Notes: *Bolivia's Unified Health System (universal and free) was approved in February 2019 and is in the process of implementation. Law 1152 establishes that the Ministry of Health may, on an exceptional basis and until there is a sufficient public supply, purchase health products in the private sector during this phase.

Source: Authors based on Crosta *et al*. (2019), official web pages of the ministries of health in each country, Lorenzoni *et al.* (2019) and Giedion, Bitrán, and Tristao (2014).

One of the cases in the region with the greatest horizontal integration and most generous coverage is Uruguay, where everyone has access to the same health benefits plan whether they have a formal employment relationship or not. Moreover, this benefit plan is financed through a unique resource fund. This level of integration blurs the distinction between contributory and non-contributory coverage in this country. In Chile and Colombia, the guaranteed minimum basket of services is also the same for those who obtain health coverage through the non-contributory route as that obtained through the contributory system. On the other hand, in Mexico, while the social security institutions do not have specific health benefit plans for their affiliates, Seguro Popular does have a detailed list of services covered. Unlike the other countries, the public subsector in Argentina does not have an explicit list of prioritized health care services, except for those that obtain coverage through the SUMAR Program (originally called *Plan Nacer*).[13]

Beyond efforts to equalize coverage between subsystems, the difference in resources available to each one affects the coverage they can guarantee in practice. In turn, the network of medical service providers accessible under each subsystem is not the same and there may be differences in quality. This is the case of Peru, for example. Although the Essential Health Insurance Plan (PEAS) was designed to cover the entire population, in practice, coverage for non-contributory individuals is not guaranteed due to the limited financing, which has led to implicit rationing (Giedion *et al.*, 2014). Different metrics are analyzed below that attempt to approximate the generosity of both subsystems in the countries of the region.

Efforts to strengthen health systems have had beneficial impacts.

Apart from the prevailing differences between subsystems, the efforts made in the countries of the region to strengthen health systems have had beneficial impacts. Box 4.4 outlines some of the most emblematic reforms for which there is rigorous evidence, quantifying their impact on various dimensions that contribute to achieving universal health coverage.

Finally, the third pillar of coverage in the countries of the region is voluntary private insurance. This subsystem is aimed at high-income people who either do not have social security coverage or opt for this coverage because they consider it to be of higher quality. This segment represents a minority market share except for Brazil.

13. The Argentine government created *Plan Nacer* to improve maternal and child health by increasing access to health care for pregnant women and children under six. Later, it was expanded, under the name of *Plan Sumar*, covering adolescents and young people.

Box 4.4
Evidence of the impact of health system reforms in Latin America

Various studies have quantified, through rigorous evaluation methodologies, the effect of recent reforms on the region's health systems aimed at increasing social health insurance coverage and enhancing financial protection. Overall, the expansion of health insurance significantly reduced infant mortality levels, improved newborn health indicators, increased access to services, especially among maternal-infant populations, shifted demand toward more efficient medical services, and cut out-of-pocket costs. As an unwanted collateral effect, the programs including benefits tied to the condition that no coverage is received via contributory systems tend to moderately discourage job search in the formal sector of the economy.

A drop of up to 10% of infant mortality in the poorest Mexican municipalities is attributed to the 2002 launch of the Seguro Popular program, helping to close 84% of the gap in infant mortality rates between the country's poor and rich municipalities. (Conti and Ginja, 2017). Another impact was the reduction by 4.5 percentage points in the probability that households incurred catastrophic health expenditures (Grogger, Arnold, León, and Ome, 2015). On the other hand, the introduction of the program reduced formal employment by 2 percentage points among low-educated families with children (Conti, Ginja, and Narita, 2018).

Colombia's contributory regime reduced the incidence of low birth weight by 14% (Camacho and Conover, 2013) and the variability of out-of-pocket expenses associated with hospital expenses. It also generated large increases in the use of previously underutilized preventive medical services (which doubled in some cases) and improvements in the population's health (Miller, Pinto and Vera-Hernández, 2013). At the same time, it induced an increase in labor informality of 4 percentage points (Camacho, Canover, and Hoyos, 2014).

In the case of Peru, the Comprehensive Health Insurance increased the probability that its beneficiaries would receive medical treatment, especially curative care, and that they would have access to medicines, increasing out-of-pocket expenditures as a result of greater access (Bernal, Carpio and Klein, 2017).

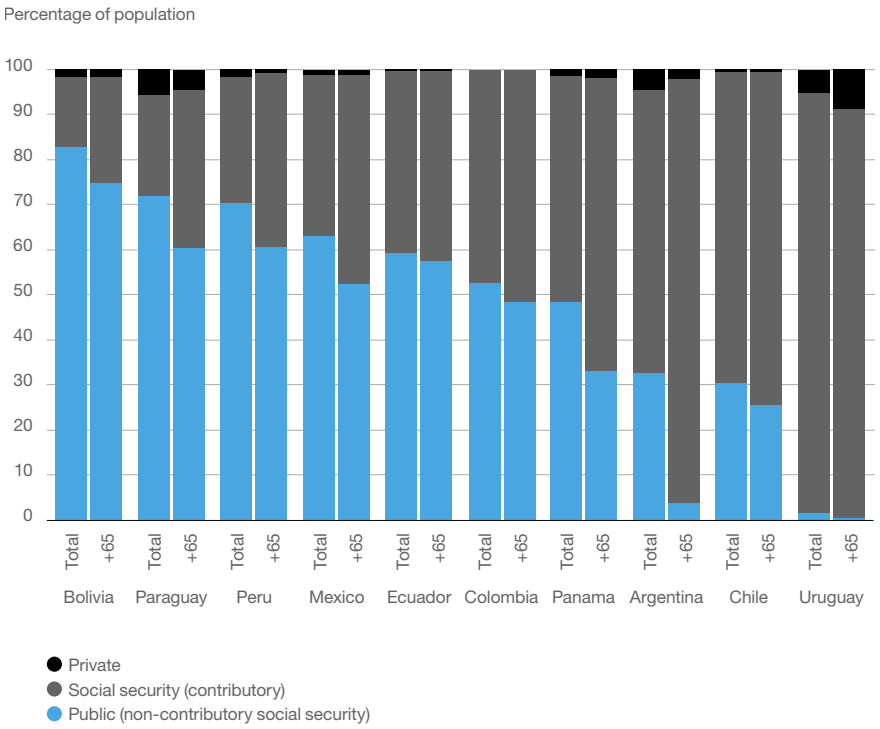
In Uruguay, the extension of social health insurance to the population previously covered by the public system implied an increase in the possibilities for beneficiaries to choose health service providers in a wider network. The measure had a negligible effect on newborn health and the quality of perinatal services (Balsa and Triunfo, 2018). Although evidence in other countries has shown that increasing the possibilities of choice for beneficiaries can lead to quality improvements in markets with regulated prices, this does not seem to be the case in Uruguay.

Finally, in Brazil, the expansion of the Family Health Program, within the Unified Health System, substantially reduced infant and maternal mortality and generated a significant increase in the use of primary health care and hospital services (Bhalotra, Rocha, and Soares, 2019).

Figure 4.24 shows how the population is distributed across ten countries of the region according to the three types of coverage described. The information comes from the analysis of national household surveys. Despite its limitations for accurately identifying the type of health coverage (especially for people

who are not formal workers), this type of survey is the best available source to analyze homogeneous information for a wide group of countries. Coverage data are presented for the total population and the age group of 65 and over. The average coverage under the compulsory contributory system (social security) in this group of countries is 46%. Argentina, Chile, and Uruguay are the countries with the highest coverage with this subsystem, mainly due to their lower rates of labor informality, as seen in Chapter 2. Non-contributory coverage plays a more important role in countries such as Bolivia, Mexico, Paraguay, and Peru, where there is a higher prevalence of informal employment. In all these countries, the role of private insurance is minimal.

Figure 4.24
Health coverage by type of insurance in Latin American countries, 2015



Source: Authors based on data from Crosta (2019).

As far as differences by age in the type of coverage are concerned, in most of the countries contributory subsystems provide greater coverage to older adults than to the overall population. Wide gaps on the opposite end could be expected in countries where a significant segment of the employed population experiences frequent transitions between the formal and informal labor market, so that they may not make contributions for the required number of years to maintain social security subsystem coverage once they retire (documented

in Chapters 2 and 3) However, certain policies could offset these effects. In Argentina, for example, the implementation of policies for access to a pension for people who in principle could not receive it due to lack of contributions allowed a large proportion of older adults to also benefit from the contributory health system. As documented in Chapter 1, the higher rate of social security coverage in adults may also be associated with the socioeconomic gradient that exists in terms of life expectancy because people with a higher income level (like those who are covered by the contributory system) are more likely to live longer lives.

Generosity of coverage and financial protection

Most Latin Americans have some type of health coverage, as seen in Figure 4.24. However, many countries are still far from achieving true universal health coverage, understood as the possibility of effective, timely, and financially affordable access to health care services when they are required.

Per capita spending is, in most countries, substantially higher in the contributory system than in the non-contributory one.

As already mentioned, the response strategy of most countries in the region to provide universal health coverage has focused on strengthening the non-contributory or social protection subsystem. Despite progress, differences persist in the access to coverage, availability, and quality of the services provided by these subsystems, as well as in the financial protection they offer. One way to estimate these gaps is to compare per capita spending between these subsystems. Table 4.4 presents information in this regard using the information on total health spending by type of subsystem and estimating the beneficiaries of each of them based on the coverage inferred from household surveys (reported in Figure 4.24). In eight of the nine countries for which information is available, per capita spending in the contributory system is higher than in the non-contributory system, with the exception of Argentina.[14] The magnitude of the spending gap in most countries is indicative of the more generous coverage offered by contributory systems. The spending gap varies considerably between countries. While in Chile, Colombia, and Bolivia per capita spending in the non-contributory system is equivalent to between 10% and 27% of the contributory system, in Panama and Ecuador, it is 83% and 87%, respectively.

14. The calculation of the number of people who access health care services through the non-contributory system is complex in those countries where there is public health system provision with universal access, as is the case of Argentina, where in practice there is overlap or double coverage. Given that the number of beneficiaries used to compute per capita expenditures in Table 4.4 is based on the people without any type of health insurance (neither contributory social security, nor private) according to their household survey responses, the number of effective users of the non-contributory subsystem and, therefore, the expenditure per effective user in that subsystem could be underestimated.

Table 4.4
Health expenditure per beneficiary of the health subsystems, 2015

Country	Health expenditure per beneficiary (constant 2011 USD to PPP)			
	Contributory (social security)	Non-contributory (social protection)	Gap	Ratio (non-contributory / contributory)
Argentina*	1761	2740	-979	156 %
Bolivia	795	211	584	27 %
Chile	1316	163	1153	12 %
Colombia	1053	106	947	10 %
Ecuador	536	465	71	87 %
Mexico	747	457	290	61 %
Panama	1127	936	191	83 %
Paraguay	635	349	286	55 %
Peru	737	328	409	45 %

Notes: *The number of beneficiaries of the non-contributory health system used to calculate per capita expenditures is obtained from the number of people who reported that they did not have any type of health insurance (neither contributory social security, nor private) in the household surveys. In Argentina, the number of effective users of the non-contributory subsystem could be underestimated because of the unrestricted access to the network of public health providers, and, therefore, per capita expenditure would be overestimated.
Social security spending includes all resources from health systems financed with mandatory contributions and encompasses governmental and mandatory health insurance systems. Spending in the non-contributory system includes all resources from health systems financed with non-compulsory contribution systems.

Source: Authors based on WHO data (2019b) and Crosta (2019).

Financial protection

Out-of-pocket health spending is the sum of payments made by households upon receiving health care services. Its study allows a first approximation to the level of global financial protection offered by a health system. Among households that have health insurance, the generosity of coverage determines which ailments and services are covered and which are not and, among the former, how much the insured must pay and how much corresponds to the insurer, given the existence of copays and deductibles. Users of non-contributory public health care services may also have to make copayments for the benefits received when using these services. Moreover, the beneficiaries of a health subsystem may face availability or quality restrictions in the services to which they theoretically have access, requiring the use and payment of alternative providers.

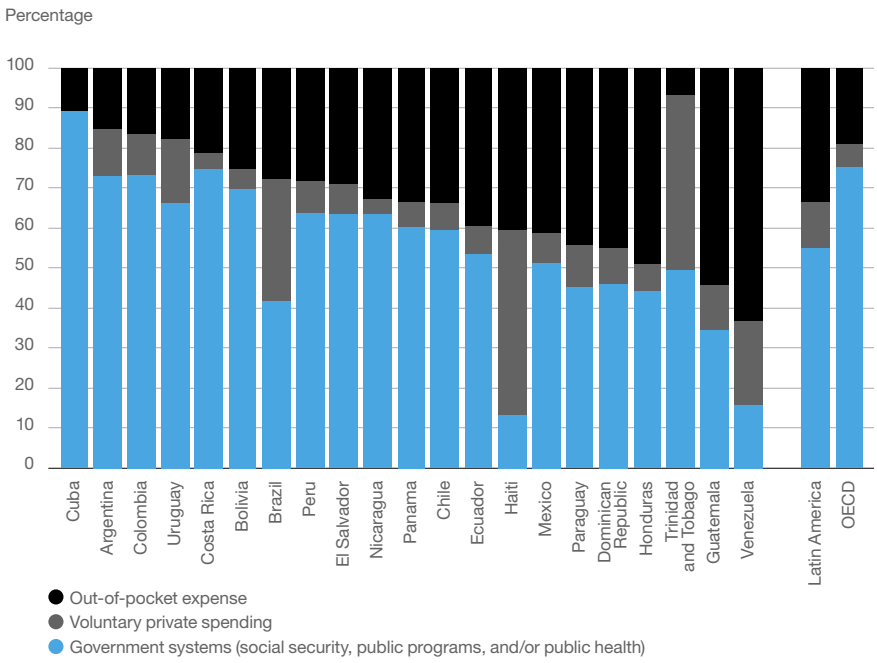
Out-of-pocket spending can boost a system's financial sustainability because of the monetary contribution represented by copayments and, above all, because it can contribute to reducing the excessive use of health care services. However, for many households, particularly the poorest, a high level

of out-of-pocket health expenditures can result in the type of adverse financial event that health insurers seek to avoid.

In Latin American countries, out-of-pocket spending represents a higher proportion of total health spending than the average prevalent in OECD countries.

Figure 4.25 shows total health spending according to its source of funding for 20 Latin American countries. As can be seen, there is great heterogeneity in the importance of out-of-pocket spending. While out-of-pocket expenditures account for less than 20% of total health spending in Argentina, Cuba, and Uruguay, they represent 40% or more in Ecuador, El Salvador, Guatemala, Haiti, Mexico, and the Dominican Republic. In comparative terms, out-of-pocket spending in most of the region's countries is higher than the prevailing average in OECD countries. According to this indicator, countries with higher social security coverage appear to be, on average, more generous in terms of financial protection, although there are exceptions: in Chile, for example, which is one of the countries with the highest social security coverage in the region, out-of-pocket spending is higher than the Latin American average; on the other hand, in Colombia, a country with an intermediate level of social security coverage, the share of out-of-pocket spending is closer to the cases of Uruguay and Argentina.

Figure 4.25
Total health spending by funding source, 2016

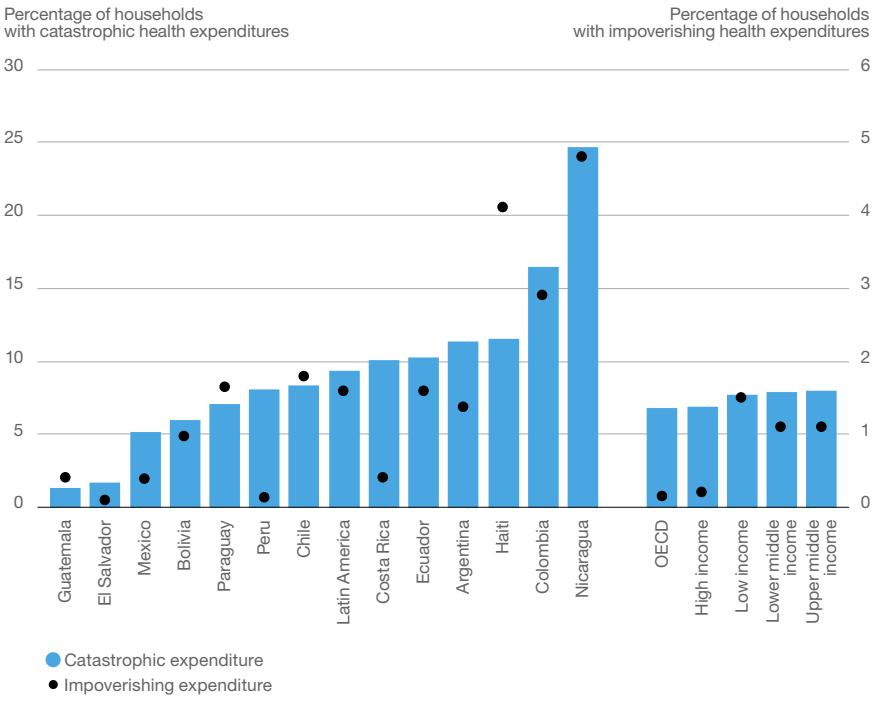


Notes: The funding of health spending through governmental frameworks includes the social security subsystem, the funding of which is based on compulsory individual contributions, in addition to public programs and the public health subsystem, which are financed with state contributions. Voluntary private spending includes all payments from private agents (households, companies, and non-profit organizations) to health service providers in the form of prepaid contributions. Out-of-pocket expenses include all direct payments made by individuals to health care providers at the time of using the service.

Source: Authors based on WHO data (2019b).

Another way to study the financial protection enjoyed by the population in the face of an adverse health event is to directly identify the proportion of households that incur out-of-pocket health expenses of such magnitude that they are deemed catastrophic or impoverishing. Figure 4.26 presents information in this regard based on expenditure surveys in the countries of the region. Catastrophic health expenditure is defined as out-of-pocket spending for health care that exceeds 10% of a household's income, whereas impoverishing health expenditure is defined as spending on health care that results in a household's per capita income, deducting health expenditure, falling below the poverty baseline (in this case, USD 3.20 per day, adjusted for purchasing power parity or PPP) (Wagstaff, Eozenou, Neelsen and Smitz, 2018).[15]

Figure 4.26
Financial protection of households with catastrophic and impoverishing health spending in Latin American countries, most recent year available



Notes: The date of the data for each country is as follows: Peru, 2018; Bolivia, 2017; Chile and Mexico, 2016; El Salvador, Guatemala, Nicaragua and Paraguay, 2014; Ecuador and Haiti, 2013; Argentina and Costa Rica, 2012; and Colombia, 2011.

Source: Authors based on Argentina's 2012/2013 National Household Expenditure Survey; Bolivia's 2017 Household Survey; Chile's 2016 Family Budget Survey; Colombia's National Quality of Life Survey 2011; Mexico's 2016 National Survey of Household Income and Expenditure; and Peru's 2018 National Household Survey. and the World Bank database on health equity and financial protection indicators (2019a) for the rest of the countries.

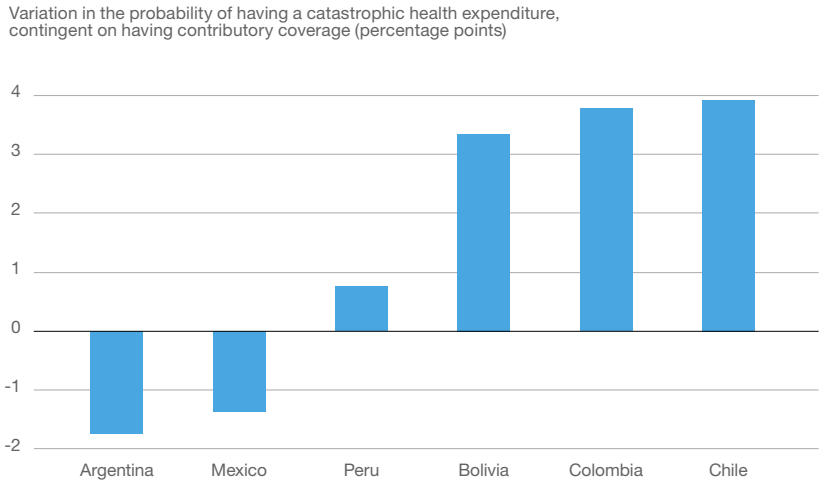
15. For the calculation of impoverishing spending, only households whose income is above the poverty line are considered before discounting health expenses. This measure is, therefore, sensitive to the choice of the poverty baseline and the degree of dispersion of household income in each country.

On average, the proportion of households exposed to catastrophic and impoverishing health expenditures in Latin America is higher than the proportion in OECD countries and even higher than the average for lower-middle and upper-middle-income countries in other regions of the world. This suggests that households in the region are particularly exposed to health-related financial risks. Behind this average, there is tremendous variation in the prevalence of catastrophic and impoverishing health spending within Latin America. Using these metrics, and at the aggregate level by country, it is less clear that those with greater social security coverage are those that on average offer greater financial protection.

Given the vast heterogeneity in the organization of health systems in the region, which makes a comparison between countries difficult, an analysis of the gap in the financial protection offered by the contributory and non-contributory systems within each country is also relevant. To this end, an analysis of national household income and expenditure surveys was carried out in six countries in the region that have updated information. This examines how social security coverage—or the lack thereof—in households with similar sociodemographic characteristics is related to the incidence of catastrophic health expenditures (more than 10% of family income). Figure 4.27 shows that the contributory system has mixed effects on the likelihood of catastrophic health spending: contributory coverage is associated with increased protection in some countries (reflected as a negative sign of the gap), but less protection in others (reflected as a positive sign of the gap).

In Argentina and Mexico, the incidence of catastrophic health expenditures is lower in households where the head of household has contributory social security coverage than in households of similar characteristics, but with non-contributory coverage, which manifests as a negative gap. Conversely, in Bolivia, Colombia, Chile, and, to a lesser extent, Peru, households where the head of household has contributory social security coverage are more exposed to financial risks than those with non-contributory coverage. In part, the explanation for the positive gaps in these countries is that people with non-contributory coverage suffer from access problems: they may not use certain health care services even if they need them because of the expected high costs. This behavior would make it appear that the non-contributory system offers greater financial coverage, but it would be because part of the beneficiary population forgoes the use of the services. Information collected by the 2019 edition of ECAF, shown below, provides evidence consistent with potential problems of effective access to certain services suffered by beneficiaries of non-contributory systems in almost every country, which are particularly important in Colombia and Chile (Figure 4.27).

Figure 4.27
Impact of catastrophic health spending and contributory social security coverage in Latin American countries



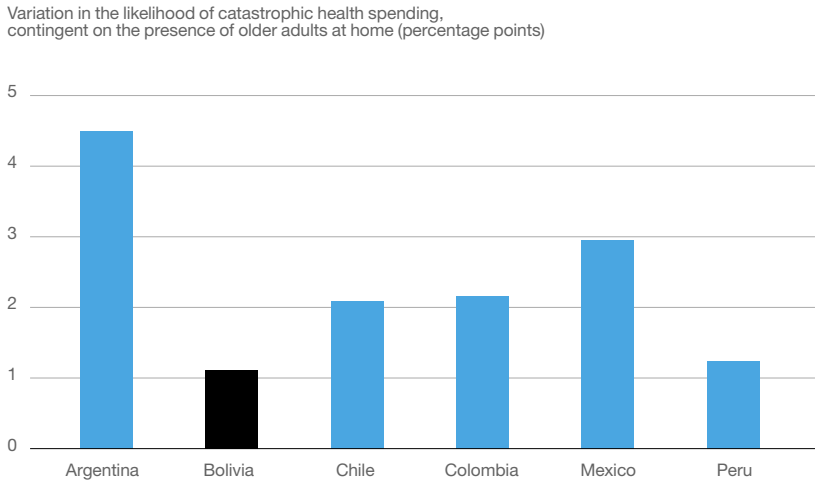
Notes: Each bar represents the regression coefficient estimated by ordinary least squares of the contributory social security coverage variable for the household head. The dependent variable is a binary variable that indicates whether the household suffered catastrophic health expenditures. Catastrophic health expenditure is defined as that greater than 10% of household income. Regressions include the following control variables: number of household members, presence of children under 14 years of age, presence of adults over 65, level of education of the household head, occupational category of the household head, and subnational jurisdiction of residence (the latter is not included for the case of Mexico). All reported coefficients are statistically significant with a 90% confidence interval. The construction of the social security health coverage variable is based on the sources specified in Table A 4.1 of the Appendix to this chapter.

Source: Authors based on Argentina's 2012/2013 National Household Expenditure Survey; Bolivia's 2017 Household Survey; Chile's 2016 Family Budget Survey; Colombia's National Quality of Life Survey 2011; Mexico's 2016 National Survey of Household Income and Expenditure; and Peru's 2018 National Household Survey.

A central concern of this report is the possibility that households with older adults may be more exposed to catastrophic and impoverishing health expenditures, either because they have lower incomes (e.g., insufficient pensions), because they face higher expenses (given that health spending increases with age) or because they have less generous health coverage. Figure 4.28 shows gaps in the incidence of catastrophic health expenditures in households where an older adult lives (65 and older) compared to households without anyone that age. In five of the six countries studied, the incidence of catastrophic health expenditures is higher in households with older adults than in households with similar characteristics without older adults. This evidence indicates that older adults have less financial protection to deal with adverse health events.

The incidence of catastrophic health expenditures is higher in households with older adults than in households with similar characteristics without older adults.

Figure 4.28
Impact of catastrophic health spending and the presence of older adults at home in Latin American countries

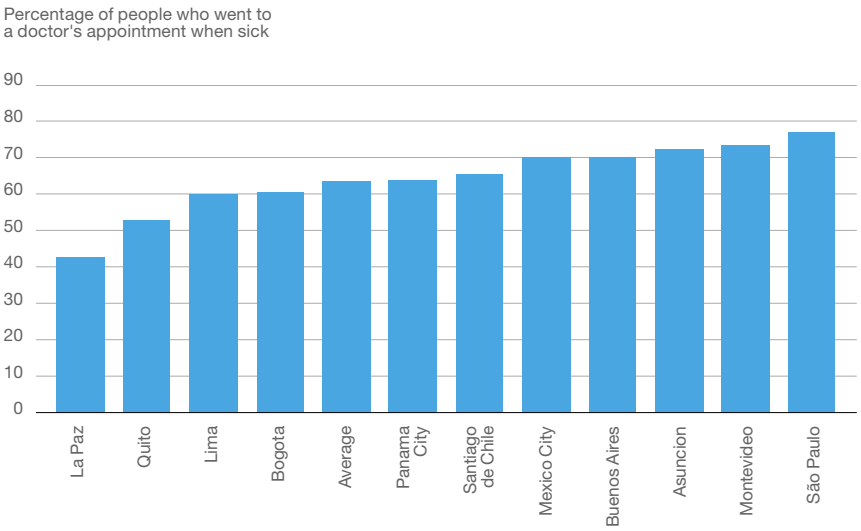


Notes: Each bar represents the regression coefficient estimated by ordinary least squares of the variable of the presence of an older adult 65 or older. The dependent variable is a binary variable that indicates whether the household suffered catastrophic health expenditures. Catastrophic health expenditure is defined as that greater than 10% of household income. Regressions include the following control variables: number of household members, presence of children under 14 years of age, level of education of the household head, occupational category of the household head, social security coverage held by the household head, and subnational jurisdiction of residence (the latter is not included for the case of Mexico). Blue bars represent statistically significant coefficients with a 90% confidence interval. Black bars represent coefficients that are not statistically significant. The construction of the social security health coverage variable is based on the sources specified in Table A 4.1 of the Appendix to this chapter.

Source: Authors based on Argentina's 2012/2013 National Household Expenditure Survey; Bolivia's 2017 Household Survey; Chile's 2016 Family Budget Survey; Colombia's National Quality of Life Survey 2011; Mexico's 2016 National Survey of Household Income and Expenditure; and Peru's 2018 National Household Survey.

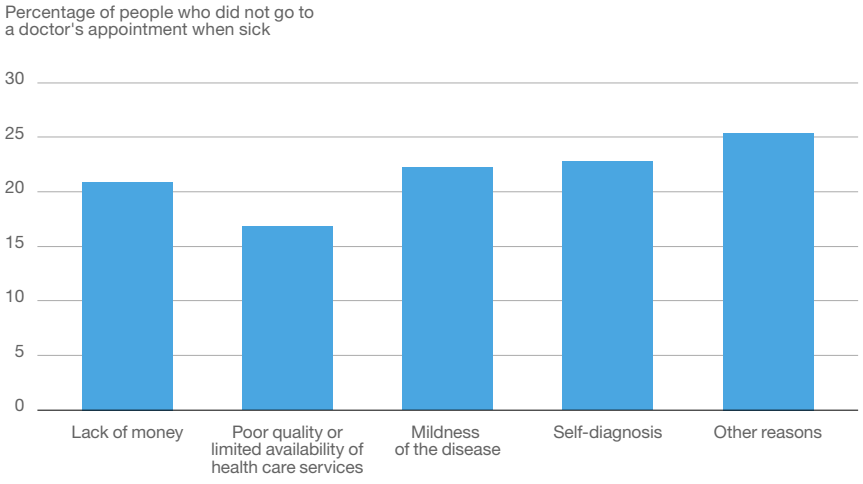
An indicator of effective access to health care services is the proportion of people who go to the doctor when they feel sick. In this regard, Figure 4.29 uses information from the 2019 ECAF survey in 11 cities in the region, showing the proportion of people who went to a health care provider the last time they felt sick. As can be seen, not everyone uses these services. The proportion of those who do varies by city and is between 43% and 77% of the people who felt ill in the past three months. Figure 4.30 examines the reasons behind these statistics. What is worrying is that, among those who did not get medical attention, 17% cited a lack of money, 14%, the low quality or availability of health care services, and 23%, self-diagnosis. Moreover, 20% said it was because they had a mild condition (and 26%, some other reason).

Figure 4.29
Population who went to the doctor when sick in 11 Latin American cities, 2019



Notes: Respondents who report feeling unwell in the last three months were considered.
Source: Authors based on 2019 CAF Survey (ECAF) data (CAF, 2020).

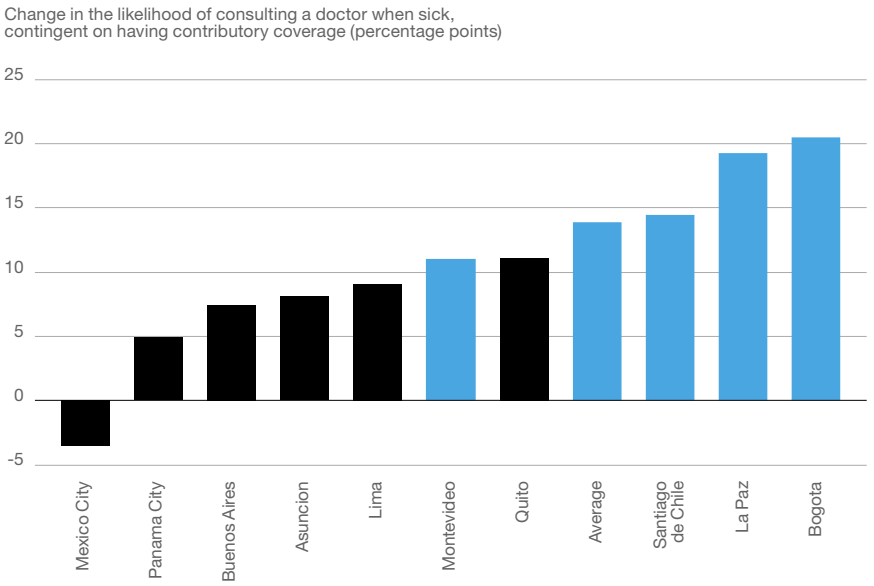
Figure 4.30
Reasons people cited for not going to the doctor when sick in 11 Latin American cities, 2019



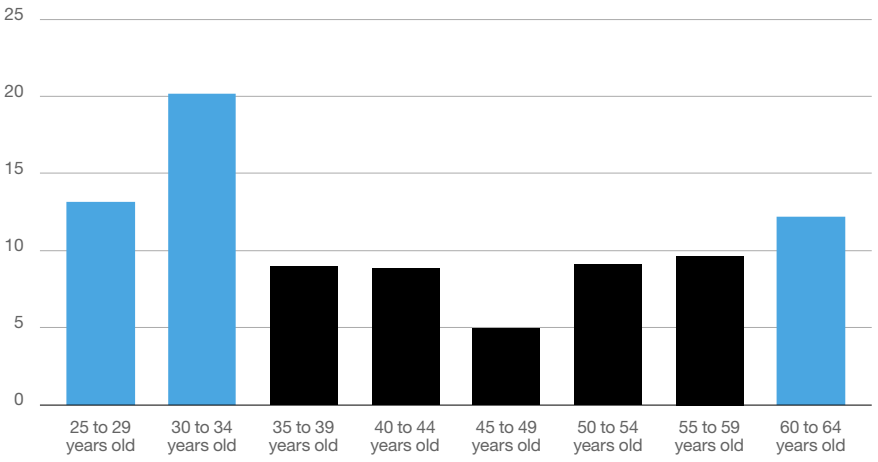
Notes: The reasons are not mutually exclusive.
Source: Authors based on 2019 CAF Survey (ECAF) data (CAF, 2020).

Figure 4.31
Population with contributory social security coverage who went to the doctor when sick in 11 Latin American cities, 2019

Panel A. By cities



Panel B. By age groups



Notes: Each bar represents the regression coefficient estimated by ordinary least squares of the contributory social security coverage variable for the household head. The dependent variable is a binary variable that indicates that the person went to the doctor when sick. Regressions include the following control variables: gender, occupational status, marital status, educational level, and quintile of household per capita income. In Panel A, 5-year age groups are included as a control; in Panel B, city of residence is included as a control. Blue bars represent statistically significant coefficients with a 90% confidence interval. Black bars represent coefficients that are not statistically significant. The construction of the social security health coverage variable is based on the sources specified in Table A 4.1 of the Appendix to this chapter.

Source: Authors based on 2019 CAF Survey (ECAF) data (CAF, 2020).

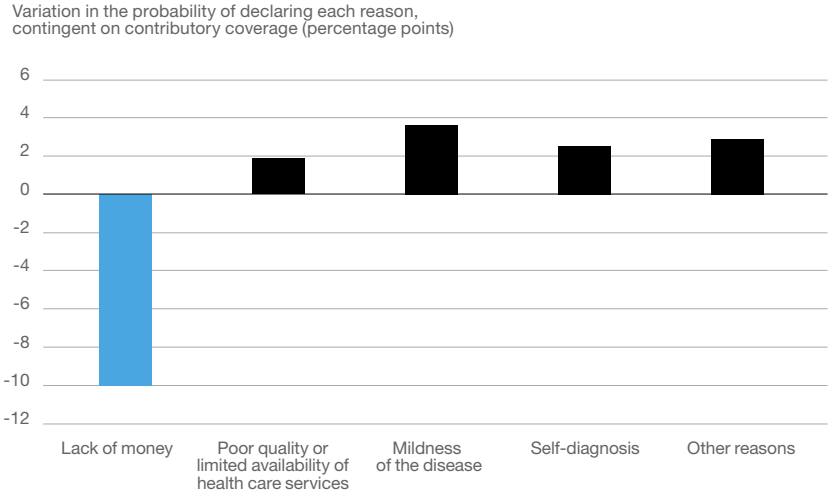
In most big Latin American cities, people with contributory health coverage have greater access to health services when they need them.

Given the results above, it is appropriate to ask whether there is a relationship between a person's health coverage and the likelihood that they will see the doctor if they feel sick, and, if not, the reasons why they don't. Figures 4.31 and 4.32 provide information in this regard.[16] In particular, gaps arise depending on the specifics that they have access to contributory social security, adjusted by various sociodemographic characteristics of the persons interviewed. As you can see in Panel A of Figure 4.31, people with social security are more likely to see a health care provider when they feel sick than those who do not have coverage, although the differences are not statistically significant in all cities. This result is interesting given that, in addition, people covered by the non-contributory system tend to have poorer health. It should be noted that these gaps are positive for all ages, although they are not statistically significant in the age range of 35 to 60 years (Panel B of Figure 4.31).

Regarding the causes (see Figure 4.32), it is less likely for people with social security to report that they do not go to a health service due to lack of money, even when controlling for family income variables, among others. On the other hand, no differences are observed in reports of problems with the quality and availability of health care services among those who have access to social security and those who do not. These results suggest that social security services in the region reduce financial barriers to using health care services, but do not necessarily provide access to higher quality services or increase availability; or at least, this is the perception among the inhabitants of the main cities in the region. Moreover, information collected in the 2019 ECAF survey shows that the level of satisfaction with the medical care of those who went to the doctor is not substantially different between subsystems in most countries.

16. In Figures 4.31, 4.32, and 4.33 São Paulo (Brazil) is omitted because the health system in this country is unified.

Figure 4.32
Reasons people cited for not going to the doctor when sick and contributory social security coverage in 11 Latin American cities, 2019



Notes: Each bar represents the regression coefficient estimated by ordinary least squares of the contributory social security coverage variable for the household head. The dependent variable is a binary variable that indicates the respective reason why a person did not go to the doctor when sick (lack of money, poor quality or availability of health care services, mildness of the disease, self-diagnosis, or other causes). Each regression includes the following control variables: gender, occupational status, marital status, educational level, quintile of per capita family income, five-year age groups, and city of residence. Blue bars represent statistically significant coefficients with a 90% confidence interval. Black bars represent coefficients that are not statistically significant. The construction of the social security health coverage variable is based on the sources specified in Table A 4.1 of the Appendix to this chapter.

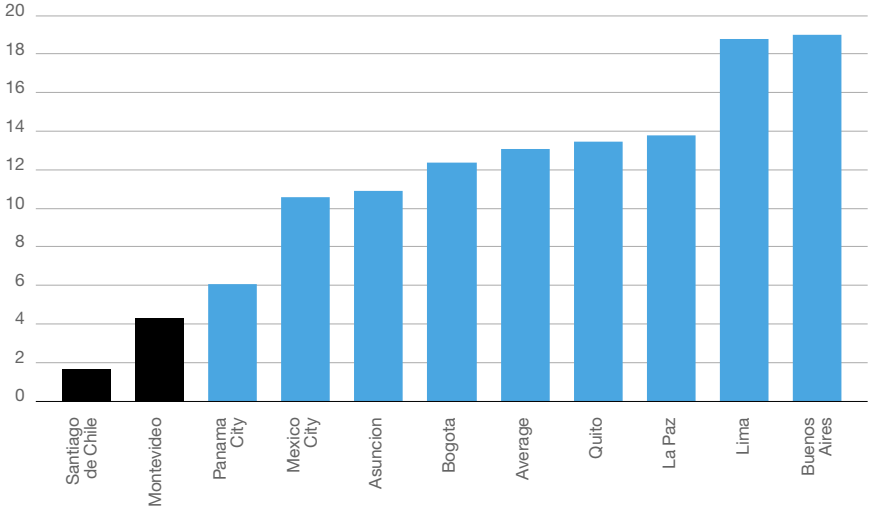
Source: Authors based on 2019 CAF Survey (ECAF) data (CAF, 2020).

Figure 4.33 presents gaps in the number of preventive diagnostic exams, depending on whether or not people have access to the contributory health system. The gap is calculated based on an index that synthesizes information on three exams: a physical check-up, blood glucose, and blood pressure. These exams are a key element for the prevention of chronic diseases, such as hypertension and diabetes, or for the early detection of diseases that are already in progress, which, as seen previously, have a high incidence on health spending in adults. These types of exams are inexpensive and can have a high impact on containing another type of expense that would be triggered without early detection of certain pathologies. After adjusting for various sociodemographic characteristics of the people interviewed as a control, panel A shows that access to the social security system is associated with a higher probability of undergoing diagnostic medical exams in most cities, except for Montevideo and Santiago, where the difference is not statistically significant. It is unclear whether countries with large coverage gaps between subsystems in regard to preventive services are also those with the biggest access gaps between subsystems in terms of curative services. Panel B shows that there are access gaps between subsystems for all age groups.

Figure 4.33
Number of preventive medical exams and contributory social security coverage in 11 Latin American cities

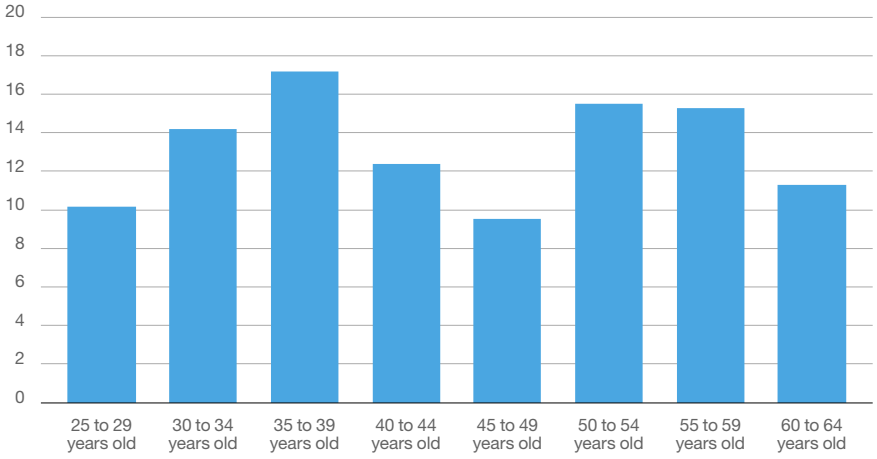
Panel A. By cities

Variation in the rate of medical exams conducted, contingent on having contributory coverage



Panel B. By age groups

Variation in the rate of medical exams conducted, contingent on having contributory coverage



Notes: Each bar represents the regression coefficient estimated by ordinary least squares of the contributory social security coverage variable for the household head. The independent variable is an index of medical exams constructed from a simple average of three binary variables that indicate whether the individual had a physical exam, a blood glucose test, and a blood pressure test in the last 12 months (relative to the time of the survey). Regressions include the following control variables: gender, occupational status, marital status, educational level, and quintile of household per capita income. In Panel A, 5-year age groups are included as a control; in Panel B, city of residence is included as a control. Blue bars represent statistically significant coefficients with a 90% confidence interval. Black bars represent coefficients that are not statistically significant. The construction of the social security health coverage variable is based on the sources specified in Table A 4.1 of the Appendix to this chapter.

Source: Authors based on 2019 CAF Survey (ECAF) data (CAF, 2020).

Necessary policies for a new demographic reality

The development of mechanisms for cost control and efficient use of resources, preventive care policies, and adjustment of the supply of health and care services are key elements in the face of the new demographic reality.

Latin America faces rapid demographic aging that implies challenges for its health care systems and long-term care policies. Aging brings upward pressure on expenditures in these sectors and, due to the important role of the state in the health care sector and the need for a more active role in care issues, it will apply significant pressure on public finances. As seen in the previous sections, this process occurs in a context in which all health systems in the region are still suffering from structural problems of coverage, accessibility to health care services, and insufficient financial protection. In the case of long-term care, access to formal services is practically non-existent. As with many other dimensions that affect the well-being of Latin Americans, inequalities also emerge in the health and long-term care sectors where the most vulnerable groups still confront substantial barriers to access an adequate health coverage.

This scenario raises the need to promote a public policy agenda that jointly addresses the need to respond simultaneously to greater demands and the need to make spending more efficient so that they do not become conflicting objectives. Some key elements of this agenda are common for all countries—regardless of their idiosyncratic characteristics: development of cost control mechanisms and efficient use of resources, health promotion and disease prevention policies, and adjustment of the supply of health and long-term care to new demands.

Strengthening strategies of cost containment and efficient use of spending

There are several policies that may affect the incentives of the different agents that interact in the health care sector that may promote a better alignment with the objective of a more efficient use of resources. These include, for example, copayment policies, payment systems for medical service providers, and explicit definition of health benefits basket that should be covered. An important challenge in the design of these policies is that they manage to contain expenditures, but not at the expense of a deterioration of the population's health. For this reason, medical evidence must be used rigorously in their design, but without neglecting the economic aspects that guide the decisions of the different agents in the system. The use of health technology assessment methodologies to determine the coverage of high-cost treatments and the development of comprehensive information systems in the health care systems are also essential elements to improve the allocation of resources in a sector as dynamic as health.

The subsections that follow describe in greater detail some relevant conceptual aspects for the design of these policies, discuss their role in the context of population aging, and identify key areas for improvement in the countries of the region. Box 4.5 shows how some of the policies discussed here correlate with public spending on health and with life expectancy in a set of OECD countries for which harmonized and comparable information is available over time.

Box 4.5
How different policies impact public spending on health and life expectancy in OECD countries

The incentive structure generated by different institutional arrangements and regulations in health systems is an important determinant of their performance. These arrangements affect the way in which each of the actors that make up health systems interact with one another (patients, doctors, clinics, hospitals, insurance companies, etc.). The diversity of regulations that coexist in systems makes it difficult to make comparisons between countries.

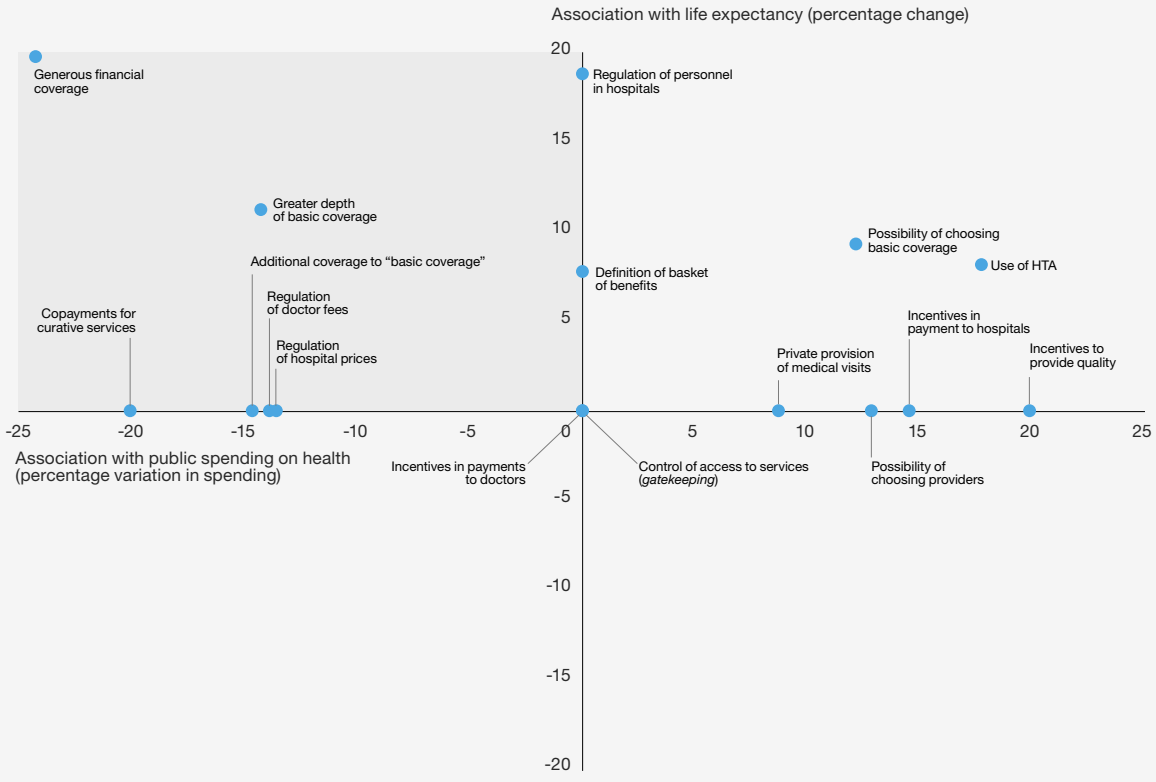
Lorenzoni *et al.* (2018) study how different aspects of health systems in OECD countries correlate with health spending and life expectancy, controlling for other socioeconomic differences between countries. To do this, they use a set of harmonized indicators on the characteristics of health systems in 26 countries from 2008, 2012, and 2016. The indicators cover the following areas: financing, type of coverage offered, medical service provision system, and governance and resource allocation mechanisms.

Figure 1 summarizes the results of the study by Lorenzoni *et al.* (2018) on the association of policies in the health care sector, and the variation in public spending on health and life expectancy. The dark gray area comprises cases where policies are associated with both lower expenses and longer life expectancy. It is clear from the figure that no policy is associated with a reduction in life expectancy; at most, there is no impact. Regarding their relationship with public spending on health, some policies show a negative correlation (lower spending), while others have a positive correlation (higher spending). Countries with policies of higher copayments (out-of-pocket payments) for curative services and more regulations on hospital and medical service prices tend to have lower public spending on health. Those countries that do better in terms of spending and life expectancy provide greater financial coverage to citizens and offer greater depth in basic coverage. The explicit definition of the basket of benefits is also associated with a longer life expectancy, although it has a null impact on with spending.

These results should be viewed with caution since these relationships do not imply a causal effect. However, they suggest that policies to expand coverage of essential services and improve financial protection—dimensions in which Latin America lags behind its OECD peers—may not necessarily conflict with the objectives of cost containment that population aging may require, while not limiting potential improvements in population health. For example, explicit coverage of more prevention and health promotion services could help prevent or detect early diseases associated with high treatment costs at an advanced stage. Similarly, greater financial protection, by breaking down barriers to access certain essential services for the poorest population, could induce an improvement in the overall health of this population and lower overall expenses.

Other policies that are also associated with longer life expectancy, but which involve greater expenditure, are those that offer users greater scope of choice for basic coverage and policies associated with greater capacity and use of health technology assessment (HTA). Despite their potential benefits, technology assessment agencies have a high administrative cost to operate, while the number of approved services can drive up expenditures. Finally, it should be noted that policies related to improving provider incentives tend to have a positive correlation (incentives to provide a higher quality of medical services offered or incentives in payments to hospitals) or no correlation (incentives in payments to physicians) with public spending.

Figure 1
How different policies impact public spending on health and life expectancy



Notes: Each point shows how each policy in the health care sector is related to changes in public spending on health and life expectancy. The reported coefficients come from an estimation of a system of equations, where the independent variables are the logarithm of public spending on health and the logarithm of life expectancy, by non-linear least squares. The control variables, in addition to the various indices that summarize the policies applied in each country, include the proportion of the population over 65, GDP per capita, the educational level of the population, the fraction of the population that smokes and per capita alcohol use, country and time fixed effects.

Source: Authors based on the results of Table 2 from Lorenzoni *et al.* (2018).

Copayments and gatekeeping

The optimal design of an insurance program must weigh the objective of providing the most complete coverage possible to eliminate the uncertainty of health risks and, at the same time, avoid the inefficient use of resources resulting from moral hazard (Pauly, 1974). Co-responsibility for the payment of health care services by the insurer and the patient is a measure to avoid overuse of medical services. Higher copayments discourage excessive use of health services, but at the cost of providing less financial protection for those who continue to need it. There is strong evidence that demand is

indeed price-sensitive, especially in the consumption of those medical goods and services in which life is not at risk (Manning, Newhouse, Duan, Keeler & Leibowitz, 1987; Chandra, Gruber and McKnight, 2010).

There is little margin in the countries of the region to increase out-of-pocket costs to finance health spending.

Is there margin in the region to require patients to increase their out-of-pocket costs? In general, as seen in this chapter, financial protection is low in many countries in the region. Out-of-pocket expenses represent relatively high share of total spending, leaving little room to think about generalized policies to increase copayments. As shown, these out-of-pocket expenses also represent a high share of family income; health spending generates impoverishment and can be catastrophic for some households, especially those where an older adult lives. To the extent that a broad group of people has relatively low income, the introduction of uniform copayments for the entire population could lead to an underutilization of health care, aggravating access problems. Failure to use medical services when they are necessary or discontinuing certain treatments may increase future expenses. This is particularly problematic for the population at risk and older adults (Chandra *et al.*, 2010).

In designing copayment policies, two other problems should not be overlooked. On the one hand, higher copayments on certain services could shift demand toward more expensive services, but with greater financial protection. This could be the case for people who do not go to the doctor when they have certain mild symptoms but end up requiring emergency services, typically more expensive and prone to congestion. De la Mata and Gaviria (2015) present evidence in this regard for Colombia. A second problem is the financial externalities between health subsystems when higher copayments in one of them cause demand to shift to another (Chandra *et al.*, 2010; Fang and Gavazza, 2011). This can be particularly important in countries that have public systems with unrestricted access, which end up treating untreated pathologies under the coverage of compulsory health insurance. This shift also occurs when coverage in retirement age does not coincide with coverage during working life. Argentina's health system, for example, faces both problems.

As a general rule, higher copays require a tailor-made design and should be focused on: i) goods and services that, according to scientific evidence, have low benefits for people's health; ii) goods and services with a more price sensitive demand (i.e. higher price elasticity); iii) people with greater purchasing power.

Another way to control the use of medical services is to use gatekeeping practices, whereby primary care physicians take a central role in assessing patients' care needs and redirect demand toward specialized treatments if necessary. These practices, by limiting the possibilities of patients' choices can reduce the use of unnecessary services, but, at the same time, they could impose barriers to the timely access to certain care when needed. The use of this type of practice is limited in Latin American countries (Lorenzoni *et al.*, 2019).

Explicit health benefits plans to cover essential services

As mentioned above, health plans that explicitly determine the benefits to which beneficiaries are entitled are a useful tool to guarantee access and direct resources toward preventive and curative medical services with the greatest impact on health, helping to improve the efficiency of spending. Almost all European countries with health care systems funded with payroll taxes have explicit health care plans. On the contrary, there is still a lot of room for improvement in the implementation of these plans in Latin American countries (Giedion *et al.*, 2014). In many cases, explicit coverage is still very limited, with significant gaps between contributory and non-contributory health systems. Equating the generosity of coverage between subsystems would not necessarily help to contain total expenditures, as described in Box 4.6, but additional resources could be directed toward more efficient uses, using tools like explicit health plans.

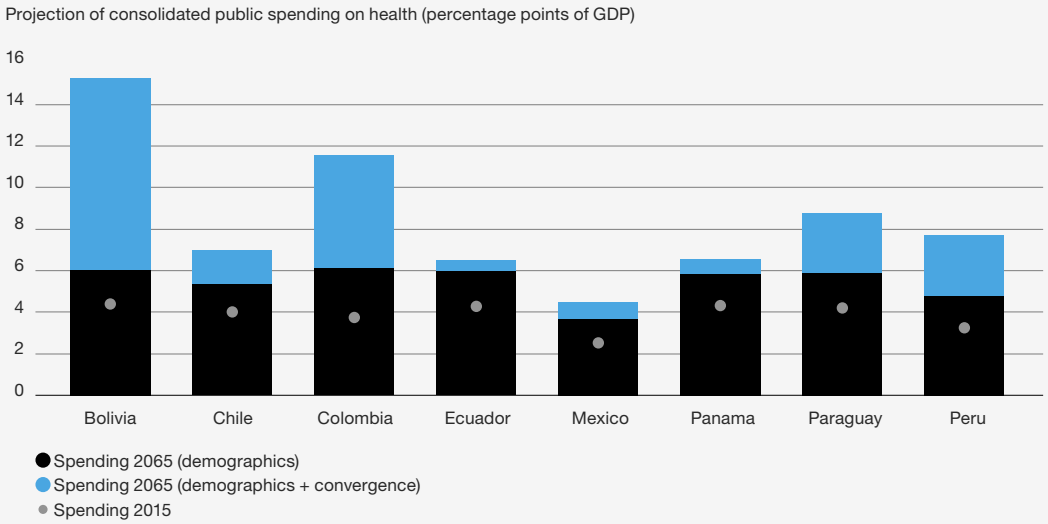
One difficulty many countries face is keeping this list of benefits updated, in line with technical criteria and with the specific needs and preferences of the covered population. At the same time, the processes for defining the list of benefits are often susceptible to pressure from interest groups to include specific benefits.

Box 4.6
Equalizing the quality and availability of services in contributory and non-contributory health subsystems

In most of the countries of the region, there are persistent inequalities in the quality and availability of the services of the contributory and non-contributory health subsystems, as seen previously in this chapter. The projection exercise presented below for eight countries in the region show what the evolution of public spending on health would be if the gap in per capita public spending between the contributory and non-contributory health subsystems were eliminated. To do this, spending in the non-contributory system is progressively increased over a period of 50 years until it is equal to that of the contributory system. This analysis is based on the exercise presented on previous pages and, as such, has the same scope and limitations. It shows how public spending on health would evolve as this policy is implemented and the aging of the population progresses, keeping everything else constant. The analysis does not contemplate the evolution of private spending on health and total spending on long-term care services. Also, the exercise is not a forecast of the actual evolution of spending neither an estimate of its optimal level.

The results of the exercise are shown in Figure 1. Although these projections are imperfect and should be interpreted with care, they show that the necessary increase in public spending on health to close the per capita spending gap between subsystems is considerable in some cases. This exercise highlights the magnitude of current gaps and the dimension of the challenge many countries face to guarantee effective universal coverage of health care services to the entire population. For six of the eight countries analyzed, the additional increase in spending (in addition to the increase generated by demographic change) to close the gaps between subsystems is between 1 and 3 percentage points of GDP (Chile, Ecuador, Mexico, Panama, Paraguay, and Peru). In the case of the other two countries (Bolivia and Colombia) this increase is considerably higher.

Figure 1
Policy of convergence of per capita public spending on health among health subsectors in Latin American countries, projections for 2065



Notes: See Daude and Pena (2020) for a detailed description of the projection exercise methodology.

Source: Authors based on WHO data (2019b), Crosta (2019), de la Mata and Valdés (2020), Buitrago and Torres (2020), and United Nations population projections by age and sex (2019b).

Payment systems

Economic incentives for the overuse of medical services do not only affect patients. The incentives given to providers of these goods and services are just as relevant, if not more so, especially for more complex and higher-cost treatments that require a doctor's prescription. In particular, the way health care providers are paid affects these incentives and may foster inefficient use of resources. Thus, contractual relationships (and their regulation) between payers and providers constitute a central element in determining health expenditures (Álvarez, Pellisé & Lobo, 2000).

The way health care providers are paid may foster inefficient use of resources in the sector.

In the case of doctors, how they are paid can exacerbate the problem of moral hazard as they are the ones who ultimately decide when to prescribe a particular treatment. Combining no copayment or small copayments for patients with lax payment schemes for doctors, such as retrospective payment per services provided, create incentives for physician-induced demand that leads to inefficient expenditures that do not deliver major health benefits for treatment recipients (McGuire, 2000). Lax payment schemes can also endorse excessive costs resulting from inefficiencies in the production of services. However, more restrictive payment schemes designed to avoid moral hazard

(e.g., prospective payments systems in which payment is a fixed amount per patient) are not problem-free. They may create incentives to reduce the quality of health care, ration its supply, stimulate the selection of less risky patients, or induce the prescription of treatments or procedures that are less advantageous for the patient, but that have a more beneficial remuneration structure for the physician.

As seen previously, hospital spending represents a very important portion of total health spending, particularly among older adults. Hospital payment schemes are very important, and its improvement could increase efficiency in the sector. The *ex-post* reimbursement systems based on payment for hospital admissions or the length of the hospital stays, or for budgets based on historical expenditures without any adjustments for the risk of the population served, are weakly aligned with the objective of efficient use of resources. This is usually a common practice in many Latin American countries, mainly within the hospital network of the public system (Lorenzoni *et al.,* 2019). In contrast, a growing number of OECD countries have moved toward prospective case-based payment systems, like diagnosis-related groups (OECD, 2010c). Under this type of payment scheme, hospitals receive a fixed amount of money depending on the patient's diagnosis.

How providers are paid in the health care sector can also affect the quality of the service provided. In Latin America, the use of incentives to link payments to the quality of services provided is very limited, in contrast with many OECD countries, where there has been more progress in this regard (Lorenzoni *et al.*, 2019; OECD, 2016). Pay for performance, such as achieving specific objectives of preventive programs and chronic disease management, is a key mechanism to improve the quality of medical services and, at the same time, ensure more efficient use of resources in the context of population aging. However, the proper design of pay-for-performance systems is not trivial. Given that health production technology has a relatively random component, basing an incentive system only on achieved results is complex and can be risky. Hence, pay-for-performance tend to be focused more on processes or sets of inputs than on health outcomes (Bardey, 2015). When pay-for-performance is based on results, it can generate incentives for providers to select the population with the lowest risk (potentially aggravating access-related problems). Additionally, pay-for-performance schemes may induce a substitution between the activities stimulated by the incentive programs to the detriment of those not rewarded by the incentive scheme.[17] When a pay-for-performance system is aimed at doctors, another unwanted effect may be a decline in their intrinsic motivation (Bénabou and Tirole, 2006).

17. Rodríguez-Lesmes and Vera-Hernández (2019) study one of the largest pay-for-performance programs for primary health care physicians in the world (the *Quality and Outcomes Framework* in the United Kingdom). Payments are based on indicators related to the management of chronic diseases and other public health problems. The authors found no evidence in favor of substitution between different tasks performed by physicians as a consequence of the incentive framework.

Uruguay presents some progress in tying payments to improvements in quality. Still, most of these payments are only weakly aligned with an efficient use of resources. The contracts that the health authority sign with comprehensive health care providers (institutions which administer the insurance and provide health care services) define goals and quality criteria for the benefits included in the explicit health plan (PIAS). Specifically, the fee that the National Health Fund (FONASA) pays each provider to guarantee the delivery of medium and low-complexity benefits included in the PIAS has two components: a capitated payment[18] adjusted for risk (age and gender) and a reward for the fulfilment of health care goals (Giedion *et al.*, 2014). These goals are aimed at strengthening maternal and childcare, reducing the burden of morbidity and mortality from non-communicable diseases (particularly hypertension, ischemic heart disease, diabetes, and cancer), and strengthening primary care for older adults. A study that analyzed the impact of the maternal-infant component found that this pay-for-performance program improved prenatal check-ups and the average birth weight of newborns, and reduced neonatal mortality (Katzkowicz, 2015). In contrast, the capitated payment component, which represents the largest portion of resources received by comprehensive health providers (around 90%), is not properly aligned with efficiency and quality objectives (Fleitas, 2017). This is because the way in which the capitated payment is computed generally validates all the expenses made by the providers regardless of how efficient those expenditures are. Furthermore, the adjustment by age and gender does not fully account for the possible heterogeneities in the individual health risks of affiliates between different providers or in the costs and quality offered by them. Ultimately, under this compensation framework, efficiency gains tend to turn into economic rents for providers. A similar problem prevails in Colombia (Bardey, 2015), where Health Promoting Entities (EPS) receive a capitated payment with adjustment for risk that only takes into account the age, gender, and geographic location of the affiliates.[19]

Another example of the use of pay for performance in the region is the SUMAR Program in Argentina. The Argentine health system is one of the most fragmented and decentralized in the region, with the administration of the public system managed mainly by provincial and municipal governments. Under this program, provincial health insurances were created to reinforce existing public health, guaranteeing certain services for specific groups of the population. This program stands out for the introduction of incentives in its payment mechanisms. The incentive framework consists of two payment components between institutional levels: i) a capitation payment adjusted for performance in prioritized health indicators, paid by the national government to the provinces[20] and ii) a payment made by the provincial health insurance to providers (public hospitals, generally). The transfer is made to the providers under the modality of fee-for-service payments. Health facilities receive

18. Consisting of transfers from the government to comprehensive health care providers, calculated based on a fixed amount for each insured individual, regardless of their use of the services.

19. Unlike Uruguay, vertical integration between insurers (EPS) and health providers, although it exists, is limited by law (Bardey and Buitrago, 2016).

20. Forty percent of the funds drawn are based on compliance with a series of health outcomes measured from 10 performance indicators.

resources that they are then allowed to allocate based on their priorities and specific needs (Giedion *et al.*, 2014).[21] A portion of these additional resources can be used to pay bonuses to hospital staff. A recent study shows that this incentive framework improved prenatal check-ups, procedures and routines, displacing inefficient practices, although it did not affect newborn birth weight. (Celhay *et al.*, 2019).

Health technology assessment

One of the most important challenges is finding strategies to value the use of high-cost medical treatments.

One of the biggest challenges facing health systems is to find strategies to assess the use of high-cost medical treatments, mainly those that could have a limited impact on people's health. An important part of these new treatments arises, precisely, to treat the pathologies that appear with age (Acemoglu and Linn, 2004). In OECD countries the use of health technology assessment methodologies is growing and many specific agencies that take into account the efficacy and cost-effectiveness of new technologies are being created to guide coverage decisions with the public funds (in Australia, Finland, France, and the United Kingdom). Their use in Latin America is still limited (see Table 4.5). An additional challenge to the extent to which it is possible an explicit definition of what should and should not be covered is the reluctance of the population to accept these limits. This reluctance has led, in cases like Colombia and Uruguay, to the judicialization of medicine, especially when high-cost treatments whose cost-effectiveness does not have a solid basis are involved.

Table 4.5
Use of health technology assessment in Latin America

Type of technology	Applications of Health Technology Assessment (HTA) in decision-making processes	Countries
Medical procedures	Systematic use for health coverage decisions	Brazil, Trinidad and Tobago, Uruguay
	Use in some circumstances for health coverage decisions	Argentina, Belize, Chile, Colombia, Guyana, Mexico, Paraguay
	Use to determine copayment levels	
Pharmaceuticals	Systematic use for health coverage decisions	Belize, Jamaica, Mexico, Paraguay, Uruguay
	Use in some circumstances for health coverage decisions	Argentina, Brazil, Chile, Costa Rica, El Salvador, Guyana, Peru
	Use to determine copayment levels	
Implantable medical devices	Use in some circumstances for health coverage decisions	Argentina, Chile, Colombia, Costa Rica, Mexico, Paraguay
	Use to determine copayment levels	

Source: Lorenzoni *et al.* (2019).

21. These resources are added to the regular budgets of each provider.

Developing integrated health information systems

The digitization of the health care sector to create integrated, structured, and interconnected systems plays a fundamental role in ensuring more efficient use of resources. Technological tools, like electronic medical records, improve the quality of care for people during their life cycle and facilitate coordination between different levels of medical care providers. Integrated systems are an important support tool for the decision-making process of medical professionals, providing contextual information that improves prescribing (for example, avoiding duplication of studies). They are also a key instrument in a context in which the prevalence of chronic diseases, a product of demographic aging, is increasingly gaining relevance in the countries of the region. Patients with this type of disease require permanent contact with the health system due to its typical slow progression and these tools facilitate a more effective management of these diseases. The design of these systems must take into account the need to maintain this confidential and sensitive information protected.

Moreover, integrated information systems that can record the costs associated with the services provided by the different health care providers in the system, are key to strengthening the implementation of evidence-based public policies. In particular, they can help improve the designs of strategies to contain spending, enabling continuous monitoring and evaluation of the performance of the entire system, and strengthen its regulation. These information systems are a key element, for example, for improving provider payment schemes that require computing the expected costs associated with specific pathologies or risk profiles of the covered population (such as capitated payments to health care providers [EPS] in Colombia or the private collective medical care institutions [IAMC] in Uruguay). An example of the potential for information systems to guide public policy is the case of Colombia's *Cuenta de Alto Costo*, a non-governmental technical body of the General System of Social Security in Health [*Sistema General de Seguridad Social en Salud*], whose objective is to generate reliable up-to-date information about high-cost diseases in the country.

Strengthening prevention

Health prevention and promotion policies can play a vital role in reducing the prevalence of chronic diseases, which, as already mentioned, tend to have a high financial cost and a higher prevalence in older ages. Prevention can help avoid the development of a disease and delay its onset. If effective, prevention offers a double advantage, since it not only reduces the cost of treating the disease by preventing its onset, but it also eliminates the human cost of suffering from the disease. However, it is important to recognize that the prevention of one disease can lead to the appearance of others, particularly those that share risk factors. For example, obesity is a risk factor for both high blood pressure and cholesterol. Diagnosing and managing hypertension without altering obesity can reduce the incidence of deaths from hypertension-related

heart attacks but increase those related to cholesterol. This is known in the specialized literature as the competitive risk effect.

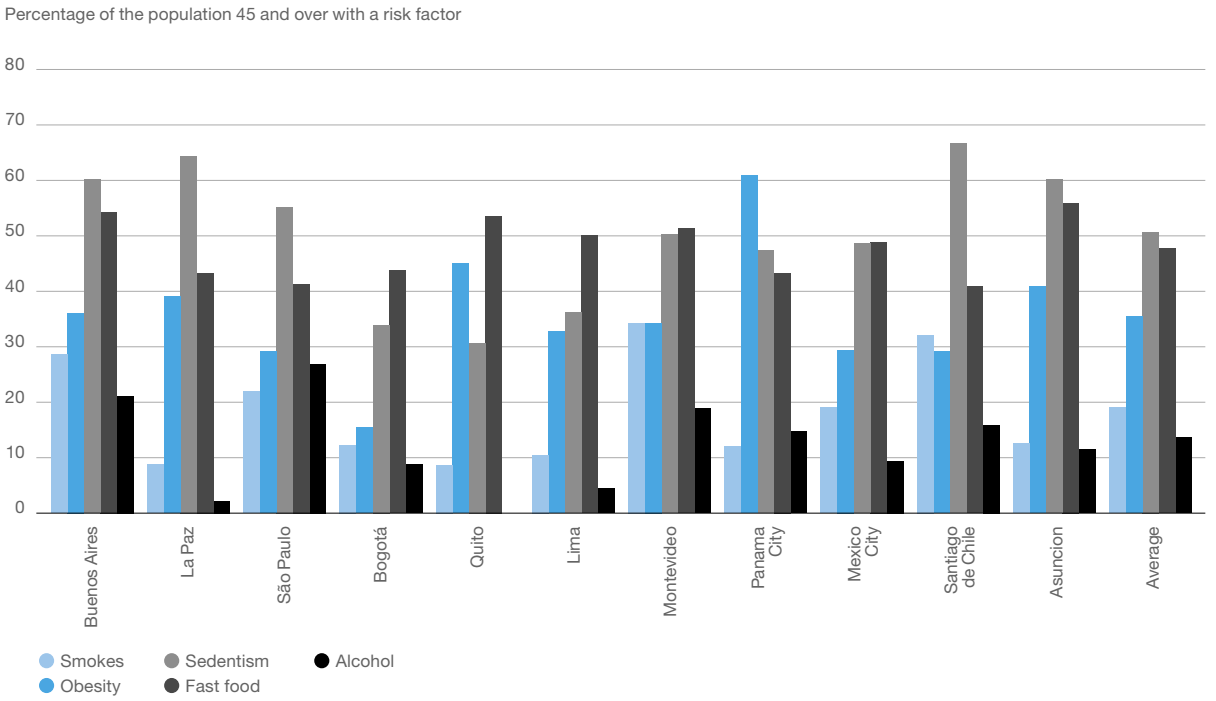
The effective implementation of prevention and health promotion services faces challenges in terms of targeting and participation. Targeting is based on recognizing that not all people will suffer a chronic disease at some point in their life, nor do they have the same propensity to suffer one. Following cost-effectiveness principles, prevention efforts should be directed at the population that can benefit the most from them. Otherwise, it implies using scarce public resources in actions of low effectiveness or imposing direct costs on sectors of the population with low expected health benefits (for example, undergoing screening tests for diseases they are not prone to). A central challenge of targeting is to avoid by design the exclusion of people who can highly benefit from these services and the inclusion of people for whom these services will be of little benefit. The issue with participation is related to achieving the adoption of prevention practices among population groups with high expected health benefits, but whose participation is low, either because they face high participation costs or because of other restrictions.

The adoption of healthy lifestyles among the population is perhaps the most important public health goal for reducing or delaying the onset of major chronic diseases.

The adoption of healthy lifestyles among the population is perhaps the most important public health goal for reducing or delaying the onset of major chronic diseases. By reducing the risk of multiple chronic diseases at the same time, adopting a healthy lifestyle has the added advantage of having a lower competitive risk effect. A healthy lifestyle includes physical activity, a healthy diet, not smoking, and moderate alcohol consumption. The absence of these habits contributes to the prevalence of obesity, which is also a risk factor for chronic diseases.

Engaging in a healthy lifestyle is recommended for people of all ages. However, as the prevalence of chronic diseases increases starting at 45, focusing on this age group may be of particular interest. Figure 4.34 presents evidence on the prevalence of five risk factors for chronic diseases in the population aged 45 to 64 residing in the cities where ECAF 2019 is conducted (whose study domain does not include people 65 and over). Results vary by risk factor and city, but as a whole suggest that an important part of this segment of the population could benefit from adopting a healthier lifestyle. In these cities, an average of 19% of the population in this age group currently smokes, 50% do not normally engage in physical activity, 48% consume fast food at least once a week, 14% drink alcohol at least three times a week and 35% are obese (with a body mass index above 30).

Figure 4.34
Incidence of risk factors among the population aged 45 to 64 in 11 cities in Latin America, 2019



Notes: The individual smokes if they respond that they currently smoke; they are considered obese if they have a body mass index (BMI) of 30 or higher; they are sedentary if they do not engage in physical activity in the week; they consume fast food if they eat it at least once a week; and they drink alcoholic beverages if they have one at least three times a week.

Source: Authors based on ECAF 2019 data (CAF, 2020).

The biggest policy challenge to change the scenario described is the scarcity of programs that have rigorously shown their effectiveness in producing a sustained change in participants' lifestyles (Bhattacharya, Hyde, and Tu, 2014). In this regard, it may be helpful to consider that people face costs and benefits related to the decisions and actions needed to change their lifestyle. Probably, those who do not follow a healthy lifestyle are those people who face higher costs (or lower benefits outside the health domain) as a result. For example, the fact that cities are not effective in providing safe public spaces for sports may increase the cost of engaging in intense physical activity on a regular basis. Beyond the specific policies, the promotion of healthy lifestyles requires changes in the physical and social surroundings that favor their adoption by the population.[22] In this context, the introduction of taxes on sugar-sweetened beverages, mainly, and other high-calorie foods has recently gained momentum (see Box 4.7).

22. See more about the role of the environment for the accumulation of human capital in Chapter 5 of the 2016 Report on Economic Development (CAF, 2016).

Box 4.7
Regulating calories

Given the difficulty of changing the population's consumption patterns through information and health education campaigns, the voices in favor of the regulation of high-calorie foods have gained strength.

The idea of regulating the consumption of products with undesirable effects (sometimes called sinful) is not new. There is a long tradition of imposing taxes and restrictions on the supply and consumption of tobacco and alcoholic beverages, motivated both by paternalistic arguments and by the existence of negative externalities associated with their consumption (see the discussion on the reasons for social protection in Chapter 1). The incidence of conditions in non-smokers exposed to tobacco smoke and the victims of automobile accidents and acts of violence related to the abusive consumption of alcoholic beverages are among the externalities or negative effects on third parties.

Recently, almost 40 countries around the world—including Colombia, Chile, Mexico, and Peru—have imposed taxes on sugary drinks. The consumption of sugary drinks does not directly affect the health of third parties, like the consumption of tobacco and alcoholic beverages does. Nevertheless, it represents a financial cost for society due to the increase in chronic diseases if their treatment is financed by health system contributors' payments or general taxes. Another argument in favor of these taxes is the existence of health benefits associated with a healthy lifestyle that consumers do not take into account due to a lack of information or self-control issues (Allcott, Lockwood, and Taubinsky, 2019).

Taxes on sugary drinks—or goods deemed harmful to society and individuals in general—have several disadvantages. One of the main reasons is that they tend to be regressive. In other words, their incidence is greater among lower-income people, since they are the ones who consume more of these beverages—at least in proportion to their income—although it is possible that the potential "corrective" effect of these taxes is greater among this segment of the population.

To be effective, these kinds of taxes require, at the very least, that the tax rates are indeed reflected in higher prices, that the demand for sugar-sweetened beverages decreases significantly as prices increase, and that there is no substitution effect from other products of similar caloric content.

In Mexico, Aguilar, Gutiérrez, and Seira (2018) found that a tax levied on sugary drinks and high-calorie processed foods put into effect in 2014 did not have an impact on the population's caloric intake, even though it resulted in an increase in the prices of regulated products and a decrease in their consumption. This was due to an increase in the consumption of non-regulated products of similar caloric content (the so-called substitution effect).

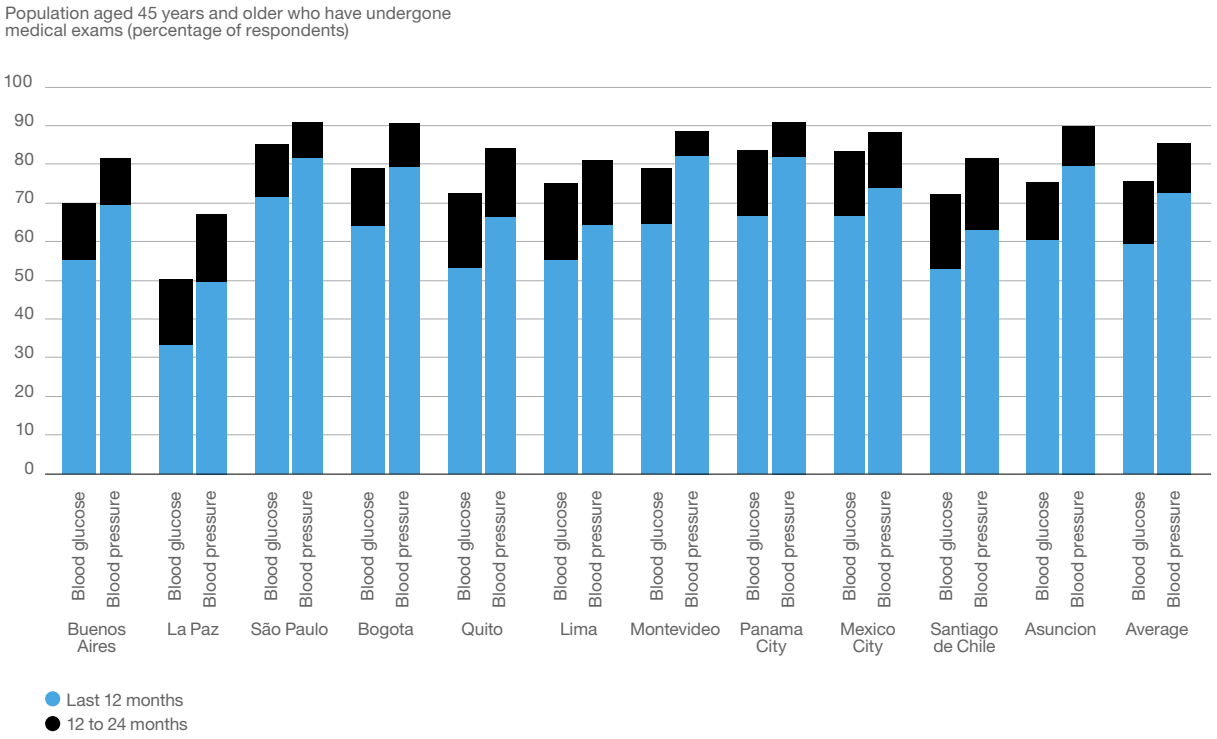
Another important challenge is the financing of prevention and health promotion services. In systems where individuals may have more than one insurer or health care provider over their lifetime, these have little incentive to incur prevention and promotion expenses (since they bear the current cost, but not necessarily the benefit of future savings), which underscores the importance of public funding for these kinds of efforts. However, if the

public sector faces significant budget constraints, spending on service provision is likely to be more visible and attract resources that could be used for health promotion.

Early detection of chronic diseases and those with increasing prevalence may offer medical benefits when the likelihood of the success of the therapeutic interventions is greater at the start of a condition's evolution. This is the case, for example, of high blood pressure (also known as hypertension), which is the main risk factor for heart disease and stroke, and the second leading cause of disability in the world. High blood pressure is asymptomatic, which is why it is known as "the silent killer." This disorder can be identified measuring the pressure in a person's arteries, which is a basic clinical exam. The World Health Organization (WHO) recommends that all adults get their blood pressure tested regularly. This is especially important for middle-aged and elderly individuals as well as people with unhealthy lifestyles because age and lifestyle are both hypertension risk factors (WHO, 2013). Type II diabetes is an example of a chronic disease whose early detection can help increase the effectiveness of the treatments available to control it. This disease can be diagnosed using basic exams, like blood glucose tests, which measure the concentration of glucose in the blood. Moreover, the WHO recommends that this test should be available in all primary health care centers. Conducting these tests is a high-priority among the population with risk factors, like age (age over 45) and overweight, among others (WHO, 2016, and Reinauer *et al.*, 2005).

Using ECAF 2019 data, Figure 4.35 shows the proportion of the population aged 45–64 subjected to glucose and blood pressure tests during the last two years in the participant cities in the survey. On average, 73% of people in this age range had a blood pressure check-up in the last twelve months (plus an additional 13% if the last two years are taken as a reference period, which is less frequent than the recommended period for this type of test). For their part, 59% had a blood glucose test in the last year, a figure that rises to 76% if the last two years are taken into account. These figures are similar for the overweight population, which is also considered a risk group (results not shown in the figures). As stated already, the likelihood that a person will undergo such an exam is lower among those who do not have access to the contributory social security system. Broadly speaking, these figures illustrate the challenge facing most of the region's health systems: there has been significant progress in the coverage of basic services, but effective universal coverage has not yet been achieved.

Figure 4.35
Population screened for high blood pressure and blood glucose in the last two years in 11 cities in Latin America, 2019



Source: Authors based on 2019 CAF Survey (ECAF) data (CAF, 2020).

Developing a strategy for long-term care policies

Most of the countries in the region have yet to develop a public policy framework for long-term care of dependent older adults.

The evidence shown in this chapter indicates that the demand for long-term care may increase considerably over the coming decades, putting pressure on the role of families as the primary caregivers for older adults. Faced with this phenomenon, most of the countries in the region have yet to develop a public policy framework for the care of dependent older adults. According to the reality of each country, this framework should be based on a diagnosis that answers the following questions: What role should the state play in the regulation, financing, and provision of long-term care services? Similarly, what is the level of financial protection required by people in need of long-term care in old age? What is the best way to provide this protection? How can the role of families in providing care be recognized and enhanced?

Dependency, like disease, is a risk. In principle, an individual could react to such a risk by purchasing long-term care (LTC) insurance, paying an annual policy upon entering the workforce in exchange for receiving financial protection should they require LTC services at some point in their old age. However, the

use and coverage of this type of insurance policy are limited. For example, in the United States, a country with a highly developed insurance industry, only 14% of adults aged 60 and over have private LTC insurance. Moreover, the typical policy offers coverage—if purchased at age 65—equivalent to just two-thirds of expected LTC expenses (Brown and Finkelstein, 2011).

What are the main obstacles to the development of the insurance market for LTC services? To begin with, market failures due to adverse selection and moral hazard, common to all insurance markets (see Chapter 1), are not foreign to this sector. Moreover, long-term care insurance is a very long-term contract with considerable uncertainty regarding key parameters for defining its costs and benefits. This uncertainty makes even defining the price that the insurer should charge to cover the costs associated with the promised coverage an extremely complex task. State intervention can affect the LTC insurance market by means of regulations that affect prices, quality or availability of services in these markets, or by introducing public insurance that reduces the value of having private insurance (Brown and Finkelstein, 2011). In addition to existing regulations, expectations about future changes in public policy —for example, the introduction of public insurance—may have a significant effect on the current demand for private insurance. Even in the absence of the problems listed so far, lessons from behavioral economics suggest that the demand for long-term care insurance may be inefficiently low among people who strongly prioritize the present over the future in making decisions. Furthermore, many people with limited resources may not have enough income to pay for this type of insurance.

In this scenario, three alternatives for public intervention in the long-term care services market stand out: mandatory public insurance, subsidies for users of long-term care services, and public provision of these services.

Mandatory public insurance for long-term care services financed by income taxes is a natural extension of the Bismarckian model of health insurance. Its mandatory nature eliminates the issue of adverse selection characteristic of optional insurance and the possible low demand due to biases caused by undervaluation of the future. As with contributory social security systems, the state is called upon to play the role of system regulator and may assume or delegate the administration of insurance and the provision of services to private companies or social organizations. Germany, South Korea, Japan, and the Netherlands are examples of countries with these systems (Colombo, Llena-Nozal, Mercier, and Tjadens, 2011). However, it is important to bear in mind that this insurance alternative faces the same limitation as the region's contributory health subsystems: its coverage is restricted to workers in the formal sector.

Another policy option is to provide the dependent population with subsidies to cover long-term care services. This alternative is similar in spirit to the non-contributory health systems which finance access to private health providers, like in the case of Colombia in the region. Financing comes from general taxes supplemented by copayments that may vary according to the economic capacity of the beneficiaries. For example, in the United States, this is the path adopted under Medicaid, a health insurance program for low-income older

adults that covers LTC services and is the main source of financing for the payment of institutional care facilities for older adults in the country.

In the region, Chile and Uruguay, two of the countries in which aging is more advanced, have implemented a group of policies that can be placed in the latter category (Failache *et al*., 2019). In Chile, the National Subsystem of Support and Care (known as Chile Cuida) supports the implementation of functional adaptations to homes in which older adults reside and, through the Home Care Program, funds long-term care services for older adults in a situation of dependency who have limited resources and do not have a caregiver. In Uruguay, the Personal Assistants Program provides people over 79 years of age with a disability or severe dependency with long-term home care through qualified personnel, while the Home Telecare Program covers adults over 69 years of age by using a communication device that allows them to alert their social support network and health care services in the event of an emergency.

The public provision of long-term care services is a model in line with non-contributory social protection systems that provide health care services through a public network. As in the previous option, general taxes finance these services, supplemented with copayments that may vary according to the economic capacity of the beneficiaries. This is the model adopted, for example, in Nordic countries, in which the preponderant role of local governments in the financing and provision of LTC services stands out (Colombo *et al.*, 2011).

As in the design of any social protection policy, defining the scope of coverage and its generosity is a crucial task. In other words, what are the answers to the following questions: universal or targeted coverage, and in this second case, for whom? What services should be covered, up to what amount, and under what conditions? And how can the quality of care be guaranteed? The responses chosen will have a major impact on the efficiency, equity, and financial sustainability of the long-term care system.

In developed countries with LTC systems, there is a wide range of criteria used to determine universal coverage or targeted assistance for the lower-income population (in the case of non-contributory systems). Regardless of whether coverage is universal or targeted, there are generally eligibility criteria based on age or intensity of dependency. There is also diversity between countries in the amount set for copayments and whether they should vary according to people's ability to pay (Colombo *et al.*, 2011). In terms of services, institutional residences and home care by specialized personnel have given way to a more complex offer that includes telecare services, adult day care centers, support for home modifications, and training for family members or people who carry out unpaid care (Medellín *et al.*, 2018). This diversity of supply recognizes the diversity of needs of dependent people, according to the intensity of dependency, and the preference of the majority of the population to remain in their homes the longest possible, instead of opting for a care institution. In many cases, beneficiaries may choose to receive cash transfers instead of subsidies or access to LTC services (Colombo *et al.*, 2011). These transfers can function as a compensation mechanism for family members who assume a primary role as caregivers at the expense of their participation in the labor market. Given their lower level of potential wages, the poorest households

may prefer to receive cash transfers over subsidies for the acquisition of LTC services (Caruso, Galiani, and Ibarrarán, 2019).

As has already been said in this report, one of the market failures associated with insurance (and social protection) is the so-called moral hazard effect. In the health care sector, this effect implies, above all, excessive use of health services, a concern that also impacts long-term care services. In addition, another big concern about cash transfers is that they can act as a disincentive to the voluntary purchase of LTC insurance, precautionary savings (use of accumulated assets) or family support, which has occurred in the United States based on the evidence seen there (Brown and Finkelstein, 2011, and Barczyk and Kredler, 2018). An alternative to reduce the moral hazard effect is the definition of copayment policies, which in the case of LTC services can also help limit public subsidies from being mere substitutes for resources that households could have otherwise dedicated to this purpose. A policy like this should establish copayments based on the economic capacity of the beneficiaries, which implies the challenge of being able to effectively monitor a person's assets. This is not always feasible given the degree of development of fiscal systems in the region, although many countries have experience identifying populations in vulnerable conditions for targeting social programs. Another possibility is to prioritize coverage for those with fewer informal care alternatives. For example, older adults without a spouse (who are the main provider of informal intensive care). Both alternatives, however, leave the door open to errors of inclusion and exclusion that must be carefully weighed. Finally, the experience of developed countries underlines the importance of building institutional mechanisms that make it possible to evaluate: 1) the dependency situation in which a person finds themselves and to identify the best care options among the available institutional options; and 2) the quality of LTC services (Medellín *et al.*, 2018).

It is imperative to design policies that provide financial protection to dependent people who require it, taking into account the response of families and avoiding transfers of public resources to households that need them least. Faced with a prospect of growth in the demand for long-term care, it is high time to build a framework that outlines the policy response to this challenge.

Keys to face the challenges of aging in health care and long-term care systems

1 As the demand for health and long-term care services increases with age, the process of population aging is expected to drive up spending on health and long-term care systems. The increase in demand for both types of services may be particularly high in the region because many Latin Americans are reaching old age with deteriorating health.

2 Population aging has been accompanied by significant changes in the epidemiological profile of the population, in which the weight of non-communicable diseases has far exceeded that of communicable diseases. Non-communicable diseases, like cancer, diabetes, and circulatory disorders, whose chronicity and slow progression require permanent contact with the health system, tend to account for a large share of health expenses.

3 Latin American countries are still facing significant problems in guaranteeing their population ample and homogeneous insurance against health risks. This is due, in part, to the remarkable fragmentation between contributory and non-contributory health subsystems that coexist in almost every country.

4 Problems accessing health care services are more acute for those covered by the non-contributory health subsystems (which represent between 30% and 83% of the population, depending on the country) without any significant differences by age group. Regarding financial protection, there is no clear pattern among the countries of the region regarding which subsystem (contributory or non-contributory) provides greater protection. However, the population over 65 in both subsystems is particularly vulnerable to suffering health expenditures high enough to induce poverty.

5 If there are no changes in to the current design of health systems, aging will increase public health spending (the sum of contributory and non-contributory subsystems) between 1 and 2.5 points of GDP by 2065, depending on the country. Closing the gap in the generosity of coverage between the contributory and non-contributory health subsystems poses an enormous challenge for countries in a context of accelerated aging. It can imply, in some cases, an increase in spending of similar or greater magnitude than that expected due to demographic change.

6 Health expenditures arise from a complex process of interaction between multiple actors (patients, medical service providers, insurers, and the government), so the public policies necessary to contain and make a more efficient use of resources are diverse. They include improvements in the design and implementation of payment systems for health care providers, the explicit definition of essential health benefits, copayment policies, and policies that regulate entry into the health system. The evaluation of health technologies, the development of integrated health information systems, and the deepening of prevention and health promotion strategies also stand out.

7 A considerable proportion of older adults in Latin America require long-term care to carry out basic activities of daily living (for example, eating or bathing) or instrumental (for example, shopping or taking medicine). Depending on the country, this proportion can be between 8% and 35% of the population over 75. Data from Ecuador and Mexico indicate that up to half of the people who require support to carry out some basic activity of daily living may not receive it. Due to population aging, the number of older adults in a situation of dependency could double in the next 30 years.

8 The family is the main provider of long-term care in the countries of the region, where there is also limited participation of non-specialized paid providers that varies by country. Women, spouses, and, in general, those who share a residence with the person requiring care participate more in care tasks. The potential increase in demand for long-term care goes hand in hand with trends like smaller family sizes and increasing employment opportunities for women, which raise the cost for families of providing long-term care.

9 Most of the countries in the region do not yet have a long-term care system. These systems must balance the objective of providing protection to the dependent population with the need to ensure the system's financial sustainability, considering the high potential cost of specialized long-term care services. One of the core challenges in this regard is to guarantee the development of a supply of quality services that can be accessed by those who need them the most, without public resources becoming a mere substitute for the financial and human resources that households could otherwise allocate for this purpose.

Appendix

Construction of the variable of health coverage by social security (contributory coverage).

Table A 4.1
Health coverage by subsystem in the 2019 CAF Survey

	Contributory social security subsystem	Non-contributory subsystem
Argentina	Regular or prepaid health insurance systems or PAMI	PLAN NACER - SUMAR Program / Programa Federal Incluir Salud/none, only public hospital
Bolivia	Health funds (Caja Nacional de Salud/ Caja de la Banca Privada/Banca Estatal/ COSSMIL/Seguro Universitario)	Single Health System Benefits, Law 1152 (Before: Servicio de Salud Integral [Comprehensive Health Service] Law No. 475, SUMI, SSPAM)/ Public Health Insurance (departmental or municipal government)/no coverage
Chile	FONASA (categories B, C, D), armed forces and military forces, ISAPRE	FONASA (category A)/none
Colombia	Contributory Regime (EPS), Special Regimes (armed forces, Ecopetrol, public universities, teacher's union)	Subsidized Regime (EPS-S)/no coverage
Ecuador	Ecuadorian Institute of Social Security (IESS) (General Insurance, Voluntary Insurance), ISSFA Insurance or ISSPOL	Seguro Campesino [rural social insurance]/ Seguro Comunitario [community-based health insurance]/ municipal insurance/no coverage
Mexico	Social security (IMSS)/ISSSTE/State ISSSTE/PEMEX, Defense or Navy	Seguro Popular (public national health insurance) or Seguro Médico para una Nueva Generación [Program for a New Generation]/none
Panama	Social Security Fund	None/just public system
Paraguay	Social security (IPS)/Sanidad Militar (insurance for armed forces)/Sanidad Policial (insurance for police personnel)	No coverage
Peru	ESSALUD (Social Health Insurance) / IPSS (Peruvian Institute of Social Security)/ armed or police forces/ Health Promotion Entities (EPS)	Seguro Integral de Salud [Comprehensive Health Insurance]/no coverage
Uruguay	Collective medical care institutions (IAMC, also called *mutualistas*)/armed or police forces	MSP - ASSE (general hospital-Public Health Ministry)/municipal polyclinic/one

Putting together the pieces

5

Putting together the pieces[1]

Social protection systems in the region face a twofold challenge in the context of the current process of demographic aging. On the one hand, they must increase coverage and guarantee that the transfers and services they provide to the population suffice to ensure certain income and quality thresholds. On the other hand, they must achieve those objectives within a framework of financial sustainability. Addressing these issues successfully will require the adoption of public policies with a comprehensive outlook considering the different dimensions of the social protection system, the specific features of other economic and social areas in each country, and the interaction between them.

To understand the main challenges and opportunities, and thus, the priorities for reform in the region, it is important to identify the baseline situation of social protection systems and project their future evolution. The dimensions to be explored include each country's demographic transition status as well as its social protection system's coverage, sufficiency, and current financial situation, among others. Looking to the future, it is also important to analyze the trajectory of expenditures and revenues of the protection schemes, the existing fiscal space, and other aspects like the extent to which higher revenues could be generated by reducing the existing gender and formality gaps in the labor market.

An additional aspect to be considered when devising reforms is how the characteristics of non-contributory systems—transfer amounts, access conditions—and the mechanisms for funding contributory systems can impact incentives. In fact, these design features can alter the behavior of certain groups (e.g., self-employed workers) regarding their labor participation and type of job, thus modifying their tendency to contribute to the healthcare or pension system.

While the previous chapters addressed specific aspects of job markets, and healthcare and pension systems in Latin America, this one adopts a more systemic viewpoint and discusses options for putting together the pieces of the jigsaw puzzle posed by social security systems in the region while at the same time meeting the goals of coverage, benefit sufficiency, and financial sustainability. In particular, the chapter highlights the aggregate effects and the interactions among the long-term changes in demographic structure, the job market, and the expenditure and revenue trends associated with the

1. This chapter was prepared by Christian Daude with research assistance from Federico Pena and Roberto Ferrer.

social protection system. The analysis considers existing spaces in terms of institutional capacities and fiscal resources, as well as potential new sources of funding and savings.

Some restrictions are particularly relevant upon examining the viability of reforming social protection systems in the region. Firstly, during the design phase of possible reforms, it is important to consider the potential consequences on the job market arising from changes in forms of funding and the creation or extension of non-contributory pension or healthcare systems. Secondly, there are political-economic limitations that reduce the space for viable reforms.

A social protection system with problems of financial sustainability may have negative effects on social welfare. For individuals, the lack of sustainability may create, for example, uncertainty regarding future income, because changes are expected either in system parameters or funding parameters. The less people know about the trajectory of these parameters, the greater the uncertainty they will be faced with. In addition to diminishing people's welfare, this can induce changes in the behavior of households as they endeavor to protect themselves against potential risks that they are unable to mitigate satisfactorily and efficiently.

A social protection system with problems of financial sustainability may have negative effects on social welfare.

From a macroeconomic standpoint, lack of sustainability in a social protection system may have negative effects on the rest of the economy. For example, in a high-deficit pay-as-you-go pension system, which will require greater financial assistance in the future, economic agents may think that a greater tax burden will be required in the future to fund the payment of the debt currently being generated. However, this higher future tax burden may negatively affect investment, particularly investment in projects with long-term horizons, reducing economic growth and thereby placing even more pressure on the sustainability of the financial system. Ensuring the sustainability of social protection systems should be a priority for public policies, not only due to matters of fiscal balance and macroeconomic stability, but also because it is a necessary condition for those systems to efficiently provide the social protection levels they are designed for.

One particularly relevant challenge for social protection policies is that although the effects of the demographic and technological changes analyzed in this report have accelerated, they are slow compared to the time horizon of political decisions. For example, despite the potential positive impacts of a pension system reform, the benefits of the changes usually materialize gradually and in the medium term, in contrast to the political costs that would be involved in the reform process. This may induce politicians to postpone these changes, so it is important to understand which factors could create the consensus required to make the necessary reforms politically viable.

Firstly, this chapter will analyze the main current challenges faced by social protection systems in terms of coverage and sufficiency, considering the existing heterogeneity across the region. Next, this starting point will be combined with social protection system expenditure and revenue projections for different scenarios, including one that reflects expected demographics trends.

In addition, it will look more broadly at sustainability aspects, considering the fiscal space, alternative sources of revenue or reduction in expenditure, and other public policy actions that could help address the costs of aging. Finally, it will delve into significant contextual aspects for the assessment of public policy reforms, such as the preferences of the population, the political economy of the reforms, and state capacities.

Current challenges to coverage and sufficiency

Social protection systems have been reviewed in this report based on the principle that they should provide a stable pattern of individuals' consumption throughout their life cycle. In addition, benefits must provide a minimum income threshold which, in case of extreme events, will prevent families and individuals from falling into poverty, as well as providing a certain level of income redistribution.

The previous chapters discussed in detail the extent to which different parts of the social protection system meet these objectives, as well as specific policies for pension and health systems that would enable those objectives to be further approached, taking into account the limitations imposed by the labor market and demographic trends.

Some of those points are taken up again in the current section, with the aim of considering the aggregate results and the funding needs that would be involved in some policies for addressing the challenges of social protection service coverage and sufficiency. This section documents the different starting points and the main challenges, first analyzing aspects related to pension systems and then healthcare systems in Latin America.

The analysis will consider the region's significant heterogeneity regarding some of the key dimensions of the challenges that aging, and the structural characteristics of and recent trends in labor markets pose to social protection systems. It also takes into account diversity in terms of the available window of time for introducing reforms that anticipate and provide sustainable trajectories for these systems.

Pension system coverage and sufficiency

There are significant differences in coverage and sufficiency among the social protection instruments discussed in this book (see Chapters 3 and 4). The gaps in coverage and sufficiency are analyzed using their absolute and expected levels considering GDP per capita, given that the two variables correlate to a country's level of development, as has been shown in the case of pensions (see Chapter 3). This may be due to factors tied to demand—e.g., as income grows, demand for social protection services increases—or the availability of resources that facilitate the supply of those services.

Clearly, pensions are not the only source of income for older adults, which may be supplemented by earnings from their own work or the work of other household members, remittances, other public transfers, capital returns and savings. This is shown by the fact that, on average, pensions and public transfers only account for one-third of the total income of adults over 65 years of age in Latin America. This proportion is quite low in comparison to the OECD average, where pensions and public transfers account for approximately two-thirds of the income for that age group (see Chapter 3). The correlation between coverage rates and poverty among older adults is negative and significant (with a simple correlation coefficient of -0.63), suggesting that a pension system with broad coverage is an important instrument for maintaining consumption levels during old age and protecting people against the risk of falling into poverty.

To delve deeper into these aspects, below we explore whether current coverage and poverty levels among older adults[2] are low or high considering each country's development level. It is important to bear in mind that the concept of sufficiency is broader than the need to avoid falling below an absolute monetary poverty line (see Chapters 1 and 3). In this regard, one limitation of the exercise is that, although the line of USD 4 per day, adjusted for differences in purchasing power, is useful for measuring sufficiency in medium-low income countries, it probably underestimates the problems of the sufficiency of benefits in medium-high income countries in the region. To contemplate this limitation, this comparative analysis will consider absolute coverage and poverty levels among older adults, as well as values related to development level.

Figure 5.1 presents the results for 17 Latin American countries based on available data, showing, on the one hand, the "excess" in the poverty rate, expressed as the difference between the expected poverty rate given GDP per capita and the observed poverty rate, and on the other hand, coverage deficit, defined in an equivalent manner.[3] Table 5.1 (see page 306) shows, without considering development level, the absolute coverage levels for contributory and non-contributory systems, and the poverty rate among older adults compared to the poverty rate in the population in general.

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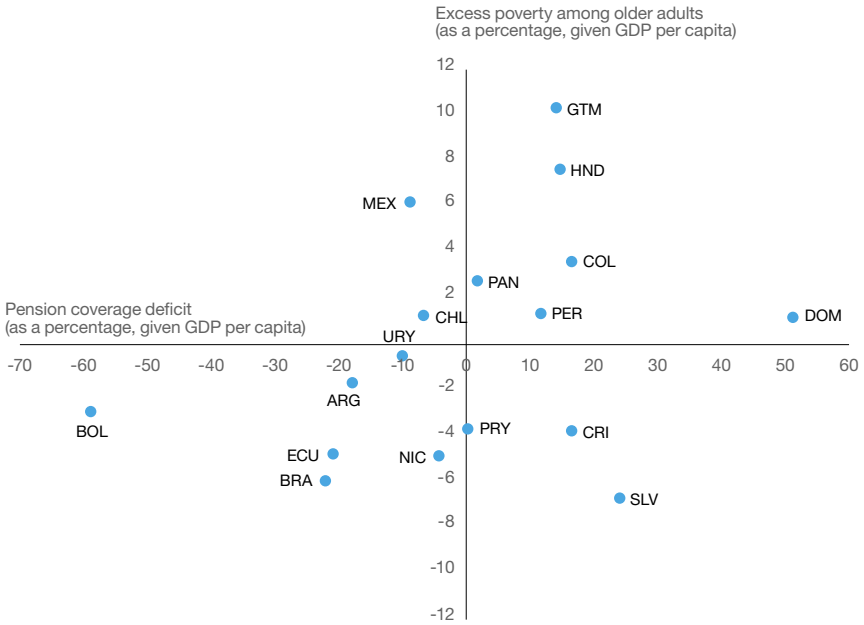
2. The simple correlation between pension coverage and GDP per capita in 2017 for the 17 countries in the region is 0.59, while monetary poverty, defined as those persons with income lower than USD 4 per day, adjusted according to purchasing power parity (PPP) is -0.85. Both these correlations are statistically significant for conventional levels of statistical confidence.

3. Thus, if a country has positive values on the vertical axis (to the right of the origin), it means that the observed proportion of poor older adults is higher than expected given its GDP per capita. Similarly, a positive value on the horizontal axis means that the country has a coverage deficit, i.e., its coverage is lower than expected.

Figure 5.1
Association between pension coverage and incidence of poverty for older adults in 2017



Notes: Coverage deficit is the difference between expected coverage, based on simple linear regression of the coverage rate with respect to GDP per capita at PPP and a constant, and the observed coverage rate. Similarly, excess poverty among older adults arises from comparing the expected poverty rate, after regressing it against a constant and GDP per capita, and the observed poverty rate among older adults.

Source: Author based on Arenas de Mesa (2019) coverage data and CEDLAS (2020) poverty data.

Countries tend to appear in the lower left and the upper right quadrants, suggesting the existence of a slightly positive correlation between the two variables.[4] For the countries in the lower left quadrant—Bolivia, Brazil, Ecuador, Nicaragua and, to a lesser extent, Argentina and Uruguay—coverage is higher and poverty is lower than expected considering their respective values for GDP per capita. Thus, although there may still be many challenges for the design of their social protection systems, it is not easy to establish a clear priority in terms of coverage and sufficiency, considering their development levels. As we will see, and as arises from the analysis of Chapter 3, one element in common among several countries in this quadrant is that they tend to have more immediate difficulties regarding the financial sustainability of their pension systems.

There is a positive correlation between excess poverty among the elderly and pension coverage deficit.

4. The simple correlation is 0.30. By excluding the (somewhat extreme) variables of Bolivia, the Dominican Republic, and El Salvador, it increases to 0.55.

Table 5.1
Pension system coverage and poverty, 2017

Country	Pension coverage			Poverty among older adults	Poverty in the general population
	Contributory	Non-contributory	Total		
Argentina	92.4%	0.1%	92.5%	0.3%	3.4%
Bolivia	22.3%	98.1%	98.1%	15.3%	14.6%
Brazil	75.7%	11.5%	86.9%	0.6%	5.5%
Chile	66.9%	20.0%	87.0%	0.6%	2.3%
Colombia	24.3%	21.4%	45.7%	11.3%	16.3%
Costa Rica	36.7%	14.5%	51.2%	1.4%	4.8%
Ecuador	33.0%	42.1%	75.1%	6.6%	12.9%
El Salvador	13.5%	4.1%	17.6%	10.5%	14.5%
Guatemala	14.5%	13.9%	28.3%	27.1%	34.5%
Honduras	10.2%	0.0%	10.2%	32.4%	39.2%
Mexico	29.7%	58.4%	81.6%	9.0%	11.4%
Nicaragua	34.0%	0.0%	34.0%	17.6%	20.8%
Panama	40.1%	38.7%	78.7%	2.2%	7.7%
Paraguay	15.7%	42.4%	58.0%	5.8%	11.1%
Peru	25.1%	23.7%	48.8%	9.9%	13.0%
Dominican Republic	15.2%	0.0%	15.2%	7.0%	10.3%
Uruguay	81.9%	6.0%	87.9%	0.1%	1.0%

Notes: For Argentina, the pensions corresponding to pension moratoriums are classified as contributory pensions. In Bolivia, non-contributory pensions are universal, so one person may have both types of coverage. In Mexico, there are people covered by both types of pensions, therefore the total number of persons covered is lower than the sum of contributory and non-contributary pensions.

Source: Author based on coverage data from Arenas de Mesa (2019) and poverty data from CEDLAS (2020).

Table 5.1 provides additional information. In Bolivia, coverage levels are very high because non-contributory pensions are so wide-reaching. At the same time, the expected poverty rate among older adults—given Bolivia's low GDP per capita—is higher than the observed poverty rate. The incidence of poverty among older adults in Bolivia is relatively high (over 15%), though only slightly higher than the poverty rate among the general population, which is 14.6%. This is also consistent with the fact that the replacement rate in Bolivia is one of the lowest in the region (see Chapter 3). Thus, the solution in Bolivia seems to be to implement cross-sectional policies that would increase productivity (e.g., by reducing job informality) to support the income of the population in general and enable bigger contributions to the contributory pension system, reaching a larger number of beneficiaries. In contrast to Bolivia, Nicaragua has relatively low coverage, although it is

higher than expected considering income per capita, mainly because the country does not have a non-contributory pension system. Nonetheless, as shown in Table 5.1, the poverty rate among older adults is lower than among the general population, even though both rates are relatively high compared to the rest of the region. This means that like Bolivia, though perhaps to a lesser degree, Nicaragua needs more general policies to increase income level and formal employment and to combat poverty, but there is no indication that a special focus on older adults is required. In Argentina, Brazil and Uruguay, coverage levels are good and sufficiency also seems to be adequate. Moreover, the poverty index among the total population in these three countries is approximately 10 times higher than among older adults. In these cases, as we will see, one of the main challenges is the financial sustainability of the pension system.

In the lower right quadrant are the countries where the main problem is coverage, while there seem to be fewer problems regarding sufficiency. Cases in point include Costa Rica, El Salvador and Paraguay. Table 5.1 shows that total coverage in Costa Rica is just over 50%, reflecting low coverage of the contributory system and particularly, the non-contributory system, which is below the regional average, especially when GDP per capita is considered. At the same time, the proportion of older adults below the poverty line of USD 4 per day is 1.4%—relatively low given GDP per capita. This suggests that there is other income that could be replaced if coverage were extended. In El Salvador, coverage is also significantly lower than the regional average for both pillars, even though older adults here—even more than in Costa Rica—have a lower poverty rate considering the country's GDP per capita (and the poverty rate among the population). This suggests that older adults in El Salvador tend to live in households that receive other income and transfers, e.g., remittances. In turn, as in the rest of the countries, many older adults continue to be economically active beyond the age of 65 (see Chapter 3). Finally, in Paraguay, this balance of priorities is less clear. On the one hand, coverage is low in absolute terms, particularly in the case of contributory pensions, reflecting the high degree of informality in the Paraguayan economy. However, considering GDP per capita, coverage is in line with the level expected.

In the upper right quadrant, there is a large group of countries facing coverage and sufficiency challenges. Thus, in the Dominican Republic, Guatemala and Honduras, both of these levels are low, even considering their income per capita. However, there are nuances. For example, in the Dominican Republic, even though sufficiency is low considering its income per capita, coverage is clearly lower than in other countries with a similar level of development. The main cause seems to be the absence of a non-contributory benefit, in addition to the low coverage of the contributory regime due to the high level of informality. In Guatemala and Honduras, the high relative poverty rate among older adults suggests that sufficiency problems are more acute than coverage problems, which also exist. In Colombia and Peru, levels of coverage and sufficiency are low, given their income levels, even though in absolute terms, poverty rates are lower among older adults than among the general population. Deficient coverage is partly explained by the small scope of contributory systems as a result of a high level of informality, and by the

fact that they are not compensated with sufficiently broad, generous non-contributory systems.

Finally, the upper left quadrant includes Mexico and Chile, which have coverage levels close to the values expected given their levels of development, but with excess poverty, suggesting that there are some problems in benefit sufficiency in both countries.

Healthcare system coverage and sufficiency

For healthcare benefits, we can revisit the exercise described in Chapter 1 on gaps in coverage and sufficiency, the latter measured as financial protection to prevent catastrophic or impoverishing expenditure (see also Chapter 4). This analysis shows that there is a group of countries with reasonable financial protection levels, but where the healthcare systems have low coverage levels for key areas such as maternity or infectious diseases.[5] At the same time, these systems often have little capacity in terms of healthcare sector workers and beds, as was shown, unfortunately, during the COVID-19 crisis. This group includes Bolivia, El Salvador, Guatemala, Honduras, Mexico, Panama, and Trinidad and Tobago. On the other hand, there are countries in which coverage is closer to the OECD average, but financial protection is much lower. This group of countries includes Argentina, Brazil, Chile, and the Dominican Republic. Finally, a third group comprising Colombia, Costa Rica, Ecuador, Paraguay, and Peru has significant gaps in both coverage and financial protection.

One interesting aspect is that the correlation between coverage rate and lack of financial protection is positive and significant for the countries in the region (0.44), while for OECD countries it is null (-0.02).[6] Thus, Latin American countries seem to have chosen between extending coverage or strengthening sufficiency for those who are covered. As shown in Figure 5.2, the coverage rate has a significant positive correlation with public resources allocated to healthcare, although with a decreasing relationship. The figure also shows the efficiency frontier, which measures the maximum coverage that could be achieved if resources were used efficiently.[7] In general, Latin American countries are below the estimated efficiency frontier, which means that higher coverage levels could be achieved with the same level of expenditure.

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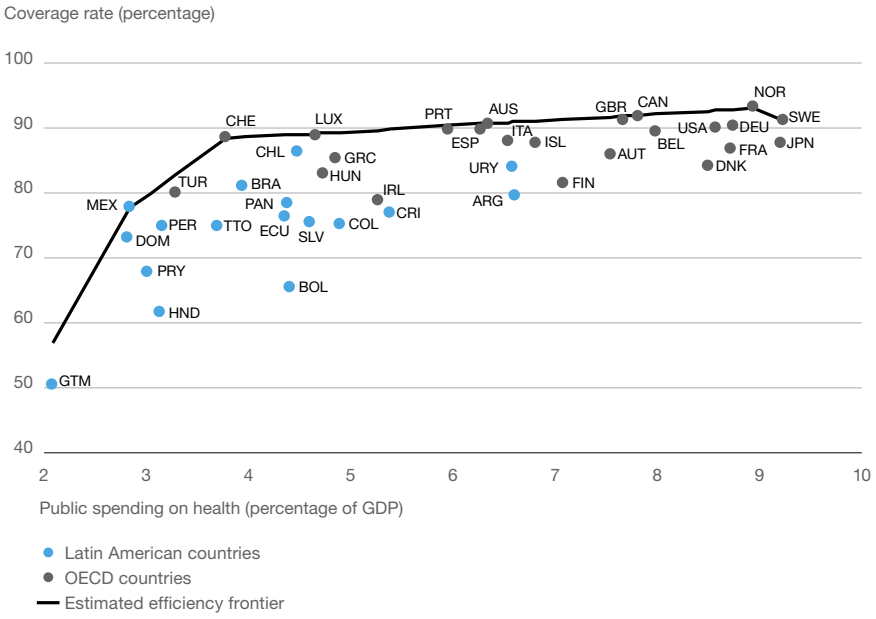
5. Uruguay is the only country in the region close to the OECD average in both areas.

6. These correlations could reflect different demographic structures. However, controlling for the advanced age dependency ratio, the correlation is 0.48 for Latin America, while it is -0.19 for the OECD.

7. Estimates calculated with Stata software, assuming decreasing returns to scale.

Figure 5.2
Coverage rate and public spending on health as a percentage of GDP



Source: Author based on data from the WHO (2020).

How much of the difference in the coverage rate with respect to the OECD average (87.5) is due to inefficiency and how much is due to a lower level of expenditure can be calculated using this estimate. The results of this breakdown, presented in Table 5.2, show that these countries could increase their coverage by 10.6 percentage points on average with the same expenditure. With an average gap of 13.4 points in the coverage rate with respect to the OECD average, this means that nearly 80% of the gap could be closed by improving efficiency.

Achieving maximum efficiency in the healthcare systems in the region would reduce their coverage gap with respect to the OECD by up to 80%.

Nevertheless, this average conceals very different situations within the region. On the one hand, countries such as Argentina, Bolivia, Colombia, Costa Rica, Ecuador, El Salvador, Panama, Paraguay, and Trinidad and Tobago present large efficiency gaps, such that significant increases in expenditure efficiency would enable them to reach average OECD coverage levels or higher. On the other hand, in the Dominican Republic, Guatemala, Honduras, Mexico, Paraguay, and Peru, even though there are also expenditure inefficiencies, expenditure levels are low, hence closing the efficiency gaps would be insufficient to attain the average OECD coverage level. Finally, in Brazil, Chile, and Uruguay, efficiency levels seem to be relatively good, and marginal improvements would suffice to close the coverage gap.

The above coverage analysis shows situations that require reforms to increase expenditure efficiency, which will most likely involve regulatory aspects of healthcare service providers and the healthcare insurance market. On the other hand, there are countries in the region that need more resources to enhance healthcare service coverage quality.

Table 5.2
Healthcare coverage levels, expenditure efficiency, and coverage gaps

Country	Coverage rate	Efficient frontier value	Efficiency gap	OECD gap	Difference
Argentina	79.4	91.0	11.6	8.1	3.6
Bolivia	65.5	89.1	23.6	22.0	1.6
Brazil	81.1	88.7	7.6	6.4	1.2
Chile	86.2	89.1	3.0	1.3	1.7
Colombia	75.2	89.5	14.3	12.3	2.0
Costa Rica	76.9	89.9	13.0	10.5	2.5
Ecuador	76.4	89.0	12.6	11.1	1.5
El Salvador	75.3	89.2	13.9	12.2	1.8
Guatemala	50.3	57.1	6.8	37.2	-30.4
Honduras	61.7	81.4	19.7	25.8	-6.1
Mexico	77.8	77.8	0.0	9.7	-9.7
Panama	78.3	89.0	10.7	9.2	1.6
Paraguay	67.7	80.0	12.2	19.8	-7.5
Peru	74.8	81.6	6.7	12.7	-5.9
Dominican Rep.	73.2	77.3	4.1	14.3	-10.2
Trinidad and Tobago	74.8	87.9	13.1	12.7	0.4
Uruguay	84.1	91.0	6.9	3.4	3.5
Average	**74.0**	**84.6**	**10.6**	**13.4**	**-2.9**

Notes: For each country, the efficient value (second column) is calculated by projecting actual expenditure on the estimated frontier function. The efficiency gap is the difference between the first and second columns in the table. The gap with respect to the OECD is calculated as the average value of the coverage rate for the OECD (87.5) minus the value in the first column. The last column presents the difference in the efficiency gap and the coverage gap with respect to the OECD.

Source: Author based on data from the World Bank (2020) and WHO (2020).

Regarding financial protection, first, for OECD countries, a linear regression was estimated between financial vulnerability (defined as the percentage of persons exposed to catastrophic health expenditure) and public spending on health as a percentage of GDP. Then, this relationship was used to calculate the expected financial vulnerability value for each Latin American country, given their expenditure. Finally, the gap between the observed value and the estimated value was compared to the difference with respect to the OECD average, where 6.66% of people are vulnerable to extreme health expenses. Results are presented in Table 5.3.

Table 5.3
Financial protection gaps and health expenses

Country	Percentage of financially vulnerable persons	Expected value given healthcare expenditure	Gap with respect to expected value	Gap with respect to the OECD	Difference
Argentina	16.9	7.0	-9.9	-10.2	0.4
Bolivia	6.0	10.0	4.0	0.6	3.3
Brazil	25.6	10.6	-15.0	-18.9	3.9
Chile	14.6	9.9	-4.7	-7.9	3.2
Colombia	8.2	9.3	1.1	-1.5	2.7
Costa Rica	9.8	8.7	-1.2	-3.2	2.0
Ecuador	10.3	10.0	-0.3	-3.7	3.4
El Salvador	1.7	9.7	8.0	5.0	3.1
Guatemala	1.4	13.1	11.7	5.3	6.4
Honduras	1.1	11.7	10.5	5.5	5.0
Mexico	1.6	12.1	10.5	5.1	5.4
Panama	3.3	10.0	6.7	3.4	3.4
Paraguay	7.1	11.8	4.7	-0.4	5.2
Peru	9.2	11.7	2.4	-2.6	5.0
Dominican Republic	17.7	12.1	-5.5	-11.0	5.5
Trinidad and Tobago	3.9	10.9	7.0	2.8	4.3
Uruguay	4.5	7.1	2.5	2.1	0.4
Average	**8.4**	**10.3**	**1.9**	**-1.7**	**3.7**

Notes: The financially vulnerable population is defined as the percentage of households in which health expenses account for more than 10% of income. The expected value for health expenses is based on the projection of the expected value based on a linear regression between vulnerable population and public spending on health in OECD countries. The gap is the difference between the value in the first and second columns. The gap with respect to the OECD is the difference between the average percentage of vulnerable persons in the OECD (6.66%) and the value in the first column. Finally, the last column shows the gap with respect to the expected value minus the gap with the OECD.

Source: Author based on data from the World Bank (2020) and WHO (2020).

There are also major differences between countries regarding financial protection. On the one hand, there is a group of countries where financial vulnerability is significantly higher than would be expected given the public resources allocated to healthcare programs. This is the case in Argentina, Brazil, Chile, and the Dominican Republic, where it seems efficiency gains would suffice to close much of the gap in financial protection with respect to the OECD. On the other hand, there are several countries, especially Central American countries and Mexico, where financial vulnerability is low (see Chapter 4) in terms of public health spending.

In several countries, the financial protection of the health systems is much lower than expected given their expenditure level.

Future challenges to financial sustainability

The financial sustainability of social protection systems and its evolution over time is another relevant dimension for understanding the current situation, the magnitude of the required reforms and the existing window of time for carrying them out. Financial sustainability, i.e., the extent to which these systems' resources and expenditures are in balance, is a complex concept to evaluate, given that, in theory, there are always certain values for system parameters that eliminate current or future imbalances; however, the political viability of implementing such parametric reform is not always clear. Moreover, public resources from other sources or reductions in public spending in other areas are also often used to fund the financial requirements of the social protection system. Therefore, it is important to evaluate these points within the broader context of public finance. The discussion will hence be divided into two parts. This section will analyze social protection systems' expenditure and revenue trends associated with the demographic scenario described in Chapter 1, which, on average for countries in the region, foresees a significant increase in the population over 65 (from 8% to 18% of the total over the next three decades). The next section will analyze, from a fiscal standpoint, the options for adapting to the resulting increase in the need for funding in countries in the region.

As mentioned above, the operational definition of the financial sustainability of a social protection system is not obvious. A social protection system is, essentially, a collective contract that insures people against certain risks and promises them a future income flow in certain conditions. For the pension system, benefit payouts depend on the trajectory of a household's income and decisions. In pay-as-you-go systems, the benefits received by pensioners are funded through mandatory contributions made by current workers. In a capitalization system, an insurance company promises to pay a life annuity, for example, which takes into account actuarial factors and the individual contributions made by future pensioners during their working life. These contributions are capitalized in the pension fund.

One way to define the financial sustainability of the pay-as-you-go system is based on the idea put forth by Samuelson (1958) and Aaron (1966), who propose that it is sustainable provided that, on average, people are paid annuities equal to or greater than the growth in the total wage bill, which, in a situation of equilibrium, should be equal to the sum of the growth of total factor productivity and population growth.[8] If the system starts from initial equilibrium, the effects of aging, in principle, can be neutralized by gradual changes in the replacement rates, i.e., by reducing pension payments in relation to the wages earned by workers before retiring. However, the system can present financial imbalance beyond those adjustments, whether because of an unexpected decline in the productivity growth rate,

8. In this simplified version of the world, it is assumed that the system cannot be in deficit and that contribution rates remain constant.

or demographic shocks, or an excess in the generosity of the system. In these cases, additional changes will probably be needed to make the system sustainable (OECD, 2012). Thus, theoretically, annuity rates could be calculated and compared.

A more operative definition for analyzing financial sustainability is to make long-term projections to capture the interaction of demographic trends with key parameters in the system that define revenue (contribution rates, basically) and benefits (e.g., replacement rates or retirement age). Obviously, part of the expenditure—e.g., components of non-contributory pensions and healthcare programs—is funded with income from general revenue. In this regard, by design, contributory systems do not fund non-contributory benefits. Moreover, as discussed in Chapters 2 and 3, and the previous section of this chapter, it would not be advisable to do so, considering the potential effects of social contributions on informality in the region's countries.

Projections of expenditure and revenues

Aggregate projections for expenditure and revenues of pension and healthcare systems are presented below. They are estimated by establishing a baseline scenario that takes into account only demographic factors,[9] which have been discussed in previous chapters. Box 5.1 outlines the methodology used to estimate them, and Figure 5.3 (see page 315) presents the projections for 2065 in Latin American countries.

Aging will increase pension and health spending in relation to GDP in all countries in the region.

As can be seen, every country is projecting an increase in spending as a proportion of GDP. On average, the projected increase is 3.4 percentage points (p.p.) of GDP, of which approximately two-thirds is due to the effect of population aging on the pension system and one-third to the increase in health care spending. This average includes very different situations, but is mainly explained by the disparate evolution of pension spending, since the increase in health expenditure is considerably more even across countries.

9. This means that it does not include potential increases in the generosity of the benefits or any significant changes in coverage.

Box 5.1
Pension and healthcare projections under the demographic scenario[a]

The methodology used to project the fiscal sustainability of pension and healthcare systems has three core components. The first component is the level of generosity (measured as average expenditure per beneficiary) and contribution (average per contributor) of the systems in relation to the country's GDP per capita. The second component is the coverage level, for the economically active or inactive population alike. The third component considers the relative weight of the covered population with respect to the total population. The financial expenditure or revenue in a particular period of time is the sum of the product of these three components across different population groups.

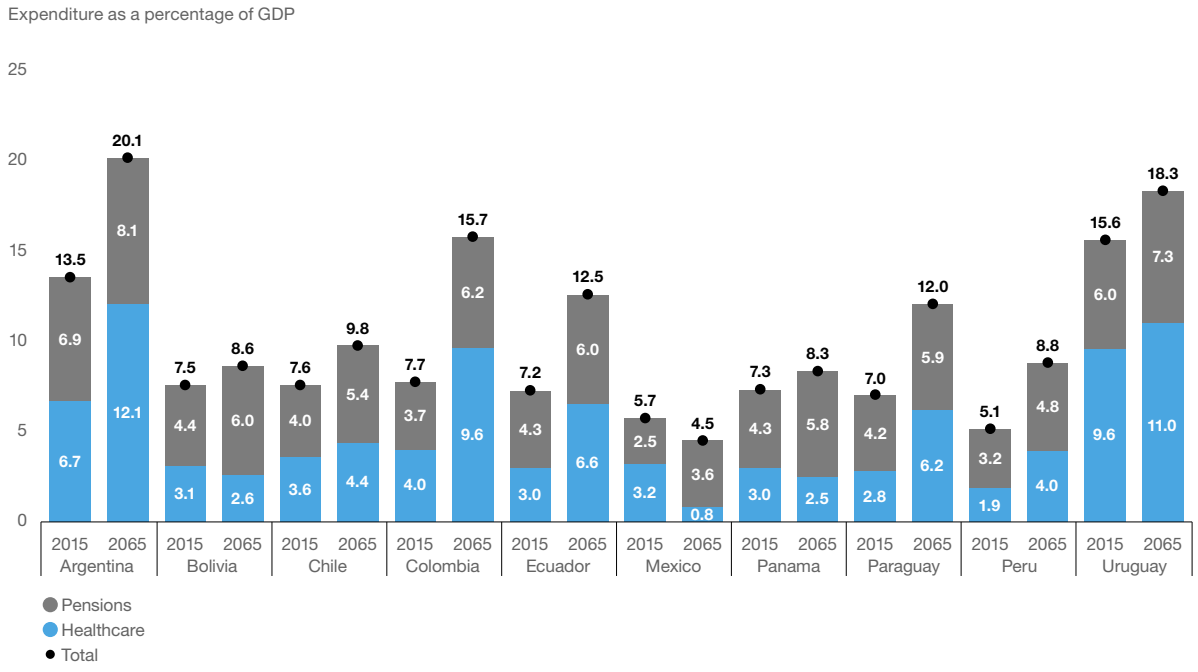
Based on this general structure, different projection exercises were performed for revenue from contributions and expenditure on benefits or services. For both the health system and the pension system, projections were made by adjusting the definition of each component to the specifics of the system analyzed. In addition, projections were broken down, distinguishing the contributory pillar from the non-contributory pillar. The projection in the baseline scenario analyzed the fiscal trajectories of each system and subsystem, isolating the pure effect of the change in demographic composition. For practical purposes, the exercise examined the trajectory of revenues and expenditures in response to the changes in the product of the three components due to fluctuations in the third component (weight of the covered population in the total population), while keeping constant values for contribution, generosity and coverage.

To project revenues from contributions for the two systems, we calculated the contributions to social security made by the formally employed, economically active population. For some countries, we also considered the pension income deductions for contributions to the healthcare system. Thus, the fiscal revenue of both systems is generated exclusively through the contributory pillar. Other income for general revenue, transfers from the National Treasury or return on investments were not considered.

Expenditure projections were broken down by the type of service provided by each system, without including the different individual capitalization systems present in the region (pensions) or the voluntary private subsystems for medical/healthcare. In the case of pensions, both in the contributory pillar and the non-contributory pillar, the benefits granted to the passive population in terms of retirement and pensions were measured in relation to per capita product. For healthcare systems, average expenditures were calculated per beneficiary or eligible person in each of the contributory pillars (social security) and non-contributory pillars (universal system). The different average expenditure profiles in each pillar were calculated according to age and gender structure, incorporating the differences over their life cycle. In addition, the gender difference as a result of years of maternity for women was captured. A key assumption is that these expenses per beneficiary over GDP per capita are constant over time.

a. This box was written by Federico Pena.

Figure 5.3
Evolution of public spending on pensions and healthcare, 2015 and 2065



Source: Author based on data from IERAL (2020) and Crosta *et al*. (2019).

For a group of countries including Argentina, Colombia, Ecuador, and Paraguay, expenditure on social protection relative to GDP would increase by more than five percentage points. In some cases, such as Argentina, the calculation reflects the currently high levels of coverage and generosity of the social protection systems, especially pensions, whose effects are reflected in the current level of expenditure and are accentuated by demographic change (see Chapter 3). For Colombia, Ecuador, and Paraguay, the population aging effect predominates. For some countries, the increase in expenditure is considerably more moderate, such as Bolivia, Panama, and Chile, where it would be 1 to 2 percentage points of GDP, and Peru, with 3.7 percentage points. This relatively low increase is due mainly to the greater weight of defined contribution (capitalization) programs, which reduce the impact of longevity on pension benefits. In Uruguay, there is also a more moderate projected increase, of 2.7 percentage points of GDP, starting from high expenditure levels. Finally, in Mexico, a slight reduction is projected, due to the complete transition of the previous pension system and the maturing of the capitalization system, which is not counteracted by the projected increase in healthcare expenditure.

Finally, in late 2019, Brazil approved a reform in the pension system that changed several key parameters in the pay-as-you-go system. Table 5.4 shows that the system before reform was clearly unsustainable. In the projection presented, expenditure on pensions increases from 12% of GDP in 2015 to 32% of GDP

in 2065. Although projections based on the new system parameters are not available for this report, Box 5.2 presents the potential effects of the reform on the sustainability of the pension system in Brazil.

Table 5.4
Projections of public revenue and spending in pension and healthcare systems

Country	Result	Result /GDP						
		2015	2020	2030	2040	2050	2060	2065
Argentina	Revenue	9.7	10.0	10.2	10.3	10.3	10.2	10.1
	Expenditure	13.5	13.4	14.4	15.7	17.4	19.3	20.1
	Result	-3.8	-3.5	-4.2	-5.3	-7.1	-9.1	-10.0
Bolivia	Revenue	1.7	1.8	1.9	1.9	1.8	1.8	1.8
	Expenditure	7.5	6.6	6.6	7.0	7.5	8.2	8.6
	Result	-5.8	-4.8	-4.8	-5.1	-5.7	-6.4	-6.8
Brazil (pre-2019 reform)	Revenue	8.6	8.4	7.8	7.0	6.3	6.0	5.9
	Expenditure	11.9	13.4	16.9	20.6	24.7	29.5	31.6
	Result	-3.3	-5.1	-9.1	-13.6	-18.4	-23.5	-25.7
Chile	Revenue	1.5	1.4	1.4	1.4	1.3	1.3	1.2
	Expenditure	7.6	6.7	7.3	8.1	8.9	9.5	9.8
	Result	-6.1	-5.3	-5.9	-6.7	-7.5	-8.3	-8.5
Colombia	Revenue	3.4	3.5	3.5	3.4	3.2	3.1	3.1
	Expenditure	7.7	8.4	10.1	11.6	13.1	14.8	15.7
	Result	-4.3	-4.9	-6.7	-8.3	-9.9	-11.7	-12.6
Ecuador	Revenue	4.0	3.9	3.8	3.7	3.5	3.4	3.3
	Expenditure	7.2	7.6	8.5	9.6	10.7	11.9	12.5
	Result	-3.3	-3.6	-4.7	-5.9	-7.2	-8.6	-9.3
Mexico	Revenue	2.2	2.2	2.1	2.0	1.9	1.8	1.8
	Expenditure	5.7	4.8	4.2	4.1	4.2	4.3	4.5
	Result	-3.5	-2.6	-2.1	-2.0	-2.2	-2.5	-2.7
Panama	Revenue	4.2	4.3	4.4	4.6	4.8	5.0	5.1
	Expenditure	7.3	6.6	6.7	7.2	7.6	8.1	8.3
	Result	-3.1	-2.3	-2.3	-2.6	-2.8	-3.1	-3.2
Paraguay	Revenue	3.4	3.5	3.7	3.4	3.0	2.9	2.9
	Expenditure	7.0	7.4	8.2	8.8	9.8	11.4	12.0
	Result	-3.6	-3.9	-4.5	-5.4	-6.8	-8.5	-9.2
Peru	Revenue	2.1	2.2	2.1	2.0	1.9	1.9	1.9
	Expenditure	5.1	5.4	6.0	6.7	7.6	8.5	8.8
	Result	-3.0	-3.3	-4.0	-4.8	-5.6	-6.6	-6.9
Uruguay	Revenue	9.4	9.4	9.2	9.0	8.7	8.4	8.4
	Expenditure	15.6	15.5	15.4	15.5	16.4	17.6	18.3
	Result	-6.2	-6.1	-6.2	-6.5	-7.7	-9.2	-9.9

Source: Author based on data from IERAL (2020) and Crosta *et al*. (2019).

Box 5.2
Effects of Brazil's 2019 pension reform

Public expenditure on pensions in Brazil is currently very high compared to the average in the region, as discussed in Chapters 1 and 3. It is also high in relation to expenditure in OECD countries, especially considering the age structure of the population. Indeed, while the proportion of the population over 65 in Brazil is half the average for OECD countries (7.8% versus 16.2% in 2015), Brazil's outlay for pensions is almost 12%, compared to only 8.2% on average in the OECD (2018a). The demographic projections in Chapter 1 show that the dependency rate in Brazil reached its minimum level in 2019, and therefore, population aging was on the way to exerting unsustainable pressure on Brazilian public finance (see Table 5.4).

This situation reflects the fact that the system in Brazil prior to reform was fairly generous, due to low retirement age and relatively high replacement rates. For example, traditionally, there was not a minimum age for retirement, so the effective retirement age was about 57 for men and 52 for women, compared to an average of over 66 in the OECD. At the same time, life expectancy in Brazil after 65 years of age is currently 20 years for women and 16.7 years for men, compared to averages of 21.3 years and 18.1 years, respectively, in the OECD (2019a). Replacement rates in Brazil were among the highest in the world, particularly for people with medium-low income (OECD, 2018a). On the one hand, this acts as a disincentive for relatively young, healthy people to remain active in the job market, and on the other hand, leads to high financial costs for the pension system.

In particular, the system for government employees was considerably more generous than the one for private workers. One of the aims of the reform was therefore to reduce the differences between them. Estimates of expected savings show that the changes in the system for public employees alone would generate a decrease of 14.2% in the net current value of the implicit pension debt (i.e., the discounted value of the deficits of the public system projected from 2020 to 2093).[a] Although it was not possible to fully assess the effect of the approved reform for this report, it is expected to stabilize expenditure on pensions in the year 2050 at approximately 20% of GDP, instead of expenditure being higher than 30% of GDP as would have occurred without the reform, according to IMF estimates (2019a).

a. See *Ministério da Economia do Governo Federal do Brasil* [Ministry of Economy of the Federal Government of Brazil] (2019).

A second point to consider is the evolution of social protection system revenue, in particular the contributions to the pension system and health system.[10] On average, revenue would remain stable as a percentage of GDP up to 2040, whereas by 2065 it would drop by approximately 0.2 percentage points of GDP in comparison to 2015. Clearly, there are also differences between countries in this case. In Uruguay, a drop of nearly one percentage point of GDP is projected due to aging, followed by Ecuador (-0.7 p.p.), Paraguay (-0.5 p.p.),

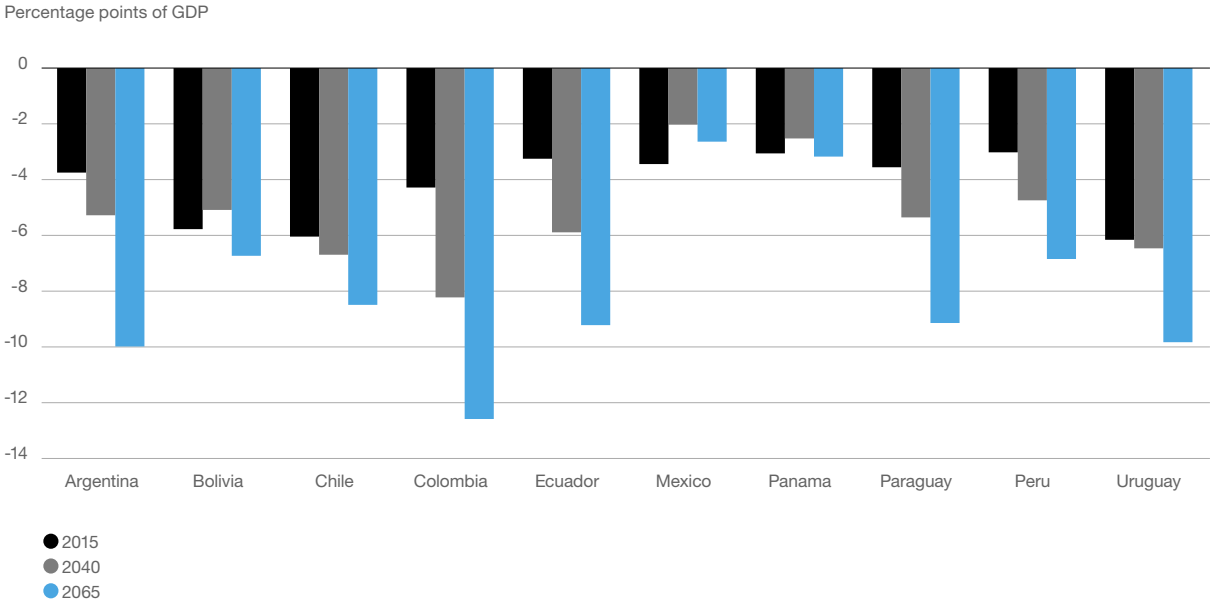
10. As in the rest of this book, resources from general revenue often required by law to be allocated to funding social protection are ignored. For example, in Uruguay, the collection of several taxes, including, among others, seven points of the value-added tax and all of the income tax collected on retirement and pension benefits, are allocated by law to funding the pay-as-you-go system. Revenue collected from these taxes accounts for nearly half the system's revenue.

Mexico (-0.4 p.p.) and Colombia (-0.3 p.p.), while other countries, such as Argentina, Panama, and Bolivia, expect a slight increase as a proportion of GDP. The levels of effective contribution rates which, for example, are high in Uruguay compared to the other countries (see Chapters 2 and 3) are also important in this evolution.

Aging will worsen the financial deficits of pension and health systems by 3.7 points of GDP between 2015 and 2065.

Despite the differences in revenue evolution, these resources may not counteract the strong increase in expenditure on social security in any of the countries. On average, the financial deficits of the pension and health systems are expected to deteriorate by approximately 3.7 percentage points of GDP between 2015 and 2065. This deterioration would be sharper in Colombia, followed by Argentina, Ecuador, and Paraguay, with needs for additional funding ranging from above 5.5 to 8.3 percentage points of GDP. Clearly, for most countries in the region, the social protection system, under its current parameters, is at risk of becoming unsustainable as a result of aging (Figure 5.4).

Figure 5.4
Evolution of the financial deficits for pension and health systems per country



Source: Author based on data from IERAL (2020) and Crosta *et al*. (2019).

Another point to consider is the projected speed of fiscal deterioration caused by the aging effect. The higher or lower speed of the process will condition the urgency and the potential transition periods that must be considered to implement the required reforms in order to achieve improvements in coverage and sufficiency that are sustainable from a fiscal standpoint. Deterioration is

expected to be faster in Colombia, where the rapid demographic transition means that the projected funding deficit will almost double, with an increase equivalent to over 3.3 percentage points of GDP, between 2020 and 2040. The next country according to the importance of deficit deterioration is Ecuador, with a projected increase of 2.3 percentage points over the next 20 years, followed by Argentina, Paraguay, and Peru, with projected increases of 1.5 to 2 percentage points of GDP, mainly related to the rapid demographic transition. In the other countries, the impacts on the social security deficit for the same period are more moderate, which would provide a somewhat wider window of time, though there are differences in the baseline situations in terms of the current system equilibrium. It must also be taken into consideration that these projections are based on the maintenance of the low coverage levels currently in place in many region's countries. In this regard, the exercises presented below to expand coverage and ensure greater sufficiency of pensions and healthcare benefits could place more fiscal pressure on the pension and healthcare systems.

Estimated costs of increasing coverage and sufficiency levels

The projections presented so far have considered only the effect of aging on the region's pension and healthcare system revenue and expenditure, maintaining the systems' current parameters. However, as discussed previously in this chapter, several countries in the region also face challenges of low levels of pension coverage, health coverage problems, and sufficiency gaps in both systems. Below, we present some estimates of the costs associated with resolving some of these challenges.

Extending pension coverage and transfers against poverty

Achieving universal coverage of pensions would cost, on average, 0.24 additional points of GDP in 2018 and 0.66 points by 2065.

Table 5.5 presents a series of simple exercises on extending pension system coverage and sufficiency and the associated costs. Neither of the two exercises intends to project the number of older adults who will lack a non-contributory pension or will live beneath the poverty line in 2065. The exercise is aimed at estimating the cost of extending coverage and sufficiency of the benefits today, and to show how demographic aging would affect this cost while maintaining everything else constant (coverage rates, poverty rate, etc.). The first column shows the value of the pension associated with the main non-contributory system as a percentage of GDP per capita, to analyze the generosity of this benefit in relation to the development levels of each country. The second column shows the cost that would be incurred when taking pension coverage to 100% by expanding the main non-contributory pension currently received by an older adult in each country. Under these assumptions, the countries in the region would have to increase expenditure by 0.24% of GDP on average, to attain universal coverage. However, there are marked differences among countries. Some, such as Bolivia, Mexico, and Panama, have high coverage levels and young populations. At the opposite extreme, there are cases like Brazil, Paraguay, and Uruguay, where

the cost is more than double that in the first group of countries. In Brazil, this is mainly due to a high minimum benefit, while in Paraguay, despite its young age structure, the cost is high because of low coverage and because it provides a relatively high benefit compared to GDP per capita. Finally, the higher cost in Uruguay is due mainly to the relative aging of the population combined with a generous minimum benefit. Argentina and Chile are at an intermediate level. They both have relatively high contributory pension coverage levels. Argentina will age at a relatively slow pace,[11] and, although Chile will age faster, its non-contributory pension is considerably less generous than those in Brazil or Uruguay.

Table 5.5
Estimated costs of universal coverage and sufficiency of pensions

Country	Non-contributory pension as a percentage of GDP per capita	Estimated cost of making coverage universal (percentage of GDP)				Estimated cost of eliminating poverty (USD 4 at PPP) in 2018
		Non-contributory pension		USD 4 per day at PPP		
		2018	2065	2018	2065	
Argentina	27.2%	0.23%	0.43%	0.05%	0.10%	0.00%
Bolivia	14.7%	0.02%	0.05%	0.02%	0.05%	0.18%
Brazil	35.1%	0.41%	1.33%	0.11%	0.37%	0.01%
Chile	12.6%	0.19%	0.50%	0.09%	0.23%	0.00%
Colombia	4.6%	0.21%	0.69%	0.45%	1.50%	0.09%
Ecuador	9.5%	0.17%	0.50%	0.22%	0.66%	0.06%
Mexico	8.2%	0.11%	0.34%	0.10%	0.30%	0.05%
Panama	9.2%	0.16%	0.43%	0.08%	0.21%	0.01%
Peru	6.6%	0.27%	0.81%	0.46%	1.37%	0.09%
Paraguay	19.0%	0.51%	1.50%	0.30%	0.87%	0.04%
Uruguay	22.9%	0.41%	0.72%	0.12%	0.21%	0.00%
Average	**15.4%**	**0.24%**	**0.66%**	**0.18%**	**0.53%**	**0.05%**

Notes: The second column measures the cost of expanding coverage to 100% of persons over 65, paying them the country's main non-contributory pension. In the third column, the same is measured, but considering the demographic structure projected for 2065. In the next two columns, the same is measured, but instead of paying the principal non-contributory pension, coverage is expanded by paying a non-contributory pension equivalent to USD 4 per day at PPP. The last column estimates the cost of providing a transfer of USD 4 per day at PPP only to persons over 65 who live below this poverty line.

Source: Author based on national data and CEDLAS (2020) and World Bank (2020).

11. For details on demographic transition and aging in countries in the region, see Chapter 1.

To analyze how demographic aging will affect coverage expansion using this mechanism, column 3 in Table 5.5 takes current benefit and coverage levels and applies the age structure projected for 2065. By that year, the cost would be 2.7 times higher with the current population structure, i.e., an increase of 0.66% of GDP on average due to population aging. The most significant increases would be in Brazil and Paraguay due to the large rise in the number of beneficiaries and the relative generosity of current benefits (column 1 in Table 5.5). From 2015 to 2065, the proportion of persons over 65 will grow from 8% to 29% in Brazil and from 5.9% to 18.8% in Paraguay (see Chapter 1). However, it is clear that even in countries with currently less generous benefits, such as Colombia or Peru, expenditure associated with universal coverage would increase by about 0.5% of GDP due to demographic change.

Columns 4 and 5 in Table 5.5 present a similar exercise, but considering that the minimum pension provided to achieve universal coverage is USD 4 per day adjusted for purchasing power parity (PPP).[12] In this case, average expenditure would be lower, both in 2018 and considering population aging up to 2065. However, this average masks major differences per country. For example, in Brazil, this policy would be less costly, because achieving universal coverage with a benefit of USD 4 per day would cost 0.11% of GDP in 2018, compared to 0.41% under the current non-contributory benefit. In 2065, this expense would increase to 0.37% of GDP versus 1.33% of GDP, respectively. The situation is similar in Paraguay and Uruguay, and to a lesser extent, in other countries in the region. The message for this group of countries would be that an increase in coverage through non-contributory pensions should probably involve a less generous benefit so that its fiscal cost would be moderate and sustainable over time in the face of demographic aging. However, for Colombia, Peru, and, marginally, Ecuador, the increase in expenditure would be highly significant, reflecting sufficiency problems in addition to low coverage. For these countries, this exercise shows that, if both problems are to be resolved, the fiscal cost in 2065 will be relatively high. Thus, as we will see, they seem to need an agenda that will enlarge coverage under contributory pensions by increasing formal employment to supplement the expansion of coverage and sufficiency, in addition to requiring potential reforms to achieve a better balance in the pay-as-you-go systems with deficits in some of these countries.

An alternative exercise, presented in the final column of Table 5.5, is based on estimating the cost of eliminating poverty for persons over 65, assuming that each older adult who lives under the poverty line of USD 4 per day at PPP receives this amount. As shown in this estimate, the fiscal cost in 2018 would be significantly lower. This is because many older adults who do not receive a pension have other income sources either from savings or their work (see Chapters 2 and 3) or that of their spouses or other household members. This supplementary income makes the incidence of poverty on the population of older adults considerably lower than the coverage gap.[13]

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12. It is implicitly assumed that the monetary value of the poverty line increases at the same rate as GDP per capita.

13. Clearly, the fact that many older adults in the region are economically active does not necessarily imply an optimum situation from a social standpoint.

If the policy aims to eradicate poverty for this age range, a monetary transfer focused on poor older people would be more cost-effective, with a cost 5 times lower than providing a minimum pension and 4 times lower than transferring USD 4 per day to all older adults who do not receive a pension. This could be one policy option, particularly for countries currently lacking non-contributory benefits, which would enable improvement in the sufficiency of the benefits for the most vulnerable persons, while moving toward better coverage by contributory systems. However, this estimate does not consider that identifying and targeting the transfers appropriately requires that institutional capacities solve important existing problems in information asymmetry, so they may be difficult and costly to implement. However, if the goal is to achieve a minimum income threshold during old age, this alternative seems to be one method that could be explored in greater depth.

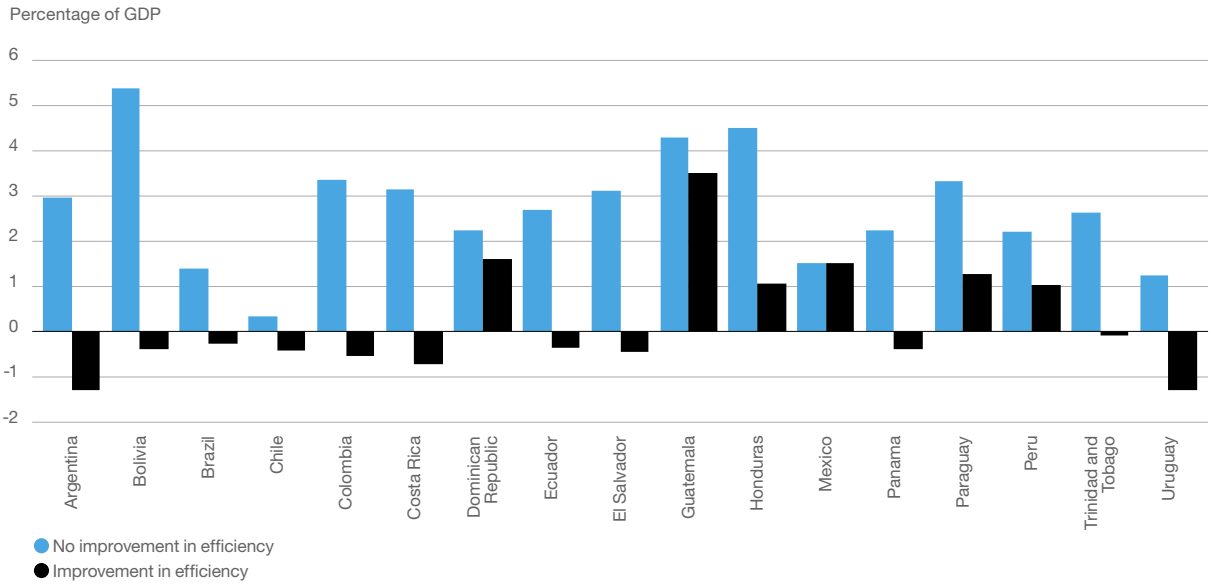
Finally, it is important to note that for countries with medium-high income (e.g., Chile, Panama, and Uruguay), a benefit of USD 4 per day would very probably be insufficient to maintain lifelong consumption levels (see Chapter 3). Therefore, reaching the sufficiency levels needed in these countries would probably require higher benefit levels and consequently, greater expenditure.

Improvements in healthcare coverage and assistance for catastrophic expenditure

Below, we present two alternative estimates of the additional expenditure required to close the coverage gaps in the healthcare systems. Both estimates are shown in Figure 5.5. The first considers the additional expenditure required in each country to equal the average coverage rate in OECD countries, discussed in the subsection "Projections of expenditure and revenues," maintaining the efficiency of expenditure constant (defined by the ratio between actual coverage and the actual level of public expenditure on healthcare).[14] This coverage level may seem ambitious, but several countries in the region with medium-high income are not so far from this goal (see Table 5.2 on page 310). A second estimate assumes that countries reach expected coverage through improvements in the efficiency of current public expenditure on health, so that they are placed on the frontier (maximum efficiency) and only the incremental expenditure to reach the average OECD coverage is calculated.

14. Indeed, there are several countries, including Brazil, Chile, Mexico, Peru, and the Dominican Republic, whose coverage levels are higher than expected given the expenditure on healthcare as a percentage of GDP.

Figure 5.5
Expenditure required to close the healthcare coverage gap in relation to the OECD



Source: Author based on data from World Bank (2020) and WHO (2020).

Estimates show that an average additional expenditure of 2.7% of GDP would be needed to close the coverage gap compared to the average in OECD countries.[15] In contrast, if it is assumed that countries can improve efficiency in healthcare expenditure, this gap could be closed with an additional expenditure of 0.2% of GDP. Moreover, many countries could reduce expenditure as a percentage of GDP and achieve average coverage quality equal to that in OECD countries.[16]

Although these estimates should be taken only as indicative exercises and not as exact results, the magnitudes show that reforms intended to improve the efficiency of healthcare expenditure can be an important source of savings in many countries in the region, whether to expand service quality or to maintain services for an aging population that places pressure on the system, increasing its costs. For example, potential savings in Uruguay are 1.2 percentage points of GDP, while projected healthcare expenditure due to demographic aging would increase by 1.3 percentage points of GDP between 2015 and 2065.

Improvements in the efficiency of healthcare expenditure are an important source of funding to expand coverage and improve service quality.

15. Despite the high correlation between coverage rate and expenditure on healthcare as a percentage of GDP (in logarithms), with a simple linear correlation coefficient of 0.77, the coefficient means that an increase of 10 percentage points in expenditure only increases coverage by 1.8 percentage points.

16. There is clearly room for improvement in efficiency also in OECD countries. For example, one study found that, on average, potential improvements amount to 2 percentage points of GDP (OECD, 2010b).

It is important to note that to close coverage gaps in a group of countries with high expenditure efficiency but low coverage levels, more resources would be required (at least an additional 1% of GDP), according to these estimates. This is the situation in Guatemala, Honduras, Mexico, Paraguay, Peru, and the Dominican Republic. An alternative estimate for these countries could minimize the increase in expenditure needed to equal OECD coverage levels, but assuming a maximum level of efficiency (countries are placed on the efficiency frontier, shown in Figure 5.2, see page 309). Using this measurement, the Dominican Republic, for example, could theoretically reach the goal of average OECD coverage by spending only an additional 0.9 rather than 1.6 percentage points of GDP.

It is no easy task to identify the reforms that could increase efficiency in healthcare expenditure. These reforms depend on the specific context of each country. However, the exercises presented in this chapter suggest that the countries in the region should consider reforming their healthcare systems to include policies and regulations that would enable efficiency gains in expenditure in a context of fiscal restrictions and aging-related pressures on expenditure. Thus, they should consider implementing policies like those discussed in Chapter 4 with regard to increasing the efficiency of provider payment systems, introducing a consistent design for copayments, adopting containment strategies for high-cost treatments, developing integrated healthcare information systems and reinforcing basic coverage.

To estimate the cost of reducing household financial vulnerability associated with health-related risks, a simple exercise was performed to quantify the expenditure needed to ensure that no person falls below the poverty line of USD 4 per day, adjusted for PPP, due to catastrophic health expenditure. We used the microdata available in Latin America from household expenditure and income surveys. By analyzing spending on health, the amount of catastrophic expenditure that leads to household income per capita falling below the poverty line was measured. The sum of these amounts results in the aggregate amount required to prevent poverty caused by catastrophic health expenditure. The results set out in Table 5.6 show that the cost of compensating households for impoverishing expenditures would be very low, since the average for the region is 0.06% of GDP, although, for households, it represents a large portion of their income (7.56% on average), with major differences among countries.

This exercise did not consider the effect of aging on a system providing healthcare coverage for catastrophic expenditure. However, this type of coverage would clearly involve an increase in costs because the incidence of catastrophic expenditure is higher in households with at least one person over 65 (see Chapter 4).

The main challenge is to find a system of this kind that would be easy to implement. Given the estimated cost, rather than creating an information and administration system, it would probably make more sense to reinforce one of the existing transfer programs with proven effectiveness focusing on the same aim. Alternatively, the coverage and quality of public hospital services and non-contributory pillars could be reinforced, or certain expenses could be subsidized for a group of persons who are beneficiaries of other social

programs or according to some easily verifiable characteristic within the non-contributory systems.

Table 5.6
Estimated expenditure required to prevent impoverishing health expenditure

Country	Amount per capita/GDP per capita	Amount (percentage of GDP)
Argentina (2012)	3.83%	0.07%
Bolivia (2017)	2.34%	0.02%
Chile (2016)	5.91%	0.16%
Colombia (2011)	2.31%	0.06%
Mexico (2016)	0.89%	0.00%
Peru (2018)	30.07%	0.04%
Average	**7.56%**	**0.06%**

Source: Author based on surveys of household expenditure and income for the years specified in parentheses and the World Bank (2020).

Fiscal aspects to address the effects of aging

To address the pressure on public budgets arising from demographic aging, it is not enough to understand the baseline situation in terms of population structure, existing coverage, challenges regarding the sufficiency of benefits and the current financial situation of social protection systems. It is also key to understand other contextual factors that define the fiscal space. While, so far, the focus of sustainability has been on the relationship between revenues and expenditure of the social protection systems, this section will adopt a broader view. It is therefore considered whether the potential financial imbalances of these systems can be funded with resources—either by a reduction in expenditures or an increase in revenues—in other areas of the State.

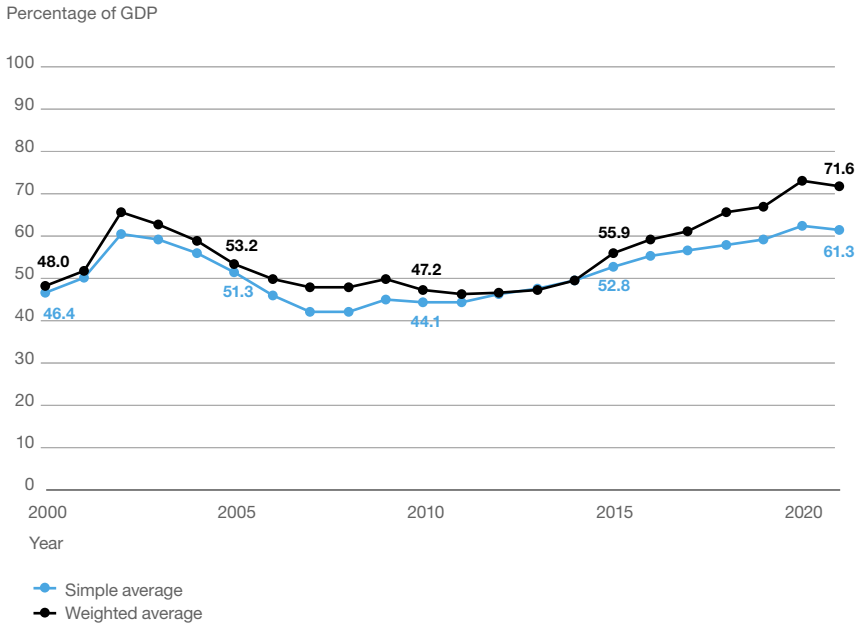
In this regard, the current section considers two relevant aspects. First, available fiscal space understood as the capacity to accommodate the increase in expenditure as a result of population aging without compromising fiscal sustainability. Second, the potential reduction of expenditure in other areas as a consequence of aging, particularly in education, as the fraction of children and teenagers using the system declines. Finally, taking a broader view, there is a set of "extra spaces" (or dividends) which may in the future alleviate the fiscal pressures from population aging, both through greater formalization of the economy ("formality dividend") and through an increase in women's participation in employment ("gender dividend"), both of which are described in Chapter 2.

Fiscal space

Fiscal space to address the main expenditures associated with population aging is a multidimensional concept. For example, the International Monetary Fund (IMF) considers that a country has fiscal space to fund a permanent increase in public expenditure if it can do so without placing at risk the access to private financing and sustainability of the debt (IMF, 2018a).

One key aspect to understand the current fiscal situation in Latin American countries is their levels of public debt. During the first decade of this century the region managed to reduce public debt; however, this trend reverted from the 2008-2009 global financial crisis despite the advantageous financial conditions that characterized that period. On average, since 2008, public debt increased by more than 17 percentage points of GDP (simple average). This trend will accelerate significantly in 2020 due to the drop in revenues as a result of the world recession and increased expenditure as a consequence of the COVID-19 pandemic (Figure 5.6), reaching its maximum value in more than two decades.

Figure 5.6
Evolution of total public debt as a percentage of GDP, 2000-2021

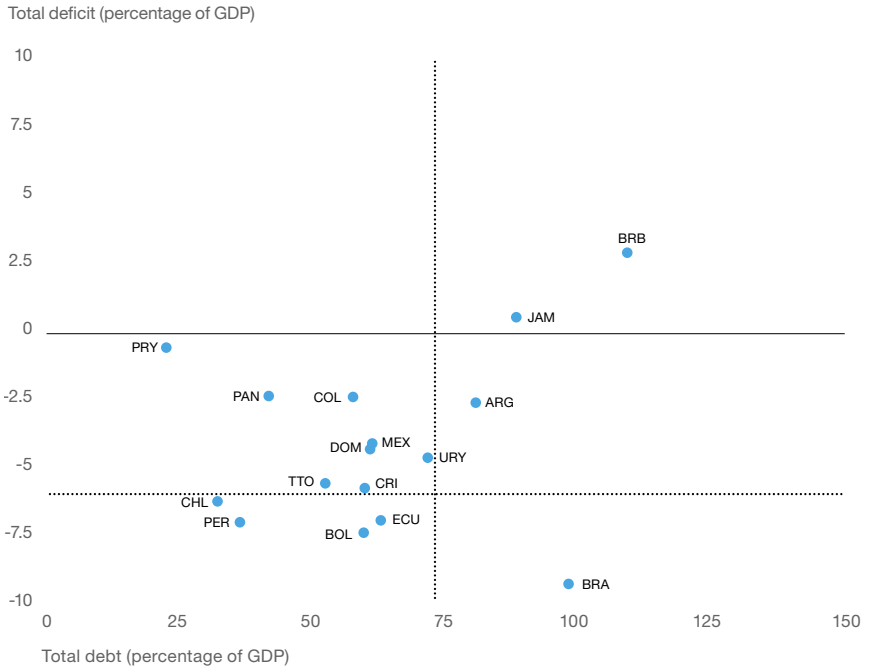


Notes: IMF projections for 2020 and 2021 consider the effects of COVID-19. The latest value shown in the figure corresponds to estimates for the year 2021. The weighted average was based on the relative weights of GDP for each country. The countries considered are Argentina, Bolivia, Brazil, Barbados, Chile, Colombia, Ecuador, Jamaica, Mexico, Panama, Peru, Paraguay, Dominican Republic, Trinidad and Tobago, and Uruguay.

Source: Author based on data from IMF (2019b, 2020a and 2020b).

From the standpoint of flows, there is also deterioration in the average fiscal result, going from a surplus of 0.5% of GDP in 2007 to a deficit of 2.9% of GDP in 2019, with a projected average deficit for 2020 above 4%.[17] Figure 5.7 shows the projected situation in terms of fiscal deficit and public debt for 2020. Beyond the differences per country, it is clear that sooner or later, most of the economies will have to make a consolidation effort to address the fiscal consequences of the COVID-19 crisis.

Figure 5.7
Fiscal deficit and total public debt as a percentage of GDP in Latin American countries, 2020



Notes: The horizontal and vertical dotted lines show the weighted averages of the countries for the year 2020. The weighted average was based on the relative weight of the aggregate GDP in each country.

Source: Author based on IMF (2019b, 2020a and 2020b).

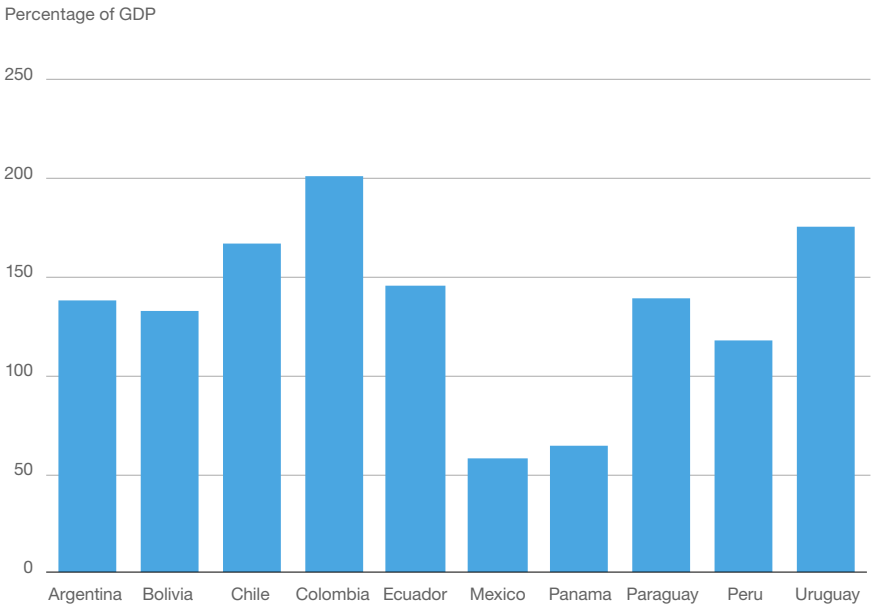
In this context, rather than creating short-term savings, the reforms seeking to reinforce the sustainability of the social protection system can contribute to providing greater certainty regarding the medium and long-term fiscal strategy. For example, an analysis of the net present value of the imbalances between revenues and expenditure of the pension and healthcare systems in the region

17. This figure will probably be higher in the end because growth projections have been revised downward since April and several governments have announced supporting fiscal measures.

Reforms reinforcing the financial sustainability of social protection will not generate rapid savings, but will provide greater certainty regarding the medium- and long-term fiscal trajectory.

projected from 2020 to 2065, i.e., the sum with a 3% discount rate, clearly shows that the levels of indebtedness would be very high if those systems were funded entirely through an increase in public debt. Moreover, those levels of indebtedness would surely not be compatible with an applicable interest rate to fund these financial needs. Figure 5.8 clearly shows that this strategy does not seem feasible. The net present value exceeds 100% of GDP in all the countries except Mexico and Panama, where it is lower, while it is over 200% for Colombia.

Figure 5.8
Net present value as a percentage of GDP of the projected deficits in pension and healthcare systems per country



Notes: Calculations based on a 3% discount rate per year.
Source: Author based on data from IERAL (2020) and Crosta *et al*. (2019).

Thus, it seems clear that inaction would lead to fiscal sustainability problems, so it is crucial to evaluate the potential spaces available in relation to both revenues and expenditure, to reduce those risks. Below, we evaluate the possible space for increasing tax pressure—partly the contributions to contributory social security systems, but also taxes in general—in order to address the projected increase in expenditure. Afterward, we will also explore initiatives regarding expenditure.

It is difficult to evaluate the space available to increase the burden tax on the economy because, in addition to economic factors, there are social and political factors that affect the level and composition of taxes in each

country. Below two analyses are presented that are agnostic regarding social preferences about the size of the State and the degree of redistribution, which affect the level and composition of collection, as well as other aspects related to the implementation of the increase in the resulting collection. Firstly, the gap in the collection of contributions compared to OECD countries is analyzed. Secondly, a simple exercise to measure the space available for stronger general fiscal pressure is presented, taking into account income level per capita as well as sector structure and openness of the economy. According to economic theory, these are factors that impact collection.

Contributions to social security

In most countries in the region, employee and employer contribution rates do not differ significantly from those in the OECD.

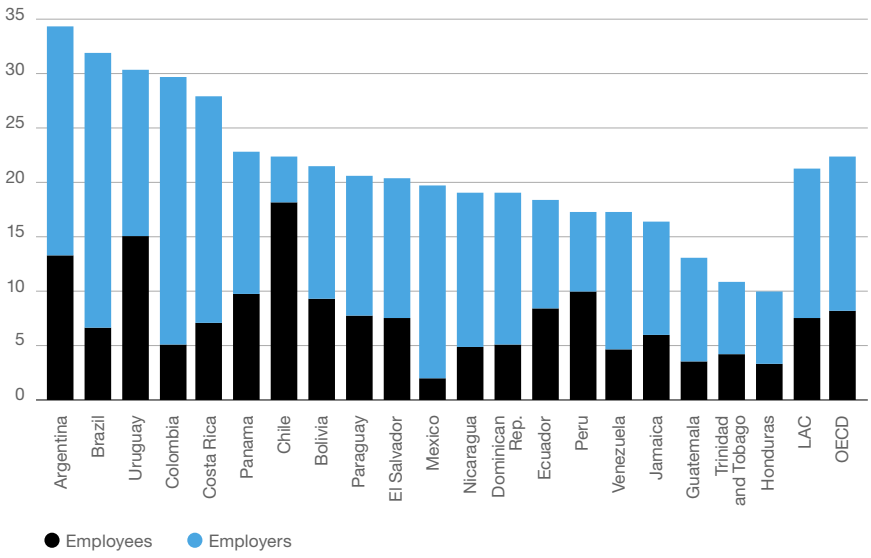
Worker and employer contributions to the pension and healthcare system constitute one potential source for funding the projected expenditure on social security. However, average contribution rates from employees and employers in the region do not differ significantly from the rates in the OECD (Figure 5.9). On average, contributions to social security represent 21.3% of the average cost of labor for Latin America and 22.6% for OECD countries.[18] The average composition of contributions from employees and employers in the region is also similar to that in the OECD. As required by law, just over one-third of the contribution is paid by the employee and two-thirds by the employer.[19] These figures cast doubt on the viability of the rates of contribution to the system as an alternative source of financing for all countries in the region.

Within the region, there are multiple situations regarding contributions to social security. First, there is a group of five countries, comprising Argentina, Brazil, Colombia, Costa Rica, and Uruguay, where contribution rates are even higher than the average OECD rate and quite close to the rates in advanced countries in Europe. Second, there is a large group of countries with a proportion of social contributions similar to those in the OECD: Bolivia, Chile, Ecuador, El Salvador, Mexico, Nicaragua, Panama, Paraguay, Peru, the Dominican Republic, and Venezuela. In this group, some countries may have a margin to specifically increase employee or employer contribution rates in some parts of the social security system, but this must be balanced with the potential negative effects that such a measure would have on labor formality. Finally, for a small group of countries comprising Guatemala, Honduras, and Trinidad and Tobago, there seems to be more room to increase social contributions.

18. Considering the total tax burden on wages, including personal income taxes, there is a relevant difference with more developed countries. For Latin America, the average increases marginally to 21.7%, while for the OECD, the burden is over 35.9%. This difference is mainly due to minimum taxable income and relatively high exemptions.

19. Clearly, economic incidence—i.e. who ultimately pays these contributions—may vary greatly and depends on the elasticities of labor supply and demand.

Figure 5.9
Contributions to social security as a percentage of total labor cost, 2013



Notes: The OECD average includes Mexico and Chile. Contributions include all mandatory contributions made by employers and employees to pension and healthcare systems, unemployment insurance, occupational accident insurance, and coverage against other risks.

Source: OECD, IDB, and CIAT (2016).

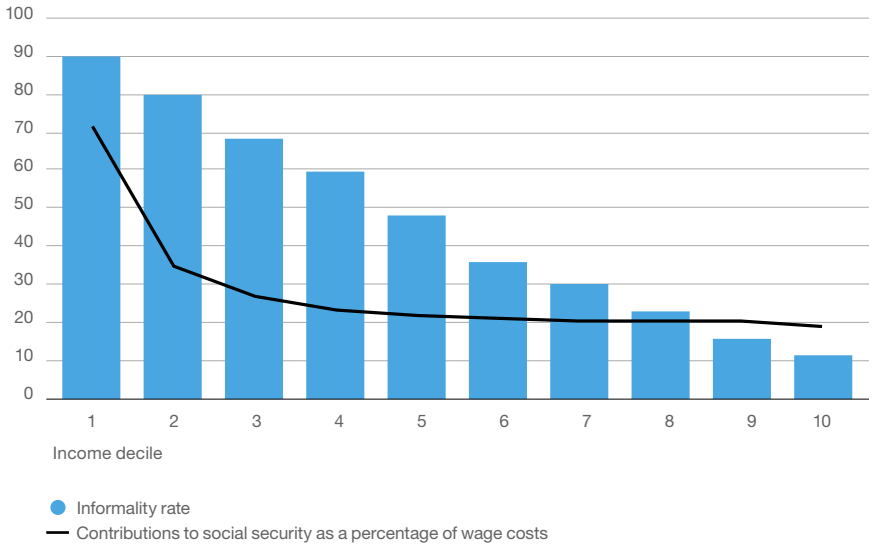
As mentioned, it is important to consider the effects of the contributions to social security on informality (see Chapter 2 and the following section in this chapter). From an individual standpoint, some parts of contributions, for instance, those made to the pension system, may imply a higher savings rate than desired. Thus, whether as a result of shortsightedness or convenience, a worker may prefer to access this income and therefore not make the applicable contributions. Moreover, in the countries in the region, there are often few effective mechanisms to monitor and enforce labor and tax regulations given the size of the informal sector and the low capacity of the State. Similarly, part of the population may underestimate the risks of unemployment, disability, and disease to which they are exposed—especially when there is non-contributory coverage for some of these risks—and may therefore choose informal employment. For companies, the tax burden on labor may lead to lower demand for employment or evasion of payment of social security contributions, leaving workers in informality, especially if the productivity of the company is low and the likelihood of evasion being detected is also low.

Indeed, average informality in Latin America decreases with worker income levels—a reflection of educational level and labor productivity, among other factors (Figure 5.10). Moreover, the costs of formality—measured only by worker contributions to social security, expressed as a percentage of

average labor income per decile—are relatively higher for persons in the lower part of the wage distribution. In the first decile, where the average informality rate is 90%, the average cost of complying with formality represents more than 70% of the wage. The average correlation between the informality rate and the cost of formality is positive and relatively high (0.6) for the 18 countries in the region for which there is data.[20] This evidence is supported by more rigorous studies that established that taxes and contributions have a causal effect on jobs and informality. For example, Bernal, Eslava, Meléndez, and Pinzón (2017) found that the reduction in payroll taxes in Colombia associated with the 2012 tax reform had a positive impact on formal employment and salaries.

There seems to be little room to increase social security funding through higher contribution rates in most countries in the region.

Figure 5.10
Informality rate and average cost of formality in Latin America



Source: Author based on OECD, IDB, and CIAT (2016).

In summary, there seems to be little room to increase social security funding through higher contribution rates in most countries in the region, particularly considering the potential negative effects on formalization.

20. This average reflects various situations. For example, there are some countries, such as Argentina and Panama, where the cost of formality has a similar relative weight throughout labor income distribution, while in other countries, such as Brazil, Chile, Costa Rica, the Dominican Republic, and Uruguay, the correlation between these two variables is greater than 0.8. Finally, in countries where general contribution rates are similar to those in the OECD—Mexico, Nicaragua, and Peru –formalization costs are higher than wages in the first decile.

Room to increase the general tax burden

Considering that there is little space to increase contributions, tax revenue is another possible source to cover increasing social security expenses without causing negative effects on labor formality. Below is an estimate of the tax revenue expected per country in the region, considering the income level in the economy (GDP per capita), the degree of economic openness (international trade as a percentage of GDP), and the weight of the primary sector in the aggregate GDP. The available tax space indicator is calculated as the difference between expected and observed revenue. A positive value indicates that the country could increase tax revenue, while a negative value indicates that there is limited room to do so.[21] Fiscal space estimates for 2017 are in line with previous studies using similar techniques (see e.g., Daude, Gutiérrez, and Melgizo, 2013).[22]

The margin to increase tax revenues is very small in some countries in the region, moderate in others, and wide in yet others.

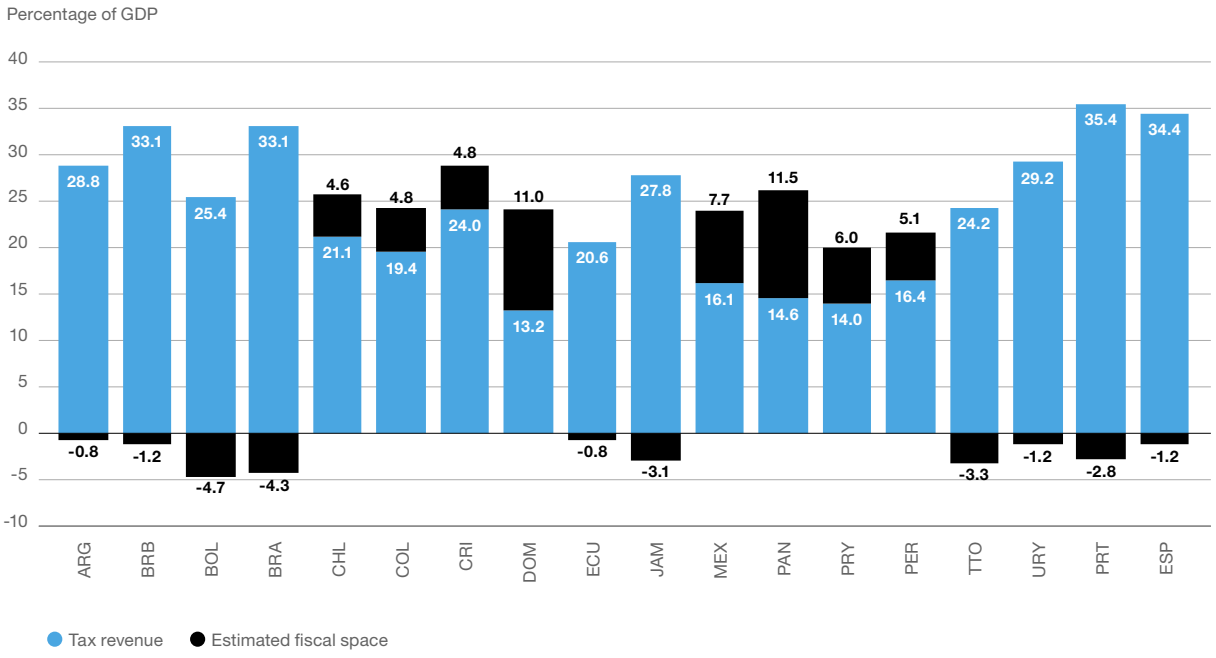
There are disparate situations among the countries in the region regarding space to increase tax revenue. In the group comprising Argentina, Barbados, Brazil, Bolivia, Ecuador, Jamaica, Trinidad and Tobago, and Uruguay there seems to be little room to increase tax revenue significantly, like the situation in some European countries, such as Spain and Portugal. According to this estimate, in Chile, Colombia, Costa Rica, Paraguay, and Peru there is room to collect approximately an additional 4 to 6 percentage points of GDP. Finally, in the Dominican Republic, Mexico and Panama, there seems to be a considerable margin for increasing tax pressure (Figure 5.11).

Therefore, considering the estimates of higher expenditure in the basic demographic scenario discussed above, the first group of countries needs reforms that contain the increase, although income per capita growth could generate a certain margin for higher tax revenue in the long term. This potential for higher tax revenue generally occurs as a result of increased income tax collection from individuals. For example, using the elasticity of tax revenue to GDP per capita, if Argentina were to reach Spain's current level of GDP per capita, tax revenue would increase 3.5 percentage points of GDP. Assuming that this process were to happen over the next 50 years, it would require an average economic growth of 1.3% per year, higher than the 0.9% achieved by Argentina over the past 20 years. However, this would only suffice to cover just over half the increase in expected expenditure due to demographic change (6.6 percentage points of GDP). Moreover, standards of living might be accompanied by a more than proportional demand for protection and services provided by the state, so that part of the rise in tax collection would be used to cover these additional expenses.

21. The estimate was made using tax collected as a percentage of GDP in 2017, as reported by OECD, IDB, and CIAT (2017).

22. This exercise does not include non-tax income specifically related to the extraction of non-renewable natural resources. See below the discussion on the importance of such income for the countries in the region.

Figure 5.11
Tax revenues and fiscal space as a percentage of GDP, 2018

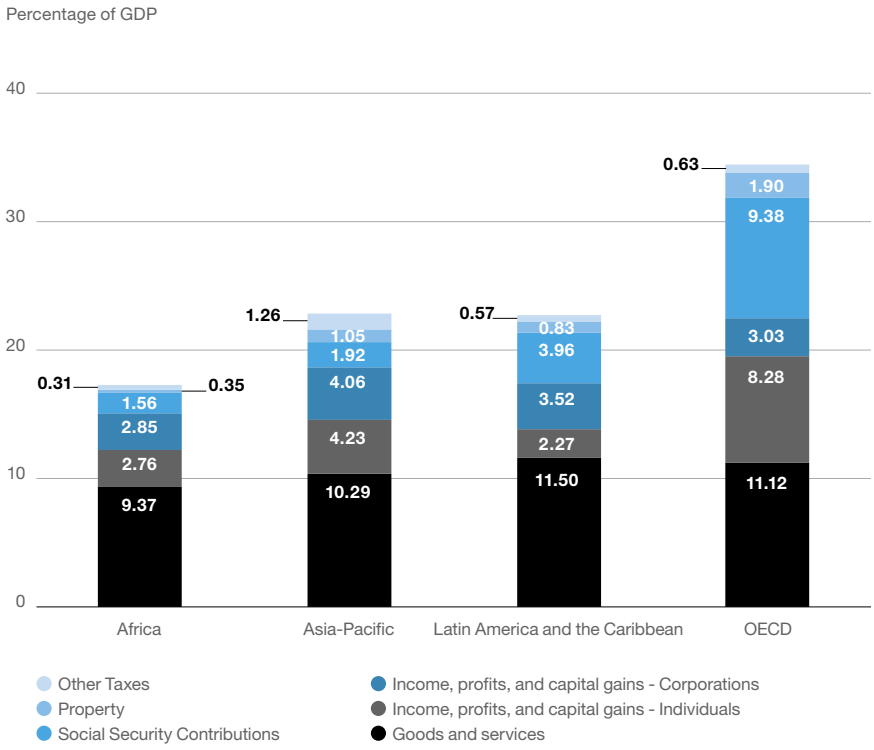


Source: Author based on OECD data (2020a)

In the second and third groups of countries, in principle, all or much of the growth in projected expenditure could be funded with a potential increase in tax revenue. However, increases in tax revenue are usually not easy to implement, due to both economic and political economy factors. In this regard, the deterioration of fiscal accounts as a result of the COVID-19 crisis places greater pressure on tax reforms and may act as a driving factor for such reforms. Although the composition and speed of tax reforms vary from country to country and are far beyond the scope of this book, below some elements of these reforms that arise as common factors for this group of economies are presented bellow.

A comparison of the components of tax revenue in Latin America and other regions is useful to examine potential areas where revenue could be increased. Figure 5.12 shows the main tax categories (as a percentage of GDP) in Latin America, OECD countries, Asia, and Africa. Table 5.7 (see page 335) presents those tax categories for the countries with significant estimated fiscal space. The difference between regions in terms of indirect taxes on goods and services, such as value-added tax or sales tax, is small. Taxes on goods and services average 11.5% of GDP in Latin America and the Caribbean, 11.1% in OECD countries, with similar levels in Asia and Africa.

Figure 5.12
Total tax revenues as a percentage of GDP per region in the world, 2018



Source: Author based on data from OECD (2020a).

The main difference lies in social security contributions, which average 9.4% of GDP in the OECD and only 4% in Latin America. As noted in the previous section, this is not generally due to Latin America having low contribution rates, but rather to high labor market informality—similar to other developing regions—and the greater weight of private capitalization pension regimes, which are not part of the total public sector revenue. In summary, increasing social security contribution rates does not seem to be a potential direct source for increasing revenue. Rather, revenue associated with social contributions could be raised via reforms leading to higher levels of formality in Latin American economies, as discussed below.

The second source of tax revenue with major differences is personal income tax, given that taxation on companies as a percentage of GDP is, in fact, higher in Latin America than in the OECD. Moreover, considering the high levels of informality, fiscal pressure on the income of formal Latin American companies is probably higher than in developed countries. The difference in terms of tax revenue from personal income partly reflects differences in households' contribution capacity, but also other relevant factors such as relatively high

tax exemption thresholds, high marginal tax rates that only apply to very high incomes, and high rates of tax evasion.

Table 5.7
Composition of revenue for broad tax categories in countries with room to increase tax collection, 2018

Country	Income, profits, and capital gains		Contributions to social security	Property	Goods and services	Other taxes
	Individuals	Corporations				
Chile	1.4%	4.7%	1.5%	1.1%	11.2%	-0.2%
Colombia	1.2%	5.0%	1.9%	1.6%	8.3%	1.2%
Costa Rica	1.4%	2.6%	8.2%	0.4%	8.4%	2.1%
Dominican Republic	1.2%	2.1%	0.1%	0.6%	8.5%	0.0%
Mexico	3.4%	3.4%	2.2%	0.0%	0.0%	0.0%
Panama	1.8%	1.5%	5.6%	0.4%	4.2%	0.3%
Paraguay	0.3%	2.0%	3.5%	0.3%	7.8%	0.1%
Peru	1.8%	3.9%	2.0%	0.4%	7.9%	0.2%

Notes: The category "other taxes" also includes taxes on payroll and labor force.
Source: Author based on OECD (2020a).

In Latin America, on average, individuals begin to pay income tax when their income exceeds 1.4 times the GDP per capita—equivalent in 2016 to approximately USD 12,000 at current prices (USD 20,500 PPP adjusted). In contrast, in Europe, the tax exemption threshold is 0.31 times GDP per capita, which means approximately USD 9,700 in current terms (just over USD 11,000 PPP adjusted). Tax exemption thresholds in Latin America are therefore high, not only in relative terms but also in absolute terms.[23] There are clearly major differences within Latin America. While in Bolivia the tax exemption threshold is 0.2 times GDP per capita, in Paraguay it was 5.8 times GDP per capita in 2016. On the opposite end, higher marginal rates start at relatively high incomes by international standards, which decreases both the progressivity and the total revenue of the tax system (Table 5.8).

23. A person who earns USD 20,500 PPP adjusted in Latin America would not pay income tax, while in Europe that person would be nearly two times above the tax exemption threshold.

Table 5.8
Characteristics of personal income tax in Latin America

Country	Taxable income (in multiples of GDP per capita)		Tax rates (in percentages)	
	Minimum	Maximum	Minimum	Maximum
Argentina	0.1	1.6	9.0	35.0
Bolivia	0.2	n.a.	13.0	13.0
Brazil	0.7	1.7	7.5	27.5
Chile	0.8	6.8	4.0	35.0
Colombia	1.8	6.9	19.0	33.0
Costa Rica	0.1	0.2	10.0	15.0
Ecuador	1.8	18.1	5.0	35.0
El Salvador	1.0	5.6	10.0	30.0
Guatemala	8.8	n.a.	5.0	7.0
Honduras	3.3	9.4	15.0	25.0
Mexico	0.0	18.8	1.9	35.0
Nicaragua	1.6	7.8	15.0	30.0
Panama	0.7	3.2	15.0	25.0
Paraguay	3.0	7.6	8.0	10.0
Peru	0.9	8.2	8.0	30.0
Dominican Republic	1.0	2.2	15.0	25.0
Uruguay	0.6	10.0	10.0	36.0
Venezuela	n.d.	n.d.	6.0	34.0
Latin America (18 countries)	**1.6**	**7.2**	**9.8**	**26.7**
OECD Average	**0.6**	**5.4**	**13.9**	**37.9**

Notes: Data used for GDP per capita correspond to 2018. n.d. means data not available; n.a. means not applicable.

Source: Author based on information from the Inter-American Center of Tax Administrations (CIAT, 2020), OECD, BID and CIAT (2016), and World Bank (2020).

At the same time, there is a large group of exemptions and deductions that reduce the effective collection of personal income tax. Finally, according to ECLAC estimates, income tax avoidance and evasion (by people and corporations) in Latin America reduce revenue from this set of taxes by nearly 40%, which is equivalent to a loss of 4 percentage points of GDP (ECLAC, 2019).

In general, there is room in the region to increase the collection of personal income tax.

Thus, even though it is no simple task, there is room in the region to increase personal income tax collection. Reforms could arise from enlarging the tax base, reducing exemptions and deductions, and lowering tax exemption thresholds, as well as making other changes in the structure of these taxes. Although the political economy may be complex, the current situation—in which the fiscal consolidation needed after COVID-19 requires additional fiscal efforts—may be a window of opportunity to make progress in this direction given the progressiveness of these types of taxes.

A more general instrument is increasing the tax bases for other taxes. In the region, these bases tend to have many exemptions and exonerations due to the proliferation of tax expenses, so tax collection is ultimately lower. Estimates show that these tax expenses are 3.5% of GDP in the region (Peláez Longinotti, 2018). This does not mean that this amount would be collected by eliminating those exemptions and exonerations, but it does indicate that there is room to review their relevance and efficiency.[24] A good practice to begin to evaluate tax expenses and study potential reforms to enlarge tax bases is the periodic publication of studies measuring tax expenses using a rigorous methodology. This is especially useful for evaluating the effectiveness of stimulus policies, which usually justify these tax expenses, as well as their distributional impact, and impact on tax revenues.

Institutional reinforcement of tax agencies would help achieve this objective and should consider tax agencies' material and technological resources as well as the legal frameworks in which they act, ensuring transparency and accountability. Clearly, reinforcing tax agencies would have positive effects beyond the reduction of noncompliance with income tax, given that noncompliance with other tax obligations is also relatively high. For example, it is estimated that lost VAT revenue is equivalent to 2.3% of GDP in Latin America. At the same time, stronger tax agencies are essential to combat illegal activities such as asset laundering.

To complete this analysis, it is important to discuss the availability of other revenue sources. Of particular importance is non-tax revenue related to the extraction of non-renewable natural resources in several countries in the region, including oil and gas extraction and mining. In 2018, it accounted for 2.3% of GDP in countries where there is significant extraction but was even higher in countries such as Bolivia, Mexico, and Ecuador, accounting for 4% to 8% of GDP (OECD, CIAT, ECLAC and IDB, 2020). Because of its volatility, it is difficult to use the current revenue associated with the extraction of those resources to fund recurrent social security expenses. However, sovereign funds are a highly effective means to distribute these resources among generations in order to address the outlays of the social protection systems. The most notable example is the Norwegian sovereign fund, which amounts to about 280% of GDP. It was created in 1990 to save revenue from North Sea oil extraction and address the pressures on future expenditure resulting from population aging.

Accumulating such high levels of assets is probably not desirable from the standpoint of welfare in Latin American countries because their current needs for social investments and infrastructure are much greater than Norway's. However, the experience of Chile, both with the creation of the Pension Reserve Fund (*Fondo de Reserva de Pensiones*) in 2006 and the Economic and Social Stabilization Fund (*Fondo de Estabilización Económica y Social*) in 2007, may be useful to other countries in the region with relevant revenue from non-renewable natural resources (Box 5.3).

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24. Something similar occurs with taxes on net assets, such as, for example, real estate (OECD, CIAT, ECLAC, and IDB, 2020). However, although there is room to improve revenues and fairness of these taxes, they account for less than 2% of GDP even in OECD countries, and less than 6% of total revenues.

Box 5.3
Use of sovereign funds as a fiscal tool in Chile

In 2006 and 2007, Chile decided to reinforce its fiscal policy by creating two sovereign funds. The Pension Reserve Fund was created first to accumulate savings in financial assets to be able to address expenditures related to the non-contributory solidarity pillar of pensions. The fund was initially constituted with approximately USD 600 million and currently contains nearly USD 10 billion (approximately 4% of GDP).

At the same time, the Economic and Social Stabilization Fund (*Fondo de Estabilización Económica y Social*, FEES), which took over the old Copper Stabilization Fund (*Fondo de Estabilización del Cobre*), was created for countercyclical purposes, to save and amortize debt during the high part of the cycle and be able to finance expenditure when economic activity fell. Thus, at the beginning of the COVID-19 pandemic, the FEES had savings exceeding 4% of GDP and a general government net debt of 27.9% of GDP. These resources are part of the ambitious plan launched in Chile to address the social and economic consequences of COVID-19.

Source: *Ministerio de Hacienda del Gobierno de Chile* [Ministry of Finance of the Government of Chile] (2020).

Other potential sources of funding and savings

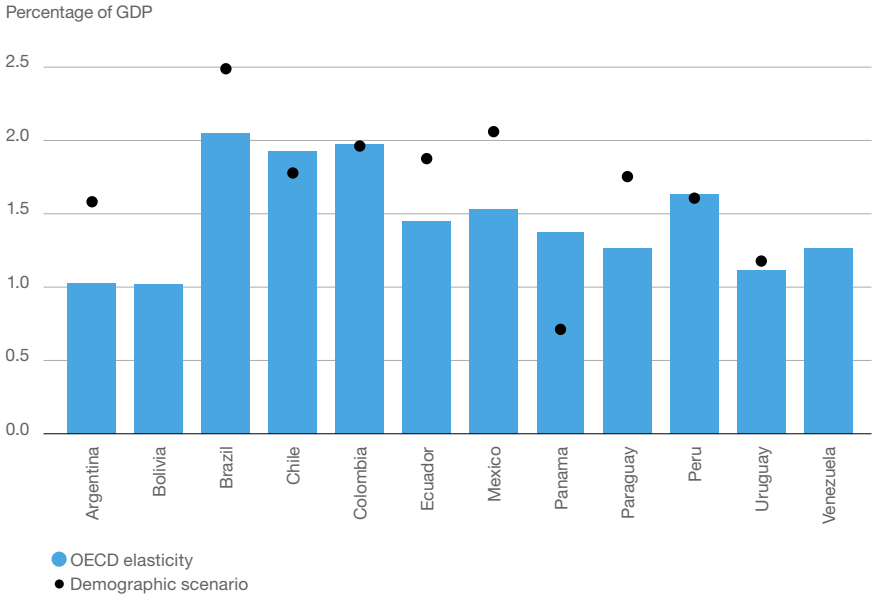
This section provides a brief discussion of alternative funding sources based on savings in other expenditure areas or as a result of labor market policies, with consequences on revenue from contributions to the social protection system. First, we will analyze the potential savings that could be channeled to other expenditures associated with demographic aging. Then we will briefly revisit the topic of formality dividends and gender dividends addressed in Chapter 2 and discuss their implications in terms of sustainability.

Savings in education induced by aging

One funding source for the incremental expenditure on social security could be reducing other expenses. As demographic transition progresses, there will be not only a higher proportion of older adults, but also a lower proportion of children and adolescents. This may cause a gradual reduction in expenditure on education, as the number of children and adolescents in the educational system declines.

We performed two alternative exercises to quantify potential savings. The first exercise consisted of projecting savings according to the elasticity of public spending on education to the old-age dependency ratio for OECD countries.[25] The second method was based on maintaining constant levels of expenditure per student in relation to GDP per capita, and constant coverage rates per educational level (preschool, primary, secondary and tertiary or higher); then we analyzed the trajectories caused by the change in relative weight of the population of ages attending each level with respect to total population in the country.[26] As shown in Figure 5.13, both methods produce projections of potential savings of 1 to 2.5 percentage points. The second method generally results in somewhat greater potential savings.

Figure 5.13
Potential savings in spending on education due to aging, projection for 2065



Source: Author based on data from the World Bank (2020) and Marchionni and Vazquez (2019).

25. For the OECD countries with available information, the correlation between average expenditure as a percentage of GDP and this dependency ratio is -0.42. A simple regression implies an elasticity of approximately 0.1, i.e., an increase in 10 percentage points of the old-age dependency ratio is associated with a 1% reduction in expenditure on education as a percentage of GDP.

26. As is usual in the literature on intergenerational transfers, the evolution of aggregate public expenditure was projected per educational level without distinguishing according to the different management subsystems (see Miller, Mason, and Holz, 2011, and Marchionni and Alejo, 2015). The assumption behind these exercises is that the participation of each sector in enrollment remains fixed over time, which would have consequences on the projected levels of spending on education. For example, if public expenditure associated with the private subsystem is very low or null and if private enrollment increases in relation to public enrollment, expenditure projections arising from these exercises would overestimate the true fiscal effort required to extend educational coverage. In this case, which seems realistic in the light of the recent evolution of the private education sector in the region, aggregate projections would provide an upper limit of the fiscal effort required for education.

Thus, although spending on education will probably decline as the demographic transition advances, projected savings will not suffice in countries with more compromised financial sustainability. Nevertheless, these savings will not be negligible, since the projected amount in most countries could fund a significant part of the potential expansion in pension coverage and protection against impoverishing spending on health, as discussed above. However, it is also possible that part of this reduction in spending will not materialize, given that the levels of educational coverage, as well as educational results, will probably require increases in the resources allocated. Moreover, in most countries, child and adolescent poverty are significantly higher than poverty among the population in general, so it also seems reasonable to expect an increase in the resources allocated to that age group.

Implications of the formality and gender dividends for the sustainability of the systems

Chapter 2 provided an in-depth analysis, for eight countries in the region with available data, of two potential ways to increase coverage, which would also have an impact on the financial result of the social protection systems. These potential sources of coverage are greater formality of the labor market and greater participation of women in the labor market. The analysis gave rise to a series of implications for fiscal sustainability.

Firstly, greater labor market formality could lead to an increase in contributions of 0.85 to 1.5 percentage points of GDP, depending on the formalization scenario used. Secondly, there is considerable variation among countries in these scenarios. If formality increases with income per capita, contributions in Uruguay would only increase by 0.2 percentage points of GDP with respect to the baseline scenario, while in Mexico, they would increase by more than 1.1 percentage points of GDP. With the alternative methodology, where in addition, the gap is closed with respect to the formality rate expected for countries' GDP per capita, the country with the highest potential would be Argentina, with an increase in contributions of 2.4 percentage points of GDP, followed by Peru with 0.9 percentage points. Thirdly, these amounts are not negligible, but it must be considered that in the long term, greater formalization of the economy would also lead to greater contributory coverage and an increase in public expenditure on pensions and healthcare.

Finally, the gender dividend, i.e., closing the gap between men and women's participation in the labor market with respect to OECD countries, taking into account age and education profile, is considerably more modest from the standpoint of contributions. On average, contributions would increase by only 0.1 percentage points of GDP, with a maximum of 0.4 percentage points of GDP in Argentina and almost nothing in Uruguay. Beyond the other gains in welfare that would be associated with the elimination of the gender gap in participation in the labor market, reducing informality would be more beneficial to women because informality is more prevalent among women than among men (see Chapter 2).

What reforms are needed and what is their political viability?

It can be inferred from the discussion in the previous sections that most countries in the region will have to implement a set of reforms to address the effects of demographic change on their social protection systems. These reforms will be necessary either to reinforce their capacity to ensure certain levels of income and protection against health risks, or to extend their coverage and at the same time ensure their financial sustainability.

Reform design should consider the interactions with the labor market and formality, savings, economic growth, and inequality.

On the one hand, there are countries that, in principle, have room for a gradual increase in tax pressure to accompany the increase in projected expenditure, although part of it will be more compromised by the COVID-19 pandemic crisis. In these cases, the design of structural tax reforms will need to ensure such income and enable an extension of coverage or sufficiency, which are usually deficient in these countries. As discussed in Chapter 3 and in the previous section, in some countries there is even room to increase social security contributions. However, an overall picture of the system should be kept in mind while designing these reforms, considering the interactions with other relevant dimensions such as labor market and formality, savings, economic growth, and inequality. Clearly, the diagnosis of low revenue in the region is not new and it is partly explained by weak state capacities in the region (CAF, 2012 and 2015). The following subsections provide an in-depth analysis of the interactions between policies, as well as the role of State capacities.

On the other hand, there is a group of countries where fiscal space is much smaller and reforms will also have to focus on adjusting expenditures. At the same time, they must maintain or improve coverage and sufficiency of the system as a whole. These reforms involve certain specific challenges requiring broad political consensus to achieve sustainability over time.

In addition, a significant group of countries will have to find an intermediate path that involves greater resources, rationalization of expenditure, and better design in order to extend coverage of the systems and sufficiency of the benefits. In this regard, the specific instruments, the sequence, and the timelines of the reforms vary per country according to their specific contexts. Below, we highlight some of the more general aspects that could support these reform processes aimed at achieving social protection systems that will cover more people, better protect them against risks, reduce inequity, and be financially sustainable in a scenario of demographic change.

Several of the countries in the region implemented pension system reforms during the 2000s. These reforms generally focused on extending coverage and reducing some inequity, mainly for women. For example, in Bolivia (2010), Chile (2008), and Uruguay (2008), measures were introduced which extended coverage and State presence in the pension system (Arenas and Mesa, 2019). Like in other parts of the world (especially Eastern Europe), there was also a reversion of some of the individual capitalization systems. In Argentina, for example, pension fund administrators were eliminated and the public pay-as-you-go system was once again implemented, while in Nicaragua and Ecuador,

although reforms creating similar systems had been approved, the plans to implement them were abandoned.

Over the last decade, the favorable situation of Latin American economies, particularly in South America, contributed to the perception of a broad fiscal space and to the existence of a political will to carry forward the reforms. However, the situation was completely different from the one that will be faced by governments that implement reforms in the future to adapt to the effects of aging on the social protection systems. As shown in the analyses in previous sections, most future reforms will require combinations of adjustments in benefits, increased revenue (whether general taxes or contributions), a gradual reduction in other expenditures, and regulatory changes to increase the efficiency of expenditure, which is often associated with a reduction in rents. Basically, in all these scenarios, although the reforms will lead to greater welfare of society as a whole, there will be winners and losers, and the losers are expected to oppose the changes.

Availability of timely, quality information can help overcome political barriers preventing reform.

A crucial problem for the social protection reforms is their political economy dimension. Especially in the case of pensions, benefits tend to be seen only gradually and in the long term, while potential political costs of making changes that curtail the generosity of the system are perceived immediately by those affected. This is aggravated by the fact that, usually, the main beneficiaries of reforms to ensure the long-term financial sustainability of the system are young people, children, and unborn generations, while those who are in the labor market are more sensitive to these changes and are voters. This is why it is generally argued that measures such as raising the retirement age are more difficult to implement in aging societies. For example, using administrative data from electoral circuits and opinion surveys in Switzerland, Bello, and Galasso (2018) found evidence that demographic aging has made it more difficult to approve reforms to raise the retirement age, given the aging of the average voter. However, other studies emphasize channels that could act in the opposite direction. For example, in a pay-as-you-go system that requires a balance between revenue and expenditure, aging may facilitate reforms involving increases in retirement age, because, in the political balance, if the agents decide on changes in both retirement age and social contributions at the same time, the adjustment will occur, at least partly, via an older retirement age (Galasso and Profeta, 2007).[27]

There is extensive literature analyzing the political reasons for the fact that structural reforms, including those related to social protection, can be postponed and are more often implemented at times of economic difficulties—when at least part of the costs of unsustainability begin to come into play (see Alesina and Drazen, 1991; Drazen and Grilli, 1993; Sturzenegger and Tommasi, 1998). Resistance to reforms may be partly due to a bias of the status quo generated when the winners and losers of the reforms are not known with certainty in advance (Fernández and Rodrik, 1991). This suggests that the

27. This is because demographic aging reduces the return of the pay-as-you-go system due to its negative effects on the return rate through the lower population growth.

availability of quality, timely information may help change the alliances and implement the reform.

The empirical evidence for Latin America regarding structural reforms suggests that crises effectively cause changes in economic policies (Lora and Olivera, 2004). It could be argued that this is more of a tautological observation, as does Rodrik (1996), for example. Nevertheless, little is known about the mechanisms in terms of variations in political balances, the weight of stakeholders, and other aspects that facilitate change. The fact that changes happen at times of crisis could potentially affect the quality of the social protection reforms, as well as their sustainability over time, because there is not always a clear mandate or in-depth analysis, and there is no time or incentive to seek broad consensuses (OECD, 2010a).

Below, we review some principles and experiences that are useful when considering the reforms required in Latin American social protection systems, their political viability, and quality.

Some principles for social protection reforms

Quantify, measure, and communicate

One of the first relevant ingredients to prepare the ground for quality reforms is the available information regarding projections and future costs associated with aging. International experience in the field of social protection shows that reforms based on sound technical work that quantifies the challenges and the costs of inaction are more likely to succeed (OECD, 2010a).

It is also important to reinforce and supplement the medium-term fiscal frameworks with a periodical review of the projections of social protection systems' long-term revenues and expenditures. This can contribute to elevating the horizon of the fiscal policy. There are already positive experiences within the region that can serve as a basis for learning and continuing to make progress. For example, the annual report on contingent liabilities prepared by Chile's Ministry of Finance includes an estimate of expenses associated with the pension system.[28] The report on the medium-term fiscal framework in Colombia also includes relevant information, e.g., an estimate of the implicit debt associated with the pay-as-you-go system, the minimum pension guarantees and the non-contributory pension programs (Colombia Mayor), the projected expenditure on pensions covered by the national government over the next 10 years and how they have changed with different reforms and policies that have been approved.[29] This report also includes items discussing the sustainability of the Comprehensive Health Social Security System. In Peru, the Multiannual Macroeconomic Framework (*Marco Macroeconómico*

28. See section IV in the 2019 contingency liability report included in the references (Gómez, Huerta, and Martínez, 2019).

29. See *Ministerio de Hacienda y Crédito Público de la República de Colombia* [Ministry of Finance and Public Credit of the Republic of Colombia] (2019).

Multianual) 2020–2023 reports demographic trends up to 2070 but does not include projections of associated expenditure or revenues.[30]

In more general terms, the countries in the region have made progress by going beyond the annual budgetary cycle and adopting a vision establishing medium-term fiscal frameworks (usually 3 to 5 years). They have also adopted other relevant elements, such as systematic measurement and reporting of contingent liabilities and tax expenses (OECD, 2020b). In order to avoid the short-term bias in fiscal policy—which is a natural outcome of political play—and to foster quality reforms, it can be very useful to prepare a report in the style of the one produced annually by the European Commission on the long-term effects of aging on the economies regarding potential growth as well as the expenditure and revenues of the social protection systems.

Clear communication of the need for reform, a strong mandate, and political leadership from the government facilitate its implementation.

Advisory committees, which are longstanding in several countries in the region, provide an interesting way to achieve technical consensuses and social dialogue. One example is the recent pension reform in Chile (2008), the main aim of which was to increase sufficiency by including elements of solidarity in the pension system. It established the *Pensión Básica Solidaria*—a non-contributory basic pension—and the *Aporte Previsional Solidario*—a benefit to supplement contributory pensions received by low-income households (approximately 60% of the population). It also endeavored to reduce gender inequality by giving women a live-born child bonus. These reforms were proposed by an advisory committee of experts in topics related to pension systems that is often referred to as "*la Comisión Marcel*" (the Marcel Commission) because it was presided over by former budget director Mario Marcel. This technical commission was summoned by decree of the executive branch at the beginning of 2006 and was spearheaded by the Presidency of the Government. It worked for a period of four months, with intensive sessions and series of hearings with experts and members of society. Consultations resulted in an extensive report with a diagnosis and answers that formed the basis of several of the decisions subsequently implemented in the comprehensive pension system reform.[31] The reform process included several ingredients which ensured its success. First, the committee's work was technically sound and was prepared in consultation with stakeholders. It considered broad issues and their interactions (e.g., the effect of non-contributory pensions on incentives to participate in the formal labor market). It also included projections of the financial impact of the proposals.

However, technical work and social dialogue alone may prove ineffective to facilitate change. To be effective, it is important to clearly communicate the need for reform. Moreover, the government needs to provide a clear mandate and political leadership that demonstrates its will and commitment to act. Although it is difficult to find causal evidence of these factors, an analysis of cases—implemented successfully and unsuccessfully—suggests that these factors considerably increase the likelihood of successful implementation of structural

30. See, in particular, section 7.3.2.2 of the document published by the *Ministerio de Economía y Finanzas de Perú* [Ministry of Economy and Finance of Peru] (2019) included in the references.

31. For further information on the reform, see the document published by Consejo Asesor Presidencial de Chile para la Reforma Previsional [Chilean Presidential Advisory Council for Pension Reform] (2006) included in the references.

reforms (OECD,2010a). These aspects were present in the reform process in Chile, but they also apply to other countries, such as Brazil with its 2019 pension reform. In both these cases, the reforms were announced as priorities of the economic policy at the beginning of the period and approved during the first years of the administration of the elected government. According to more general evidence on structural reforms, this seems to be the most viable strategy from the political economy standpoint (Alesina, Furceri, Ostry, Papageoriou, and Quinn, 2020).

To prepare this report, an experiment was conducted as part of the 2019 CAF Survey (ECAF) in 11 cities in the region with the aim of evaluating the effects of information on people's predisposition to changes in the social protection systems. Two groups were selected at random among the interviewed households. The first group ("treated") was informed of the evolution and projections concerning life expectancy in their country, while the second group ("control") was not given this information. Both groups were then asked whether they were willing to raise the retirement age, reduce benefit amounts, increase contribution rates or support a combination of these policies to ensure fiscal balance. If information was a relevant factor, the group that was informed of the increase in life expectancy would be more likely to accept reforms. Table 5.9 shows the difference between groups per city for the different options.

Table 5.9
Differences in the answers concerning reform options after receiving information about life expectancy in the country

Region	Reform options			
	1	2	3	4
Latin America	0.7	0.5	0.4	-1.7
Asuncion	5.5**	-2.7	-0.1	-2.7
Bogota	-0.1	-5.7	4.1	1.8
Buenos Aires	2.3	2.3	-4.4	-0.2
Mexico City	1.2	2.3	-0.1	3.4
Panama City	-6.8	5.3	4.3	-2.8
La Paz	5.2	5	-4.7	-5.4
Lima	-1.9	5.9**	-8.1*	4.1
Montevideo	-1.8	1.1	-1.2	2
Quito	2	1.8	-2.6	-1.2
São Paulo	-0.2	-9.9*	8.6	1.4
Santiago	2.7	0.4	9	-12.2**

Notes: The figures reflect variations in percentage points of applying the treatment (treated minus control subjects). The question was: Which of the following reforms would you be most in agreement with to maintain fiscal account balance? 1) Raising minimum retirement age; 2) Reducing pension benefit payouts; 3) Increasing mandatory worker contributions to social security; or 4) A combination of the above. Treatment consisted of providing the following information: Official data show that in 1997 an inhabitant in your country lived on average "X" years; in 2017 they lived on average "Y" years, and in 2030 they will live "Z" years. The sample includes only employed persons. The number for Latin America is the simple average of countries included in the sample. Lost values were discarded.

Source: Author based on ECAF 2019 data (CAF, 2020).

The information regarding the increase in life expectancy has different effects in different countries in the region. In half the cases, some significant effect is found upon providing this information. On average, the proportion of employed persons in favor of the option of raising the retirement age increases slightly compared to the control group, although the increase is only significant in Asuncion, while in Panama City the effect is the opposite. People in Panama City more often opt for lowering benefits or increasing contributions, although neither of these responses is statistically significant. For the option of reducing pension payouts, the information on the increase in life expectancy has a significant positive effect only in Lima (while the option of increasing contributions has a significant negative effect). The opposite is true in São Paulo, where willingness to reduce benefits is lower and preference for increasing contributions is higher. Finally, in Santiago, the only option where there is a significant difference is the combination of the other three measures, which is the least preferred option in the control group. In contrast, more people are in favor of the option of increasing contributions to social security, even though the difference is not statistically significant.

Table 5.10 shows the results according to income level. This enables us to move forward in some hypotheses about workers' preferences. In Asuncion, the preference for raising the minimum retirement age occurs mainly among persons with low income. A possible interpretation for this is that informality is highly prevalent in this group (see Chapter 2) and therefore people consider that the likelihood of retiring is low for them anyway or that they will still have to work beyond the minimum retirement age, as documented in Chapter 3.

In Bogota, while no notable effect is found at the aggregate level, when results are broken down according to income level, the information experiment shows that people with low income have significantly less preference for a reduction in benefit payouts. At the same time, preferences for an increase in contributions and for combining several instruments are higher in this group than in the rest. One interpretation consistent with this result is that the replacement rates for people who do not contribute throughout their lifetime—probably because they have spent periods in informality—are quite low (see Table 3.5, page 187). In São Paulo, there is a similar effect among people with low income with regard to benefit payouts, while in Buenos Aires, there are also significant effects for the low-income group. When the low-income group learns about the increase in life expectancy, preference for an increase in contributions becomes significantly lower, while preferences for the other options increase. This seems logical, considering that Argentina is the country with the highest contributions in the region (See Figure 5.9). Likewise, in Panama City, the effects are due to people with low income who prefer not to increase the minimum age but opt for a reduction in benefit payouts. Montevideo is an interesting case, where more information on life expectancy leads to preferences of increasing contributions in opposite directions for people with high income versus people with low income. Finally, in Santiago, the effect of information on life expectancy is statistically significant among people with high income, who tend to prefer an increase in contributions. This result is in line with the fact that the low replacement rates in the Chilean capitalization system are associated with the low level of savings, which is directly related to the low contribution rates,

particularly by employers. Indeed, the reform presented by the Government in November 2018 aims to increase this contribution, among other measures.

Table 5.10
Results of the survey on reform options after receiving information about life expectancy in the country, according to income level

Region	Income level	Option 1		Option 2		Option 3		Option 4	
		C	T	C	T	C	T	C	T
Latin America	High	13.3	14.1	10.0	10.6	25.2	27.7	51.4	47.6
	Low	14.7	14.9	11.5	12.2	31.1	29.1	42.7	43.8
Asuncion	High	5.3	7.7	9.9	11.3	35.4	30.8	49.3	50.1
	Low	2.7	13.7**	14.4	9.3	33.9	41.7	49.0	35.4*
Bogota	High	5.9	7.1	20.2	27.1	26.8	23.0	47.0	42.8
	Low	11.3	6.7	29.2	16.7**	22.9	31.6	36.6	45.0
Buenos Aires	High	18.9	14.7	4.8	6.5	33.5	35.1	42.8	43.7
	Low	15.7	20.9	2.4	6.4	43.3	26.6**	38.5	46.1
Mexico City	High	17.6	20.5	9.9	15.3	19.9	11.8	52.6	52.4
	Low	19.4	16.6	12.9	9.8	28.9	32.3	38.8	41.3
Panama City	High	10.2	7.5	22.8	15.2	17.0	26.7	50.1	50.6
	Low	19.8	6.5**	14.0	31.0**	10.8	10.4	55.4	52.1
La Paz	High	17.8	24.7	5.7	11.0	18.8	17.0	57.6	47.3
	Low	20.8	20.2	9.2	17.2	25.8	17.7	44.2	44.9
Lima	High	16.0	18.5	9.0	9.8	38.7	29.8	36.2	41.9
	Low	28.3	21.5	7.6	15.8	39.7	32.7	24.3	29.9
Montevideo	High	21.4	18.8	1.5	1.6	14.3	27.0**	62.8	52.6
	Low	12.8	12.8	2.5	4.9	33.9	22.5**	50.8	59.9
Quito	High	14.7	15.3	13.1	10.2	26.0	26.9	46.1	47.6
	Low	12.9	15.2	10.1	16.0	33.4	27.7	43.5	41.0
São Paulo	High	10.2	16.3	11.1	6.8	13.5	23.7	65.2	53.1
	Low	9.3	19.5	23.6	5.1*	20.0	22.3	47.2	53.1
Santiago	High	8.5	3.5	2.3	1.8	33.2	53.2**	56.0	41.5*
	Low	8.9	10.5	0.8	1.6	48.9	54.5	41.4	33.4

Notes: The figures reflect the percentage of respondents who selected each option, in each group (control and treatment). The question and treatment are specified in Table 5.9. The sample includes only employed people. High and low income are defined considering respondents' median income. (*) and (**) indicate statistical significance of the difference between the control group (C) and the treatment group (T) at 10% and 5%, respectively. Lost values were discarded.

Source: Author based on ECAF 2019 data (CAF, 2020).

To sum up, this analysis shows that more information seems to influence people's preferences on how to address the consequences of aging in the pension system. However, these changes in preferences depend on the context in each country and the specific situation of the workers, suggesting a further reason for the relevance of political economy—preferences are heterogeneous within society.

Gradualism of reforms and compensation for potential losers

In order to secure approval of potential reforms and implement them successfully, it is key that changes be introduced gradually. There are two reasons for this. One is that purely economic factors generally require relatively gentle transitions, and the other is that from the standpoint of political economy, reducing resistance to proposed changes often requires the introduction of gradual changes that will not affect a significant part of the population, at least in the short term.

Regarding the economic aspects, the reforms implemented mainly in the 90s, with the introduction of capitalization pillars in the pension systems, are a clear example of the need for transition. Going from a pay-as-you-go system to a capitalization system implies that contributions made by active workers no longer fund the pensions of retirees and instead go to pension funds. This leads to a drop in revenues collected and therefore temporary financial imbalances. This is why, in general, all countries have set transition periods, where the new system is applied to a portion of younger individuals, while older workers remain with the previous system (though frequently with some parametric changes) to mitigate the short-term fiscal impact.

There are also examples in the region that follow a similar rationale in the field of health and long-term care. For example, in 2006, Uruguay approved a structural reform of the healthcare system that increased coverage and funding, and introduced a payment system to compensate healthcare providers for the services provided (see Chapter 4). The reform involved a substantial increase in coverage, by including dependent children and spouses of formal dependent workers, as well as retired workers and pensioners. To be able to accommodate the increase in spending required by this reform—which did not come with an equivalent increase in contributions—the country resorted to the progressive integration of various groups into the program over a 10-year period. Initially, it added dependent children under 18 years old, and retired persons and pensioners with low incomes. After two years, it added spouses and gradually, more retired persons and pensioners. This enabled an increase in coverage, rising from 750,000 beneficiaries in 2007 to 2.5 million beneficiaries in 2018, a growth associated with approximately 3.5 percentage points of GDP in public expenditure on healthcare during the decade.[32] In the case of Chile, the expansion of healthcare coverage under the

32. Much of this increase in spending substituted private expenditure on health. Thus, according to official estimates, whereas total health spending in 2004 was equivalent to 8.6% of GDP, in 2018 it was 9.5% of GDP. In the same period, private expenditure went from 5.4% of GDP to 2.7% of GDP (half).

Universal Access Plan with Explicit Guarantees (*Plan AUGE*) focused mainly on broadening the set of pathologies covered. A total of 40 pathologies were included in the system in early 2006 and were gradually expanded to cover 85 illnesses by 2019. This also enabled a gradual increase in coverage and associated costs.

From a political point of view, international experience shows that one way to reduce resistance to pension system reform involves excluding from new rules (older retirement age, lower replacement rates, changes in calculations of pension benefits, etc.) individuals who have already retired or are relatively close to retirement. It would be difficult for these people to make decisions—in the short term—that would prevent the negative impact of reform on their income. So, to ensure fairness and not change the rules of an ongoing game, it is usually appropriate to introduce reforms of this type gradually (Jousten, 2007).[33]

A failure to compensate potential losers may trigger pressure against reform. In fact, even if reform is adopted, tensions may persist that threaten the sustainability of change over time. In Uruguay, one example is provided by the so-called "*cincuentones*" (people in their fifties), who were just under forty years old when the mixed pension system was created in 1995. The reform clearly placed them at a disadvantage, because they were included in the new system and—in contrast to younger cohorts that would have much of their active life to accumulate and capitalize their contributions in the capitalization pillar—would have less time to accrue savings that would compensate for the changes introduced. Although a technical means to compensate them was in place—e.g., depositing the capitalized value of the equivalent contributions made up to that time—, it was not applied when the reform was implemented. This ultimately generated a partial reversion of the system for this group of people, which was probably more costly than solving the problem by means of compensation.

The lack of compensation for potential losers may prevent the adoption of reforms or, if they are adopted, may threaten their sustainability over time.

A systemic view of policies and instruments

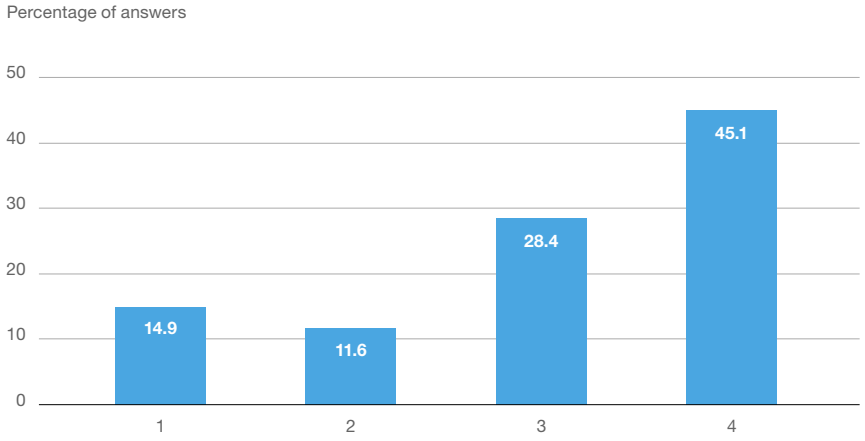
One strategy for achieving successful reforms is to adopt a broad view of the policies and to group measures that would enable consideration of different dimensions in the social protection system. There may be two reasons for this. On the one hand, there are technical arguments, such as the interactions and effects on other policy areas that make it worth proceeding in this manner, as discussed in the following subsection. On the other hand, there are political arguments, since a reform strategy of this type enables the creation of a solid majority of winners and the reduction of the vetoing power of affected groups.

The preferences of the ECAF 2019 respondents clearly seem to favor a strategy of this kind. Figure 5.14 shows that more than 45% of the ECAF respondents

33. In many countries in the region, from a legal standpoint, it is often argued that there are acquired rights that would be violated by any abrupt change in the rules. Beyond being an arguable point, changes can generate fiscal uncertainty as a result of potential lawsuits and rulings in this regard.

prefer reforms combining changes in retirement age, benefit payouts, and contribution rates rather than any single option. As shown, there are several cases in which preferences regarding these instruments differ according to income level. Thus, a combination would probably persuade more people than a single option that emphasizes opposing interests.

Figure 5.14
Preferences in Latin America on how to resolve the financial challenges to pension systems arising from aging



Notes: The figure shows the simple average of answers provided in 11 cities in Latin America. The question was: Which of the following reforms would you be most in agreement with to maintain fiscal balance? 1) Raising minimum retirement age; 2) Reducing pension benefit payouts; 3) Increasing mandatory worker contributions to social security; or 4) A combination of the above. Lost values were discarded.

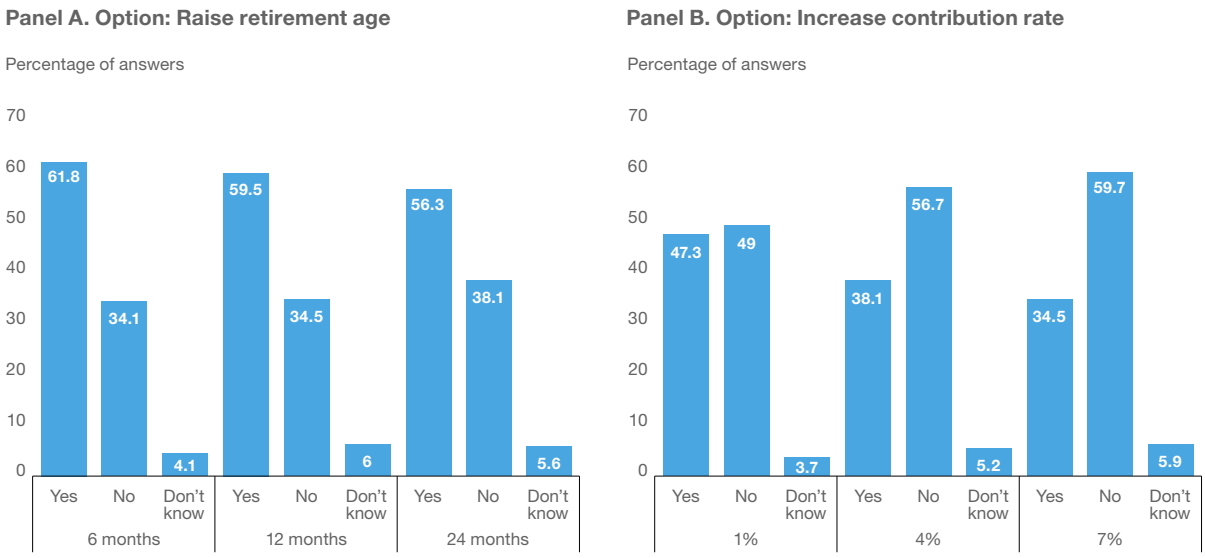
Source: Author based on ECAF 2019 data (CAF, 2020).

According to the ECAF, most people prefer reforms that include a combination of changes—in retirement age, benefit payouts, and contribution rates—over a single option.

A frequently used formula in social security reforms combines elements that finance aspects of extending coverage or improvements in sufficiency, e.g., creating a minimum non-contributory benefit, with elements that reinforce the financial sustainability of the system. This means that, on the one hand, it provides broader safety against poverty in old age and, on the other hand, generosity is reduced in some non-priority aspects of the system to improve fairness.

What other instruments of this kind can influence the success of the reforms? Figure 5.15 shows, for example, that on average, most people in the region choose to fund a minimum pension by increasing the retirement age, while they are considerably less favorable, and much more elastic, to funding it by increasing contribution rates. Whether this is due to rational reasons from an economic standpoint or to perceptions based on behavioral economics, it is also important to pay attention to these aspects.

Figure 5.15
Preferences in Latin America on how to fund a universal minimum pension



Notes: The figure shows the simple average of answers from 11 cities in Latin America. The survey asked respondents to imagine that the public administration wants to implement a reform to guarantee a minimum pension equivalent to a basic basket per month, as from now, for all older adults. Panel A shows the preference of respondents who answered 'Yes' to the question: Would you be willing to retire "X" months later as part of this reform if it did not involve a reduction in your own pension payout? Panel B shows the preference of respondents who answered 'Yes' to the question: Would you be willing, as from now, to accept a discount of "Y" as part of this reform, if it did not involve a reduction in your own pension payout? The sample includes only people who expect to receive a pension in the future. Lost values were discarded.

Source: Author based on ECAF 2019 data (CAF, 2020).

Another area in which instruments are important is that of mechanisms that contribute to ensuring sustainability, prevent errors in demographic projections or other key parameters from creating financial imbalances, and contribute to reducing the risks of parametric reforms being recurrently postponed. Moreover, tying intergenerational transfers to demographic factors is useful not only for fiscal reasons but also from the standpoint of the social distribution of risk. For example, Green (1988) notes that unexpected changes in the trend in the fertility rate introduce volatility in real salaries and in the return on savings for old age. As these shocks affect the different generations in opposite directions, there would be incentives, under the veil of ignorance, to share this risk among generations. This risk cannot be diversified by the market, but it can be diversified by a system of intergenerational transfers that depends on the size of the population. This would involve linking pension payouts (and the taxes to fund them) to demographic shocks. It has led some countries to index retirement age according to life expectancy, for example. However, this may generate inequity and problems of sufficiency, especially in capitalization systems that use average mortality tables due to the differences in life expectancy between persons with different income levels (OECD, 2018c). For example, in Chile, empirical evidence shows that the life expectancy of low-income

workers at the time of retirement is at least three years less than high-income workers (Edwards, Soto, and Zurita, 2020). Thus, the countries in the region should carefully evaluate these inequalities before implementing mechanisms of this kind.

Potential conflicts between social protection and efficiency

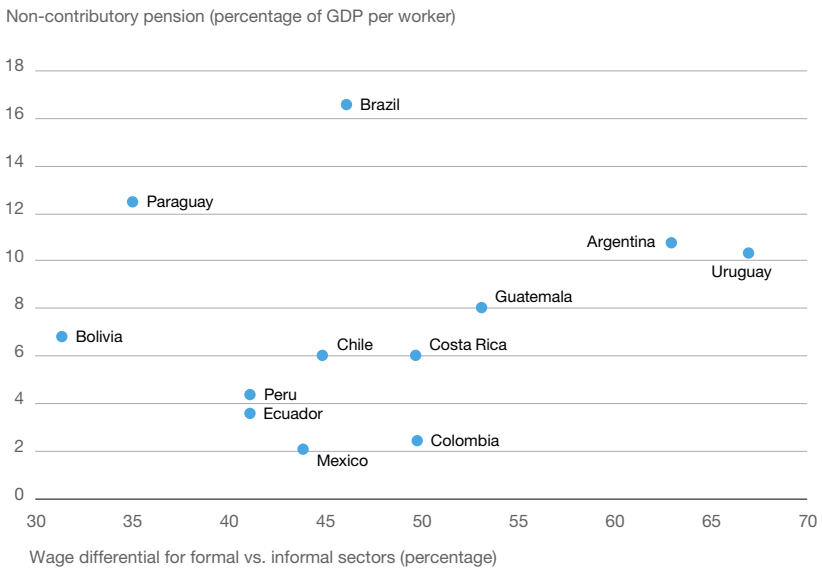
In principle, social protection systems contribute to economic efficiency by providing insurance against risks for which pure market mechanisms generally do not offer sufficient solutions. However, tradeoffs are frequently reached between public policies that intend to provide greater social protection benefit coverage or sufficiency and other policies that aim to provide incentives to increase the efficiency and productivity of the economy. Non-contributory public healthcare systems and non-contributory pension systems, which usually have a positive effect on social welfare—particularly for informal and vulnerable workers—may generate incentives for these workers to remain in the informal sector, which leads to lower levels of productivity and GDP (CAF, 2018). For instance, evidence shows that non-contributive public healthcare programs have had a positive impact not only on coverage levels but also on some relevant results in the health of the beneficiary population, such as child mortality, beyond the matter of whether or not they are cost-efficient. At the same time, the coexistence of contributory systems funded with contributions linked to wages, and other aspects of these programs also tend to contribute to an increase in informality, since workers can receive benefits without making contributions to the system (see Chapters 2 and 4).

Policymakers are often torn between increasing social welfare today—through healthcare and pension social protection programs—and creating incentives to encourage people to contribute more to the contributive pillars and get out of informality. Higher contributions deriving from greater labor formality would also increase the economic resources available in the future to extend and perfect the social protection system. Although it is not usually possible to eliminate these concessions completely, public policy design should consider and evaluate these effects, understand their magnitudes, and aim to minimize undesired side-effects. This means that there is no single optimum solution for all countries in the region, but that it is necessary to consider the starting point of the reform (with measurements of the most significant dimensions) and evaluate how welfare, the behavior of the agents, and public finances change for different policy designs.

For example, in countries where the income gap between the formal and informal sectors is large, non-contributory social protection systems can be more generous. The intuition behind this idea is that since productivity is considerably higher in the formal sector than in the informal sector, that difference is also apparent in wages, so the benefits of being in the formal sector are high. In this situation, providing certain access to universal or non-contributory social protection services would not create too many incentives to

remain within or move into informality.[34] Indeed, for example, in the region there is a relatively close association between the relative value of non-contributory pensions in relation to labor productivity (GDP per worker) and the wage premium for working in the formal sector in comparison to the informal sector, considering observable characteristics such as gender and educational level (see Figure 5.16). This suggests that, on average, the existence of these non-contributory social protection systems would not be creating major distortions, although there are important exceptions in Bolivia, Brazil, and Paraguay. In these three countries, it seems clear that non-contributory pension benefits are high in relation to the mean productivity of labor, considering additionally that these are economies in which wages are not much higher in the formal than in the informal sector.

Figure 5.16
Non-contributory pension relative to labor production and wage premium of formality



Notes: Wage premiums for formality are estimated using a regression that takes the logarithm of labor income as a dependent variable, and they indicate, as a percentage, how much higher a formal worker's income is than an informal worker's. The specification of each regression includes the following controls for personal characteristics: three education levels, sex, and age group. The regression universe comprises all employees in the private sector. The regressions are estimated separately for each country, grouping all the waves of the household surveys per country processed by CEDLAS (2020) between 2005 and 2008 (according to country). The coefficients reported associated with wage premiums for formality per country are significant at 1% statistical significance.

Source: Author based on CEDLAS (2020), Pension Watch (2020), and Penn World Table 9.1 (Feenstra, Inklaar, and Timmer, 2015).

34. The loss in efficiency, measured by the difference between productivity levels in the formal and informal sectors, should obviously be reflected in wage differences.

Several studies provide more thorough evidence of the impact of non-contributory healthcare programs, evaluating their consequences not only regarding aspects of the welfare of the beneficiary population but also their effects on the efficiency and productivity of the economy. These programs (which extend beyond people's working lives) include Brazil's Family Health Program (PSF), created in the mid-90s and extended to many municipalities starting in 1998. This program had significant impacts both on social welfare and on informality. Conti, Ginja, and Narita (2019) found that the PSF's social value almost doubles its cost. The increase in social welfare is almost 12%. Even considering the government expenditure needed to provide and fund the service, the increase in welfare is almost 5%. At the same time, as informal workers now have access to non-contributory healthcare insurance, there is less incentive to enter the formal sector, with more workers moving into informality. Simulations show that, although salaries in the informal sector drop, due to the higher number of people who offer to work there, the health insurance more than compensates for this effect. Thus, the introduction of the PSF led to an increase in informality, particularly in households with low education levels, of between 8% (4.2 percentage points) and 10% (5.8 percentage points) considering the increase in taxes required to fund expenditure associated with the program.

Mexico also has a large non-contributory public health program, *Seguro Popular* (SP), which has been studied in depth. In terms of results in the health of the covered population, the SP had a positive effect on the reduction of child mortality, out-of-pocket expenditure for some treatments, and the risk of spontaneous abortions (see Chapter 4). For example, Conti and Ginja (2017) found that the SP led to an 84% reduction in the difference in child mortality between poor and rich municipalities. However, the program has had adverse effects on formal employment. Bosch and Campos-Vazquez (2014) found that the SP led to a reduction in formal jobs in Mexico. Conti *et al.* (2019) report that, although the *Seguro Popular* in Mexico fostered a marginal increase in welfare for households with little education, the added welfare drops by nearly 5% when it is considered that the additional cost must be financed through higher taxes. At the same time, informality in this segment of the population increased slightly.[35]

Non-contributory pension systems are another set of social protection programs that may have effects on labor supply and formality because their aim is usually to provide a certain minimum income level to older workers who have spent much of their working lives in the informal sector and therefore do not meet the requirements in terms of the number of years of contributions at a reasonable age. A non-contributory benefit would improve the welfare of these workers by partially protecting their income during old age. Evidence from several countries in the region that have introduced and extended non-contributory pensions shows that they are an effective

35. An important question that has not yet been answered satisfactorily, due to the methodological complexity it involves, is whether the effects of this type of program on formal employment cause a drop in total factor productivity, either through greater distortion in the allocation of workers among companies with different levels of productivity or through lower incentives for the accumulation of specific human capital (CAF, 2018).

instrument for reducing poverty among older adults (Bosch, Melguizo, and Pagés, 2013).

At the same time, the availability of non-contributory pensions can have several undesired side-effects on the labor market.[36] For example, evidence from developed countries shows that a reform that raises the age at which people are eligible to receive benefits from this type of support by three years would significantly increase labor participation of men aged 56 to 65 (Gruber and Wise, 1999 and 2004). Empirical evidence from the region shows that access to a non-contributory pension has a negative effect on the supply of labor by the beneficiaries, i.e., that a proportion of older adults stops working, with a negative impact on productivity, economic growth, and financial sustainability of the social protection systems. A recent study by ECLAC reviewing empirical literature on the region concludes that almost 70% of the assessment studies on the impact of different non-contributory pension systems reflect a significant negative impact on the supply of labor by older adults, particularly women (Abramo, Cecchini, and Morales, 2019).

Argentina is an example of the above. In the mid-2000s, pension coverage was extended through a "moratorium," which relaxed the number of years of contributions required to receive a pension, leading to an estimated drop of 5 percentage points in the employment of men and women in beneficiary age ranges or close to beneficiary age. There was also an increase in the number of informal workers who were receiving a pension, which shows that many continued working beyond the maximum age (Bosch and Guajardo, 2012). Empirical studies for systems in Bolivia, Brazil, and Mexico even found a reduction of over 10 percentage points in labor participation among the beneficiary population (see Hernani-Limarino and Mena, 2015; de Carvalho Filho, 2008, and Juarez and Pfutze, 2015).

Another potential negative side-effect is that younger workers may anticipate the situation and, considering the possibility of receiving a non-contributory benefit, could decide to reduce their labor supply or move into the informal sector. Also, an older adult in the household could receive a non-contributory pension and this may affect other household members' behavior regarding labor. Empirical evidence on this situation is less clear, probably because, in contrast to the non-contributory healthcare systems, which provide immediate benefits, retirement is often perceived as being distant and difficult to address because of the uncertainties and complexities involved. In Bolivia and Mexico, there seems to be no effect on the labor supply by other household members or any effect of anticipation (Hernani-Limarino and Mena, 2015; and Galiani, Gertler and Bando, 2016). Pfutze and Rodríguez-Castelán (2019) find that the labor supply of working-age men in Colombia increases if the household includes a beneficiary of the *Colombia Mayor* program. At the same time,

36. One of the aims of these policies is clearly that the older beneficiaries should be able to retire from the labor force without sharp drops in their consumption capacity and welfare. However, policies should endeavor to ensure that healthy persons who are able to work should remain active in the contributory system and thus be able to receive a greater benefit in the future. Similarly, it would not be desirable for workers with formal employment who are close to meeting the requirements for receiving the benefit of a pension to move into the informal system based on the availability to them of a benefit that does not depend on whether or not they have made contributions.

there is evidence that non-contributory pensions can help reduce child labor (Abramo *et al.*, 2019).

To sum up, non-contributory pension systems have a major effect on reducing the vulnerability of older adults and often also have positive effects on other household members.[37] At the same time, there may be negative side effects, such as encouraging retirement of persons who are able to work and generate a higher contributory benefit in the future. Similarly, even if these persons do not leave the formal labor market, they may lose the incentives to continue contributing and therefore end up in the informal labor market.

An additional aspect is related to the quality of the protection instruments linked to formal employment because, in principle, it makes formal employment more attractive and thus may not only reduce informality but also increase labor supply. For example, in Uruguay, formal employment was encouraged by the expansion of healthcare benefits associated with it, increasing labor participation (Bergolo and Cruces, 2014).

At the same time, the way in which social security benefits are funded may affect the labor market. Thus, it is known that labor taxes can be a disincentive to labor supply and, in developing countries, promote informality. For example, Fernandez and Villar (2016) studied Colombia's 2012 reduction in employer contributions to social security from 29.5% to 16% and found that it reduced informality by about 5 percentage points. Even the contributions to pension funds, which represent a form of savings for the worker, may be interpreted as an implicit labor tax when the return on these savings is significantly lower than the return on capital.[38]

The discussion in this section showed the complexity of providing social protection in economies with a high level of informality, and the importance of designing social policies that consider all the aspects of the social protection that they provide. For example, if a non-contributory public health system encourages a large proportion of middle and low-skill workers to enter the informal job market, those workers will not have coverage against risks such as workplace accidents, disability, or death, even though they are covered for healthcare. Their income will be lower, given the lower labor productivity in informal activities and the lack of opportunities to acquire skills there. Neither will they generate the right to receive a contributory pension, so they will frequently be exposed to the risk of falling into poverty in old age. Thus, when specific programs are designed to extend one type of coverage, they should also consider the long-term incentives created on the labor market. As shown by empirical evidence, aspects such as how contributory systems are funded versus non-contributory systems, and the benefits or quality of each type of coverage provided, are important aspects to consider.

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37. Galiani *et al.* (2016) report, for example, major improvements in mental health among older adults who have access to this type of program. At the same time, they provide evidence showing that paid work of older adults is substituted by non-paid work at home.

38. Feldstein (1996) estimates that in the U.S., from 1960 to the mid-1990s, the return on the social security contribution was about 2.6%, while the return on capital was about 9.3%. The loss in efficiency related to this implicit tax, according to the author's calculations, may have been about 1% of GDP for the period under analysis.

Good design of social protection systems is crucial to increase coverage or the sufficiency of some benefits while minimizing concessions in terms of productivity. On the contrary, a system made up of fragmented programs, without previous analysis of the incentives generated, may lead to more limited improvement in social welfare in the short term. It can also erode the capacity of persons and of the economy as a whole to achieve higher income levels that would reduce social vulnerability in the long term and generate resources to maintain and expand the social protection network in the context of future population aging faced by the countries in the region.

A well-designed system aims to achieve greater coverage or sufficiency of benefits while minimizing losses in productivity.

State capacity and other relevant elements

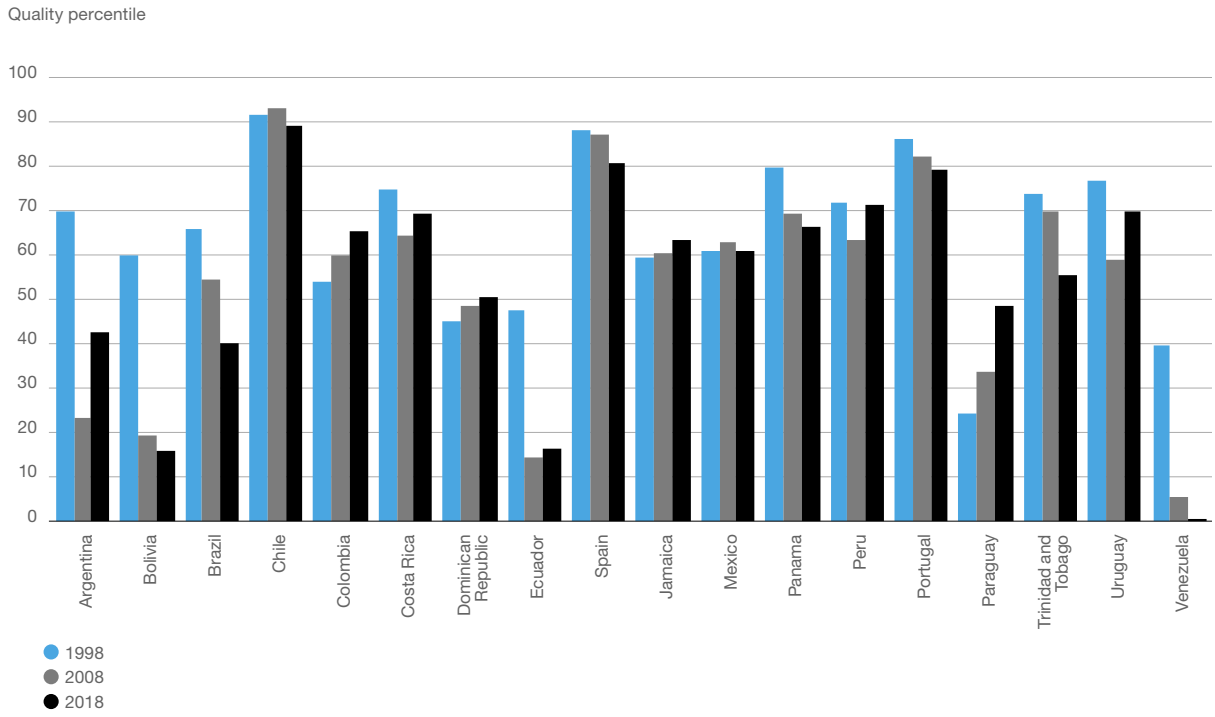
Institutions and State capacity significantly condition the results of public policies, limiting the set of policies that can be implemented effectively. In principle, this happens in all policy areas, so social security is also subject to these restrictions.

In particular, there are reasons to believe that State capacity in the field of social protection is critical to make social protection policies more effective. The healthcare market features major asymmetries in information—pertaining to costs, quality of the service, and even the need for certain treatments—between service providers, regulators, and users. The pension fund market features significant fixed costs and economies of scale. The literature on behavioral economics shows that there is great inertia in demand, giving market power to healthcare providers, insurance, and pension funds (Impavido, Lasagabaster, and García-Huitrón, 2010). Finally, the impact of social security policies, and more broadly speaking, the design of non-contributory benefits, depend on the quality of the information available to the government and the agents that make long-term decisions on issues that often involve complex analyses.

The quality of the regulatory policy is relevant for effective regulation of healthcare service providers, pension funds, and insurance companies (both for the healthcare insurance market and for reinsurers for products such as life annuities). The capacity of the public sector to regulate these markets has a significant impact on the results of the policies. Given that, unfortunately, there is no information that would be comparable in terms of regulation capacities referring specifically to social protection, below we present a general indicator: the World Bank Regulatory Quality Index (2019b) for countries in the region and for Spain and Portugal (see Figure 5.17). With the exception of Chile, which is located approximately in the 90th percentile among the 214 countries and territories analyzed, regulatory quality in the region is far removed from best practices and is in fact closer to halfway down the rankings. Only Colombia and Paraguay show substantial improvements over time, while a large group of countries shows backsliding in regulatory quality.[39]

39. This drop is not only in relative terms to the rest of the countries but also in the absolute value of the index.

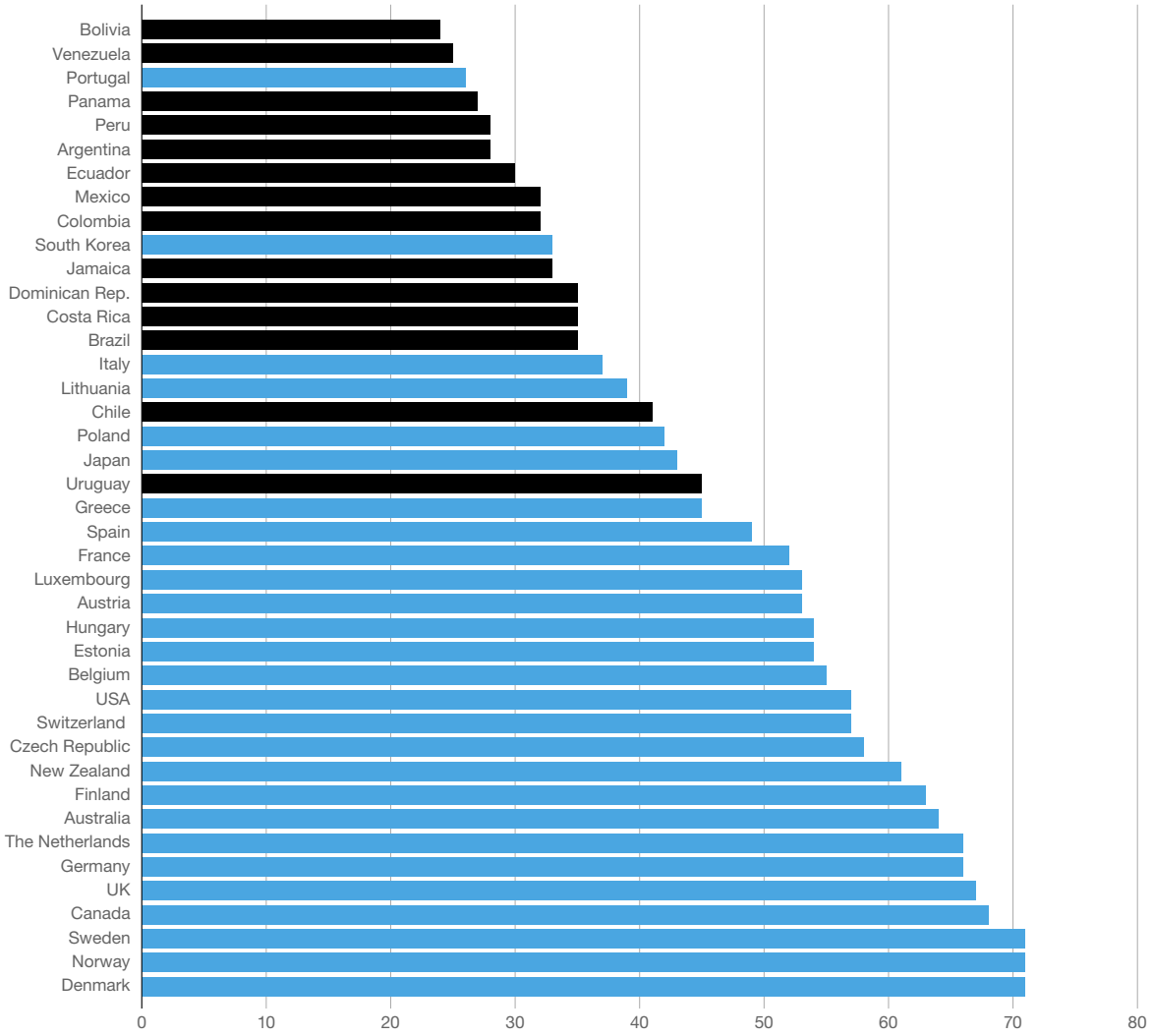
Figure 5.17
Regulatory Quality Index ranking per year



Notes: Percentile 0 corresponds to low quality; 100 indicates maximum quality.
Source: Author based on data from the World Bank (2019b).

Previously in this chapter, we presented evidence of the existence of significant margins for increasing the efficiency of expenditure on healthcare in most Latin American countries. To implement reforms that will increase efficiency and enable maintenance or expansion of coverage, as well as addressing—at least partially—the pressures on expenditure resulting from aging, there are two key elements that reinforce each other. On the one hand, the government's regulatory capacity in the sector needs to be reinforced. On the other hand, more and better data are needed on the costs of treatments and expenses of the system. Thus, reforms improving regulatory capacity should be accompanied by improvements in information systems (see Chapter 4).

Figure 5.18
Financial literacy index



Notes: The index represents the percentage of the adult population that has sufficient knowledge of three of the following four concepts: risk diversification, inflation, interest rates, and compound interest.

Source: Author based on Klapper, Lusardi, and van Oudheusden (2016).

Finally, the degree of financial literacy—which commonly refers to the ability to understand economic and financial concepts that enable households to make decisions about savings and investment—is a highly relevant conditioning factor for designing and foreseeing the impact of social protection policies. The empirical literature, in general, finds that people with better financial knowledge make better decisions regarding their participation in savings plans for old age, and more generally, about the financial risks associated

with their aging. Lusardi and Mitchell (2007) found that people in the U.S. with financial knowledge are better at saving and they plan for old age. Fornero and Monticone (2011) reach similar conclusions for Italy regarding the likelihood of participating in voluntary pension plans, as do Imenberg and Säve-Söderbergh (2011) regarding attempts to plan and diversify risks in Sweden.

In Latin America, there is similar evidence for Chile, although financial literacy levels were found to be clearly lower than those in more developed countries. Garabato Moure (2016) found that only 47% of the population understands the concept of compound interest and only 18% understands the effects of inflation.

Figure 5.18 shows a frequently used financial literacy index. Clearly, the countries in the region in general present low levels of understanding of the financial instruments relevant to pension saving and planning to mitigate financial risks. The evidence shows that these skills are not distributed uniformly among the population. A recent study by CAF in Bolivia, Colombia, Ecuador, and Peru found that people with low education levels, those living in rural areas, the young, and the elderly are the groups with fewer financial skills and save less (Mejía and Rodríguez, 2016). This means that it is probably important to provide good sequencing in reforms. To avoid undesirable results, the financial skills of the population need to be increased before introducing policies that are largely based on individual decisions, e.g., on the financial instruments for managing their pension savings.

Key points to ensure the financial sustainability of social protection systems

1 Population aging plus low coverage levels and the insufficiency of benefits will place growing pressure on the financial sustainability of most social protection systems in Latin America. Although there is broad heterogeneity within the region, all countries will face major challenges to enable their pension and healthcare systems to provide more and better coverage in a fiscally sustainable manner.

2 The financial pressures related to aging are aggravated by three factors. First, demographic change will occur at considerable speed, so the window of time for taking advantage of the demographic dividend and preparing the social protection systems is smaller than in countries that have already gone through that experience. Second, many countries are starting from a situation of deficit, meaning that, in addition to addressing long-term trends, they need to reduce financial imbalances in their social protection systems in the near future. Third, the COVID-19 economic crisis will leave Latin American states with higher levels of debt and fiscal deficits, at a time when there are many urgent matters requiring public expenditure to palliate the social effects of the pandemic.

3 The room in each country in the region to accommodate the fiscal effects of aging is heterogeneous because the baseline situations differ. In some countries, the priority is to reduce financial imbalances and prepare the systems to address the additional pressures of aging. In other countries, there is a somewhat greater margin for accommodating the increases in expenditure associated with aging and to achieve the necessary expansion in coverage and sufficiency for social protection systems.

4 The evidence presented suggests that in addition to measures in other areas of public policy—such as reduction of informality—reforms to achieve greater efficiency in expenditure could contribute to funding part of the costs of aging. It is estimated that, on average, nearly 80% of the coverage gap in the healthcare system between Latin America and the OECD could be closed with the current level of expenditure if efficiency improved.

5 The countries that have room to increase fiscal revenues should contemplate structural tax reforms, considering incentives to get companies and individuals to contribute to the system. Fiscal reforms should also take into account their effects on allocation of capital and work, as well as fairness. Among others, these reforms include extension of tax bases through reduction of tax exonerations and exemptions, higher compliance with tax obligations, and strengthening of personal income taxes.

6 The political economy of social protection reforms can be complex and result in delays in the changes needed. The following factors facilitate reforms: availability of quality information and studies; total commitment and a clear mandate for implementing the reforms; involvement of the different stakeholders in the design process so that reforms cover aspects that could broaden the base that supports them; and clear communication of the reasons for implementing reform and the consequences of inaction.

7 Reforms will be more effective and efficient if they adopt a systemic vision that takes into account the interrelationships between different policy instruments. This implies considering, for example, the impacts that social policies and the way they are financed have on the decisions of firms and workers, particularly with regard to their participation in the informal or formal labor market. Failure to consider these interrelationships can create contradictions between efficiency and equity objectives. Given the region's high levels of inequality and low levels of productivity and efficiency, no country in the region is in a position to easily sacrifice one of these objectives to advance the other.

8 Reforms require complementary investments in the construction of state capacities. To carry out the necessary tax reforms, strengthen regulation to achieve greater efficiency in health spending and improve the design of social policies to achieve greater equity and efficiency requires a State that is more agile, more transparent and more intelligent in the use of data and information with which social protection policies are formulated.

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In the next 30 years, the proportion of the Latin American population aged 65 or older will double, reaching almost 18%. Indeed, the accelerated aging of the region's population, coupled with informality in the labor market and the automation and digitalization of productive processes, will have a profound impact on social protection in Latin American countries in the 21st century.

This report examines the challenges faced by social protection systems and the public policies required to address them. It focuses mainly on pension systems and the provision of health and long-care services for older adults. The report aims to present a comprehensive and in-depth analysis of both systems, taking into consideration the interactions between the demographic structure, the labor market, and the factors that influence their financial balance and sustainability. It also presents the key elements for the development of a quality and financially sustainable social protection for older adults.

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