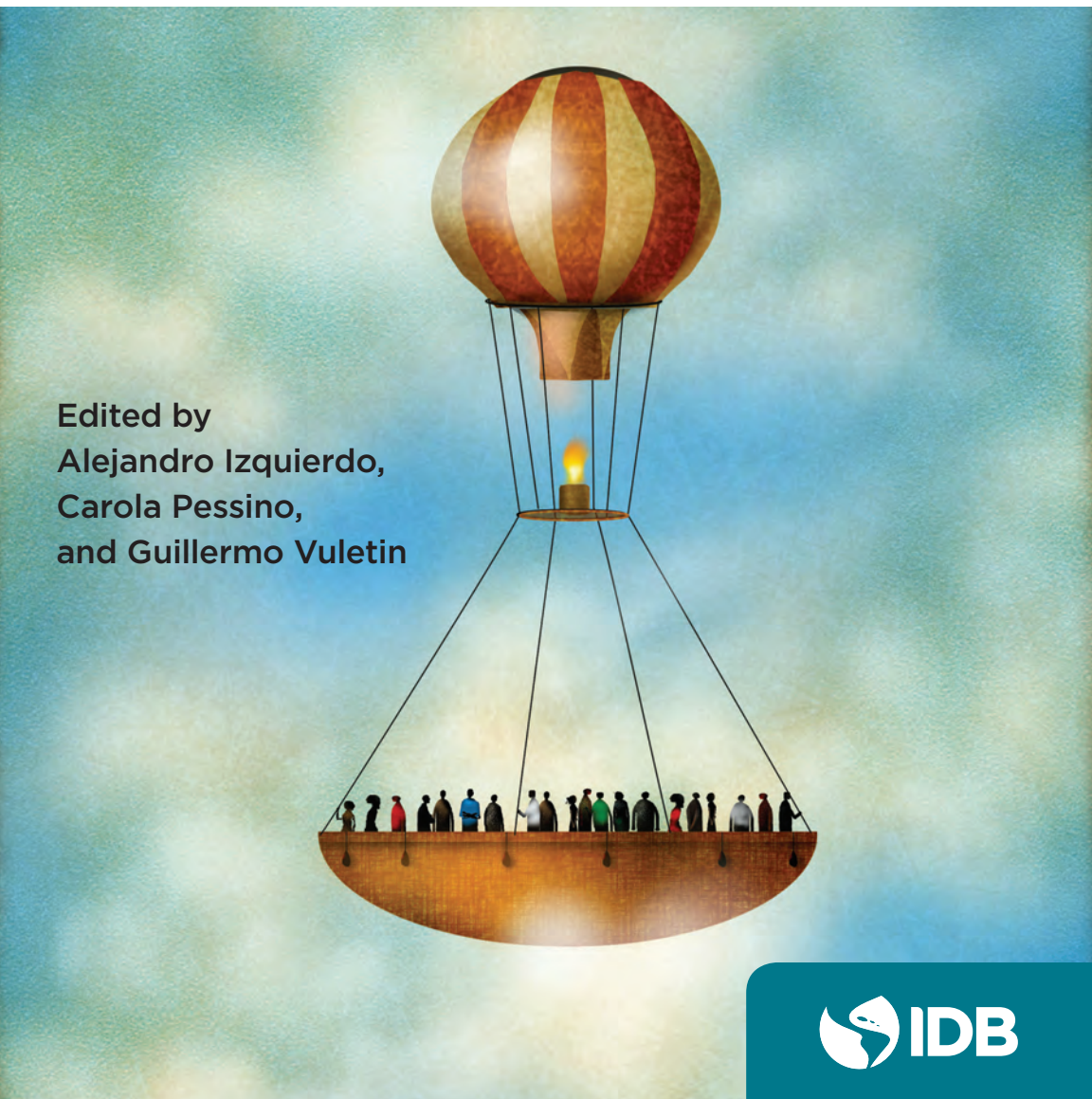
DEVELOPMENT IN THE AMERICAS

Better Spending for Better Lives

How Latin America and the Caribbean Can *Do More with Less*



Edited by
Alejandro Izquierdo,
Carola Pessino,
and Guillermo Vuletin

IDB

BETTER SPENDING FOR BETTER LIVES

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and Guillermo Vuletin

Inter-American Development Bank

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Contents

List of Tables vii

List of Figures ix

List of Boxes. xvii

Preface xix

Acknowledgments xxiii

List of Contributors xxvii

1. Public Spending: From Bigger to Better. 1
2. Spending and the Cycle 21
3. The (In)Efficiency of Public Spending 45
4. The Impact of Public Spending on Equity: Not Always as Intended 101
5. Public Infrastructure: Less Waste for Better Building 139
6. Making Spending Count in Education 167
7. Smart Spending on Citizen Security: Beyond Crime and Punishment 195
8. Efficient Spending for Healthier Lives 239
9. Better Institutions: The Key to Better Public Spending. 273
10. Shortchanging the Future: The Short-Term Bias of Politics 325

References 359

Index 409

List of Tables

Table 1.1	Preference for Public Spending vs. Fiscal Sustainability	3
Table 1.2	Determinants of Public Spending Composition (dependent variable: capital spending's share of primary total spending)	13
Table 4.1	Poverty and Inequality Incidence before and after Transfers with and without Disincentive Adjustment in Argentina, 2015 (1st Semester).	134
Table 5.1	Public Investment Management Index, 2015	144
Table 5.2	Indicators of Infrastructure Delivery Institutional Capacity, 2017	148
Table B5.1	Causes and Explanations for Cost Overruns in Infrastructure Projects	151
Table 5.3	Cost Overruns in Infrastructure Projects (Average between 1927 and 2012)	151
Table 5.4	Cost Overruns in Infrastructure Projects Financed by the Inter-American Development Bank and World Bank by Subsector (Average between 1996 and 2010)	153
Table 5.5	Results of Selected Studies on Infrastructure Efficiency	161
Table 6.1	Education Indicators: Latin America and the Caribbean and OECD	168
Table 6.2	Equity Indicators Based on Availability of Inputs by Region, 2015	179
Table 6.3	Bivariate Correlation between Efficiency, Equity, and Country-Level Variables	186
Table 6.4	Bivariate Correlation between Efficiency, Equity, and School Finance Variables	192

Table 7.1	Targeting of Citizen Security Programs, Selected Countries	221
Table 7.2	Security Interventions Selected by Integrated Approach and Cost-Benefit Analysis (2016 US$)	223
Table 7.3	Number of Citizen Security Programs Informed by Evidence	224
Table 8.1	Average Efficiency Scores by Output Indicator	247
Table 8.2	Potential Gains by Output Indicator	254
Table 8.3	Major Sources of Inefficiency by Type of Health System Input	256
Table 8.4	Policies to Promote Efficiency in Pharmaceutical Spending in DIME Countries, 2017	258
Table 8.5	Spending, Prices, and Policy Options for Ertapenem, 2017	260
Table 8.6	Spending, Prices, and Policy Options for Insulin Glargine, 2017	261
Table 8.7	Compliance with Testing among EPS Providers in Colombia, 2017	264
Table 8.8	Costs of Diabetes Care by Compliance with HbA1c Monitoring in Colombia, 2017	265
Table 9.1	Policy Recommendations to Improve Efficiency in Public Procurement Management	284
Table 9.2	Policy Recommendations to Improve Efficiency in Civil Service Management	290
Table 9.3	Policy Recommendations to Improve Efficiency in Digital Integrated Data Systems	295
Table 9.4	Recommendations to Improve Results-Based Budgeting (RBB)	302
Table 9.5	Recommendations to Improve Public Investment Management	312
Table 9.6	Key Recommendations to Improve Fiscal Decentralization for Better Spending Efficiency	316

List of Figures

Figure 1.1	Government Expenditure in the Last Two Decades	2
Figure 1.2	Fiscal Preference and Sustainability, 2007–2014	3
Figure 1.3	Wagner's Law for Latin America and the Caribbean	4
Figure 1.4	Evolution of Public Spending Composition, Economic Classification (percentage of total primary spending)	8
Figure 1.5	Evolution of Bias against Capital Spending. Measured as the difference between the current share of capital spending on total primary spending and that prevailing in 1980	9
Figure 1.6	Bias against Capital Spending, by Region	10
Figure 1.7	Bias against Capital Spending, by Country in Latin America and the Caribbean	10
Figure 1.8	Composition of Public Spending, by Economic Classification and by Region (in real terms and per capita for 1980–1985 and 2010–2015)	11
Figure 1.9	Current and Capital Spending, by Region (growth rates between 2010–2015 and 1980–1985)	12
Figure 1.10	Unexplained Bias and Trust	17
Figure 2.1	Correlation between Output and Total Primary Spending (1980–2016)	23
Figure 2.2	Correlation between Output and Total Primary Spending (2000–2016)	25
Figure 2.3	Correlation between Output and Discretionary Spending	27
Figure 2.4	Correlation between Output and Social Transfer Spending	30

Figure 2.5	Relationship between Discretionary and Automatic Spending Cyclicality in Industrial Countries	31
Figure 2.6	Correlation between Output and Family Programs and Benefits Spending	32
Figure 2.7	Correlation between Output and Unemployment Insurance Spending	33
Figure 2.8	Correlation between Output and Social Security Spending	33
Figure 2.9	Correlation between Output and Specific Social Transfers before and after Social Security Law Amendment in Argentina, Brazil, and Uruguay	34
Figure 2.10	Spending on Social Security, Family Programs, and Unemployment Insurance (as Percentage of Total Social Transfers Spending)	35
Figure 2.11	Capital and Current Expenditure in Good and Bad Times: A Sample of Developing Countries	37
Figure 2.12	Capital and Current Expenditure Patterns: The Relevance of Institutions	38
Figure 2.13	Capital and Current Expenditure Patterns: Relevance of Electoral Effects	39
Figure 2.14	Multiplier of Total Primary Spending on Output	40
Figure 2.15	Multiplier of Total Primary Spending Components on Output	41
Figure 2.16	Multiplier of Government Investment on Output	42
Figure 2.17	Multiplier of Primary Government Spending on Output	44
Figure 3.1	Total Spending as Percent of GDP by Economic Classification and GDP per capita PPP, 2015–2016	49
Figure 3.2	Share of Wage Bill, Procurement, and Transfers in Government Spending, 2015–2016	50
Figure 3.3	Public Procurement Spending as a Percentage of GDP and of Government Spending, 2016	52
Figure 3.4	Corruption Perception Index (CPI) and Diversion of Public Funds (DPF) Index, 2017	54
Figure 3.5	Wage Bill in Selected Countries, 2016	56
Figure 3.6	Public Employment as a Share of Total Employment and Public-Private Sector Estimated Wage Gap	57

Figure 3.7	Targeted Spending and Leakages (Social Programs, Energy, and Tax Expenditure), 2015	62
Figure 3.8	Technical Inefficiency in Targeted Transfers, Procurement, and Wage Bill	64
Figure 3.9	Evolution of the Distribution of Population by Age Groups and the Window of Opportunity, 1950–2100	66
Figure 3.10	Pension Spending (% of GDP) and the Old Age Dependency Ratio (OAD), 2017	67
Figure 3.11	Pension and Health Expenditure Projections, 2015–2065	71
Figure 3.12	Composition of Total Expenditure and Per Capita Expenditure by Age Group	73
Figure 3.13	Evolution of Total Factor Productivity (TFP), ratios to U.S. TFP	78
Figure 3.14	Gaps in Skills by Socioeconomic Status of Parents	83
Figure 3.15	Returns to a Dollar Invested in the Skills of Disadvantaged Children (Compared to Well-Off Children) at Different Stages of Life Cycle	85
Figure 3.16	Heterogeneity: Marginal versus Average Treatment Effects for Returns to Tertiary Education	87
Figure 3.17	Subnational Government Expenditure, circa 2016	91
Figure 3.18	Vertical Fiscal Imbalances, circa 2016	93
Figure 3.19	The Effect of Revenue Sources on Allocative and Technical Efficiency of Spending	94
Figure 4.1	Poverty and Inequality in Latin America and the Caribbean	102
Figure 4.2	Average Primary and Social Expenditure in Latin America and the Caribbean	104
Figure 4.3	Average Composition of Social Spending in Latin America and the Caribbean	105
Figure 4.4	Differences in Income Inequality Pre- and Post-Taxes and Government Cash Transfers in Latin America, Compared with OECD and European Union, Circa 2012	107
Figure 4.5	Social Spending and Redistribution in Latin America, OECD and European Union, Circa 2012	108

Figure 4.6	Composition of Government Social Spending	110
Figure 4.7	Distribution of Income from Pensions by Quintile of Per Capita Income (ranked by market income), Circa 2012	112
Figure 4.8	Differences in Income Inequality, Pre- and Post-Pensions, and Government Cash and In-Kind Transfers in Health and Education	113
Figure 4.9	Spending on Conditional Cash Transfer Programs and Noncontributory Pensions in Latin America and the Caribbean	115
Figure 4.10	Pro-Poor or Pro-Rich Transfer Spending (ordered by market income), Circa 2012	116
Figure 4.11	Changes in Extreme Poverty and Inequality from Market Income to Disposable Income in Latin America	118
Figure 4.12	Coverage and Leakage of Transfers in Latin America and the Caribbean	119
Figure 4.13	Disposable Income Extreme Poverty Gap, % of GDP in Latin America	120
Figure 4.14	Pro-Poor or Pro-Rich Spending on Education by Level, Ordered by Market Income, Circa 2012	123
Figure 4.15	Public Spending on Education by Level, as % of GDP in Latin America Circa 2012	124
Figure 4.16	Pro-Poor or Pro-Rich Spending in Health (Concentration coefficients) and Public Spending in Health in Selected Latin American and Caribbean Countries (ranked by market income), Circa 2012	125
Figure 4.17	Inequalities in Health-Care Access and Outcomes in Latin America and the Caribbean and More Developed Countries	127
Figure 4.18	Inequalities in Education Access and Outcomes in Latin America and the Caribbean, and in More Developed Countries	128
Figure 4.19	Share of Social Spending by Central and Subnational Governments in Latin America, Circa 2015	130
Figure 4.20	Subnational Human Opportunity Index: Gap between Municipalities with the Highest and Lowest Scores, 2014	132

Figure 4.21	Noncontributory Social Spending in Latin America and the Caribbean, 2014	136
Figure 5.1	Investment in Infrastructure (Average between 2008 and 2015)	140
Figure 5.2	Relationship between Quality of Overall Infrastructure and Income Level, 2014 Positive relationship between the quality of infrastructure and a country's level of development	140
Figure 5.3	Potential Efficiency Gains in Infrastructure Spending	142
Figure 5.4	Efficiency of Public Investment Management, 2016	145
Figure 5.5	Indices of Subdimensions of Efficiency in Public Investment Management, 2016	146
Figure 5.6	Benchmarking of Public Procurement, 2017	147
Figure 5.7	Cost Overruns in Public Infrastructure Projects Financed by the IDB and the World Bank in Latin America and the Caribbean	153
Figure 5.8	Months Between Approval and Eligibility of a Sample of IDB-Financed Infrastructure Projects	155
Figure 5.9	Months Between Approval and Eligibility of IDB-Financed Infrastructure Loans (Average between 2005 and 2015)	155
Figure 5.10	Relationship between Delays in Approving Infrastructure Projects and Rule of Law and Government Effectiveness Indices (Average between 1996 and 2015)	156
Figure 5.11	Days Required to Complete Permitting and Approval Procedures for Infrastructure Projects, 2016	157
Figure 5.12	Theoretical and Actual Cumulative Disbursements of IDB-Financed Infrastructure Loans (by year)	158
Figure 5.13	Theoretical and Actual Cumulative Disbursements of IDB-Financed Infrastructure Loans (Average between 2003 and 2016)	159
Figure 5.14	Theoretical and Actual Cumulative Disbursements of IDB-Financed Infrastructure Loans by Sector (Average between 2003 and 2016)	160
Figure 6.1	Composition of Government Expenditure on Education by Education Level	171

Figure 6.2	Efficiency Index Computed at School Level, 2015	175
Figure 6.3	Relationship between Vertical Inequity and Horizontal Equity, 2015	180
Figure 6.4	Relationship between Efficiency Index and Horizontal Equity, 2015	181
Figure 6.5	Relationship between Efficiency Index and Vertical Inequity, 2015	182
Figure 7.1	Intentional Homicide Rate (mean) by Region, 2003–20015	197
Figure 7.2	Intentional Homicides and Crime Victimization in Latin America and the Caribbean	198
Figure 7.3	Cost of Crime in Latin America and the Caribbean, by Subregion, 2014	199
Figure 7.4	Main Concerns of Citizens in Latin America and the Caribbean, 2014	199
Figure 7.5	Expenditure on Public Safety in Latin America and the Caribbean and OECD Countries, 2014	200
Figure 7.6	Spending Profiles of Latin America and the Caribbean and the OECD, 2014	201
Figure 7.7	Spending Profiles, by Country, 2014	201
Figure 7.8	Spending Profile and per Capita GDP PPP, 2014	202
Figure 7.9	Overcrowding and Percent of Spending on Prisons	204
Figure 7.10	Share of Wages in Public Safety Spending	205
Figure 7.11	Share of Wages by Subsector, 2015	205
Figure 7.12	Spending on Public Order and Security, 2008–2015	206
Figure 7.13	Spending Per Capita on Public Safety (US$ PPP)	207
Figure 7.14	Factorial Breakdown, 2008 and 2015	207
Figure 7.15	Evolution of Annual Total Spending by Subsector (selected countries), 2008–2015	208
Figure 7.16	Standardized Increase in Spending Per Capita and Rate of Victimization	209
Figure 7.17	Standardized Increase in Spending Per Capita and Homicide Rate	209
Figure 7.18	Public Spending Efficiency Index at Global Level	211

Figure 7.19	Technical Efficiency and GDP per capita	212
Figure 7.20	Technical Efficiency, Rule of Law, and Government Effectiveness Index	213
Figure 7.21	Public Spending Efficiency Index Adjusted by External Factors	214
Figure 7.22	DEA Maps with Output Variation, Selected Countries	216
Figure 7.23	Budget Allocation for Citizen Security, El Salvador, 2011	218
Figure 7.24	Results of Studies on Crime Concentration	220
Figure 7.25	Direct Impunity, Average 2010–2015	227
Figure 7.26	Prisoners in Preventive Detention	228
Figure 7.27	Prisoners without Conviction, Average 1999–2017	228
Figure 7.28	Prisoners without Conviction, by Country	229
Figure 7.29	Capacity to Apprehend, Process, and Sanction Successfully and without Undue Delay, 2017	233
Figure 7.30	Projected Growth of the Prison Population in Latin America and the Caribbean	234
Figure 7.31	Citizen Perceptions of How to Deal with Crime	236
Figure 8.1	Evolution of Total Health Expenditure, 1995–2014	241
Figure 8.2	Total Health Expenditure by Financing Agent, 2014	242
Figure 8.3	Evolution of Public Health Expenditure, 1995–2014	244
Figure 8.4	Estimated Efficiency Frontier for Life Expectancy at Birth	246
Figure 8.5	Comparison of Average Efficiency Scores	252
Figure 8.6	Comparison of Average Efficiency Scores by Group of Countries Using DEA Outputs	253
Figure 8.7	Average Regional Compliance with All Recommended Tests in Colombia, 2014	263
Figure 8.8	Yearly Number of HbA1c Tests, by Individual Patient in Colombia, 2014	263
Figure 9.1	Evolution of Fiscal Rules Adoption, 1985–2015	275
Figure 9.2	Fiscal Rules Adoption and the Probability of Debt Crisis, Fiscal Procyclicality, and Public Spending Composition	276

Figure 9.3	Incidence of De Facto Second Condition Fiscal Rules	278
Figure 9.4	Macroeconomic Effects of Second Condition Fiscal Rules	278
Figure 9.5	Civil Service Development Efficiency Index and Government Effectiveness	288
Figure 9.6	How Smart Integrated Data Systems Work	294
Figure 9.7	Results-Based Budgeting and Open Budget Index	300
Figure 10.1	Countries with Proportional Representation, by Region, 2017	329
Figure 10.2	Degree of Congressional Institutionalization across Regions	329
Figure 10.3	Ratio of Capital to Current Spending and Congressional Institutionalization	331
Figure 10.4	Preferences for (against) Public Goods in Latin America, 2017	333
Figure 10.5	Trust in People in Their Community, 2016 and 2017	336
Figure 10.6	Low Trust in the President, 2016 and 2017	336
Figure 10.7	Low Trust in Political Parties, 2016 and 2017	337
Figure 10.8	Low Trust in Congress, 2016 and 2017	337
Figure 10.9	How Much Do You Trust People You Meet the First Time?	338
Figure 10.10	Keeping Promises, Obeying the Law: Responses from Seven Countries in Latin America and the Caribbean, 2017	339
Figure 10.11	Education Financing Preferences and Trust, 2017	341
Figure 10.12	Police Financing Preferences and Trust, 2017	344
Figure 10.13	Preferences for Redistributive Taxes, 2017	346
Figure 10.14	Taxes for Redistribution and Trust, 2017	347
Figure 10.15	Trust in Government and Preferences for Higher Taxes for Education, Police, and Redistribution, 2017	349
Figure 10.16	Survey Respondents' Perceived Likelihood of Collecting 500 Signatures on a Petition and Degree of Trust	352
Figure 10.17	How Much Do Latin Americans Demand in Return for Delayed Benefits? (2017)	354

List of Boxes

Box 4.1	Definitions of redistributive analysis	111
Box 4.2	Jamaica Early Childhood Program: An Example for the Region	129
Box 5.1	Cost Overruns in Infrastructure: Why the Price is Never Right	150
Box 7.1	Multisystemic Therapy in Chile's 24 Hour Program	224
Box 7.2	Hot-Spot Policing: Uruguay Takes the Lead	226
Box 7.3	Objective Tools for Determining Preventive Detention	232
Box 7.4	Drug Treatment Courts in Chile	235
Box 7.5	Money Matters: Fiscal Prudence and nonpunitive reforms in the UNITED STATES	237
Box 8.1	Big data to inform allocation decisions	265
Box 8.2	Key Elements of Priority Setting Systems	269
Box 9.1	A Results-Based Budget (RBB) Program for Nutrition and Skills Formation in Peru	303
Box 9.2	Fiscal Risks from Public-Private Partnerships (PPPs), State-Owned Enterprises (SOEs), and Public Trusts	313

Preface

Most countries in Latin America and the Caribbean have recently reached, or are close to reaching, middle income status. As such, citizens in the region are demanding more and better services from their governments. This juncture is crucial: if governments can cope with these new demands, countries stand a good chance of climbing up the development ladder. If not, social tensions may arise, stalling development, as has happened time and again in many promising countries.

This challenge is even greater given the specter of higher world interest rates, lower commodity prices, and lower world growth—external factors that may not favor Latin America and the Caribbean as they did in the early 2000s. Moreover, several governments increased public expenditures rapidly during the good years, hoping that external gains would persist, only to find they had deteriorated and accelerated the need for fiscal consolidation in a context of increasing debt.

How can this puzzle of larger demands and fiscal strengthening be solved? This edition of the Development in the Americas (DIA) report focuses precisely on this question. The book suggests that the answer is about fiscal efficiency and smart spending rather than the standard solution of across-the-board spending cuts to achieve fiscal sustainability—sometimes at great cost for society. It is about doing more with less.

Moreover, more efficient spending may lead to higher growth. Take, for example, the way public expenditure is allocated between current and capital expenditures. Often, current expenditure grows above trend in good times, but then public investment takes the blow of adjustment in bad times. This bias against public investment hurts growth, as public capital is a major determinant of private investment, which is a key engine of growth. To top it off, the multiplier effects of public investment on output are much larger than those of current expenditure, so expenditure cuts that focus only on public investment are flawed.

Does this bias come solely from policymakers' choices? Or are citizens asking their politicians for on-the-spot transfers instead of more profitable

long-term investments such as infrastructure or education? Our report reveals that trust in government is a key ingredient behind citizen demands; when lack of trust is high—be it because of government inefficiency or blatant corruption— citizens prefer transfers over long-term investments. This political equilibrium could be highly detrimental for growth and development, since everybody may end up shortchanging the future with lower investments, both in physical and human capital.

Efficiency is not only useful for adjustment. Some countries in the region spend too little for their level of development and would largely benefit from expanding the gamut of government services offered. However, they find it difficult to raise taxes to finance higher expenditures. A key factor in this reticence to raise taxes is that citizens may be unwilling to pay more as they don't believe their governments will spend those additional resources efficiently by providing the services they need. Thus, a precondition for expanding public expenditure seems to be government's ability to deliver efficient services, leaving nothing to waste. Citizens that trust their governments will likely pay more for additional services, particularly those that take more time to deliver, such as education or infrastructure.

Latin American governments suffer from both technical and allocative inefficiency. Technical inefficiency relates to not doing things the best way, given the resources available. Latin Americans could have more and better-quality education, health services, public safety, and infrastructure if their governments were using existing resources as the best countries in the world do. This means reducing crime, getting higher PISA scores, increasing life expectancy, and providing more infrastructure services. All these goals are within reach using the same level of expenditure available today, or at least providing current levels of services with less money, thereby freeing up resources if fiscal consolidation is at stake.

The other issue is allocative efficiency, a matter largely disregarded in the region. Budgets across different types of expenditure are typically allocated according to historical standards, but not depending on where an additional dollar is most useful. Some important discussions need to be addressed sooner than later. For example, will we be spending too much on the elderly in the years ahead relative to the young? How can we strike a balance between taking care of pensioners and investing in children, who represent the future? What is the right mix of resources devoted to preventive care and curative care? Should we invest more in early childhood development, primary, secondary, tertiary education, or on-the-job training? Answers to these questions are spread throughout the report with details and examples from throughout the region.

While there is much to be gained from resolving inefficiencies, public spending is not only about efficiency, but also about equity—particularly, equity that leads to equal opportunities. Latin America and the Caribbean's taxes and public expenditure do little to reduce income inequality compared to advanced countries. While tax and spend policies reduce inequality in Latin America and the Caribbean by about 5 percent, they do so by 38 percent in advanced economies.

Finally, governments must focus on "how" to achieve technical and allocative efficiency while improving equity; for this, the key is institutions. At the macro level, aggregate rules that ensure fiscal sustainability may lead to biases against capital expenditure. Fiscal rules have proliferated throughout the region to keep fiscal sustainability in check. However, little has been explored about fiscal rules that also account for spending composition. In this report, we think about "second condition" rules that protect public investment. At the micro level, a myriad of institutions need to be strengthened, ranging from results-based budgeting for expenditure allocation, to the creation of smart integrated data systems, public investment management agencies, public procurement, and so on.

There is much to be done. I hope this report provides a platform for a long overdue discussion on what we spend on, how efficiently we do it, how we allocate it, and how we can deliver more and better public services with the resources we have to improve the lives of Latin American and Caribbean citizens, who expect more.

Luis Alberto Moreno
President
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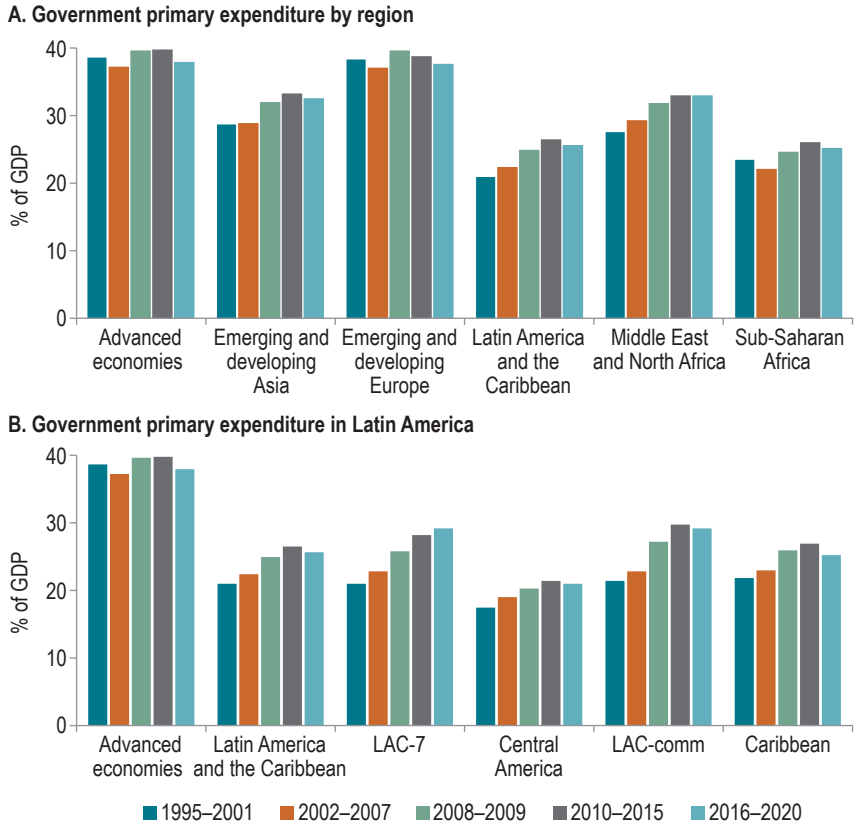
1 Public Spending: From Bigger to Better

Since the early 1900s, the role of governments and their participation in the economy has steadily increased around the world. Typical ratios of public spending to gross domestic product (GDP) have crept up from about 5 percent in the early 1900s to about 22 percent in 2018. Government participation is almost twice as large in the developed world as in developing countries, including in Latin America and the Caribbean (40 percent vs 20 percent of GDP, respectively). The latest commodity boom of the 2000s pushed the size of government to 25 percent in Latin America and the Caribbean as a whole, and to 30 percent in the LAC-7 (that is, the seven largest regional economies) plus commodity producers. Moreover, following the Great Recession in the United States and its repercussions in the developing world, many countries in the region followed expansionary policies in an effort to bolster aggregate demand. However, many of these expansionary policies, which were considered countercyclical at the time, led to permanent increases in expenditure, mostly through higher wages and transfers, which are very difficult to reverse.

This upward spending trend raises the question, how large should government participation in the economy be? The answer depends on a myriad of issues ranging from ideological and economic to demographic. However, a key determinant is the country's degree of economic development, typically proxied by GDP per capita. In a nutshell—and following the so-called Wagner's Law—as GDP per capita increases, public spending tends to increase, both at the extensive margin (i.e., new activities and services are undertaken) and intensive margin (i.e., existing activities and services are expanded).

Focusing on the more recent past, since the mid-1990s, the speed of public spending growth has varied widely across regions and groups of countries in the world (see Figure 1.1, Panels A and B). Specifically, as shown in Figure 1B, public spending has increased relatively rapidly in Latin American economies and those with large commodity-exporting sectors, compared to Central American and Caribbean economies. For

Figure 1.1 Government Expenditure in the Last Two Decades



Source: Authors' calculations based on IMF WEO data.

example, LAC-7 and large commodity-exporting countries have, on average, pumped up public spending from 20 percent to 30 percent of GDP.

Does this growth in public spending threaten fiscal sustainability? Not necessarily. In fact, some of the countries with the greatest public spending in the world, such as the north Scandinavian economies, have both high levels of public expenditure and high standards for fiscal sustainability. However, as Latin America and the Caribbean's history makes plainly clear, surges in public spending, especially during good times, have typically forced countries to adjust dramatically in bad times, producing a now well-known procyclical pattern.[1] Table 1.1 classifies societies along

[1] See Talvi and Végh (2005); Kaminsky, Reinhart, and Végh (2004); Frankel, Végh, and Vuletin (2013); and Végh and Vuletin (2015) for further discussions of procyclical fiscal policy in the developing world.

Table 1.1 Preference for Public Spending vs. Fiscal Sustainability

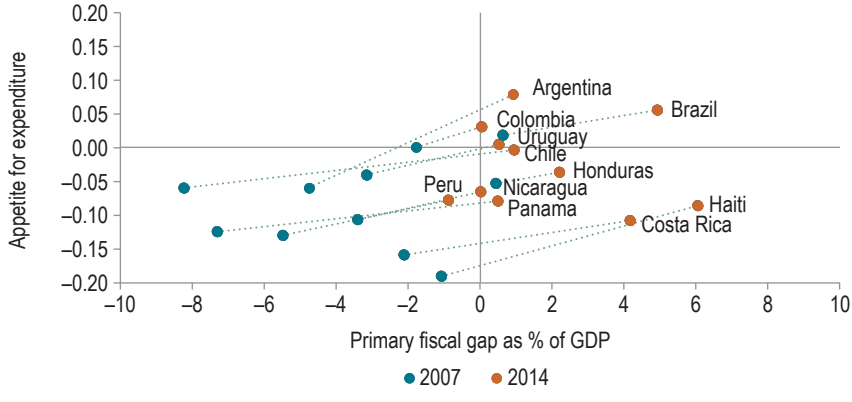
		Fiscal sustainability	
		Sustainable	**Not sustainable**
Preference for public spending	*High preference*	Liberal on preferences and fiscally sound	Liberal on preferences and fiscally "exuberant"
	Low preference	Conservative on preferences and fiscally sound	Conservative on preferences and fiscally "exuberant"

two dimensions: their high or low preference for public expenditure; and the institutions that make them fiscally sound or fiscally "exuberant" and eventually unsustainable if not kept in check. Usually, the struggle lies with countries that belong to the upper-right quadrant of Table 1.1: those that have a higher preference for expenditure but lack the institutions or national arrangements to make this expenditure sustainable.

Greater Public Spending: At What Cost?

During the last decade, has the increase in public spending come at the expense of fiscal sustainability? According to Figure 1.2, the answer is a resounding yes. It shows in the x-axis the "fiscal gap," which relies on a Debt Sustainability Assessment (DSA) approach. A positive value indicates that the observed primary surplus is smaller than the surplus required to stabilize the debt-to-GDP ratio (i.e., pointing to fiscal sustainability issues). On the other hand, a negative value indicates that the observed primary surplus is larger than the surplus required to stabilize the debt-to-GDP ratio (i.e.,

Figure 1.2 Fiscal Preference and Sustainability, 2007–2014

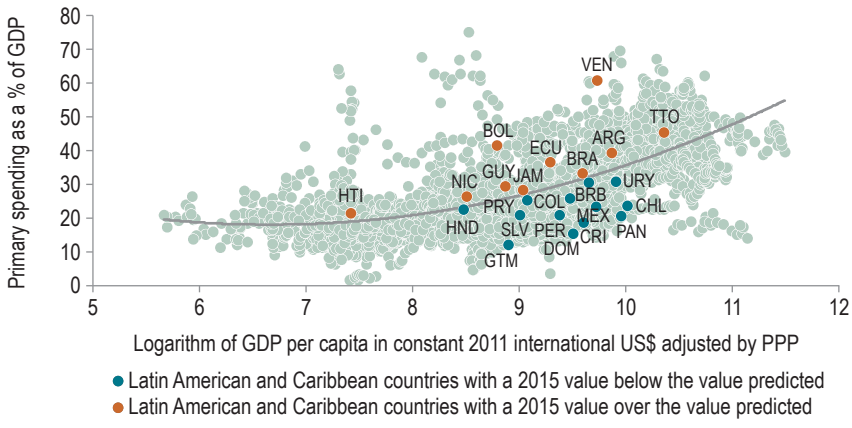


Source: Authors' calculations based on IMF WEO data.

pointing to fiscal space). The y-axis illustrates the so-called "appetite for expenditure," which proxies for public spending preferences after controlling for the degree of development (i.e., Wagner's law). Positive values point to high preferences for public spending, as the observed expenditure-to-GDP ratio lies above that predicted given a country's level of development. On the other hand, negative values indicate low preferences for public spending, as the observed expenditure-to-GDP ratio lies below that predicted by the degree of development. In other words, the four quadrants in Figure 1.2 mimic those of Table 1.1. For illustrative purposes, Figure 1.2 shows the situation of Latin American and Caribbean countries for which these data are available both in 2007, the year before the global crisis (marked in blue), and in 2014 (marked in red). A picture is worth a thousand words. All countries transitioned from 2007 to 2014 by moving to the upper right, meaning that an increase in preferences for public spending had raised fiscal sustainability concerns. Naturally, not all countries evolved alike. Whereas Colombia moderately raised its public spending while barely changing its fiscal gap, Argentina "traveled" a great distance, both in terms of its appetite for public spending (actually moving from a low level of spending preference for its degree of development to a high level of spending preference) as well as its greater exposure to fiscal sustainability concerns.

Does this mean that all countries in the region need to think about cutting their spending? Not necessarily. Many countries in the region still spend less than the level predicted by their degree of development, as measured by their GDP per capita levels. Figure 1.3—a testimony to Wagner's law—attests to this. Several countries like Guatemala and El Salvador

Figure 1.3 Wagner's Law for Latin America and the Caribbean



Source: Authors' calculations based on IMF WEO data.

currently have public expenditure levels below those predicted for their level of development. In these cases, countries may want to consider providing a wider range of public services.

Two clear messages emerge from this analysis:

1. Some countries in the region spend more than what is suggested for their level of development without the necessary fiscal institutions to make these levels of expenditure sustainable in the long run. These countries will need to adjust. In principle, there is nothing wrong with meeting the demands for greater spending, as long as it is does not compromise growth and is accompanied by higher taxes and other fiscal institutions that ensure sustainability. Increasing public expenditure without institutions for sustainability is like having one's cake and eating it too. Such a policy often leads to crises that undo all the good provided by greater public expenditure or may lead to long and costly adjustment processes.
2. If the experience of many Latin American countries in Figure 1.2 teaches anything it is that countries with expenditure levels below those predicted for their level of development should refrain from increasing spending if they haven't planned on sustainable ways to pay for it. Of course, this does not mean that a thorough analysis of the need for more and better public services should not be carried out, but it must be accompanied by sustainability institutions that make the spending increase payable not only in good times, but in bad times as well.

In light of growing fiscal sustainability concerns and debt levels, several governments in the region are (and will continue) adjusting. However, the manner in which these adjustments take place, both in terms of their size and composition, will be key for the future of the region. Not all adjustments are created equal: across-the-board expenditure cuts may produce quite different results than carefully planned cuts that resolve inefficiency issues in the public sector. Badly planned adjustments, as in the case of large decreases in public investment, could jeopardize growth prospects for the region. Large drops in public transfers could wipe out the social gains achieved during the good years and, in some instances, rekindle widespread social tensions. This book explores public spending inefficiencies in detail, ranging from technical inefficiencies to allocation and targeting inefficiencies—as well as the political economy issues involved—in hopes of providing a roadmap for smart spending with better and lasting institutions that herald efficiency for the future of the region.

Even if cuts are not needed from a sustainability point of view—the privilege of a few countries in the region—governments should nonetheless battle gross inefficiencies in public expenditure. A key concern in many Latin American countries is that as they reach the middle-income development stage, citizens begin to demand new and better services, ranging from access to high quality tertiary education to better health care. Yet, in the context of low growth, there is little room for increasing expenditure to satisfy these demands; instead, governments need to do more with the same resources. This means obtaining efficiency gains in many areas of government so that resources can be freed up and put to better use to meet new demands.

Even when countries plan to expand expenditures—as would be the case when ratios of public expenditure to GDP drop below those suggested by Wagner's law—it is important to focus on efficiency gains. Usually, countries with low spending levels for their stage of development find it difficult to raise taxes to finance higher expenditures. Typically, their citizens are unwilling to pay higher taxes as they don't believe their governments will spend those additional resources efficiently by providing them the services they need. Thus, a precondition for tax increases and higher spending seems to be a government's ability to deliver efficient services and leave nothing to waste. Citizens that trust their governments may be willing to pay for services, particularly those that take more time to deliver, as is the case of education or infrastructure (see Chapter 10).

Composition of Public Expenditure

The most common approach to analyzing the participation of the public sector in the economy is to focus on the level of public spending. This focus is also used to answer questions about public spending sustainability, or how public spending is financed, as well as issues related to social demands for publicly provided goods. However, a less explored, but equally relevant, approach to complement the analysis focuses on the composition of public spending. The framework based on the amount of spending can shed light on people's preferences for public expenditure and the size of government. Yet, it provides little information about which expenditures are prioritized, or how they are combined to achieve efficiency and equity objectives. The level of total spending does not indicate whether a government is investing much or little, whether it is actively pursuing redistributive policy, or whether it spends more on health, education, or infrastructure. Nor does it answer whether expenditures on

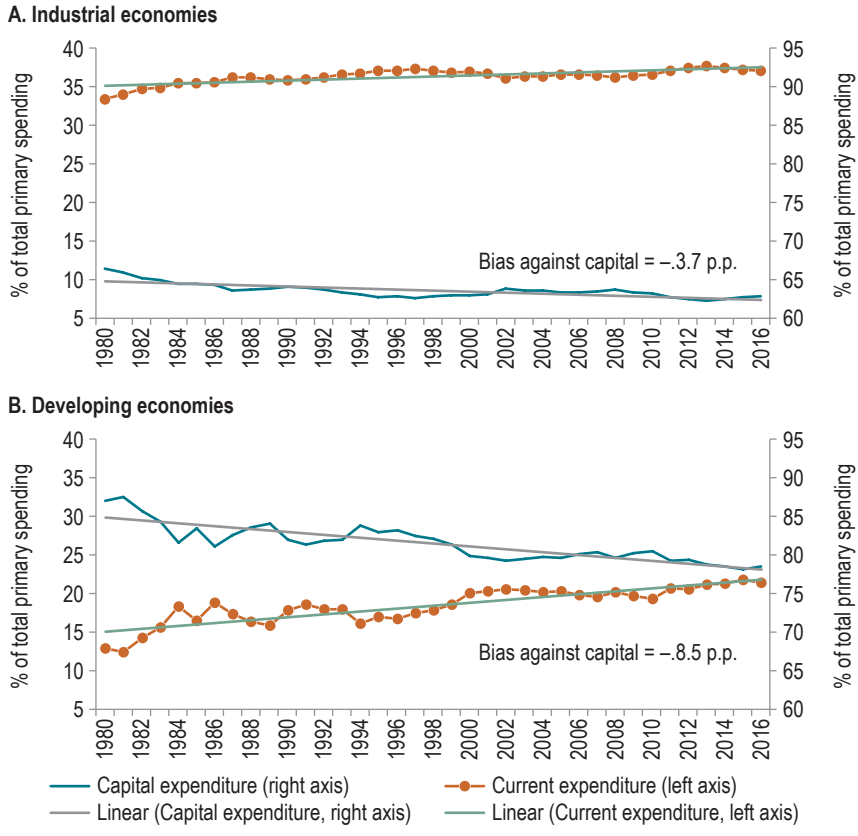
public employees are high, whether retirees receive reasonable pensions, or whether money is well spent on poverty reduction programs.

To study public spending composition, spending must be classified. Two widely used classifications distinguish spending components by their function or purpose and by economic characteristics. The former is called the functional classification of government expenditure and it breaks total expenditure into categories such as health care, education, and defense. The latter is called the economic classification of government expenditure; it separates total spending into current and capital expenditure. Usually, the literature looks at determinants of public spending composition using the first classification. In an interesting contribution, Shelton (2007) tests the relevance of several leading hypotheses on determinants of public spending using a double disaggregation: i) by categories of spending (i.e., health, education, and defense), and ii) by level of government (i.e., central and local). The results suggest that much of the expenditure associated with greater trade openness is not in categories that explicitly insure for risk, and there is evidence that both political access and income inequality affect the extent of social insurance. However, to date little has been done to analyze the determinants of public spending composition using the economic classification view. This chapter strives to fill that gap by looking into current versus capital public spending trends and their determinants, including some novel variables such as trust in government.

Today vs. Tomorrow: Current vs. Capital Spending

During the past two decades and a half, public spending composition has basically remained constant in industrial economies while it has changed dramatically in developing economies. Figure 1.3 plots the evolution of current and capital spending shares of primary total spending since 1980 and clearly shows a growing bias against capital spending in developing economies. A bias against capital spending can be defined as a decline in capital spending's share of total primary spending over the course of the sample period. With this definition in mind, capital spending lost 3.7 percentage points (from 11.5 percent of total spending to 7.8 percent) relative to current spending in industrial economies (Figure 1.4A) while in developing economies, capital spending lost more than double that amount, reaching 8.5 percentage points (from 32.1 percent to 23.5 percent, see Figure 1.4B). Curiously, this bias against capital spending occurred despite substantial hikes in primary spending as a share of GDP, which could have provided enough room to increase social and other current expenditures, without substantially cutting into the share of capital spending. This implies

Figure 1.4 Evolution of Public Spending Composition, Economic Classification (percentage of total primary spending)

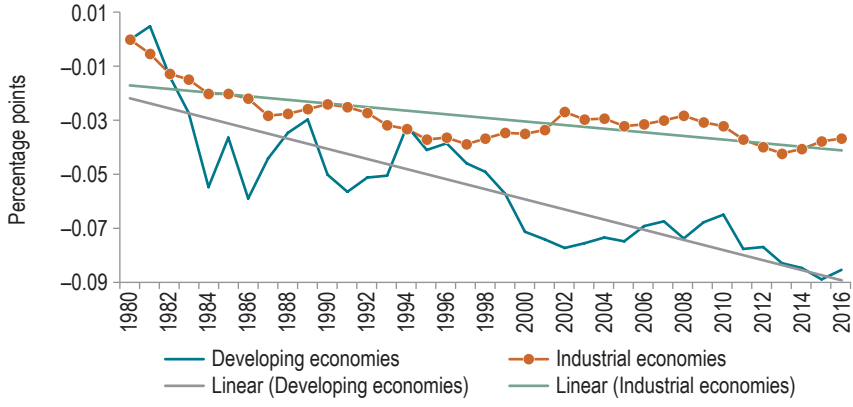


Source: Izquierdo, Puig, et al. (2018c).
Note: Real government capital spending is defined as general government gross fixed capital formation. Real government current spending is defined as general government current spending net of interest payments. Total spending is defined as the sum of capital and current spending. Variables are deflated by the GDP deflator. The bias is defined by the absolute variation of capital spending share between 2016 and 1980.

a conscious decision to prioritize present expenses over investments in building the future. In short, today won out over tomorrow.

The bias against capital spending can also be measured as the difference between the share of capital spending in total spending at each point in time and that prevailing in 1980 (see Figure 1.5). There are two periods in which the share of capital spending was particularly hard-hit: the early 1980s, when U.S. federal reserve chairman Paul Volcker's interest rate shock plunged many developing countries, particularly in Latin America and the Caribbean, into a debt crisis; and the late 1990s, when

Figure 1.5 Evolution of Bias against Capital Spending. Measured as the difference between the current share of capital spending on total primary spending and that prevailing in 1980



Source: Izquierdo, Puig, et al. (2018c).
Notes: Real government capital spending is defined as general government gross fixed capital formation. Real government current spending is defined as general government current spending net of interest payments. Total spending is defined as the sum of capital and current spending. Variables are deflated by the GDP deflator.

the Russian crisis spread to most emerging markets.[2] Importantly, this bias never recovered in normal times, which implies that it is not only an issue generated by cyclical management, but that crisis periods may be particularly relevant.[3]

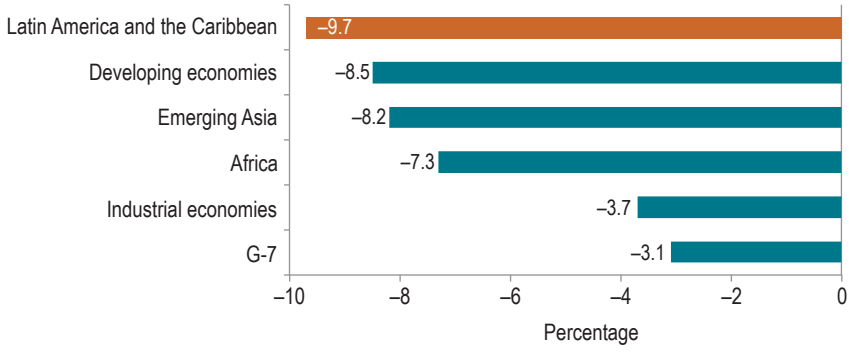
This bias against capital expenditures is particularly costly for two reasons: capital expenditure multipliers are larger than current expenditure multipliers and, therefore, amplify output costs in bad times (see Chapter 2); it can lead to lower growth in the long run, to the extent that public capital complements private capital. Thus, the appetite for private investment, a key driver of growth, may be low when public capital provision—say, roads or ports—is not sufficient.

An analysis across regions reveals that this bias against capital spending is generalized (see Figure 1.6). However, the bias is greatest in Latin

[2] Chapter 2 argues that adjustment through cuts in capital spending during bad times is the preferred policy in emerging markets, despite its short- and long-term consequences. However, this adjustment mechanism—and the hysteresis that accompanied it—seems to be the preferred (or inevitable) tool during crisis as well. This behavior is exacerbated when institutions are feeble and political economy issues such as elections become relevant.

[3] See Ardanaz and Izquierdo (2017) for a recent discussion about cyclical management of public spending.

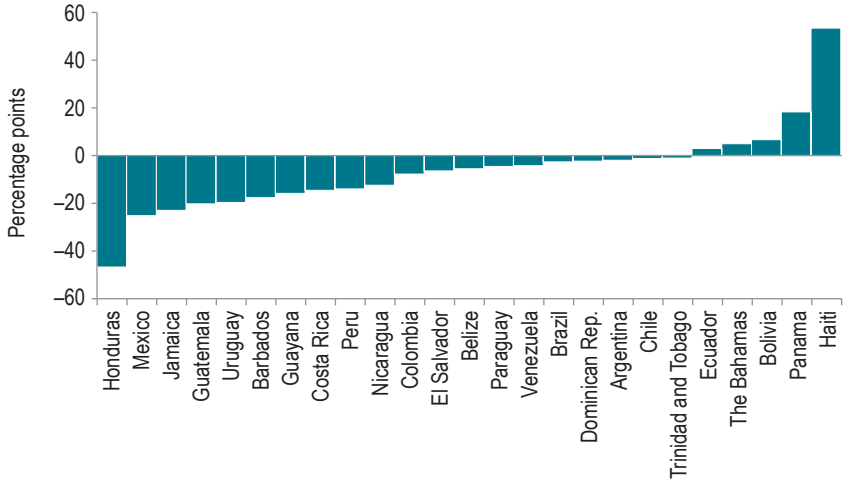
Figure 1.6 Bias against Capital Spending, by Region



Source: Izquierdo, Puig, et al. (2018c).
Note: Bias is defined by the absolute variation of capital spending's share of total spending between 2016 and 1980.

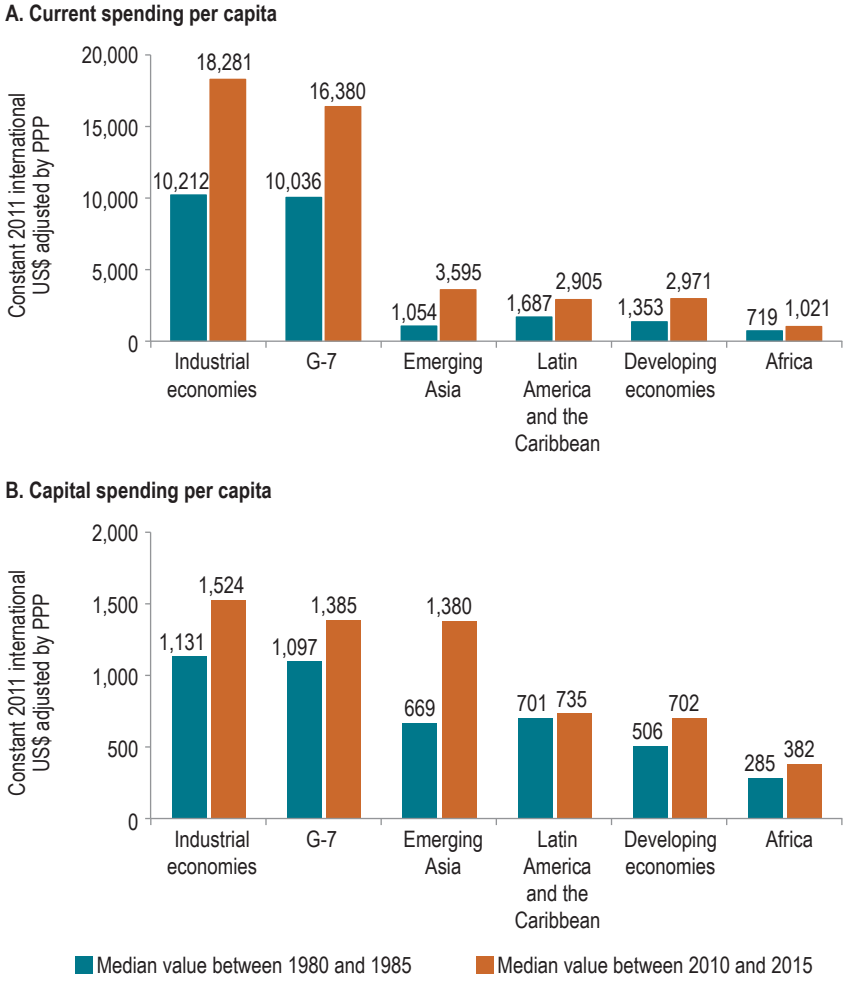
American and Caribbean countries (–9.7 percentage points). Emerging Asia and Africa present a bias of –8.2 and –7.3, respectively. When considering the bias for individual countries in the region, with the exception of Haiti, Panama, Bolivia, The Bahamas, and Ecuador, most countries in the region have penalized capital spending in recent decades (see Figure 1.6).

Figure 1.7 Bias against Capital Spending, by Country in Latin America and the Caribbean



Source: Izquierdo, Puig, et al. (2018c).
Note: Defined by the absolute variation of capital spending's share of total spending between 2016 and 1980.

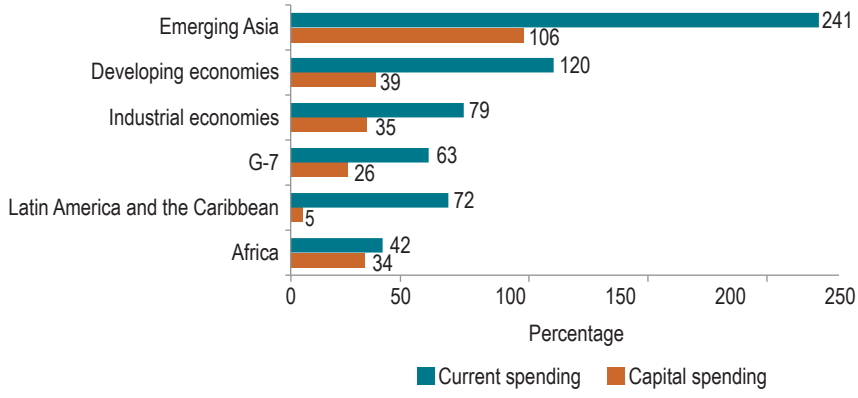
Figure 1.8 Composition of Public Spending, by Economic Classification and by Region (in real terms and per capita for 1980–1985 and 2010–2015)



Source: Izquierdo, Puig, et al. (2018c).
Note: Each bar shows the median value within the period.

It may be argued that this bias is all about shares, not about levels; as Latin American and Caribbean economies have grown over time, it may well be that capital expenditure per capita has grown despite losing its share of the budget. This argument is true in industrial countries and in the developing world as a whole, but not in Latin America. In the early 1980s, industrial countries spent on average $10,212 (PPP-adjusted) per person on current spending (see Figure 1.8A) and $1,131 on capital spending (Figure 1.8B). Now they spend US$18,281 and $1,524, respectively. This

Figure 1.9 Current and Capital Spending, by Region (growth rates between 2010–2015 and 1980–1985)



Source: Izquierdo, Puig, et al. (2018c).

represents an increase of 79 percent in current spending and 35 percent in capital spending, both in per capita terms. On the other hand, developing countries earmarked $1,353 per person for current spending and $506 for capital spending between 1980 and 1985. Today, the figures are $2,971 and $702, respectively. Thus, developing countries expanded current spending per capita by 120 percent and capital spending per capita by 39 percent (see Figure 1.9). However, the picture is quite different for Latin America and the Caribbean; indeed, the region has penalized capital expenditure per capita the most. At the beginning of the 1980s, Latin American and Caribbean countries spent on average $701 on capital expenditure per capita—roughly the same as they spend today ($735). Yet, Latin America has managed to increase current spending per capita by 72 percent—from $1,687 to $2,905—very much in line with the rest of the world.

Determinants of Public Spending Composition

The economic literature has attempted to shed light on the determinants of public spending composition, particularly for the functional classification of public expenditure, highlighting numerous explanatory variables that involve economic, political, institutional, and demographic factors. Many of these factors are explored here to determine their relevance for the economic composition of public expenditure, but many new factors, which are relevant for the economic classification, are also studied here. So, which factors help determine the economic composition trends analyzed in this chapter (Izquierdo, Puig, et al. 2018c)? The dependent variable is capital

Table 1.2 Determinants of Public Spending Composition (dependent variable: capital spending's share of primary total spending)

	Sustainable	Gini coefficient	Initial capital stock	Trade openness	Electoral democracy index	Corruption	Ideology (left)	Fiscal rules	Population dependency
Basic model	–	–	–	–	–	–	0	–	–
Full model	0	–	–	+	–	0	0	–	–

Source: Izquierdo, Puig, et al. (2018c).
Note: Model 1 regresses each explanatory variable at a time. Model 2 regresses them all together. Both models are estimates including fixed effects.

spending's share of total primary spending. Two main specifications are presented in Table 1.2. The first one runs individual regressions between the share of capital spending and each explanatory variable, controlling for fixed effects (Basic Model). The second one is basically a joint regression including all explanatory variables, also controlling for fixed effects (Full Model). The sample includes 120 countries (98 developing and 22 developed, following the classification in Frankel, Végh, and Vuletin, 2013) from 1980 to 2016.

Cyclicality

Among economic factors that may help explain the composition of public spending, a natural candidate is the business cycle. In procyclical countries (i.e., countries that follow policies that tend to deepen the cycle), cyclicality can affect the economic composition of expenditure to the extent that each type of spending exhibits different cyclical behaviors. During bad times, for instance, capital spending is used to adjust, while during good times, current expenditure expands much more than capital expenditure (Ardanaz and Izquierdo, 2017). In the long run, this pattern naturally biases the composition toward current spending, so that a lower capital spending share could be expected in more procyclical countries.

Cyclicality is associated with a lower share of capital expenditure in the basic model, but not in the larger model. The degree of cyclicality is measured by the correlation coefficient between the cyclical component of GDP and the cyclical component of total expenditure, using a 10-year rolling window. Having said this, the fact that fiscal rules are also included in the full model may downplay the role of cyclicality. This would be the case when governments use capital expenditure to adjust in bad times in order to comply with the fiscal rule, if previous savings are not enough.

Capital Stocks

The initial stock of capital could also affect decisions on public expenditure composition. Lower starting capital stocks may lead to more capital spending as capital is highly productive at very low levels, given decreasing marginal returns to capital spending. Thus, when capital stock levels are lower, the share of capital expenditure in total expenditure could be larger.

In line with this theoretical prediction, regressions show that a large initial stock of capital reduces the share of capital spending. The measure used here is the capital stock at constant national prices provided by Penn World Tables. This finding is relevant since Latin American and Caribbean countries present the lowest levels of capital stock after Africa. If Latin American and Caribbean countries were to behave like the rest of the sample, the share of capital spending in the region should be higher—not lower—given its low starting capital stocks.

Inequality

Factors reflecting income distribution, such as the Gini coefficient, are also pertinent since inequality in pretax income can lead to high demand for redistributive policies (Romer, 1975) and, therefore, greater social spending.[4] Thus, an inequality measure like the Gini coefficient may be negatively associated with the share of capital spending in total spending.

Results confirm that inequality, as measured by the Gini coefficient, reduces capital spending's relative participation. This finding may well explain part of the observed bias against capital expenditure in Latin America and the Caribbean, given that the region is the most unequal in the world.

Openness

Openness to international markets can also be a key determinant of expenditure composition. Countries that are more internationally integrated face greater domestic volatility during times of global economic turbulence. When global markets gyrate, governments may need to compensate for this external risk by providing public insurance in the form of social transfers (Rodrik, 1998), or by increasing public employment. Thus, more open countries would be expected to spend more on these policies, thereby adding to

[4] See Meltzer and Richard (1983) and Shelton (2007).

current expenditures and establishing a negative association between openness and the share of capital expenditure in total expenditure. However, if developing countries do not have good mechanisms for making transfers to the losers of reform, the expected negative relation between capital spending's relative participation and openness could be zero or even positive.

The effect of openness to international markets is less clear since ambiguous signs are found in both models. Openness is measured as the sum of exports and imports over GDP, with data provided by the World Bank. In the basic model, no relation is found between public spending composition and openness, but in the larger model a positive relation emerges, which may point to the presence of weak mechanisms to compensate the losers of trade reforms.

Political and Institutional Factors

Among political and institutional factors, ideology could play a prominent role. Leftist-oriented governments usually attach greater importance to social security and health care, while rightist-oriented governments favor infrastructure and defense (Van Dalen and Swank, 1996). Thus, capital expenditure's share is expected to be lower in left-leaning governments.

Corruption could also affect spending. Corrupt countries have more frequently been associated with low public spending in public education and health since it is easier to collect hefty bribes on large infrastructure projects or sophisticated defense equipment than on textbooks or teachers' salaries (Mauro, 1998). Tanzi and Davoodi (1998) argue that corruption could increase public investment given rent-seeking opportunities.

Finally, democracy may affect public spending composition, as a median voter in favor of redistributive policies may push for a larger share of current expenditure (Kotera and Okada, 2017).

In fact, democratic systems seem to favor current expenditure over capital expenditure. The variable used here is the electoral democracy index, published by the V-Dem Project. Results imply that median voters—key participants in democratic outcomes—may prefer redistributive policies and, therefore, demand greater social spending.

On the other hand, based on the measure of corruption provided by the International Country Risk Guide, and contrary to what was expected, corruption punishes capital spending. However, in the larger model with other controls, the coefficient is zero.

Ideology, as measured by data from the Inter-American Development Bank's 2017 Database of Political Institutions, does not seem to affect composition either.

Fiscal Rules

The adoption of fiscal rules can also bias public expenditure composition. The principal goal of fiscal rules is to ensure the sustainability of a government's fiscal accounts by appropriately managing the business cycle. Thus, one of its objectives is to reduce procyclicality or to achieve countercyclicality (i.e., ensure savings in good times to spend in bad times). But these rules do not usually specify what type of expenditure should be used in the different phases of the cycle. If public expenditure needs to be adjusted to comply with a fiscal rule—particularly given Latin America and the Caribbean's performance in the past—capital expenditure cuts will be used to meet the rule's demands. Thus, fiscal rules with no additional conditions on expenditure composition may be negatively associated with capital expenditure's share of total expenditure.

Fiscal rules are a key determinant of public spending composition and seem to bias public spending toward current spending. Although fiscal rules have been mostly implemented in industrial countries, in the past decade, Latin American and Caribbean countries have increasingly implemented them. In this context, the design of fiscal rules that protect public investment, beyond representing good management of the business cycle, becomes a central issue in the makeup and efficiency of public spending (see Chapter 9).

Demographics

Large population dependency ratios—measured as the sum of young (under 15 years of age) and old (65 years of age and above) over total population—may favor current spending, especially for social purposes. The young may push for more health and education spending, while the elderly may prefer increases in health and social security spending. Moreover, to the extent that the elderly are not fully altruistic about their progeny, they may bias their preferences in favor of current spending instead of capital spending, which benefits future generations. Thus, the share of the elderly, as well as their intergenerational altruism, may be a determining factor in the composition of public spending (Izquierdo and Kawamura, 2015).

As expected, population dependency ratios pull for more current spending. Policymakers should carefully consider the implications of this trend; although the region is currently enjoying a demographic dividend, in the near future this dividend will end and countries will need to contemplate the effects of an aging population (see Chapter 3).

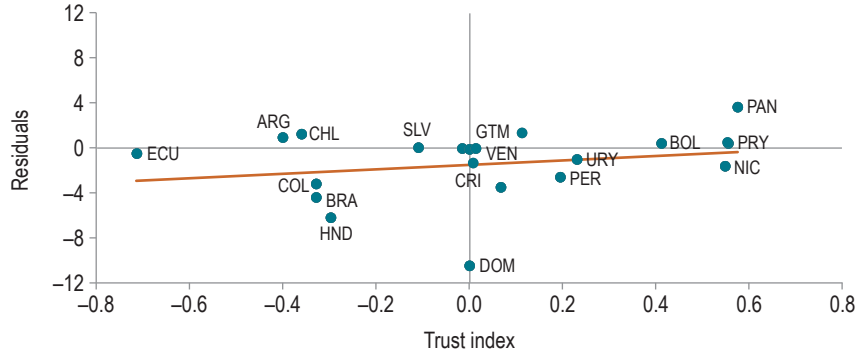
Trust, or the Lack Thereof

Lack of trust in politicians is another key determinant of public spending composition, as it may bias preferences toward certain, short-term spending such as transfers instead of uncertain, but perhaps more profitable, long-term spending such as infrastructure. Thus, the lack of credibility may lead citizens to prefer "a bird in hand (transfers) than two in the bush (infrastructure).

Given the absence of data on trust for the whole sample, data on 18 Latin American countries were taken from the Latinobarómetro Database, which measures citizens' confidence in politicians, governments, and public administrations. Here, the residuals from the overall regression—that is, the part of capital expenditure's share not explained by all other factors—were used as the dependent variable to be regressed against the trust measure from the Latinobarómetro. Positive residuals imply a higher capital expenditure share than that inferred from explanatory variables. The findings (a positive relationship between these residuals and trust) support the fact that low trust levels may lead to a bias against capital expenditure (see Figure 1.10 and Chapter 10).

Finally, results in the larger model remain robust to the inclusion of two important controls: income per capita and the role of private investment. Private investment is an important control because it can be argued that the decline in capital expenditure's share of total expenditure could be the result of an increase in private investment. To test this idea, private investment as a share of GDP was also included in the larger model, and it turned out not to be significant. Moreover, private investment was replaced by public-private partnership (PPP) investment as a share of GDP

Figure 1.10 Unexplained Bias and Trust



Source: Izquierdo, Puig, et al. (2018c).

(as published by the International Monetary Fund), which is potentially a better measure of the substitution effect that emerging PPPs could have had on public investment. This variable is not significant either in explaining the fall in capital expenditure's share.

Policy Implications

The bias against capital spending can be explained by several economic, political-institutional, and demographic factors that policymakers should consider when contemplating the composition of public expenditure.

The management of public spending policy over the business cycle must be taken into account, particularly since inequality contributes to biasing the composition toward current spending. Thus, it is crucial to carefully manage redistributive spending demands throughout the cycle, particularly during good times, when a "voracity effect" may push expenditures above trend and toward more inflexible spending (i.e., transfers) that may be difficult to sustain during the next stage of the business cycle.

In addition, policymakers should focus on how to allocate spending to the most profitable sectors given the stock of public capital. In countries with a low public capital stock, capital expenditure should be given priority as returns will typically be large for this type of expenditure.

Fiscal rules are mute about the composition of public spending, raising the issue of potentially redesigning fiscal rules. Although the primary objective of fiscal rules is to achieve sustainable spending throughout the business cycle, they should not penalize public investment during bad times. This warning is particularly relevant because many countries in the region are currently implementing fiscal rules (see Chapter 9).

Since larger dependency ratios bias public expenditure composition toward current spending, today's demographic moment calls for revisiting policy options for budget allocation. This issue will become particularly relevant as an aging population signals an end to the demographic dividends the region has been enjoying. Policymakers must be proactive and anticipate future demands for current expenses (e.g., pensions) that will bias the composition against public investment even more (see Chapter 3).

Finally, rebuilding citizens' trust in government is crucial. Individuals in the region do not trust their governments to deliver over the long term, which leads them to demand transfers that offer immediate gratification. These short-term payments may be less beneficial than long-term investments such as capital expenditures; however, citizens are unwilling to believe in promises whose fruits will not be reaped for years to come.

Public spending has climbed in Latin America and the Caribbean. Riding a worldwide spending trend and a commodity windfall, governments around the region tried to spend their way into the future. Unfortunately, the party is over and policymakers must find a way to keep their economies growing and their citizens happy in a fiscally sustainable manner. The traditional answer to this moment of truth has been to simply cut spending. This book suggests there is another way out. Even if governments need to spend less in aggregate, the same or even more services could be provided if ways are found to be smarter about spending, to be more efficient, to make every penny count. The first step is to achieve better outcomes with the same or fewer resources. The second is to allocate better, by analyzing the composition of spending and finding the right mix of transfers to meet today's needs and investments to prepare for tomorrow. Now that governments are bigger, it's time to make them better.

2 Spending and the Cycle

This chapter evaluates how governments in Latin America and the Caribbean spend over the business cycle. Economists preach the importance of so-called countercyclical spending policies. According to basic Keynesian precepts, countercyclical spending involves spending less in good times (to cool off the economy and allow the government to increase its savings thanks to the greater fiscal revenue collected from a larger tax base) and expanding spending in bad times (to mitigate recession and speed up recovery). Naturally, countercyclical spending policies help stabilize output fluctuations. By contrast, procyclical spending policies, which increase spending in good times and cut it in bad times, tend to amplify output fluctuations, creating large social costs, especially affecting the most vulnerable segments of the population. Much like individuals and families, governments cannot continually increase spending in good times (as fiscal revenues increase) and further increase spending in bad times (to cope with recession) without jeopardizing the sustainability of sovereign debt.

While some developing countries have learned how to lean against the wind and follow countercyclical policies (as has been the historic norm in most industrial countries), about two-thirds of the developing world continues to engage in spending profligacy in good times and, consequently, is forced to cut spending in bad times. Complementing previous work on aggregate spending, this chapter ventures into the nature of spending policy within spending categories. This exercise exposes structural deficiencies, not only in actual spending, which in many developing countries (including Latin American and Caribbean countries) is procyclical and discretionary, but also in the design of automatic "de-stabilizers." Automatic de-stabilizers are nothing more than a lack of automatic stabilizers in the region (mainly the lack of unemployment insurance). More puzzling is the existence of perverse automatic de-stabilizing mechanisms (particularly due to the way individual social security benefits are indexed over time

in several countries in the region). These factors, in turn, compromise the ability of countries to effectively stabilize spending policies and protect their most vulnerable citizens.

This chapter analyzes two key spending categories in particular: current and capital expenditures. Developing countries—including in Latin America—tend to increase current expenditures in good times. But spending on items such as education and health should be based solely on long-term trends. Countries then cut capital expenditures in bad times, when they should be expanded to sustain aggregate demand. This chapter unravels the differential impact of current versus capital spending on output, thereby providing evidence that the so-called capital expenditure multiplier is much larger than that of current expenditure. Thus, policies that cut capital expenditures in bad times are doubly wrong, not only because capital expenditure should expand in bad times, but also because capital expenditure has the largest multiplier effect on economic activity. In particular, public investment generates important output effects when public capital stocks are low, which is typically the case in most of the developing world. By contrast, in advanced economies, and even in parts of the developing world that enjoy appropriate levels of public capital stocks, increases in public investment have little effect on economic activity. Thus, not all types of capital expenditure are equal. In fact, inefficient spending results in no useful spending in practice. The size of spending multipliers increases when public spending is conducted in an efficient manner. By contrast, efforts to increase spending without institutional vigilance regarding efficiency may have no effect on economic activity.

How Do Governments Spend over the Business Cycle?

Using spending data from the years 1980-2016, Figure 2.1 shows the correlation of the cyclical component of output and primary spending (i.e., excluding interest payments). The difference between advanced countries (blue bars) and developing countries (orange bars) is striking. A positive (negative) correlation indicates a procyclical (countercyclical) spending policy, as spending moves in the same (opposite) direction of output. Advanced economies have overwhelmingly followed countercyclical policies, with 80 percent of countries behaving countercyclically. On the contrary, developing countries (Latin American and Caribbean countries included), by and large, have typically pursued procyclical fiscal policies: 74 percent of countries have done so, for an average and statistically significant correlation of 0.35.

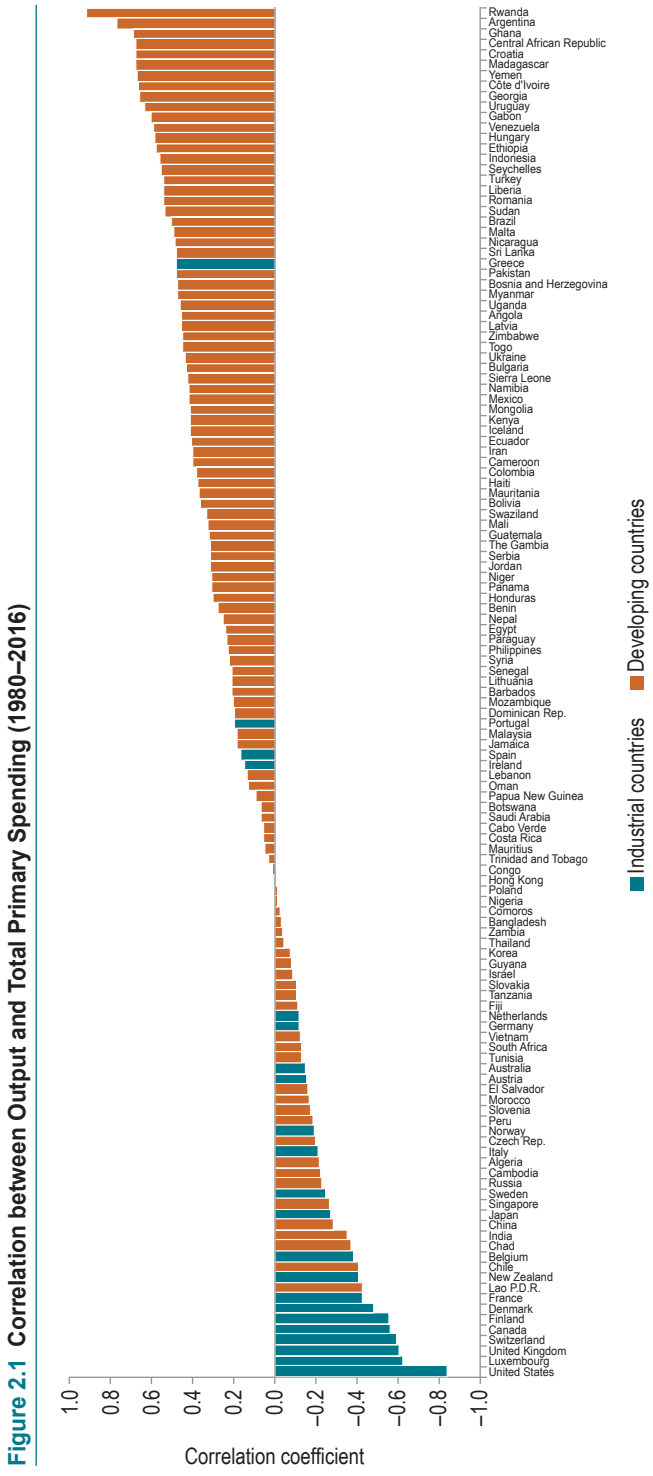


Figure 2.1 Correlation between Output and Total Primary Spending (1980–2016)

Source: Authors' calculation based on Izquierdo, Puig, et al. (2018a).
Note: Each country correlation is calculated using the cyclical components of real total primary spending and real GDP using data available between 1980 and 2016. The cyclical components have been estimated using the Hodrick-Prescott filter.

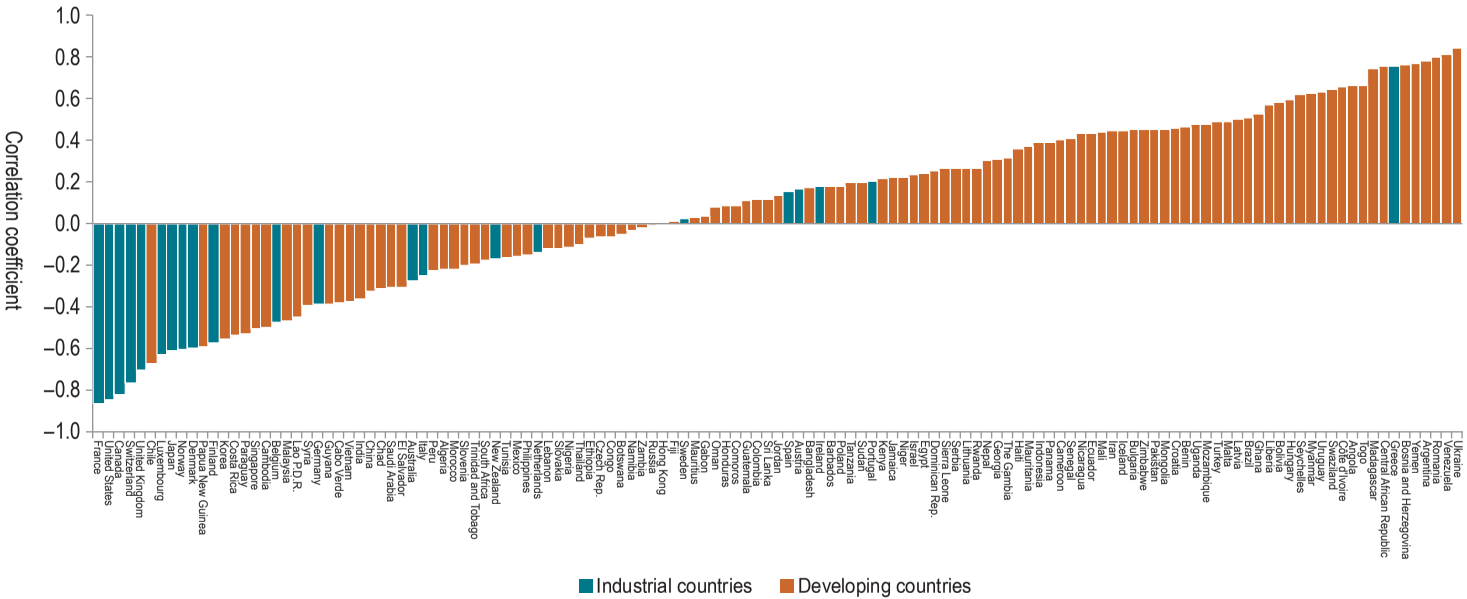
Why do governments and policymakers (especially in developing countries) follow procyclical fiscal policies? Traditional explanations center on two main arguments. The first points to political distortions and weak institutions. Policymakers' short-sightedness and political pressure to spend when resources are available, along with other political-economy-based reasons, encourage excessive public spending during boom periods. The inevitable consequence of these sprees is the need to cut spending in bad times.

The second argument emphasizes the effect of limited access to international credit markets, particularly in bad times. While several countries are isolated from international credit markets on a constant basis, most often, countries lose access to international credit markets or undergo high sovereign spreads in bad times because they have spent recklessly and become overly indebted during good times. Thus, most literature on the subject posits that spending procyclicality is the deliberate result of political economy drivers and weak institutions coupled with the absence of enforceable rules to help contain the so-called voracity effect during good times.

As a consequence of improvements in fiscal management, since the mid-1990s/early 2000s, about a third of developing countries have been able to "graduate" (to borrow a term used by Frankel, Végh, and Vuletin, 2013) from procyclical spending policy. After the year 2000, a significant number of developing countries shifted from procyclicality to countercyclicality (Figure 2.2). The first Latin American and Caribbean country to "graduate" was Chile, in the early 1990s. While far from a knock-out victory against the procyclicality trap, this nevertheless remarkable structural policy shift among a significant number of developing countries was supported by (i) better institutional quality and technocrats who knew to save during boom periods (or at the very least reduce overspending) (ii) more central bank independence, which reduced monetization expectations, inducing more fiscal prudence in good times and the buildup of large cushions of foreign reserves, (iii) the implementation of fiscal rules that, while not a panacea, helped articulate the rules of the game within the public sector, supporting a more sustainable fiscal framework (see Chapter 9 on the importance of so-called second-condition fiscal rules), and (iv) the creation of sovereign wealth funds to help save and diversify investment associated with massive commodity revenues during boom periods, especially in commodity-rich countries.[1]

[1] See Frankel, Végh, and Vuletin (2013) for a review of this literature and a more detailed analysis of the "graduation" process and its determinants.

Figure 2.2 **Correlation between Output and Total Primary Spending (2000–2016)**



Source: Authors' calculation based on Izquierdo, Puig, et al. (2018a).
Note: Each country correlation is calculated using the cyclical components of real total primary spending and real GDP using data available between 2000 and 2016. The cyclical components have been estimated using the Hodrick-Prescott filter.

Automatic Spending for Stabilization (or De-stabilization!)

The above discussion may suggest that spending policy over the business cycle is essentially the result of discretionary spending (i.e., policymakers making deliberate decisions as to whether to engage in spending expansions or cuts). True, most public spending is, in essence, discretionary. In fact, public consumption (i.e., wages and salaries, and goods and services) and public investment are, for the most part, the result of policymakers' deliberate spending decisions when approving the budget. Public consumption and investment involve around 75 and 60 percent of primary spending in developing and industrial countries, respectively. Arguably, especially in the case of wages and salaries, these expenditure items may be quite rigid or difficult to change in the short term for political economy reasons. Yet, intrinsically, this type of spending is inherently discretionary in nature. Figure 2.3 shows, like Figure 2.1, the degree of cyclicality in spending, this time focusing solely on discretionary spending (proxied by the sum of public consumption and public investment). The developing world shows strong procyclical discretionary spending, with 83 percent of countries behaving pro-cyclically, and a correlation of 0.36 (virtually identical to that estimated for total primary spending in Figure 2.1). Interestingly, the overwhelmingly countercyclical profile depicted by advanced economies in Figure 2.1 (i.e., when focusing on total primary spending) is largely diluted and, on average, becomes a-cyclical. The same is true if public consumption and public investment are analyzed separately.[2]

What happens to that portion of total primary spending that is not discretionary? In other words, what happens to automatic spending over the cycle?

About 25 and 40 percent of primary spending in developing and industrial countries, respectively, is not directly related to policymakers' deliberate/discretionary spending decisions; instead, it is the result of implementing social programs and benefits that are automatic in nature. Automatic spending, in most cases money transfers to individuals or households, involves the disbursement of public funds resulting from laws (or even constitutions) benefiting people who meet certain criteria. The specific criteria depend upon the nature of the social programs and benefits which, in turn, is also shaped

[2] These separate findings are not reported here, for the sake of brevity, yet they coincide with those of Ilzetzki and Végh (2008), who find a-cyclicality (procyclicality) in public consumption in industrial (developing) countries, and with Ardanaz and Izquierdo (2017), who find a-cyclicality (procyclicality) in public investment in industrial (developing) countries.

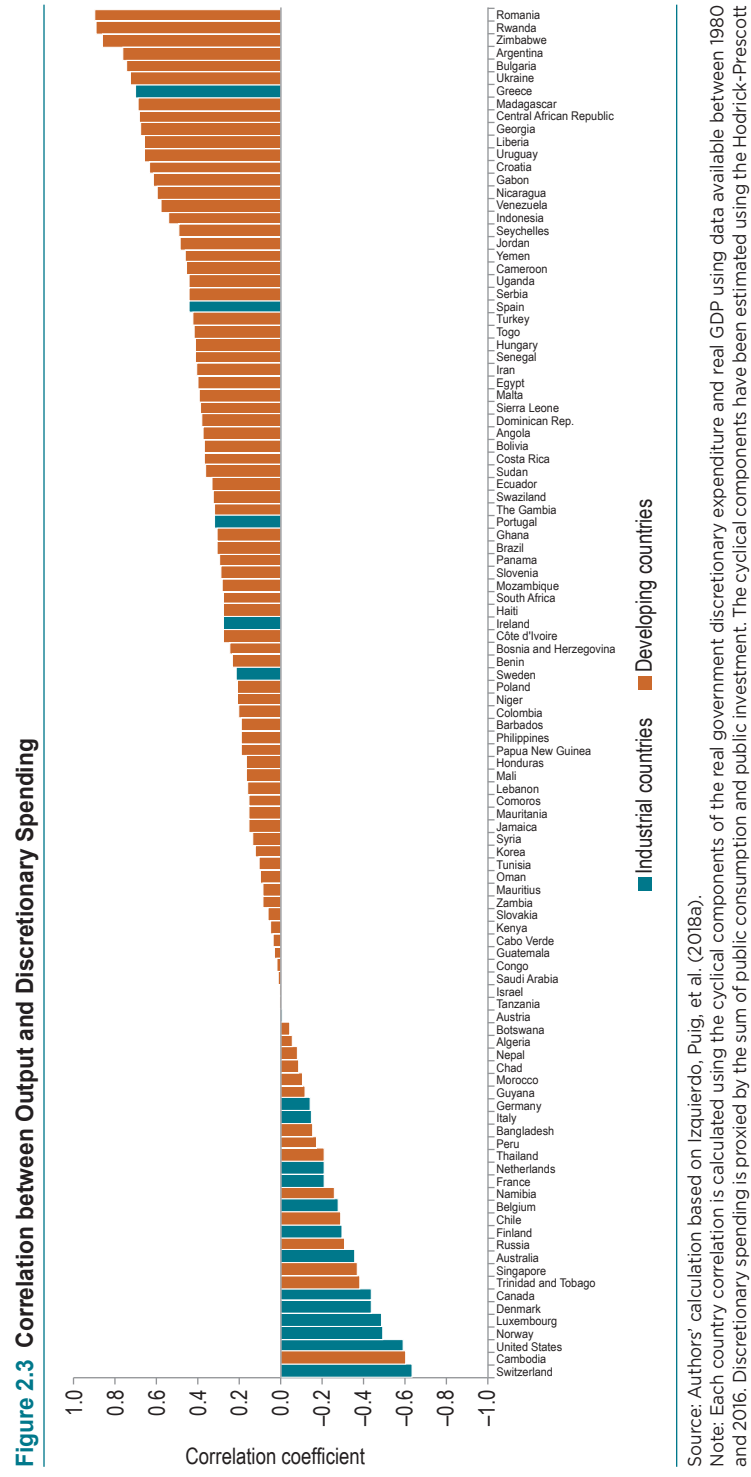


Figure 2.3 Correlation between Output and Discretionary Spending

Source: Authors' calculation based on Izquierdo, Puig, et al. (2018a).
Note: Each country correlation is calculated using the cyclical components of the real government discretionary expenditure and real GDP using data available between 1980 and 2016. Discretionary spending is proxied by the sum of public consumption and public investment. The cyclical components have been estimated using the Hodrick-Prescott filter.

by countries' most pressing social challenges. The most important automatic spending categories include (i) social security (mainly transfers to individuals after their retirement), (ii) family programs and benefits, which include conditional cash transfers mainly to the poor and most vulnerable households, and (iii) unemployment insurance (transfers to unemployed individuals).

Social Transfers and the Cycle

Social security transfers would not be expected to relate to business cycle output fluctuations, as the underlying criterion for those transfers is determined by slow-moving demographic shifts, as in age structure (i.e., one would expect a zero correlation between the short-term movements in social security spending and output movements). The same should hold true, maybe to a lesser extent and depending on the specific program design, for family programs and benefits. In principle, these social programs aim to target structural and deep-rooted problems that are expected to change little over time, with short-term output movements (i.e., there should be zero correlation between such transfers and output fluctuations). Meanwhile, the unemployment insurance mechanism is, by construction, the poster child automatic stabilizer. It is the textbook example of a countercyclical spending policy that, by design, largely fluctuates opposite to output fluctuations. During a recession, when people lose their jobs in countries with unemployment insurance mechanisms, the jobless receive transfers to compensate for the loss of income. Naturally, the specifics of the amount they receive, the type of unemployed people entitled to the program, the maximum time they are allowed to receive benefits, and the conditions under which these benefits are to be maintained, depend on the particular mechanism in each country. But broadly speaking, countries with decently designed unemployment insurance programs should see an automatic increase in these transfers during recessions (as unemployed people claim their benefits) and, by the same logic, a large decline in these transfers as the economy recovers and people return to work. It would be extremely rare (to put it mildly) to observe procyclical transfers in an unemployment insurance mechanism.

Theory vs. Practice

Figure 2.4, like Figure 2.1, shows the degree of cyclicality of spending, but focuses solely on social transfers, including all automatic types of social transfer spending. Much like previous figures, the figures rely on readily available data from various sources. Given how things should work in theory,

it is not surprising that industrial countries demonstrate a strong countercyclical behavior, with 90 percent of countries behaving countercyclically.

Does this mean that industrial countries follow, roughly speaking, countercyclical spending policies (see Figure 2.1), not because of discretionary policy (see Figure 2.3), but because of the stabilizing role of their social transfer programs and benefits (see Figure 2.4)? Not necessarily. It is true that the *average* behavior in developed countries may point in that direction, but those averages hide important differences across advanced economies. In fact, Figure 2.5 reveals a strong relationship between the cyclicality of discretionary and automatic spending policies across industrial countries.[3] Social transfer programs and benefits act as a complement to and not as a substitute for discretionary policy.[4] In other words, countries that conduct countercyclical discretionary policy also tend to have social transfer programs and benefits that are stabilizing in nature. By the same token, countries that conduct procyclical discretionary policy also tend to design social transfer programs and benefits that are de-stabilizing.

This last point triggers an obvious question: How can the de-stabilizing social transfers puzzle be rationalized? In light of the expected nature of social transfers (i.e., in theory), social transfers would be expected to be mostly countercyclical or, in a worst-case scenario (in which unemployment insurance mechanisms are absent), be basically a-cyclical. Yet, a very important segment of the developing world follows procyclical social transfer policy, with more than 50 percent of countries behaving procyclically (see Figure 2.4). Latin American and Caribbean countries vary greatly; (i) Argentina and Uruguay demonstrate the highest procyclicality in social transfers, while (ii) Chile's countercyclical levels are on a par with those in industrial countries such as Denmark and Sweden.

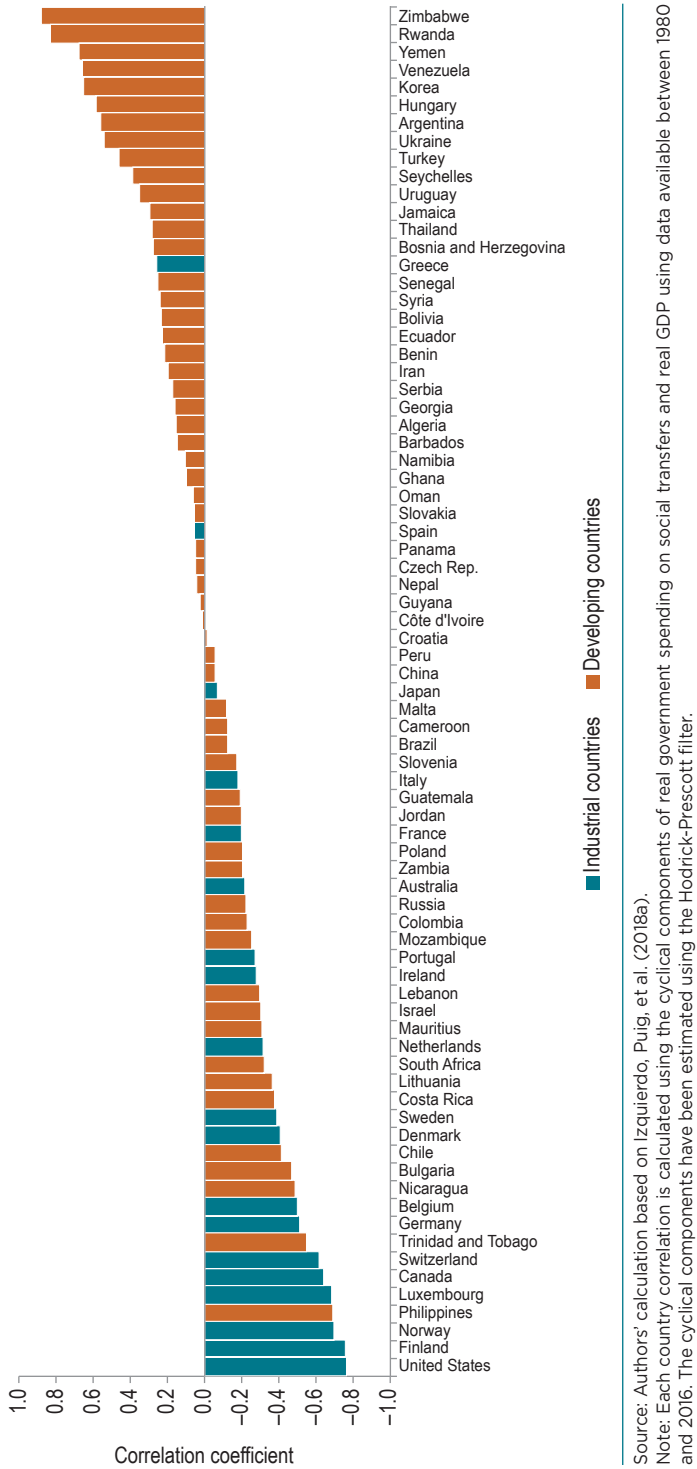
The Devil Is in the Details

Unfortunately, there is not much more information and analysis to extract from off-the-shelf data sources to help solve the de-stabilizing social transfers puzzle in the developing world. Using a novel micro dataset focusing on the most important social programs and benefits (covering

[3] Moreover, using a linear fitted line, the hypothesis that the null that the slope coefficient equals points to a one-to-one association between discretionary and automatic spending policies in industrial countries cannot be rejected.

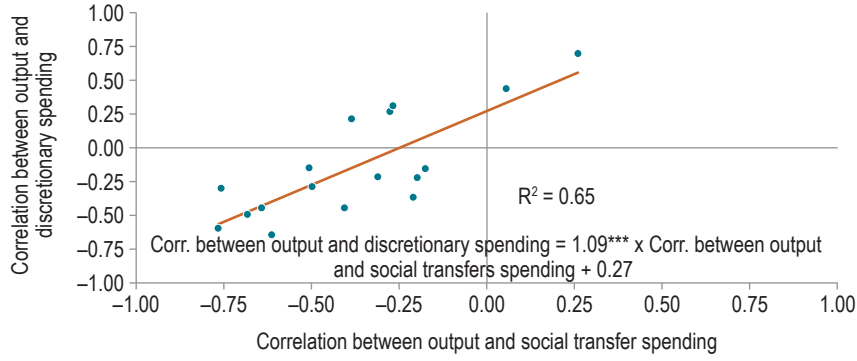
[4] While not reported here, for the sake of brevity, the same positive statistical relation between discretionary and automatic spending policies is identified for developing countries.

Figure 2.4 Correlation between Output and Social Transfer Spending



Source: Authors' calculation based on Izquierdo, Puig, et al. (2018a).
Note: Each country correlation is calculated using the cyclical components of real government spending on social transfers and real GDP using data available between 1980 and 2016. The cyclical components have been estimated using the Hodrick-Prescott filter.

Figure 2.5 Relationship between Discretionary and Automatic Spending Cyclicality in Industrial Countries



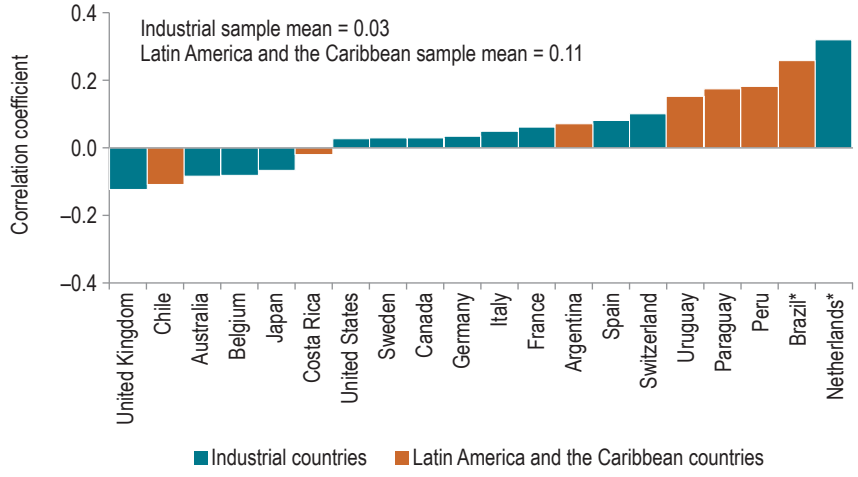
Source: Authors' calculation based on Izquierdo, Puig, et al. (2018a).
Note: This scatter plot is based on industrial countries' correlation from Figure 2.3 and Figure 2.4. *, **, and *** indicate statistically significant at the 10%, 5%, and 1% levels, respectively.

about 80 percent of the main social transfer programs and benefits in seven Latin American and Caribbean countries—Argentina, Brazil, Chile, Costa Rica, Paraguay, Peru, and Uruguay), Izquierdo, Puig, et al. (2018a) uncover this puzzle and propose policy recommendations to solve it.[5] To contrast the pros and cons of stabilization properties (or lack thereof), spending data from several countries in the Organisation for Economic Co-operation and Development (Australia, Belgium, Canada, France, Germany, Italy, Japan, Netherland, Spain, Sweden, Switzerland, United Kingdom, and the United States) were also used.[6] Data from the seven Latin American countries are matched with the criteria used to categorize programs in the OECD (i.e., family programs and benefits, unemployment insurance, and social security).

Total spending on social transfers as a share of GDP averages 15 percent of GDP in both the Latin America and the Caribbean and the industrial countries samples. In line with the expected degree of cyclicality, both samples show, typically, a-cyclicality in family programs and benefits spending (see Figure 2.6). In fact, unemployment insurance spending is, by and large, countercyclical (see Figure 2.7). Interestingly, especially in the cases of Argentina and Uruguay, social security spending is procyclical (see Figure 2.8). Why does social security spending increase in good times and fall in bad times? The answer lies in the perverse way social

[5] See Izquierdo, Puig, et al. (2018a) for details.
[6] See Izquierdo, Puig, et al. (2018a) for details. https://stats.oecd.org/Index.aspx?DataSetCode=SOCX_AGG.

Figure 2.6 Correlation between Output and Family Programs and Benefits Spending



Source: Authors' calculation based on Izquierdo, Puig, et al. (2018a).
Note: Each country correlation is calculated using the cyclical components of the real government spending on family programs and benefits and real GDP using data available between 2000 and 2016. The cyclical components have been estimated using the Hodrick-Prescott filter. *, **, and *** indicate statistically significant at the 10%, 5%, and 1% levels, respectively.

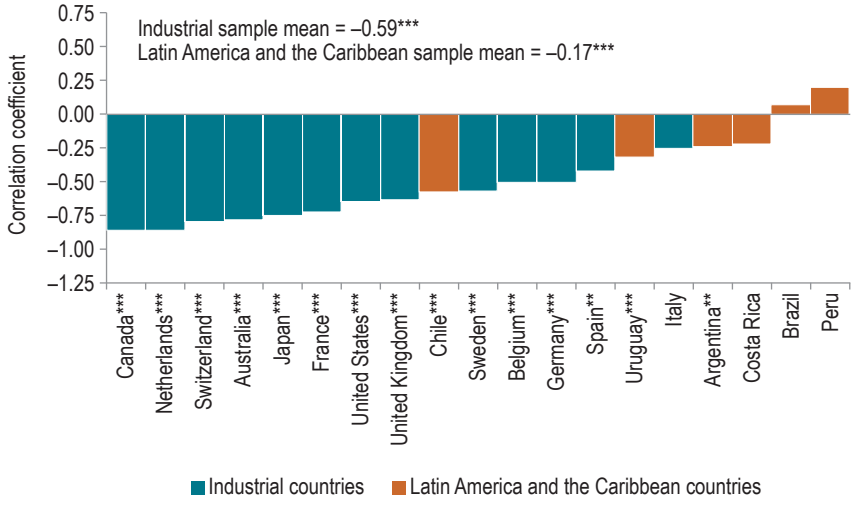
security benefits are indexed over time in several countries in the region. Most industrial and many developing countries have formulas that index social security benefits to inflation; after all, the purchasing power of retirees should ideally be preserved over time. Unfortunately, as of end 2017, that was not the case for the prevailing social security systems in Argentina, Brazil, and Uruguay.[7] In 2008, Argentina changed the formula used to index social security benefits from discretionary criteria (which in and of itself is not good as it requires discretionary policy to amend social security benefits) to a formula using both fiscal revenues and wages, which are both typically procyclical elements that do not guarantee the preservation of retiree's purchasing power.[8] Similarly, Brazil since 2011 uses both inflation and output growth and Uruguay since 2003 uses wages as inputs for updates in social security benefits.

Figure 2.9 dives deeper into the effect of these social security reforms by calculating the degree of procyclicality before and after the reforms. Indeed, before these reforms, Argentina, Brazil, and Uruguay had a-cyclical

[7] Argentina recently passed legislation that will be enforced in 2018 to partially correct the problem highlighted here.

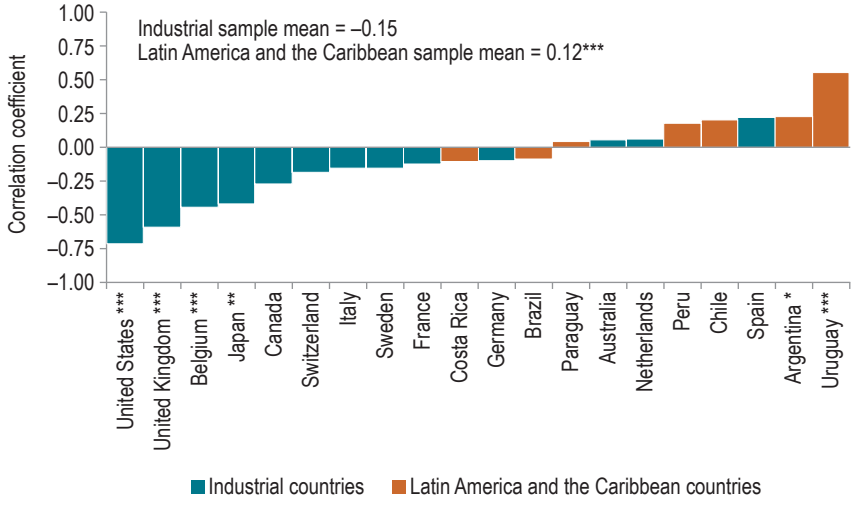
[8] The most recent reform now partly indexes by inflation, and partly by wages.

Figure 2.7 Correlation between Output and Unemployment Insurance Spending



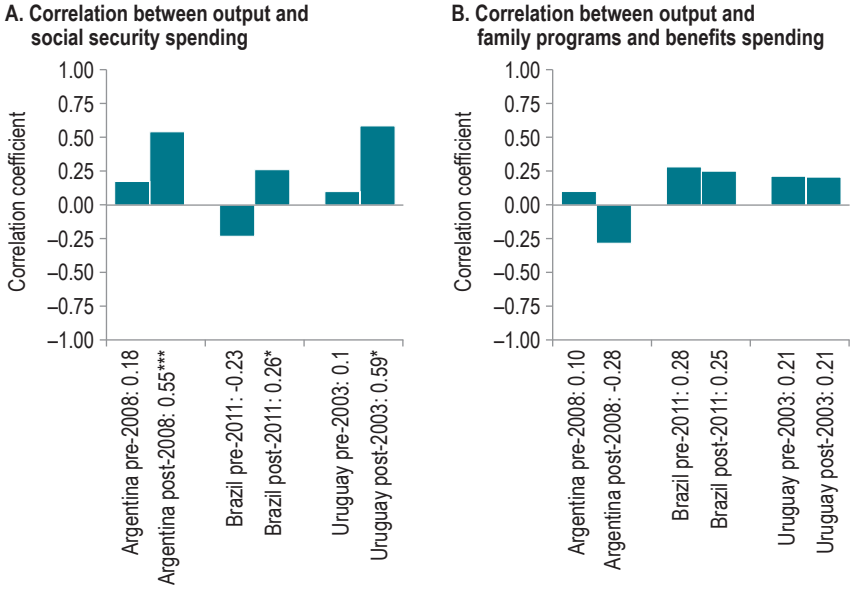
Source: Authors' calculation based on Izquierdo, Puig, et al. (2018a).
Note: Each country correlation is calculated using the cyclical components of real government spending on unemployment insurance and real GDP using data available between 2000 and 2016. The cyclical components have been estimated using the Hodrick-Prescott filter. Paraguay is excluded as it has no unemployment insurance program. *, **, and *** indicate statistically significant at the 10%, 5%, and 1% levels, respectively.

Figure 2.8 Correlation between Output and Social Security Spending



Source: Authors' calculation based on Izquierdo, Puig, et al. (2018a).
Note: Each country correlation is calculated using the cyclical components of real government spending on social security and real GDP using data available between 2000 and 2016. The cyclical components have been estimated using the Hodrick-Prescott filter. *, **, and *** indicate statistically significant at the 10%, 5%, and 1% levels, respectively.

Figure 2.9 Correlation between Output and Specific Social Transfers before and after Social Security Law Amendment in Argentina, Brazil, and Uruguay



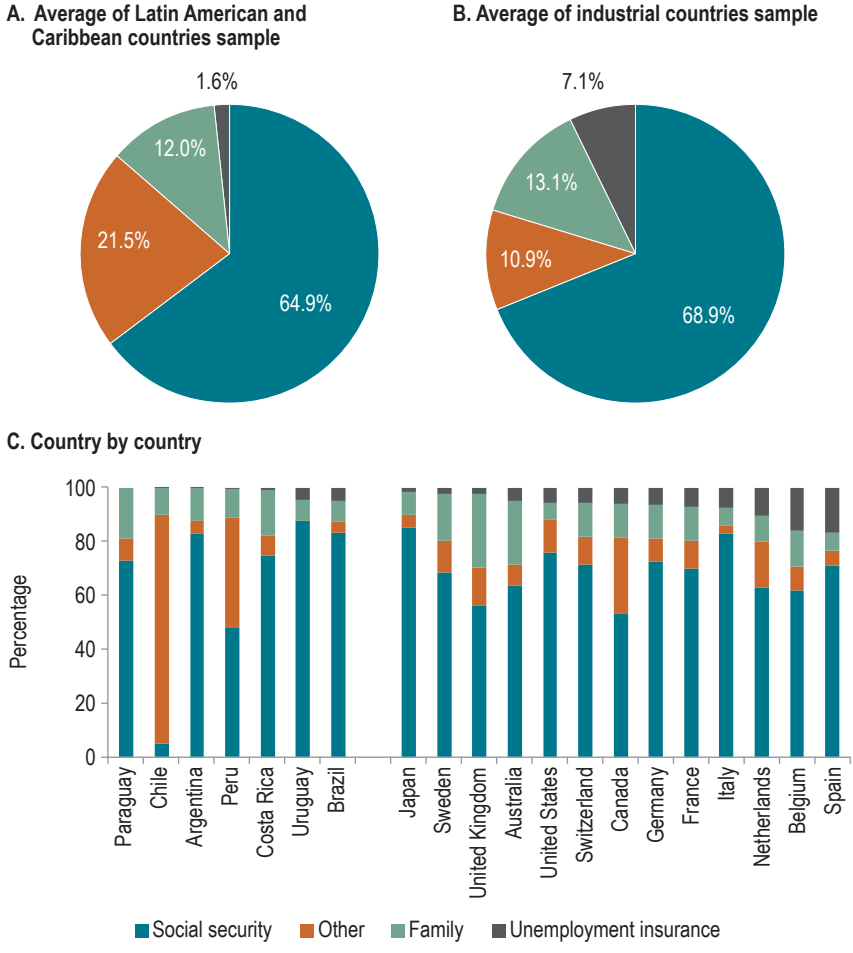
Source: Authors' calculation based on Izquierdo, Puig, et al. (2018a).
Note: Each country correlation is calculated using the cyclical components of social security spending and real GDP using data available between 1998 and 2016. The cyclical components have been estimated using the Hodrick-Prescott filter. The number of quarter observations for Argentina, Brazil, and Uruguay are 44 (32), 56 (20), and 24 (52) for the period before (after) the social security law change. The social security law amendment changed the criteria for determining individual social security benefits. *, **, and *** indicate statistically significant at the 10%, 5%, and 1% levels, respectively.

social security spending (see Figure 2.9A). Then, after the reforms, social security spending became strongly procyclical. To dismiss the idea that this switch from a-cyclicality to procyclicality may have been driven by other factors, Figure 2.9B offers a placebo test showing that family programs and benefits (which were not amended) do not change their a-cyclicality after social security reform.

Solving the Puzzle

Given all these facts and insights, how can the de-stabilizing social transfers puzzle be rationalized? So far it has been shown that, as expected (i.e., in theory), family programs and benefits and unemployment insurance spending in the Latin American and Caribbean sample are, indeed, a-cyclical and countercyclical, respectively. On the contrary, particularly in Argentina, Brazil, and Uruguay, social security spending turned strongly

Figure 2.10 Spending on Social Security, Family Programs, and Unemployment Insurance (as Percentage of Total Social Transfers Spending)



Source: Authors' calculation based on Izquierdo, Puig, et al. (2018a).
Note: Shares are calculated using data available between 2000 and 2016.

procyclical since reforms perversely changed the way in which benefits are indexed, using underlying procyclical factors such as output growth, fiscal revenues, and wages. The key to solving this puzzle is to understand the importance of each category of social transfer. On average, social security involves about two-thirds of total social transfer spending both in the industrial and Latin American sample (see Figures 2.10A and B). While there is some variation across countries (see Figure 2.10C), social security spending is by and large the largest category of social transfers. By contrast,

family programs and benefits represent around one-eighth of total social transfers. The key difference between the samples is the size of unemployment insurance spending. While this represents about 7 percent of social transfers in the industrial sample, it barely reaches 1.6 percent in the Latin American and Caribbean sample. This asymmetry reflects differences in coverage of unemployed people. According to the *World Social Protection Report*, coverage is about 70 to 80 percent in advanced economies, but less than 25 percent in Latin America and the Caribbean, and less than 10 percent in Argentina and Brazil in particular. In other words, a lack of unemployment insurance coverage (in spite of its countercyclical profile) coupled with social security benefits that are indexed to intrinsically procyclical factors (such as output growth, fiscal revenues, and wages) explain why several Latin American and Caribbean countries, especially Argentina and Uruguay, suffer from procyclical social transfer spending policies.

In principle, two features need to be addressed to make social transfers work in a less perverse manner. First and foremost, social security indexing formulas should be changed from those relying on procyclical factors (such as output growth, fiscal revenues, and wages) to inflation indexing. In fact, the Argentine reform of 2017–2018 moves precisely in that direction. Using inflation, as is done in advanced economies and many developing countries, is the best way to protect the purchasing power of retirees.

Second, and perhaps more challenging, is an increase in unemployment insurance coverage. Overall, Latin America and the Caribbean has made a supreme effort to protect the most vulnerable and poor households with several types of conditional cash transfers. While these programs certainly could be better focused and achieve a larger impact on child educational attainment outcomes, governments in the region have sent a strong signal and mobilized the associated resources to tackle structural poverty while at the same time encouraging families to prioritize children's access to education and health. Tackling this vulnerability is a priority, particularly in one of the world's most unequal regions. However, given large output fluctuations (as Latin American and Caribbean countries tend to be sensitive to external factors, including global liquidity conditions and commodity price fluctuations), it may be worth exploring protection programs for those who become unemployed during downturns. However, these programs should have clear sunset clauses, and should be budgeted beforehand.

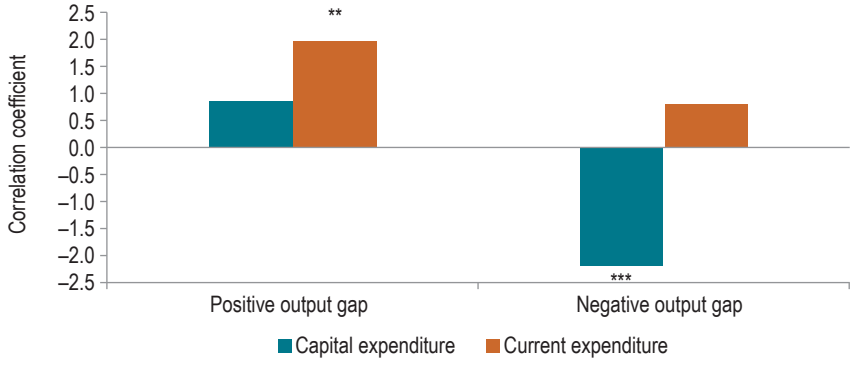
Capital vs. Current Expenditures

Capital expenditure in Latin America has been losing ground against current expenditure. An important reason for this trend is the way governments

manage current and capital expenditure along the business cycle. In principle, current expenditure (other than unemployment insurance) should be a-cyclical. Education and health expenditures, for instance, need not depend on business cycle fluctuations as they target long-term goals that are independent of the cycle. In contrast, capital expenditures are the counter-cyclical expenditure "par excellence," as they can be increased to sustain aggregate demand in downturns—thus reducing the size of output fluctuations—and rolled back to lower levels in upturns. Unfortunately, developing countries, including in Latin America, have not displayed this behavior. As Ardanaz and Izquierdo (2017) show, there is a fundamental asymmetry in the way current and capital expenditures behave in most developing countries: current expenditure is *increased* in good times (when it should not) but is not decreased in bad times, while capital expenditure is *decreased* in bad times (when it should be expanded) and not increased in good times (see Figure 2.11) The reaction of current expenditures to the positive cyclical component of output fluctuations is positively large and significant, while that of capital expenditures is not. In contrast, the reaction of capital expenditures to the negative cyclical component of output fluctuations is also negatively large and significant, while that for current expenditures is not.

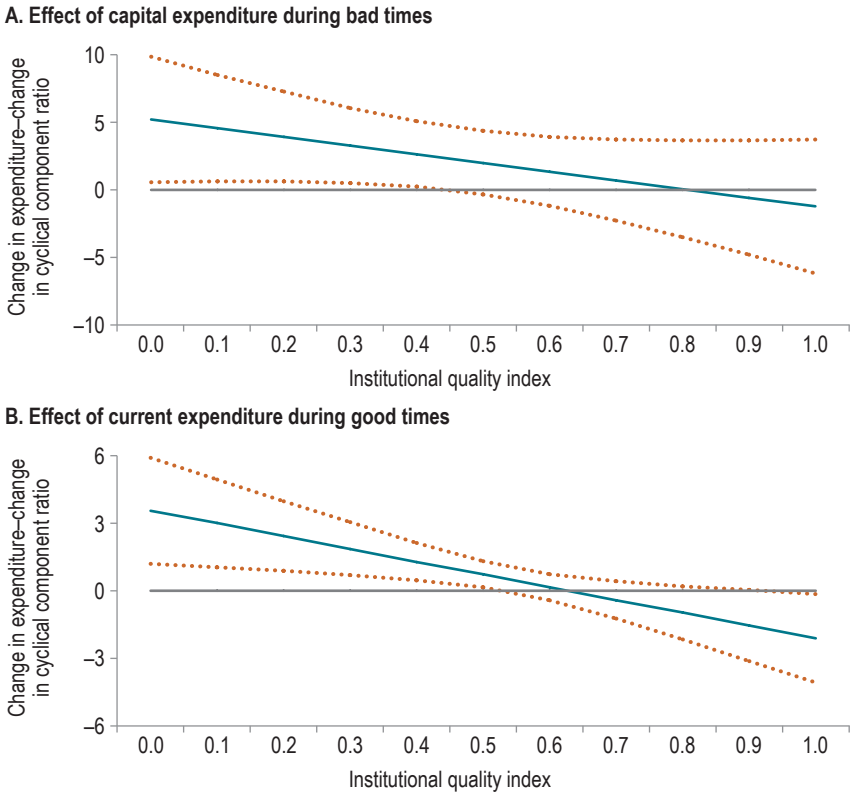
Interestingly, advanced economies do not display this behavior as they follow a-cyclical policies for current as well as capital expenditures, both in good and bad times. What lies behind these differences between

Figure 2.11 Capital and Current Expenditure in Good and Bad Times: A Sample of Developing Countries



Source: Authors' elaboration based on Ardanaz and Izquierdo (2017).
Note: This figure was constructed using a cyclical component value of 1 for positive cyclical components, and a value of –1 for negative cyclical components. *, **, and *** indicate statistically significant at the 10%, 5%, and 1% levels, respectively.

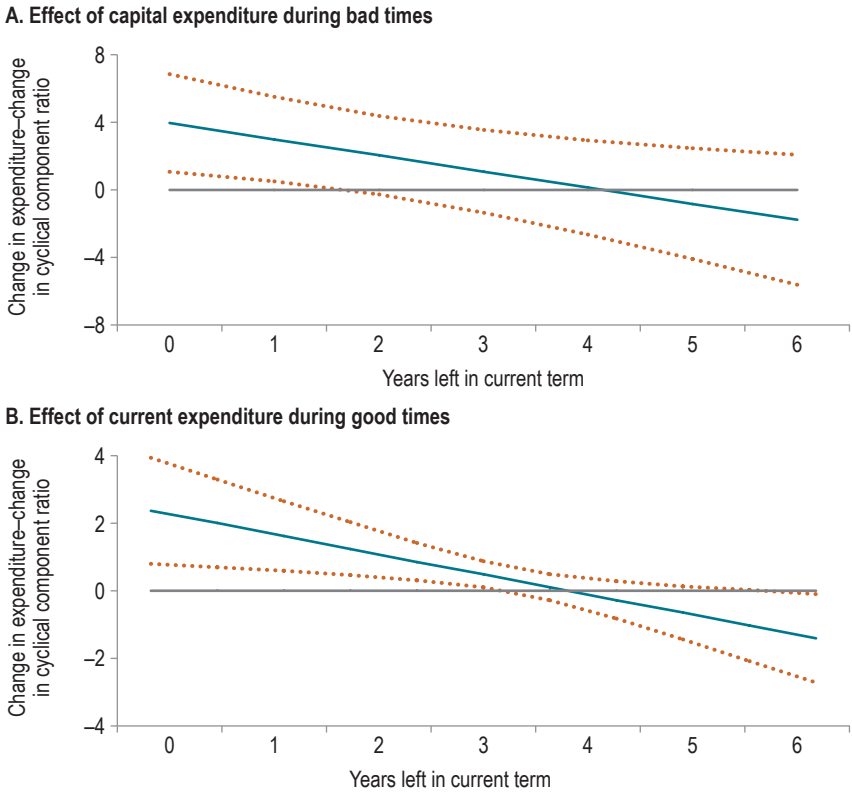
Figure 2.12 Capital and Current Expenditure Patterns: The Relevance of Institutions



Source: Authors' elaboration based on Ardanaz and Izquierdo (2017).
Note: Institutional quality index ranges from 0 (worst institutional quality) to 1 (best institutional quality). Dashed lines indicate the 95% confidence interval for the effect of capital and current expenditure.

developing and industrial countries? According to Ardanaz and Izquierdo (2017), two major elements are to blame. The first difference relates to institutions. The effect of capital expenditures in bad times is large and significant for countries with low levels of institutional quality, while it becomes small and insignificant at high levels of institutional quality (see Figure 2.12A). The opposite occurs for current expenditure: it increases in good times only when institutional quality is low (see Figure 2.12, Panel B). Thus, Latin American countries, whose institutional quality typically falls on the low side of the spectrum, tend to reduce capital expenditure in bad times and increase current expenditure in good times, something that industrial countries don't do on average. The second element at work is the impact of electoral cycles on current expenditures. When authorities are far away

Figure 2.13 Capital and Current Expenditure Patterns: Relevance of Electoral Effects



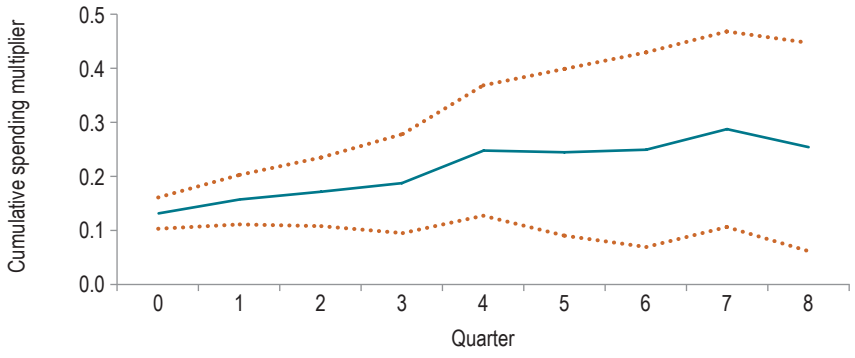
Source: Authors' elaboration based on Ardanaz and Izquierdo (2017).
Note: Dashed lines indicate the 95% confidence interval for the effect of capital and current expenditure.

from the end of their term in government, they don't cut capital expenditures or increase current expenditures in good times—they behave properly (see Figure 2.13). However, when they are close to ending their term or reelection is coming up, they do pump up current expenditures in good times—to attract more voters—and cut back on capital expenditure—which is less harmful politically than other possible cuts—in bad times. Advanced economies do not seem to engage in these practices on average.

Spending Policy and the Macroeconomy

Thus far the focus has been on how fiscal policy behaves over the business cycle. But there is another side to this coin: what is the effect of spending

Figure 2.14 Multiplier of Total Primary Spending on Output



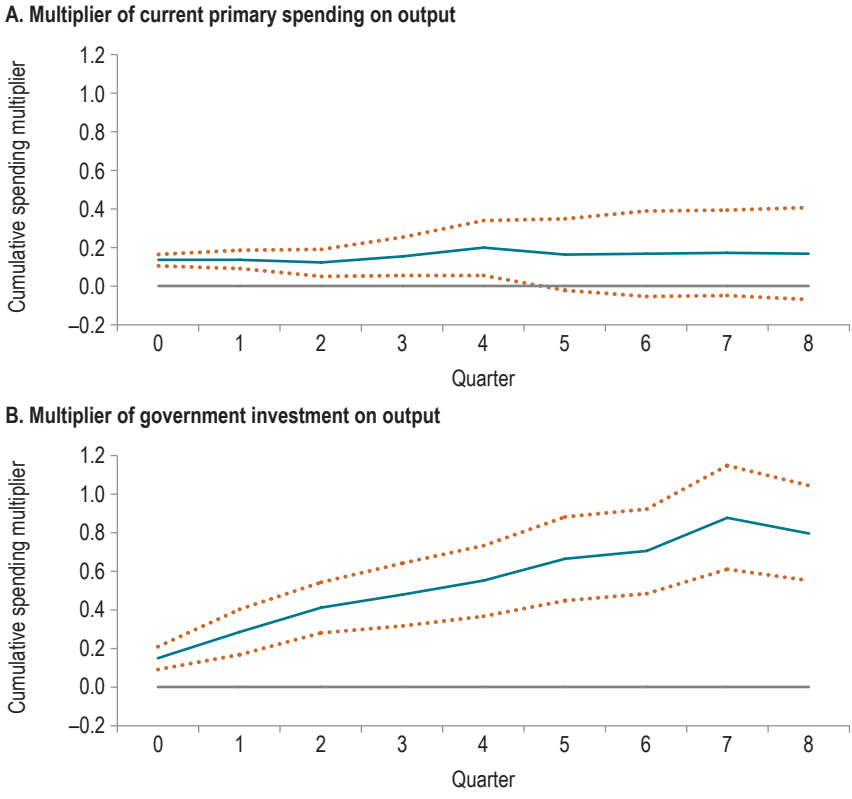
Source: Authors' calculation based on Izquierdo, Lama, et al. (2018).
Note: Dashed lines indicate the 95% confidence interval for the effect of total primary spending.

policy on the macroeconomy? The so-called spending multiplier measures just that: the effect of spending on economic activity. Understanding the size of this multiplier is important when analyzing the ability of public expenditure to affect the business cycle.

Figure 2.14 shows the cumulative effect of primary spending on output. Findings point to a lower than unit medium term spending multiplier. In other words, a $1 increase in government spending leads to less than a $1 increase in output. Why? Economists point to the crowding out effect. In other words, the direct positive effect of higher spending on output is more than compensated by a reduction in some other macroeconomic aggregate such as private consumption. For example, if people expected higher taxes to come after an increase in spending or lower private investment if interest rates rise as a consequence of greater public spending.

So far little has been said about the impact of different types of spending on output. Interestingly, splitting the effects of spending on output into the effect derived from current spending (mainly driven by public consumption) and that from public investment generates quite different results. Figure 2.15 shows that the overall low spending multiplier obtained before is the result of current spending (see Panel A) and not that of capital spending (see Panel B), which is much larger and closer to one. This systematic finding underlies a recent trend favoring public investment as a strategy to foster economic activity. The complementarity between public investment and private investment is behind these results. For this reason, it is not surprising that public investment has become "fashionable" as a means to boost resilience to adverse global conditions and foster

Figure 2.15 Multiplier of Total Primary Spending Components on Output



Source: Authors' calculation based on Izquierdo, Lama, et al. (2018).
Note: Dashed lines indicate the 95% confidence interval for the effect of capital and current expenditure.

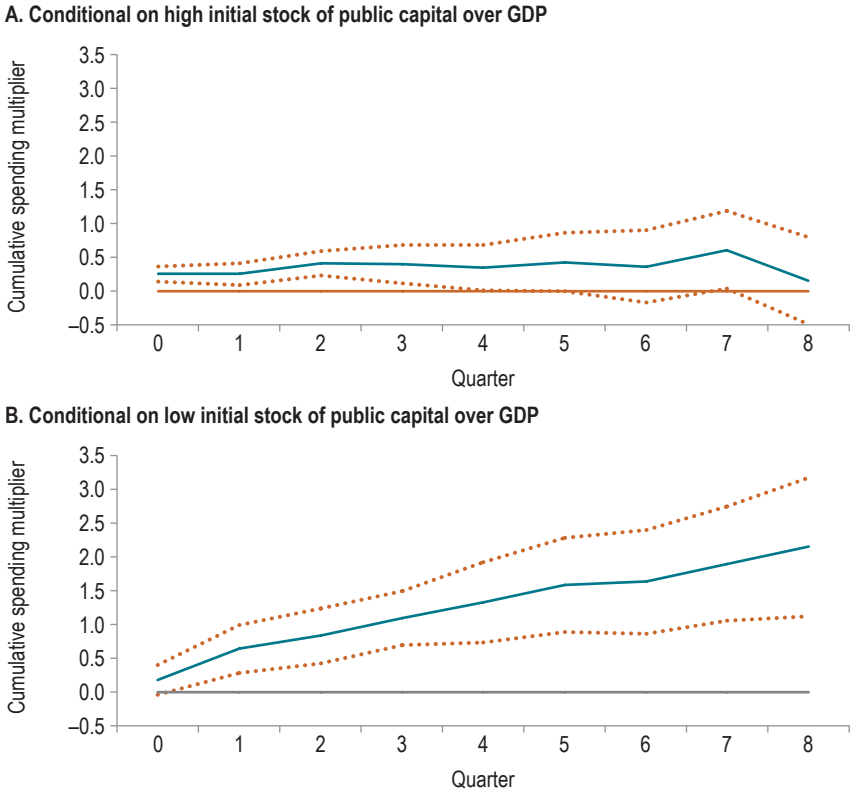
economic activity. From northern Europe to the least developing countries, policy circles are starting to embrace a public investment agenda.

When Public Investment Counts Most

While extremely appealing at first sight, the effect of public investment on economic activity relies crucially on the initial stock of public capital.[9] To illustrate this, the stock of public capital can be thought of as, for example, the stock of infrastructure such as roads, ports, railroads, and other durable public goods. The study shows that the direct effect of public investment as well as its positive synergy with private investment

[9] See Izquierdo, Lama, et al. (2018) for more details.

Figure 2.16 Multiplier of Government Investment on Output



Source: Authors' calculation based on Izquierdo, Lama, et al. (2018).
Note: Dashed lines indicate the 95% confidence interval for the effect of capital expenditure.

operates very strongly only when the initial stock of public capital is low (i.e., when the returns of an extra unit of public investment are high). On the other hand, the effects fade away when the stock of public capital is very high to begin with. Think about the large impact of building a paved road connecting a productive area with a port in a developing country with only a few paved roads (e.g., in the Democratic Republic of the Congo) vis-à-vis the impact of the same paved road in a country with a large and outstanding highway network (e.g., Sweden). One would expect the impact to be much higher in the former than in the latter country. Figure 2.16 shows that this is the case. While the government investment multiplier is virtually zero (i.e., public investment has no effect on output) when the initial stock of public capital is high (see Panel A), it reaches a value of about 2 when the initial stock of public

capital is low (see Panel B). In other words, the finding depicted in Figure 2.15 (when not distinguishing initial levels of public stock of capital) simply *averages* very different stories arising from situations in which the public stock of capital is low with cases where it is large. Naturally, for most Latin American and Caribbean countries the multipliers associated with public investment are typically larger than one, pointing to deficiencies in the current stock of public capital and an opportunity to foster economic activity. For this reason, it is worrisome to see the public investment versus current spending trends that were depicted in Chapter 1. In fact, Chapter 9 will deal with second-condition fiscal rules aimed at protecting public investment, especially in times of fiscal adjustment.

Better than Nothing? Not When It Comes to Inefficient Spending

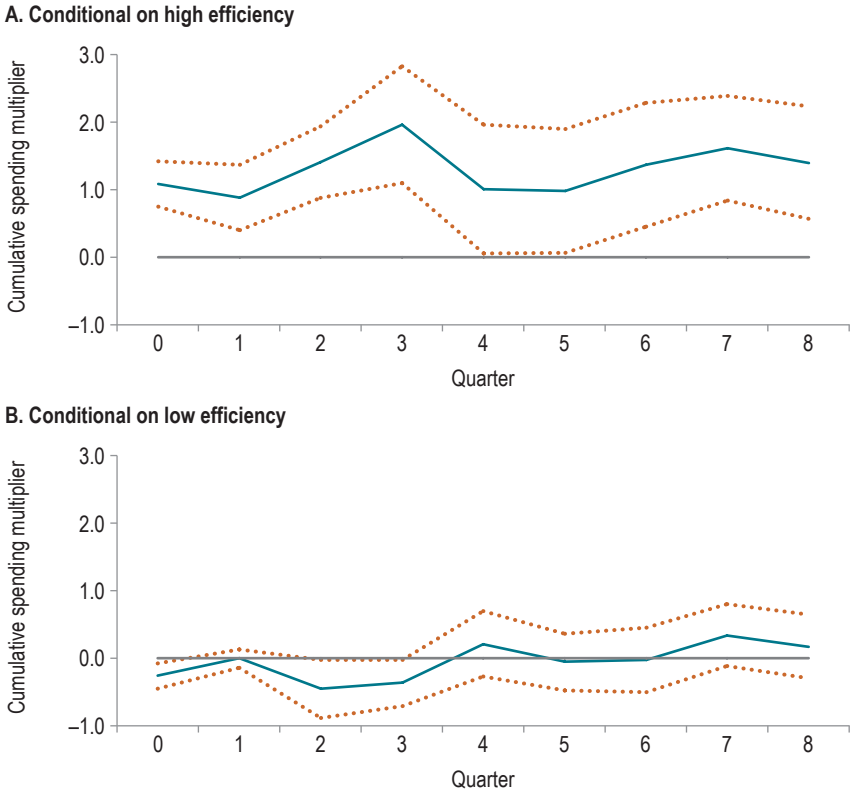
Spending resources efficiently is crucial. In practice, inefficient spending may have the same result as no spending at all. Using data from the World Economic Forum on the efficiency of public expenditure, spending multipliers are recalculated, this time incorporating the impact of efficiency for a large sample of countries. Figure 2.17A shows that the size of aggregate spending multipliers can be large when public spending is conducted in a highly efficient manner, with a cumulative multiplier of almost 2 for some quarters. On the contrary, any effort to increase spending when efficiency is low will have no effect on economic activity whatsoever (see Figure 2.17B).

Putting It All Together

Dealing with the cycle is not easy. Latin America has only a very few graduates when it comes to good management of counter-cyclical policies. This is partly due to the dubious design of some transfer programs, particularly social security expenditure. Moreover, although the region has properly dealt with transfer programs designed to take new generations out of poverty, little has been done to correct unemployment insurance programs, indeed a key instrument to deal with cycles for those that need them the most.

Latin America has yet to set up programs to deal with the management of current and capital expenditures along the cycle. Most countries in the region save too little in good times—even increasing current expenditure above trend in good times—and use mostly capital expenditures to adjust in bad times. This policy has several faults: countries should follow expansionary expenditure policies in bad times instead of cutting them,

Figure 2.17 Multiplier of Primary Government Spending on Output



Source: Authors' calculation based on Izquierdo, Riera-Crichton, et al. (2018).
Note: Dashed lines indicate the 95% confidence interval for the effect of current expenditure.

and that expansionary policy should be carried out with capital expenditure, whose multipliers are larger than those of current expenditures. Otherwise, countries are shooting themselves in the foot twice: first, they are following contractionary policies in bad times, and second, when they expand they are focusing on capital expenditure to do the job, precisely the most expansionary type of expenditure, as it has the largest multiplier. This is particularly problematic in countries with low capital stocks. Moreover, if expansionary policies are to have any impact, spending efficiency must be high.

3 The (In)Efficiency of Public Spending

Public expenditure in Latin America and the Caribbean grew on average 7 percentage points during the past 20 years—an increase that, unfortunately, is not reflected in a similar increase in quality physical and human capital, or lasting social outcomes. This is particularly the case in countries where public expenditure increased the most, which today are struggling with fiscal sustainability and low growth. Big and small countries alike have experienced huge problems achieving efficiency.

Given that public budgets in all Latin American and Caribbean countries are likely to remain tight for some time to come, all levels of government will have to learn to spend more wisely. Growing citizen concerns, aging populations, tax burdens that have reached efficiency limits, plus international economic volatility have put pressure on governments to increase the value for money of public services.

Countries have options beyond the oft-cited either-or dilemma of tax increases and spending cuts. Latin America and the Caribbean needs to spend better by switching from wasteful, inefficient expenditure to efficient expenditure that contributes to growth without adding to inequality. Adjusting government expenditure can be a painful process; however, identifying inefficiencies in public spending can help reduce the burden. This process is known as "smart" spending. Instead of cutting expenditures across the board—as has been done many times in the past—it is better to dissect the budget sector by sector, sort out technical and allocative inefficiencies, and switch spending if warranted.[1] It is important to build diagnostics based on evidence, perform cost-benefit analysis, and obtain rates of return in order to assign spending where it is most productive and efficient in achieving social welfare.

Efficiency is about doing more with less. It involves maximizing outputs such as the volume of services provided, minimizing inputs such as

[1] See Cavallo and Serebrisky (2016), particularly Chapter 8 on smart spending.

the amount of resources, time, or capital required to produce those services, and maintaining or improving quality. Public spending efficiency can be classified into technical efficiency, which deals with the inefficiencies in each expenditure component, and allocative efficiency, which aims to prioritize between alternative spending items based on evidence and allocate expenditure to programs with higher social rates of return. The allocative and technical efficiency of public spending are critical to fostering long-term economic growth and improving equity. Recent theoretical and empirical literature concentrated almost exclusively—if at all—on technical efficiency, assuming that spending allocations are either optimal or too difficult to change or manage. However, doing the wrong things right might entail high allocative efficiency costs and may even surpass technical efficiency losses.

Most Latin American and Caribbean countries spend inefficiently. While the amount of goods and services produced annually in the 26 countries in the region surpassed $5.3 trillion in 2016, public spending exceeded $1.9 trillion (about the size of Brazil's gross domestic product, GDP), leaving little room for mistakes. Lack of professionalism, negligence, corruption, or a combination thereof, inflate the cost of inputs used to produce those services. Moreover, spending is inefficiently allocated among government sectors, programs, and populations, and over time.

This chapter addresses spending efficiency in general, as well as by sector, using the Data Envelopment Analysis (DEA) popularized by Afonso, Schuknecht, and Tanzi (2005, 2010). This method is useful to benchmark efficiency relative to a frontier where advanced countries are usually situated. Within each sector, the efficiency analysis can explain why some Latin American and Caribbean countries are far from the frontier; however, it is not easy to pinpoint the technical or allocative efficiencies of each. This chapter does not rely on a single technique, but rather *dissects* separately issues of technical and allocative efficiency.

How can technical inefficiencies be identified? Technical efficiency in government spending explores how many more inputs are used than needed to obtain an outcome; or how much it costs to deliver a program while maintaining a certain level of quality compared to benchmark years or to other countries; or how governments obtain different outcomes from a certain level of expenditure. Efficiency can be measured by determining the amount of public resources wasted in delivering outcomes of a given quality. This chapter first provides estimates of how much the region loses by spending inefficiently on wages, procurement, and subsidies and transfers.

Regarding allocative efficiency, this chapter focuses on four of the most pressing problems in assigning public spending in Latin America and the

Caribbean. First, it examines the allocation of spending between older and younger generations. The region is aging much faster than developed countries; in other words, it is becoming old (and increasing its old-age spending) before becoming rich. Are countries assigning spending efficiently to current and future generations? Second, some countries in the region "ate" the commodity boom of the 2000s; that is, they spent the windfall largely on increasing subsidies, transfers, and wages, instead of improving physical and human capital. The trade-off is between public spending aimed at income redistribution (via social spending)[2] and that aimed at raising growth. How efficiently is spending allocated between physical capital (investment), human capital, and transfers? Third, as a means for tackling the problem of low-quality human capital in the region, allocative efficiency of spending for skills formation along the life cycle is analyzed. What do rates of return reveal about the current assignment of spending from early childhood programs to youth and adult training? Fourth, the increasing share of subnational spending in consolidated spending in the region raises the question whether the efficiency gains of putting services closer to constituents will be realized or if some prerequisites are needed in the process to improve it.

Poor governance, the short-sightedness of politicians, and weak budget institutions can all contribute to inefficiency. Latin American and Caribbean governments are falling short in their use of fiscal policy as a development tool that can boost growth, reduce poverty and inequality, and provide high-quality public goods and services. The main finding of chapters 3–8 of this book is that some government programs are managed ineffectively, leading to waste; some programs are not allocated to the most efficient and growth-enhancing alternatives; some benefit the rich more than the poor, and do not achieve their goals effectively. As a result, it would be possible to save an important part of the budget or switch spending without reducing access to public services that benefit the poorest sectors of the population.

Technical Efficiency: Doing the Right Things, Right

Some of the waste in public expenditure relates to technical inefficiencies: governments do the right things badly, using more resources than needed to achieve a given outcome. What is the optimal mix of labor, goods and

[2] Chapter 4 concludes that social spending is not efficient in Latin America and the Caribbean to redistribute income when benchmarked with more developed countries.

services, construction, and transfers to deliver services to citizens? To produce public services, the government should combine its inputs efficiently at the lowest cost. The economic classification of public spending focuses on inputs: goods and services, investment, labor, and transfers. Inefficiencies stem not only from the amount of labor but also from their cost. For example, if for a given job qualification, wages are much higher in the public sector than the private sector, then there is room for improvement. Wages and the cost of goods and services relate to the costs of production undertaken by government itself. Subsidies, grants, and social benefits relate to transfers in cash or in kind and purchases from third parties of goods and services for delivery to other parties, usually firms and households.[3]

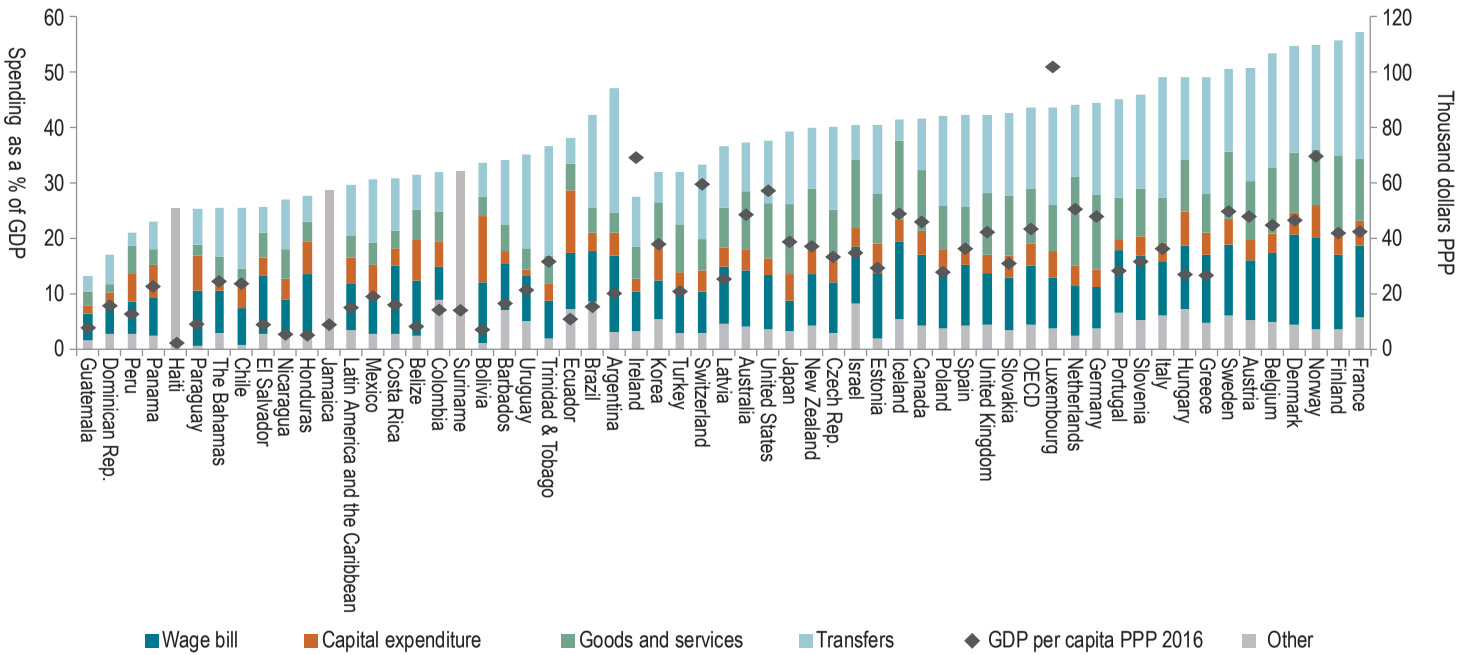
A novel dataset of consolidated general government spending for 24 countries collected by the IDB (IMF, 2014) shows total spending and its economic composition as a percentage of GDP in Latin America and the Caribbean (Figure 3.1).

Consolidated general public spending is 29.7 percent of GDP in Latin America and the Caribbean compared to 43.5 percent in the Organisation for Economic Co-operation and Development (OECD). However, spending is uneven in the region: the big spenders include Argentina, Brazil, Ecuador, Trinidad and Tobago, and Uruguay (more than 35 percent of GDP); low spenders include the Dominican Republic and Guatemala (less than 20 percent of GDP); the rest are intermediate spenders (between 20 and 35 percent). The two highest spenders in the region spend more than or equal to the median country in the OECD, but their GDP per capita (right axis) is less than half that of the median country in the OECD.

Technical efficiency is analyzed for three key components of government production costs: procurement spending, which is the cost of goods and services including capital expenditure; the costs of compensating civil service employees; and part of the cost of subsidies and transfers, which suffer from leakages to the nonpoor. This technical efficiency analysis assumes a reasonable allocation of expenditure by function and, hence, provides estimates of the direct waste of resources reflecting overcost or overuse of inputs for a given outcome.

[3] Consolidated general government should include at a minimum central government, state and local government activities, and social security funds. It excludes transfers between these levels of government to avoid double counting. Besides economic classification, the dataset includes the functional classification and crossed classification for a sample of countries (Pessino Badin et al, 2018).

Figure 3.1 Total Spending as Percent of GDP by Economic Classification and GDP per capita PPP, 2015–2016

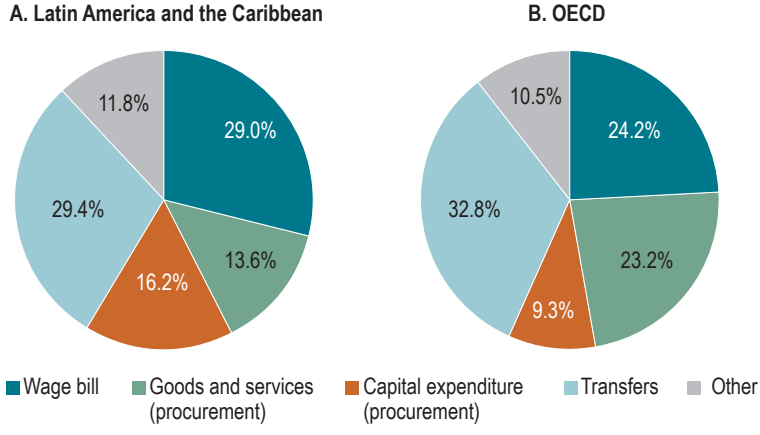


Source: Authors' calculation based on OECD National Accounts, FMM Spending database, IMF-WEO, and Pessino, Badin, et al. (2018).
Note: Spending data follows the concepts of the *Government Finance Statistic Manual* (GFSM). Wage bill refers to all compensation in cash or in kind in return for work, called Compensation of Employees in GFSM. Goods and Services refer to the use of goods and services in the GFSM. Capital expenditure includes capital transfers plus investment. Transfers are defined as social benefits plus subsidies and grants. Other is defined as other current expenditure. Belize, Barbados, Jamaica, Suriname, The Bahamas, and Trinidad and Tobago refers to central government spending and Haiti refers to the non-financial public sector. The only data available for Haiti, Jamaica, and Suriname are total spending and they are not included in the Latin America and the Caribbean average. Mexico and Chile are not included in the OECD average.

The composition of Latin American and Caribbean spending differs from OECD averages in several ways. First, compensation of employees accounts for 29 percent of spending in the region, which is higher than the 24.2 percent in the OECD. Second, total procurement constitutes 29.8 percent of spending in Latin America and the Caribbean compared to 32.5 percent in the OECD. The share of transfers, including subsidies, grants, and pensions, is larger in the OECD (32.8 percent) than in Latin America and the Caribbean (29.4 percent). This spending on transfers, together with lower spending on capital goods, point to an older population than in Latin America and the Caribbean (Figure 3.2).

Adjusting government expenditures can be painful; however, understanding their composition and identifying inefficiencies within them can be very useful. This process is known as "smart" spending. But how can inefficiencies be identified? How much is wasted in procurement, wages, and transfers? Inefficiencies in procurement can be measured by the difference between the market and purchase prices of different goods and services and can even be measured by goods of the same price but

Figure 3.2 Share of Wage Bill, Procurement, and Transfers in Government Spending, 2015–2016



Source: Authors' calculation based on OECD National Accounts, FMM Spending database, IMF-WEO (2015–2016), and Pessino, Badin, et al. (2018).
Note: Spending data follows the concepts of Government Finance Statistic Manual (GFSM). Procurement is defined as the sum of use of goods and services and total capital expenditure (capital transfers plus investment). Wage bill refers to all compensation in cash or in kind in return for work, called compensation of employees in GFSM. Goods and services refer to the use of goods and services in the GFSM. Capital expenditure includes capital transfers plus investment. Transfers are defined as social benefits plus subsidies and grants. Other is defined as other current expenditure. Belize, Barbados, Jamaica, Suriname, The Bahamas and Trinidad and Tobago refer to central government spending and Haiti refers to nonfinancial public sector. The only data available for Haiti, Jamaica, and Suriname are total spending and they are not included in the Latin American and Caribbean average. Mexico and Chile are not included in the OECD average.

different quality. It can also be measured indirectly with corruption studies or by how much procurement processes can diminish waste and inefficiencies. Both the number of workers (usage of inputs) and wage differentials in the public and private sectors provide indications of inefficiency in the public bill. And waste in transfers can be estimated through the cost of leakages to the nonpoor population.

Inefficiency in Procurement: Corruption Matters

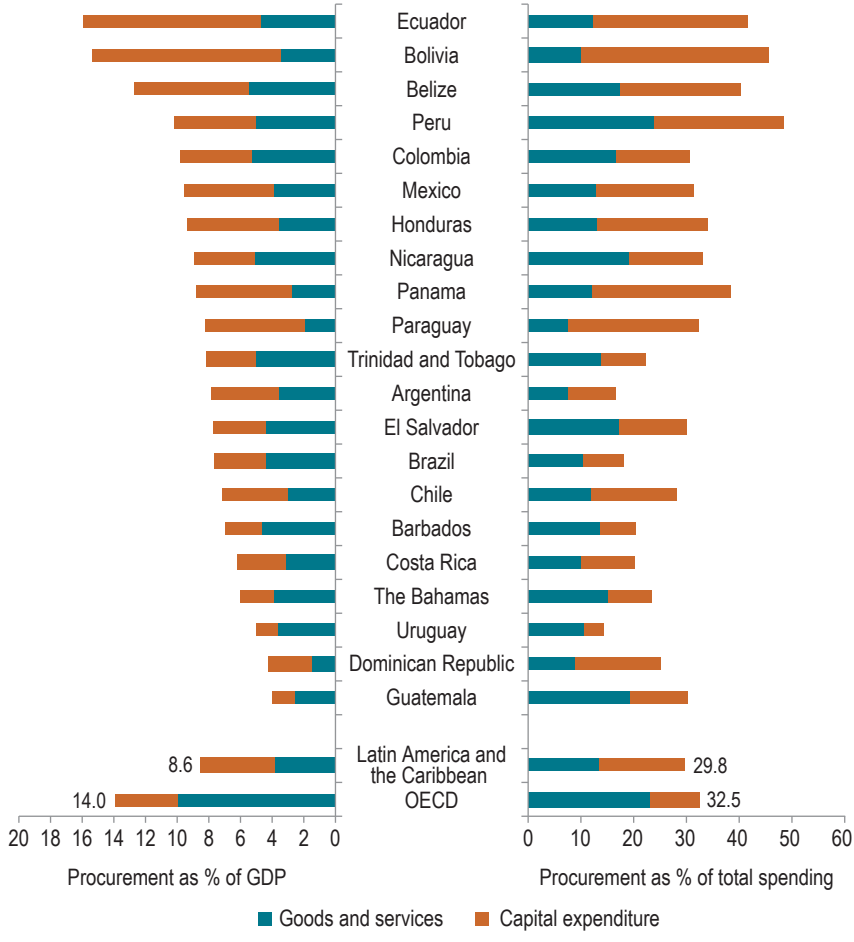
In 2016, Latin American and Caribbean governments spent approximately $450 billion on public procurement including the purchase of goods and services and capital equipment. Examples of public procurement include buying computers for primary schools; providing water, gas, and electricity to people; and building a highway or an airport. But, is public procurement efficient and effective? Are the prices paid competitive with the private sector, and similar across government offices and throughout the country? Do the goods and services delivered meet high quality standards? These questions are relevant, since public procurement spending is not only large, but affects the functional areas of government including education, health, and infrastructure.

On average, public procurement represented 32.5 percent of general government expenditure in OECD countries (14 percent of GDP) and 29.8 percent in Latin American and Caribbean countries (8.6 percent of GDP). However, the size of procurement spending varies across the region from about 15 percent of total spending on average in Argentina and Uruguay to 47 percent in Bolivia and Peru, due to the larger share of capital expenditure in total spending. In fact, spending on procurement of capital goods is more important in Latin America and the Caribbean (16.2 percent) than in the OECD (9.3 percent). In terms of GDP it is 4.7 percent in Latin America and the Caribbean and 4 percent in the OECD (Figure 3.3).

While subnational (provincial and municipal) spending is about 19 percent of consolidated general spending,[4] procurement spending at the state and local levels accounts for 27 percent of general procurement spending, and 32 percent of infrastructure. This is particularly important in Argentina, Bolivia, and Brazil, where subnational spending is about 45 percent on average in the federal countries Argentina and Brazil, and about 32 percent in Bolivia, but whose subnational governments (SNGs)account for more than 60 percent of total general government

[4] From the sample of 21 countries, 17 listed in the last section of the chapter include detailed subnational spending.

Figure 3.3 Public Procurement Spending as a Percentage of GDP and of Government Spending, 2016



Source: Authors' calculation based on OECD National Accounts, FMM Spending database, IMF-WEO (2015–2016), and Pessino, Badin, et al. (2018).
Note: Spending data follows the concepts of Government Finance Statistic Manual (GFSM). Procurement is defined as the sum of use of goods and services and total capital expenditure (capital transfers plus investment). Goods and services refer to the use of goods and services in the GFSM. Capital expenditure includes capital transfers plus investment. Belize, Barbados, The Bahamas and Trinidad and Tobago refer to central government spending. Mexico and Chile are not included in the OECD average.

procurement. Procurement spending at the state level is also notable in Peru and Colombia at about 42 percent.

Procurement is a magnet for inefficiencies in management and corruption. The large volume of transactions along with the close and complex interaction between the public and private sectors expose public procurement to various risks of waste, mismanagement, and corruption. Few

government activities offer greater temptation or more opportunity for corruption.[5] Public investment is particularly vulnerable to corruption and waste: it represents a larger share of total procurement in Latin America than in the OECD and operates with weaker institutions. But how much is that waste? With only scarce data on procurement corruption and waste by country, the option is to extrapolate estimates from the few existing studies.

Although it is difficult to measure the exact cost of corruption due to its hidden nature, an estimated 10–30 percent of investment in publicly funded construction projects may be lost through mismanagement and corruption (CoST, 2012); the OECD estimates 20–30 percent of project value is lost through corruption (OECD, 2013a). Within the European Union (EU), corruption more generally was estimated to cost €120 billion per year (European Commission, 2014b), which represents approximately 1 percent of the EU GDP. However, a new RAND study estimated a higher cost of corruption in Europe: up to €990 billion (about 6 percent of EU GDP) is lost annually (Hafner et al., 2016). About 57 percent of briberies prosecuted involved bribes to obtain public contracts, mostly in the extractive, construction, transportation, and information and communications sectors (OECD, 2014a). Hence, about 3.5 percent of GDP, or between 7 percent and 25 percent of total procurement, is lost to corruption and other waste in the EU.[6]

The largest corruption investigation in Latin America's history—involving bribes paid by the Brazilian construction giant Odebrecht to secure government contracts with Petrobras—has spread to 14 countries. The Odebrecht scandal is part of a sweeping corruption probe, known as "Operation Car Wash" (Lava Jato), launched by crusading Brazilian prosecutors in 2014. The U.S. Justice Department tracked bribes from Brazil's Odebrecht construction company to officials in Latin America. The company admitted paying $737 million in bribes between 2011 and 2016 to secure contracts worth $2.8 billion involving some 100 projects in 10 countries.[7]

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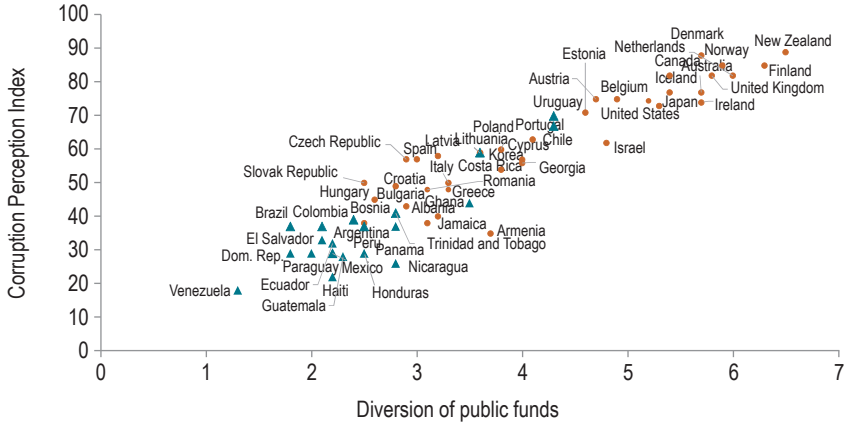
[5] As a seminal paper of Becker and Stigler (1974) showed, the temptation of malfeasance is proportional to the amount at stake, the lack of controls, the possible punishment, and the probability of detection.

[6] The lower bound estimate of corruption for the EU was 1 percent of GDP (7 percent of procurement). The World Economic Forum (WEF) estimates the global cost of corruption (including procurement) to be more than 5 percent of global GDP ($2.6 trillion).

[7] https://www.washingtonpost.com/world/the_americas/the-corruption-scandal-started-in-brazil-now-its-wreaking-havoc-in-peru/2018/01/23/0f9bc4ca-fad2-11e7-9b5d-bbf0da31214d_story.html?utm_term=.a4727cc036e8.

The waste of public funds in bribes and padded budgets appears to be enormous—about 26 percent over the cost of projects. Thus, for Latin America and the Caribbean, losses may approach the upper end of the EU estimates (between 7 and 25 percent of procurement contracts).[8] With procurement spending accounting for 8.6 percent of GDP, waste in procurement amounts to 0.9 percent to 2.6 percent in the region on average. Just how much could be recovered with good procurement and anticorruption practices depends on the country.[9] While several studies found little correlation between a country's corruption perception score and the experience of corruption, corruption indicators are still useful to estimate corruption in the EU context (Charron, 2016). The Corruption Perception Index (CPI) and Diversion of Public Funds (DPF) indices (Figure 3.4) are highly correlated, and show a similar picture of corruption and bribes in the region and in developed countries: the higher the values, the less the

Figure 3.4 Corruption Perception Index (CPI) and Diversion of Public Funds (DPF) Index, 2017



Source: Authors' calculations based on Transparency International and World Economic Forum.
Note: Triangles correspond to Latin America and the Caribbean.

8 The literature refers to "active waste" when a public official benefits by inflating the price in exchange for a bribe; "passive waste" is when there is no apparent corruption but lack of skills or capacity results in bad administration.

9 Another way to contrast the range of waste in procurement is to estimate the effects of improving procurement institutions on savings in spending. In the EU, implementing a full e-procurement system could reduce the costs of corruption in procurement by €924 million annually, equivalent to a reduction of almost 20 percent of current costs (Hafner et al., 2016).

corruption. Latin American and Caribbean countries, except Chile, Uruguay, Costa Rica and Jamaica in the middle, are mostly countries with lower indices and on the high end of corruption. Assuming these indices are imperfect but reasonable proxies for observed corruption and that average waste due to corruption in EU countries is a moderate 10 percent, a rough estimate of waste in procurement in Latin American and Caribbean countries is about 17 percent on average, implying a waste of 1.4 percent of GDP.[10]

Inefficiency in Civil Services: Does It Pay to Work for Government?

The government wage bill, about $400 billion each year in Latin America and the Caribbean, is another key input in the production of government goods and services. A large part of the inefficiency of public spending derives from the functioning of a civil service that is not always based on optimal criteria. Efficiency and effectiveness in government performance depend on the talent of public employees and the quality of their knowledge and skills compared to their total compensation. In fact, for many institutions, their greatest asset is their people. In the case of the public sector, the workforce is responsible for the design and implementation of public policies.

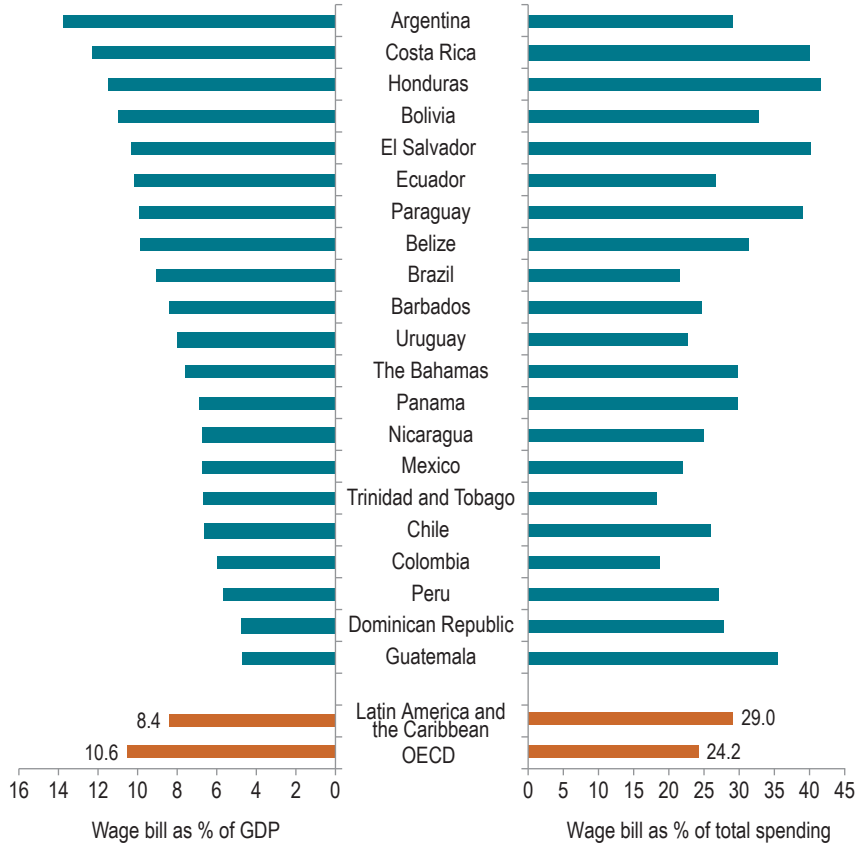
But the relevance of human resources in the public sector is also reflected in its cost to taxpayers, that sometimes can surpass its productivity. The general government's wage bill in Latin America and the Caribbean represented, on average, 29.0 percent of public expenditures and 8.4 percent of GDP. This is a higher proportion of wages in total spending than in OECD countries (24.2 percent, or 10.6 percent of GDP; Figure 3.5). However, countries in the region vary widely; some countries, such as El Salvador, Costa Rica, Paraguay, Guatemala, Bolivia, and Argentina,[11] are high wage bill spenders (more than 29 percent of government spending), ranking even higher than the average of OECD countries.

While the wage bill consumes 29.0 percent of general government spending, its share is much higher for local governments than for the

[10] EU countries have an index of corruption perception (computed as 100-CPI) of 36.3 with an estimated average "waste" of 10 percent. Latin American and Caribbean countries have a higher corruption perception of 61.1, projecting linearly to an estimated waste of 17 percent.

[11] Some of them engaged recently in civil service reforms, especially in freezing wages and hiring.

Figure 3.5 Wage Bill in Selected Countries, 2016

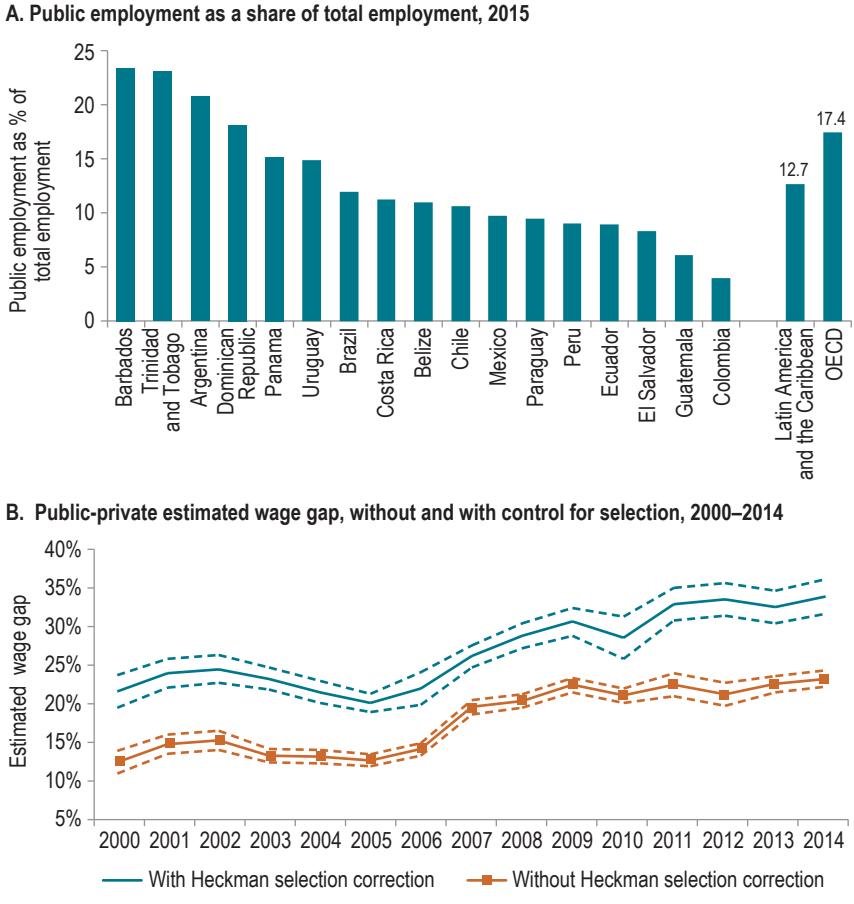


Source: Authors' calculation based on OECD National Accounts, FMM Spending database, IMF-WEO (2015–2016), and Pessino, Badin, et al. (2018).
Note: Spending data follow the concepts of Government Finance Statistic Manual (GFSM), IMF. Wage bill refers to all compensation in cash or in kind in return for work, called compensation of employees in GFSM. Belize, Barbados, The Bahamas and Trinidad and Tobago refer to central government spending. Mexico and Chile are not included in the OECD average.

central government in several countries. In Argentina, 76 percent of the wage bill corresponds to provincial and municipal spending, making up more than half of all provincial spending. In Brazil, the wage bill is almost 54 percent, while in Peru and Mexico, it is 42 percent.

Do Latin American and Caribbean countries spend more on wages because of larger public payrolls, higher wage rates, or both? There is no "right size" of the public service workforce (OECD, 2011b). The share of government employment varies widely across countries, reflecting different choices with regard to the scope, level, and delivery of public services. The proportion of the labor force employed in general government was an

Figure 3.6 Public Employment as a Share of Total Employment and Public-Private Sector Estimated Wage Gap



Source: Panel A: Authors' calculation based on Hanushek and Woessmann (2015), OECD (2017d), and ILOSTAT. Panel B: Cerda and Pessino (2018a) using household surveys from Busso et al. (2017).
Note: Panel A: This series considers the average for the 17 LAC countries included and the average share of public employment of 29 OECD countries from Figure 3.1 in OECD (2017d). Panel B: The parameter of interest was estimated by using a Mincer equation with OLS and including age, age-squared, years of education, country, and year effects. It also estimated an ATE corrected by selection bias with Heckman correction. Dashed lines display both confidence intervals at the 95% significance level for the equations estimated.

average 12.7 percent in Latin America and the Caribbean, less than the 17.4 percent public employment in the OECD in 2015–2016 (Figure 3.6A). Certainly, these averages vary in both regions: in the OECD, public employment ranges from 5.9 percent in Japan and 15.3 percent in the United States to nearly 30 percent in Sweden, Norway, and Denmark. In Latin America, the range runs from 4 percent in Colombia to about 10 percent in Paraguay, Mexico, and Chile, to over 20 percent in Argentina, Trinidad and Tobago,

and Barbados.[12] There is a positive (weak) relationship between the share of public employment in total employment and the level of development.[13] But, SNGs have higher levels of public employment than central governments, especially in federal countries: for the OECD the proportion is 57.7 percent while for Brazil it is 88 percent, Argentina, 84 percent, Mexico, 65 percent and Costa Rica, 37 percent. While the high subnational spending on wages might be explained by the hiring of teachers and doctors in several countries at the subnational level, it might also signal lower governance and accountability to overstaffing and even the hiring of ghost workers. It may also reflect a lack of incentives and capacity to invest in productive spending.[14]

While public employment is not uniformly higher in Latin America and the Caribbean than in the OECD, even controlling for development, much of the larger wage bill in Latin American and Caribbean countries can be attributed to a high public wage premium, that is, the average wages of public sector workers are greater than those of the private sector. Public wage premiums might occur for several reasons: 1) skills (such as education and experience) might differ between both sectors, 2) the government's monopolistic power or focus on vote maximization may explain a noncompetitive wage-setting process (Reder, 1975),[15] 3) higher union density in the public sector may lead to greater worker bargaining power (European Commission, 2014a), 4) election periods may increase wage premiums (IMF, 2016).

Since the public wage premium or gap could be due to higher skill levels in the public sector, wages between the public and private sectors are compared controlling for observable differences in productivity and skills. For the same levels of human capital, wages in the public sector in 2014 were an average 25 percent higher than in the private sector. Controlling for selection bias with an endogenous treatment-regression model the

[12] However, some countries in the region are still guilty of overhiring. A recent study in Central America shows that administrative staff per teacher and per health sector professional increased irrationally in most countries between 2007 and 2013, raising questions about the efficiency of expanding the public sector to improve delivery of much-needed public services (Dumas and Lafuente, 2016).

[13] A 25 percent increase in GDP per capita in the Latin America–OECD sample is associated with a 1 percentage point increase in public employment. In Latin America and the Caribbean, it is associated with a 2 percentage point increase in public employment.

[14] This issue is tackled later in the chapter.

[15] For a set of OECD countries, a recent study found that openness to international trade and improvements in the institutional quality of governments are associated with decreases in the public-private wage gap (Campos et al., 2017).

average wage premium increases to about 34 percent (Cerda and Pessino, 2018a).[16] The wage premium in favor of public sector employees in Latin America and the Caribbean is one of the highest in the world (IMF, 2016). Moreover, this premium increased over the last 15 years, perhaps fueled by the 2003–2009 commodity boom (Figure 3.6B).

Interestingly, most studies uncovered heterogeneous results related to the increase in the wage differential in favor of public workers: whereas the wage gap is more than 20 percentage points for employees with less than 13 years of education, the wage gap falls sharply for those with more than 13 years of education.[17] Qualified workers may be figuratively *paying* in some countries to work in the public sector, or strong unions in the public sector may be protecting the wages of the less skilled. In addition to higher wages, public sector employees usually enjoy many nonwage benefits such as health care and retirement plans, as well as greater job security, implying that the differential in the total compensation package may go beyond just wage earnings.

The factor affecting efficiency in most countries is the public-sector wage gap, particularly for less-skilled workers, even when controlling for productivity. These estimates do not consider the number of workers, which is a problem in some countries at the national or subnational level.

Under a moderate scenario,[18] overall wage bill inefficiency is on average 1.2 percentage points of GDP (14 percent of wage spending or about $52 billion).[19] The countries that waste the most are those with higher wage premiums and a lower proportion of unskilled workers: El Salvador, Guatemala, Honduras, Mexico, and Ecuador (higher than 20 percent),

[16] The average wage premium in Cerda and Pessino (2018a) of 25 percent varies widely across countries (from 5 percent in the Dominican Republic to more than 60 percent in Colombia and Ecuador). Results are similar to Gasparini et al. (2015), who found an average wage premium with private *formal* labor workers of 22 percent in 2012 (from 5 percent in Venezuela to 41 percent in El Salvador). Earlier, Mizala, Romaguera, and Gallegos (2011) estimated a wage gap for seven Latin American countries of approximately 22 percent.

[17] See Gasparini et al. (2015); Mizala, Romaguera, and Gallegos (2011) also found that public sector workers in Latin America and the Caribbean are better paid than those from the private sector and that the public sector wage premium is negative for the most-qualified workers and positive for the less skilled.

[18] The average premium for each country found in the latest studies is applied to the proportion of low-skilled workers and the change in the overall wage bill is equated to the change in compensation, assuming employment remains constant.

[19] At the other extreme, incorporating differentials in nonobservable characteristics such as work ethic and effort, and applying the change to the entire wage bill, the waste would climb to about 3.1 percent of GDP ($140 billion).

and Colombia and Costa Rica (higher than 15 percent).[20] Using a different methodology, the inefficiency loss in the wage bill in the education and health sectors was found to be about 0.9 percent of GDP, which is consistent with the 1.2 to 3.1 percent loss for the overall wage bill estimated here (Cavallo and Serebrisky, 2016).

Targeted Transfers: Still Leaking?

About 29.4 percent of government spending on average in Latin America and the Caribbean are transfers including social programs (conditional cash transfers and noncontributory pensions), firm subsidies (mostly energy subsidies), and contributory pensions (Figure 3.2). This amounts to about $700 billion—the largest expenditure item.

Error, fraud, or corruption reduces the economic efficiency of these interventions by decreasing the amount of money that goes to the intended beneficiaries. An international benchmark study estimates the range of fraud and error in social protection systems at between 2 and 5 percent of overall government expenditure on these transfers. They are more common in the social protection programs of less-developed countries than in OECD countries due to limited administrative capacity and absence of adequate monitoring and evidence-based strategies to combat the problem (van Stolk and Tesluic, 2010).

Targeting error is the fraction of program funds that do not reach the poor. The extent of targeting error indicates whether the program achieves its (poverty alleviation) objective or not. The error may be due to program design (as when, for administrative reasons, the program uses imperfect poverty proxies to identify poor beneficiaries) or to program implementation (as when eligibility decisions diverge from program rules). Implementation errors are, in turn, due to error, fraud, or corruption. For those social protection programs whose primary objectives are not direct and targeted poverty alleviation (for example, pensions, unemployment insurance, or other social insurance programs), targeting errors are less relevant and will be considered in the context of allocative inefficiency, especially in the case of pension spending, which accounts for about 30 percent of total social spending on average and more than 40 percent in several countries.

[20] Teachers' unions wield considerable power in most countries by virtue of either the density of the unions, their monopolistic power, or the disruptive behavior they engage in (Bruns and Luque, 2015).

A key tool for reducing inefficiencies is appropriate targeting of transfers. Typically, transfers will target a particular low-income group. However, in practice many recipients of these subsidies are not poor. The receipt of the subsidy by a higher-income household is considered leakage, and an inefficiency because people outside the target group are benefiting from the subsidy. Consider an exemption on the value added tax on food, also called a tax expenditure. Although it aims to make food more affordable to the poor, it also benefits higher-income households and, thus, constitutes an inefficiency.

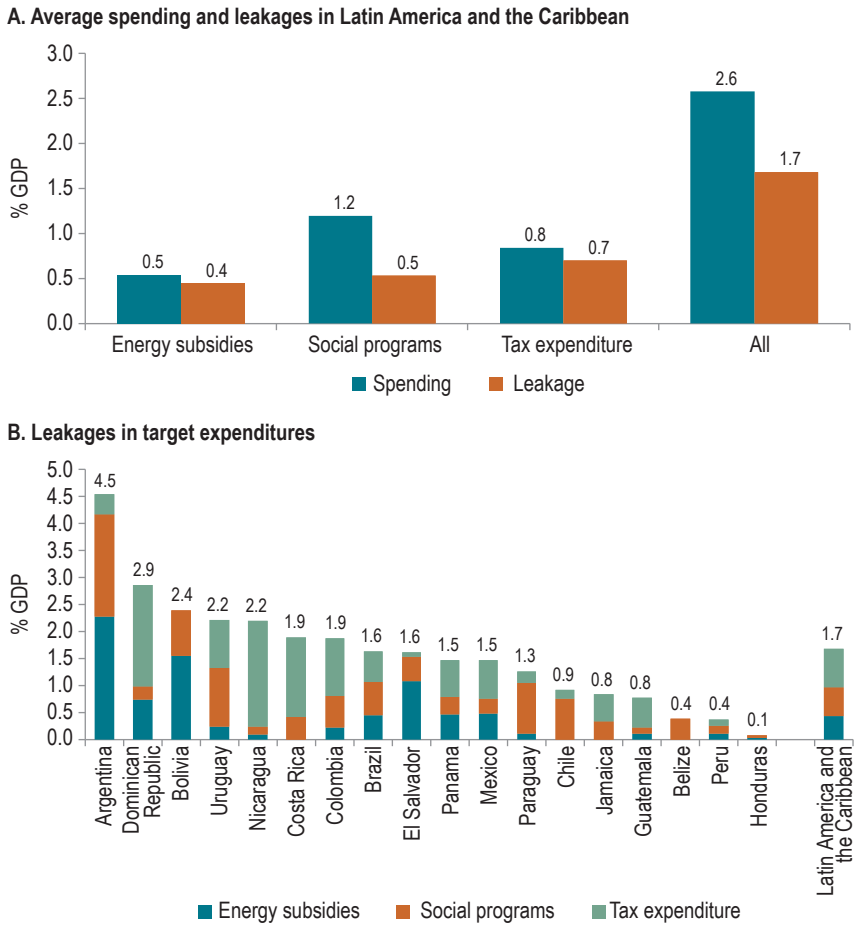
Energy subsidies: Fueling inefficiency. By 2015, about 61 percent of total subsidies in the region were energy subsidies. According to FIEL (2015, 2017), Izquierdo, Loo-Kung, and Navajas (2013), and Cavallo and Serebrisky (2016), energy subsidies in the region were unevenly distributed in 2013 in a sample of 18 Latin American and Caribbean countries with average spending on subsidies to energy of 0.85 percent of GDP. Some countries reduced these subsidies when energy prices fell after the global recession, especially after 2014. By 2015, average energy subsidy spending fell to 0.54 percent of GDP (spending in Bolivia, Honduras, El Salvador, Mexico, and Nicaragua dropped substantially, in most cases transforming the untargeted subsidies into a social tariff). In 2015, Argentina was one of the few countries that continued to increase subsidies, until 2016 when the government let tariffs begin to rise. Figure 3.7B shows average government spending and leakages to the nonpoor in each of 18 Latin American and Caribbean countries.[21] Although they vary widely across countries, on average more than four-fifths of these energy subsidies leak out to nonpoor households. The magnitude of this inefficiency—and therefore the margin for improvement—is huge.

Social programs. The two main social program expenditures are conditional cash transfers and noncontributory pensions.[22] While social programs on average in the sample of 18 countries was about 1.2 percent of GDP in 2015, not all spending on social programs has been properly targeted to the poor. Leakage tends to be less in Central American countries, averaging 0.27 percent of GDP, and much higher for South American countries, averaging 0.86 percent of GDP. The striking feature about expenditures on social programs

[21] No data are available for Venezuela, which is the largest energy producer in the region and offers large subsidies to domestic consumption of gasoline.

[22] See Chapter 4 on the impact of public spending on equity for a complete description of these programs, their large increase in recent decades, and their impact on reducing poverty and inequality.

Figure 3.7 Targeted Spending and Leakages (Social Programs, Energy, and Tax Expenditure), 2015



Source: Authors' calculations based on Izquierdo, Loo-Kung, and Navajas (2013) and FIEL (2015, 2017).

is how high leakage is as a share of total expenditures: 45 percent, on average, for the region. But leakages are higher for less-targeted transfers such as tax expenditures and energy subsidies.

Tax expenditures. Instead of transferring resources directly to needy households through budgetary spending, governments often transfer resources indirectly through tax exemptions. Usually, basic food, medicines, and rents are exempted from consumption taxes. This policy is one of the most prone to leakage since better-off individuals spend more (and hence benefit more) than the poor. Most countries in the region offer

either VAT reductions or exemptions for food, medicine, and rent, irrespective of income. Household surveys and studies on tax expenditures in the region are used to estimate how much the nonpoor consume in exempted goods. This information allows for estimating the leakage in tax expenditures. On average, total tax expenditures amount to 2.1 percent of GDP, of which 0.84 percentage points correspond to food, medicine, and rent (Figure 3.7A). Nearly four-fifths of tax expenditure on these items benefits nonpoor households (equivalent to 0.7 percent of GDP). Overall, tax expenditures are the most inefficient item in the subsidy agenda. In the targeted area of transfers, including energy subsidies, social programs, and tax expenditures, overall efficiency loss and, hence, savings could amount to up to 1.7 percent of GDP.

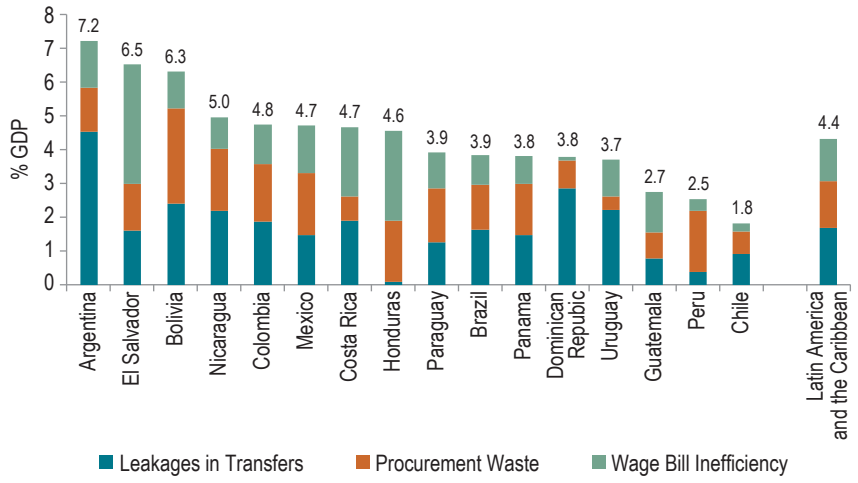
Adding It All up: Technical Inefficiencies in Procurement, Wages, and Subsidies

Smart spending can yield big payoffs. Latin America and the Caribbean loses billions of dollars annually on spending that could be switched to other more profitable spending or simply be used to decrease liabilities. Policymakers seeking to rein in spending and budget deficits should begin by decreasing this least-justifiable spending while addressing long-term entitlement costs.

Taking a moderate estimate of inefficiencies in procurement, civil service, and targeted transfers, the total average amount of waste in the region is approximately 4.4 percent of GDP and amounts to about 16 percent of average government spending (Figure 3.8).[23] However, estimates vary widely across countries, ranging from potential inefficiencies of more than 7 percent of GDP in Argentina to a low of 1.8 percent of GDP in Chile. The average estimate of 4.4 percent of GDP is larger than current average spending in health (4.1 percent) and almost as large as average spending in education (4.8 percent) in the region. At $220 billion, regional inefficiencies surpass the total GDP of Peru ($190 billion) and almost reach the total GDP of Chile ($250 billion). Correcting these inefficiencies would be more than enough to eliminate the extreme poverty gap and even diminish moderate poverty in many countries (see Chapter 4). Or the savings could

[23] These estimates represent a first attempt in the extremely difficult exercise of capturing inefficiencies in sectors that although sharing some trends are quite different across countries and demands a detailed country diagnostic that goes beyond the scope of this study and data availability restrictions. However, these caveats do not make the analysis any less relevant. To date there is no comparative analysis of potential inefficiencies in all inputs used by the government.

Figure 3.8 Technical Inefficiency in Targeted Transfers, Procurement, and Wage Bill



Source: Authors' calculations adding the estimated waste in procurement, wages, and targeted transfers based on Figures 3.1, 3.4, 3.6, and 3.7 and the explanation in the text. For most countries the data correspond to year 2015 or 2016 or the latest available.

be used to build 1,225 hospitals with 200 beds (about 47 hospitals more per year in each of the 26 countries).

Allocative Inefficiency: Doing the Wrong Things, Right

While doing the right things wrong can incur large losses, doing the wrong things right can incur even larger losses. In the simplest terms, allocative efficiency refers to how governments allocate their spending across different functions—education, health, social promotion, investment, defense, across generations, across levels of government, etc.—in order to maximize productivity and growth in the economy.

A basic goal of economics is to channel resources to their most productive use. The government, which commands between 13 percent and 47 percent of GDP, should at least conduct cost-benefit analysis and rate-of-return estimations on all the major components of spending if possible. It should then prioritize spending components; if one sector's rate of return is higher, its spending should increase. Nobel Prize Laureate James J. Heckman said in a letter to Congress: *"Fiscal responsibility is not simply reducing costs. Fiscal responsibility is looking at costs and returns—and investing resources where returns are the greatest with the least amount of risk. The question is not where to cut. The question is where to invest—and in what."*

Doing the wrong things right entails allocative inefficiency costs, and policymakers face some crucial trade-offs when allocating expenditure

by function; here we consider some of the most important: 1) allocating spending on the elderly rather than youth; 2) allocating expenditure among physical capital, human capital, and transfers; 3) allocating spending to maximize skills formation in the region, and; 4) allocating spending between central and subnational governments.

Age-Related Spending: Favoring the Elderly over the Young

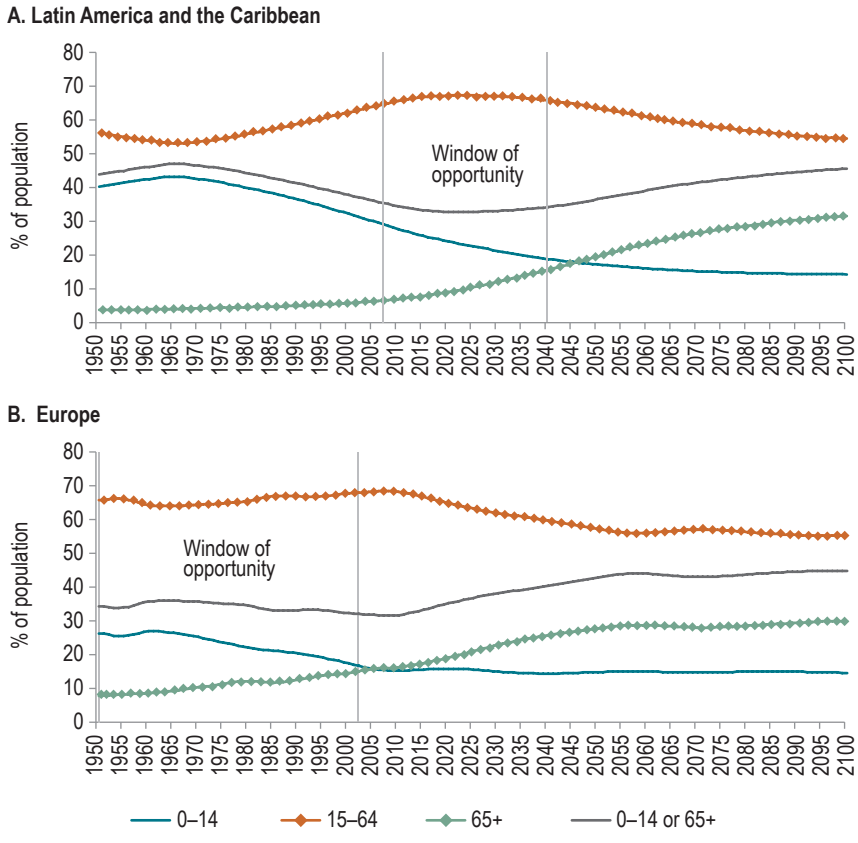
The good news: people in Latin America and the Caribbean are living longer and healthier. The region's advances in health and life expectancy are a major accomplishment. The bad news: a longer-living, aging population poses long-term fiscal challenges and, unlike Europe, Latin America and the Caribbean is growing older before its incomes rise sufficiently. Many Latin American and Caribbean countries spend heavily on pension and health benefits today, even though their populations are still relatively young. This fiscal burden is going to increase further over the coming decades as the number of old people rises much more rapidly than it did in Europe.

The worldwide decline in birth rates and increase in life expectancy (or lower mortality rates) is known as the demographic transition. In Latin America and the Caribbean, the percentage of the population aged 65 and above jumped from about 3.5 percent in 1950 to 7.6 percent in 2015 and will climb to 19.4 percent in 2050 (Figure 3.9A). In fact, the number of people over 65 will triple in the region in the next 35 years from 48 million to 150 million. Given the current retirement age, more people will have to be supported for a longer period of time by fewer people (if there is no change in the labor force of older people). In Europe, the population aged 65 and above took 65 years to triple from 1950 to 2015, giving more time to accommodate the older generation (Figure 3.9B).

In fact, as the population transitions from high to low levels of fertility and mortality rates, a country can enjoy the "demographic dividend" (Mason and Lee, 2006), that is, the result of a temporary, proportionately higher working-age population growth relative to the economically dependent population.[24] As fertility levels decline, the dependency ratio falls initially because the proportion of children decreases while the proportion of the working-age population increases, and the older cohort is still small. This window of opportunity for Latin America and the Caribbean is

[24] The exact definition may vary. The demographic window for the dividend is defined by the United Nations as open when the proportion of the population aged 0–14 is below 30 percent and the proportion of the population aged 65+ is still below 15 percent. It coincides mostly with the period when the total dependency ratio declines.

Figure 3.9 Evolution of the Distribution of Population by Age Groups and the Window of Opportunity, 1950–2100

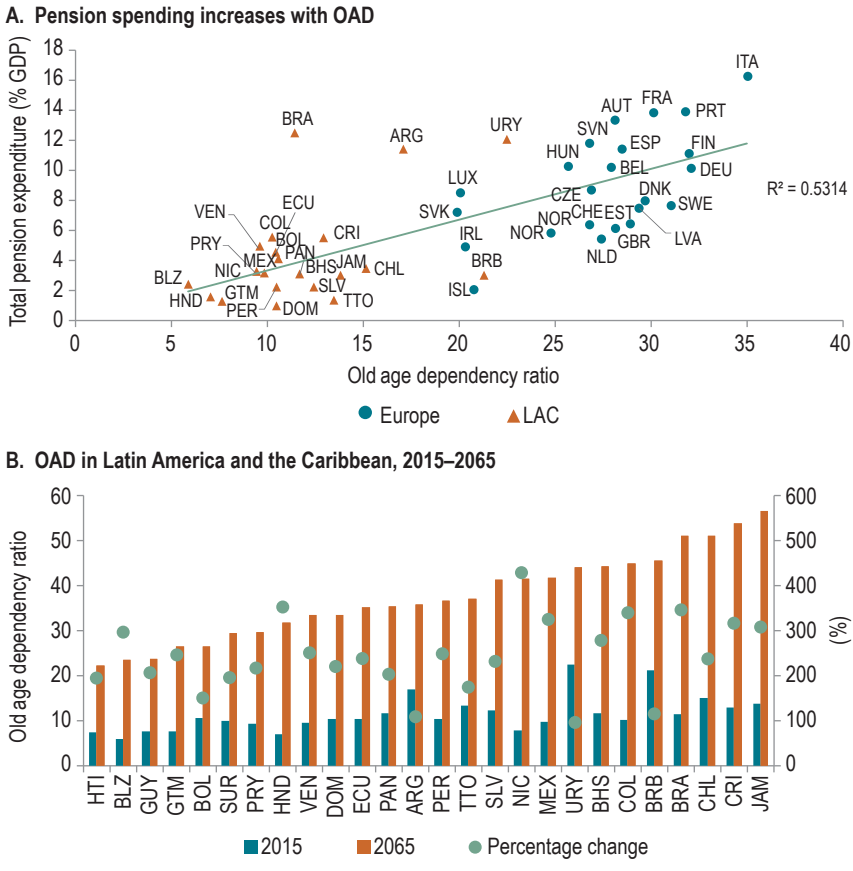


Source: Authors' own calculations based on UN medium projection scenario (2017).
Note: The demographic window is open when the proportion of the population aged 0–14 is below 30 percent and the proportion of the population aged 65+ is still below 15 percent (as defined by the United Nations).

much smaller than in Europe; it started approximately in 2005 and will last about 30 years until 2035–2040 (Figure 3.9A). The window of opportunity in Europe lasted longer, from 1950 to 2000 (Figure 3.9B).

Is the window an asset or a liability? This will largely depend on how governments use it to their advantage. Without major reform that induces older people to work longer, human capital to increase, or tax rates to increase unacceptably, pension programs will either go into an increasing deficit or pay a much-reduced pension. Before the declining trend ends, the region could exploit this bonus by raising the skills and productivity of the workforce, thereby alleviating the burden of dependents on workers.

Figure 3.10 Pension Spending (% of GDP) and the Old Age Dependency Ratio (OAD), 2017



Source: Authors' calculation based on UN (2017), IDB-FMM Public Spending Database, IMF-WEO database (2018), and OECD, Social Expenditure Dataset, OECDstat 2017.

Pension spending continued to increase to reach 4.4 percent of GDP in 20 Latin American and Caribbean countries. Not surprisingly given the region's younger population, this is below the EU average of 9 percent. However, even with fewer old people, Brazil, Uruguay, and Argentina spend more than the OECD average (Figure 3.10A). The differences in current public pension spending across countries reflect mainly differences in old-age dependency ratios, the generosity of benefits, and coverage rates. European economies have replacement rates[25] of between 40 and 60

[25] Replacement rates are the percentage of a worker's pre-retirement income that is paid out by a pension program upon retirement; it serves to evaluate if the benefit is adequate to smooth consumption across active and passive life stages.

percent, near universal coverage, and old-age dependency ratios above 20 percent. Latin American and Caribbean replacement rates in defined benefit systems are higher than 60 percent and, in some countries, almost 100 percent (Berstein et al., 2018); coverage in direct benefit (DB) systems is less than 50 percent and, hence, compensated with more noncontributory pensions coverage, and old-age dependency,[26] will increase rapidly from 11.5 percent in 2015 to 27.6 percent in 2065 (Figure 3.10B).[27]

In theory, the contributory pension system covers employed and sometimes self-employed persons and is financed by contributions levied on employment earnings. Most countries in Latin America and the Caribbean (16) have a DB pension system committed to paying a pension based on the last wage or an average of wages in the last five or 10 years. Five of the 26 IDB countries (Bolivia, Chile, El Salvador, Mexico, and the Dominican Republic) have a defined contribution (DC) system (in transition), where each worker contributes to their pension through their individual account and receives what he has contributed at the end of his working life. Another five countries (Colombia, Costa Rica, Panama, Peru, and Uruguay) have a mixed DB and DC system. One of the main reasons to shift from a DB to a DC pension plan is that the DC plan provides a clear and direct link between contributions and benefits. However, changing systems did not correct the original design flaw. Pensions are still associated with workers' formal status. Thus, despite the change, informal workers continue to have low coverage.[28] Also, since mandatory payroll contributions are required for both systems, the government has an implicit contingent liability in case the private system does not deliver a pension or the threshold of a predefined minimum pension. In fact, in the last decade most of the DC systems, confronted with lower real rates of interest[29] and, hence, low replacement rates, enacted minimum pension guarantees financed by the government,[30] converting implicit into

[26] Persons aged 65 and older for every 100 people aged 15–64.

[27] Hence, Latin America and the Caribbean would go from having 9 working-age people per person aged over 65 years to only 2.7 working-age persons.

[28] Mandatory payroll contributions remained high and conditions for receiving a pension tightened, without giving incentives to informal employees. Hence, coverage rates for these systems and the overall contributory system in the region remain low.

[29] When capitalization systems started in Chile in 1981, and then in the early 1990s in Peru, Colombia, and Argentina (which in 2008 reverted back to a DB system), returns on portfolios were in excess of 8 percent. But then average returns deteriorated, especially after the 2007 crisis, to at most 3 percent, depending on the portfolio composition.

[30] Except Uruguay, the other nine countries with DC systems, confronted with low interest rates and expecting low replacement rates, enacted a guaranteed minimum pension. In some cases, the guarantee is fixed at some level of the minimum wage.

explicit contingent liabilities. Risks to financial sustainability in DC systems arise, then, from the transition, the social pension, and guaranteed minimum pensions. During the transition, the challenge is how to finance the benefits to workers who have already retired or will retire soon but belong to the old system.[31] In some countries, a social security fund has given rise to the notion that it is a self-sustaining program that poses no threat to the broader fiscal outlook. The reality, however, is that social security spending is part of consolidated government spending, although sometimes it is off-budget. To gauge the importance of future liabilities on spending for aging, projections are elaborated through a stylized accounting model. The different scenarios[32] draw on demographic projections from the United Nations and methodologies from the European Commission (2009) and IMF (2011) to derive spending projections (Pessino and Zentner, 2018). For DB pensions, the simplest scenario is that pension spending as a percentage of GDP changes only with the OAD ratio and the employment rate.[33] These are rough estimates than using an actuarial model that is more detailed in terms of the earning and history of contributions of the different cohorts. This baseline model assumes all the other parameters of the system remain constant: the coverage and the replacement ratio do not change. For most countries, pension spending in the latest year available includes the main public pension system, the noncontributory system, and the most important civil service systems and state systems. The difficulty arises with the projection of the DC systems. If there were no contingent liabilities, just estimating the spending on the transition of the pensioners that are unfunded would be

[31] In some cases, the interest rate paid on government debt is lower than the market rate, subsidizing the public sector at the expense of workers' retirement savings. This was the case in El Salvador, which underwent a reform in 2017 and improved the return on savings.

[32] These projections do not predict the most probable event but provide better information and are hence a good planning tool to evaluate current policies and changes.

[33] The identity decomposes public pension expenditure (PE) as a share of GDP (PE/GDP) into four main drivers: aging (measured by the OAD ratio); eligibility rates (the number of pensioners as a proportion of the population 65 and older); replacement rates (the ratio of average pensions to average wages); and labor force participation rates (see IMF [2011] for more details):

$$\frac{PE}{GDP} = \underbrace{\frac{\text{population } 65+}{\text{population } 15-64}}_{\text{Old-Age Dependency Ratio}} * \underbrace{\frac{\text{pensioners}}{\text{population } 65+}}_{\text{Eligibility Ratio}} * \underbrace{\frac{\text{average pension}}{\text{average wage}}}_{\text{Replacement Rate}} * \underbrace{\frac{\text{population } 15-64}{\text{workers}}}_{\text{Inverse of Employment Ratio}} * \underbrace{\frac{\text{compensation}}{GDP}}_{\text{Compensation share}}$$

enough. But with the potential payment minimum pensions, the government steps in and may end up paying part of the pension of future retirees.[34, 35]

On average, pension spending increases two and a half times from 2015 to 2065.[36] As seen in Figure 3.11A, projected pensions for 2065 vary widely: in countries with DC systems pension's growth will be lower than in DB countries, but continue to rise. Outstanding spending in Brazil's DB system will increase four times owing to the high aging gradient as well as the fact that most people retire before 60 or 65 years old and receive at least the minimum wage as a pensioner.[37]

Health spending is also growing significantly faster than are economies overall. As of 2015, average spending in Latin America was 4 percent of GDP (Figure 3.11B). The region is still only beginning the demographic transition and has not found an efficient health system combination.[38] The literature has identified both aging and nondemographic factors such as income, technological advance, productivity, and health policies (called excess cost growth or ECG) as the key factors behind rising health-spending-to-GDP ratios. Currently, there is almost no actuarial analysis of health expenditure. The health expenditure projection presented here uses UN demographic projections and relative average health-care costs by age[39] to illustrate that long-term healthcare spending in the region could rise significantly over the next five decades.[40] It assumes that demographic

[34] Since this probability increases for low-wage workers, a rough assumption is that for the countries with minimum pensions, half of the current pension expenditure will not disappear but will grow in the same way as DB systems. For countries without guarantees (i.e., Uruguay), the assumption is that 25 percent of current spending will be subject to pay (implicit) minimum pensions. A probabilistic model to better capture these contingencies is under construction.

[35] The actual replacement rate for an average worker in a DB system is 43 percent of the average wage, significantly higher than that estimated in a pure capitalization system (29 percent) without minimum pensions (Berstein et al., 2018).

[36] It is less than triple the OAD because of mainly three events: 1) the increase in labor force participation of older cohorts; 2) the lower increase in pension spending as the transition from DB to DC systems ends; and 3) limits placed by some countries on the indexation of pensions to, at most, the level of inflation.

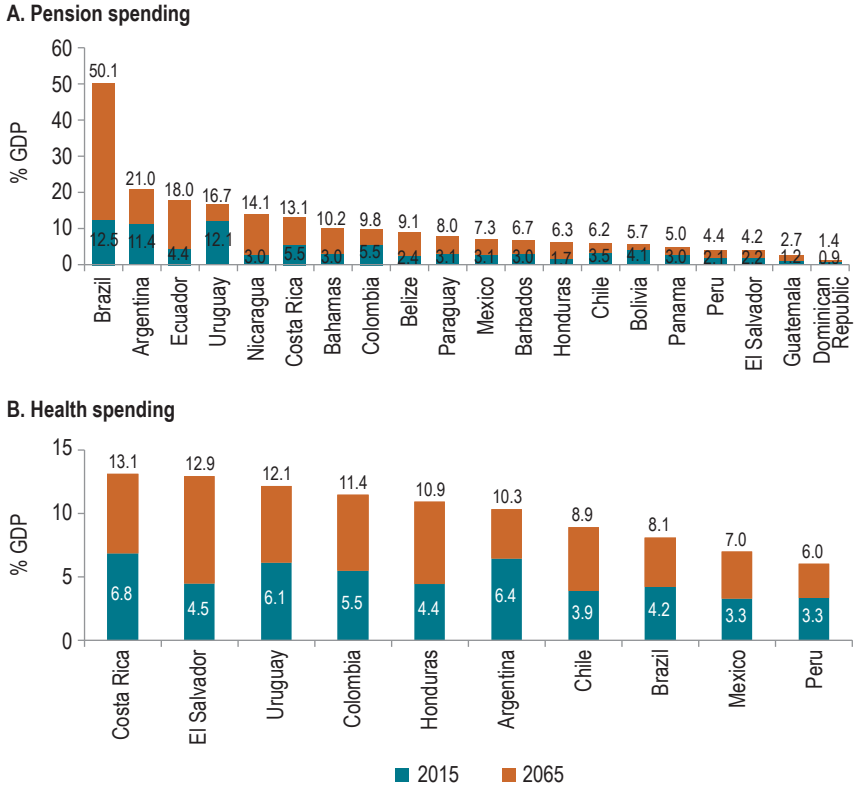
[37] Other recent studies project pensions for a subset of countries (Acosta-Ormaechea, Espinosa-Vega, and Wachs, 2017) and for health (Glassman and Zoloa, 2014).

[38] See Chapter 8 and Pessino, Pinto, et al. (2018).

[39] See National Transfer Accounts (NTAs), a system of portraying official national accounts with demographic patterns by age.

[40] See Panadeiros and Pessino (2018) for the full methodology and alternative scenarios. Significant uncertainty surrounds health-care projections, not only with risks associated with demographic and nondemographic factors but about uncertainties regarding how health status will change as life expectancy increases.

Figure 3.11 Pension and Health Expenditure Projections, 2015–2065



Source: Authors' calculation based on Pessino and Zentner (2018) and Panadeiros and Pessino (2018).
Note: Panel A: The pension projection assumes a) DB systems are aggregated with noncontributory systems and government spending in DC systems assumed to grow in part as DB systems depending on the existence of minimum pensions or a mixed system; b) the old age dependency ratio was modified according to the population and the inverse of employment ratio projections; and c) in case of a recent reform in pension indexation a change is introduced in the replacement ratio. All the other components of the formula are kept constant.
Panel B: The health projection corresponds to Scenario IV in Panadeiros and Pessino (2018) and assumes spending increases because of aging and because there is excess cost-growth, defined as the excess of growth in health expenditure to GDP attributable to the combined effect of nondemographic factors.

factors will not be the only important driver of future health-care expenditures, but that nondemographic factors will play a critical role over the long run. On average, health spending doubles in the next 50 years, 27 percent due to demographic factors and the rest to ECG. Countries that increase proportionally more are because they are aging faster or because health costs, particularly for the old, tend to grow faster than GDP.

Without reforms, public spending on aging in the region (pensions, health care, and education), is expected to increase from 16 percent to

27.6 percent of GDP from 2015 to 2065.[41] Pension costs are expected to contribute the most to the rise in age-related spending, increasing by 8 percentage points. Public spending on health is expected to rise 5.2 percentage points by 2065, while education expenditure is projected to decline 1.6 percentage points as expenditures per student remain steady at the 2015 level[42] (Figure 3.12A). Assuming total government spending remains constant as a share of GDP, the amount left for other components of spending should fall from almost 15 percentage points of GDP to just 3.2 percentage points to distribute among infrastructure, human capital, the functioning of the state, and social protection programs, to name a few. The deficit of the system will increase with current contributions reaching unprecedented levels (Pessino and Panadeiros, 2018*).* The window of opportunity to improve the quality of physical and human capital will be totally lost unless investment is strengthened today, and policies are enacted as soon as possible to accommodate aging.

It is necessary to analyze all the pension entitlements that Latin American and Caribbean countries are implicitly or explicitly committed to paying. They may or may not be in the short- or medium-term budget, but they are commitments that countries should consider when planning future expenditures and taxes.[43] Moreover, it is important to project aging-related spending on a regular basis and adjust the rest of spending to this reality.

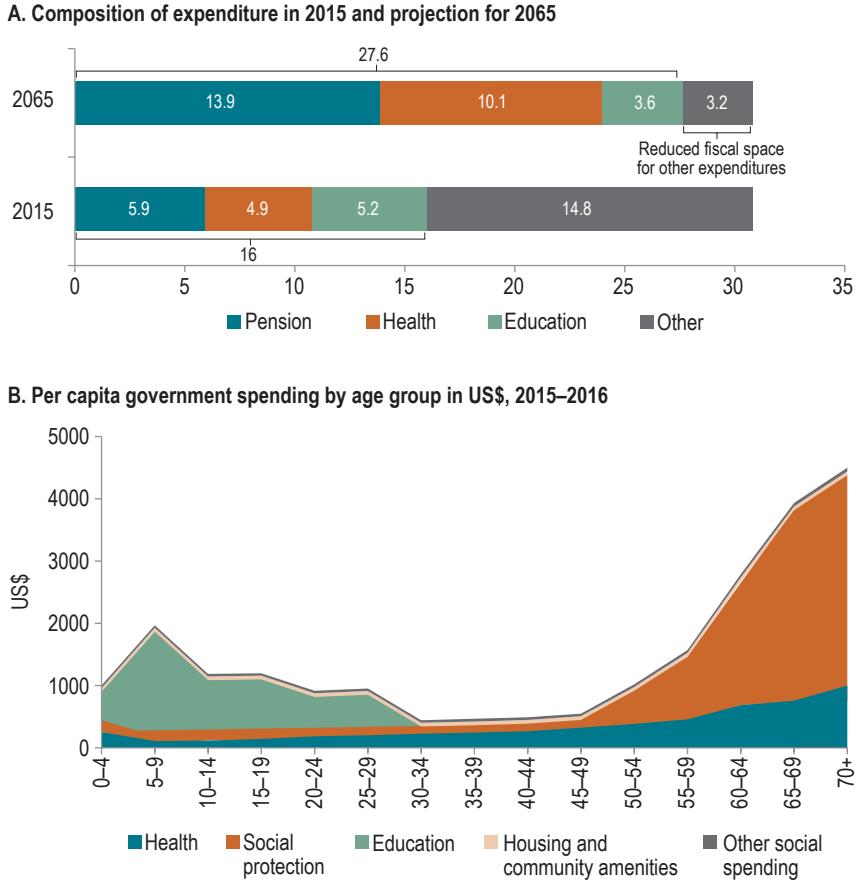
What is the result of spending on the elderly rather than on other needs—like public safety or children's programs? How much is spent today on the younger generation compared with the older one? Governments must choose among competing priorities within a more even-handed budget process. Children are the main beneficiaries of education services while older people are the main beneficiaries of health services and pensions. How should expenditure per capita be allocated between the two

[41] The EU will increase total aging spending to 26.7 percent of GDP by 2070, similar to the expected increase in Latin America and the Caribbean by 2065. This is expected even though there were pension reforms throughout Europe in recent years (European Commission, 2018a).

[42] The changes in education expenditure (EE) can be decomposed into three elements: demographic changes; costs per student; and enrollment rate. The baseline scenario illustrates the pure impact of demographic changes (the gradual decrease in the share of the young cohorts) on government education expenditure, assuming a fixed student-to-teaching staff ratio and constant enrollment rate.

[43] There is a tendency in Latin America and the Caribbean for the off-budgeting part of consolidated spending to be overspread, and apart from pensions and health, this includes expenditure on public-private partnerships, public firms not accounted for in the budget, etc. The policy implications and best practices on some of these contingent liabilities and off-budget spending are analyzed in Chapter 9.

Figure 3.12 Composition of Total Expenditure and Per Capita Expenditure by Age Group



Source: Panel A: Authors' calculation based on Figure 3.11 and education projections (see text). Panel B: Authors' calculation based on FMM/IDB database on Public Expenditure, and National Transfer Accounts (NTAs).
Note: Panel A: See Note to Figure 3.11A for pension projections and to Figure 3.11B for health projections. The average spending includes 10 countries: Costa Rica, Brazil, Honduras, Argentina, Mexico, Colombia, Chile, Uruguay, Peru, and El Salvador.
Panel B: Spending on health, education, and social protection is attributed to different age groups according to National Transfer Accounting Data, the proportion of education spending by level of education, and in social protection imputing pensions to older groups, unemployment insurance to working individuals, and conditional cash programs to children. The resulting spending per category is divided by the population in each age group. Fifteen countries are included in the average: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Paraguay, Peru, and Uruguay.

groups? The decision of how to allocate lifesaving resources between the young and the old is as much about equity as it is about efficiency. Latin American and Caribbean governments spend an average $4,000 per capita on people aged 65-plus, about $500 per capita on people

aged 30 to 49, $1,000 on young people between 10 and 25 years, and $1,500 from birth to 10 years of age. That is, they spend about four times more on older people than on younger people (Figure 3.12B). The current system of public expenditures is unfair to younger generations: the vast and growing size of unfunded health and retirement benefits will require today's children to bear a heavy tax burden when they grow up to be working-age adults. For the younger cohort's sake, elderly benefits should pay their share of taxes before transferring it to the next generation. While equity is undoubtedly affected by the allocation of public monies across age groups[44] and across generations, efficiency is also very much affected. A lower accumulation of human capital among disadvantaged families leads to losses in the social rates of return to early childhood investments and impacts growth.

Spending on Physical Capital, Human Capital, and Transfers

In the last 60 years, growth in Latin America and the Caribbean has been low compared to much of the rest of the world. Most Latin American and Caribbean countries did not converge to the expected "higher-income country" category. In 1960, the region was expected to be on the verge of significant economic growth. Both school attainment and income were well ahead of those of East Asia. But by 2000, growth and income per capita in East Asia were far ahead of Latin America. The reason for this disappointing performance seems to lie in the low quality of human and physical capital, and total factor productivity (TFP), or "efficiency." The hypothesis is that inefficient government spending in the region did not contribute to convergence. This section concludes that fiscal policy could contribute to reduce the persistent income gap by: 1) improving the quantity, but mainly the quality, of factor accumulation, in particular accumulation of skills; 2) improving the allocative efficiency of public spending; 3) eliminating distortions that cause misallocation of resources and focusing more on closing the efficiency gap; and 4) avoiding too

[44] For example, in Brazil, pensions played a significant (albeit inefficient) role in the quest against old-age poverty, and have been successful in reducing it well below the populationwide average. At present, all pension recipients receive at least the minimum wage, which is almost 10 times as much as the extreme poverty line. Further real increases in the level of the minimum pension will hence have hardly any poverty impact, while at the same time, poverty is significantly above average among children and youth (Barros et al., 2010). Similar considerations apply in the case of Argentina (Lustig and Pessino, 2014).

large a total spending ratio, especially if a country suffers from poor governance.

Physical and human capital are both important for growth, and the allocation of government spending to each of them should be based on rates of return and contribution to growth. An investment strategy that emphasizes physical capital to the exclusion of human capital fails to capture the benefits that can arise from a more balanced investment strategy.[45] It takes skilled workers to make the most efficient use of modern digital technologies. How does each type of investment affect growth? What is gained and lost by concentrating too much on current "populist" expenditure versus investment? If Latin America and the Caribbean overinvests in one type of capital or underinvests in another, opportunities for improvement in wealth are lost.

Human and physical capital versus transfers in growth. This section tackles the question of how physical and human capital investment, including public spending, promote growth.[46] Latin America and the Caribbean has been experiencing long-term stagnation or low growth due to the low productivity of its factors of production despite an increase in the number of workers and the capital stock (Crespi, Fernández-Arias, and Stein, 2014). Fiscal policy and public spending played an important role in the region's low growth in recent decades. There is likely to be a trade-off between public spending aimed at income redistribution (via social spending) and that aimed at raising growth and income levels. Moreover, the mix and quality of physical and human capital investment also influences growth rates and income levels. Hence, this section analyzes the allocative efficiency of spending on physical capital (investment), human capital, and transfers.

The estimation of the standard and extended convergence growth model—increasing the sample of OECD countries in Fournier and Johansson (2016) with LAC countries—is based on a conditional convergence equation that relates real growth of per capita GDP to the initial level of income per capita, the investment-to-GDP ratio, a measure of human

[45] It is important to analyze both types of investment together because there is strategic complementarity in the incentives to invest. Workers invest in skills to increase their wages. But without continued improvement in the technologies used by firms, the returns to workers' investments would decline and, eventually, be too small to justify further investment. Similarly, without continued improvement in the skills distribution of the workforce, the incentives for firms to invest in better technologies would decline. Sustained growth requires continued investment in both factors (Stokey, 2016).

[46] Chapter 4 analyzes how different categories of public spending promote equity.

capital,[47] and the population growth rate, augmented with government expenditures (Altinok and Pessino, 2018). The estimation uses a combined IDB/OECD database on crossed economic and functional public expenditure. While the OECD published a database on public expenditure (Bloch et al., 2016), a more recent work (Pessino, Badin, et al., 2018) extended the same data for Latin American countries (Argentina, Brazil, Chile, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Peru, Paraguay, and the Dominican Republic).[48] The extended government expenditure variables are the size of the government (total underlying primary spending to GDP), and the structure of primary spending.

The estimated growth equations show significant positive effects of the production factors on growth and plausible convergence rates. The estimated effect of human capital proxied by school attainment interacting with quality is always significant; a 1 percent increase in human capital would increase long-run GDP by close to 1 percent. Moreover, the effect is somewhat larger for Latin American countries. The effect of the investment rate is also positive and significant; a 1 percent increase in the rate would increase GDP close to 0.9 percent. According to the "iron law of convergence," countries converge to the productivity frontier at about 2 percent per year (Barro, 2015), which is roughly the rate estimated in the regressions. Thus, it takes approximately 35 years to close half of the initial GDP per capita gap. However, the rate of convergence is much higher for the OECD countries.

When public spending size and shares are added, first, larger governments are significantly and negatively associated with long-term growth but the more effective the government, the less harmful its size for long-term growth.[49] Keeping total spending of GDP constant, the share of spending on productive items (education and investment) rather than

[47] The human capital variable is constructed as the interaction between years of schooling and quality. The quality of education variable is proxied by PISA scores in the OECD and harmonized with Latin American scores according to Altinok, Angrist, and Patrinos (2018). It is a newly updated data set of 80 countries including 18 Latin American and Caribbean countries that have ever participated in a worldwide student achievement test, covering more than 95 percent of the region's population .

[48] Expenditure categories are based on crossed economic-functional classifications, following the methodology used by the OECD. Latin American countries do not present homogenous classifications and many of them have not adopted COFOG yet. Thus, specific adjustments were made in each country according to data availability (Pessino, Badin, et al., 2018).

[49] Fournier and Johansson (2016), to test the hypothesis that the impact of government size on growth may vary according to public-sector effectiveness, consider various indicators of government effectiveness from the World Bank's World Governance Indicators (WGI) database.

transfers boosts long-term economic growth. When education and public investment are separated, only public investment has a significant and , positive effect on economic growth, while the effect of education spending is positive but not significant. This implies that reallocating spending to infrastructure and improving quality education spending can raise growth rates over the long run. Importantly, when it comes to education, the key is to increase quality, not just school attainment or spending. The effect of public investment on growth is high: a 1 percentage point increase in the share of public investment spending would increase the long-term GDP level by more than 8 percent. However, when social spending, excluding education, is increased at the expense of productive investment, growth decreases. Relative to total spending, transfer spending may have growth reducing effects.[50]

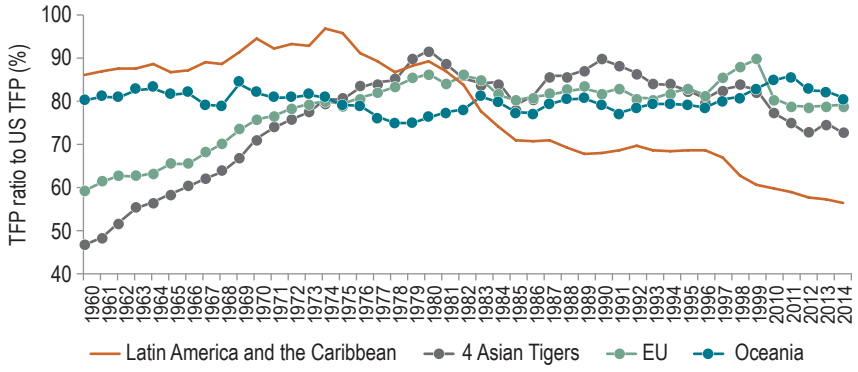
Hence, while allocative efficiency among spending components is important for growth, when considering high-quality human capital rather than higher education spending, total investment, and spending on infrastructure, a government that is too big or that spends heavily on transfers may actually diminish growth.[51] How can governments make room in their budgets to increase human and physical capital expenditures? One way is by decreasing waste in transfers, civil service, and procurement. They can also switch expenditures, largely transfers and particularly those that are less effective in reducing extreme poverty and inequality (see Chapter 4).

Development accounting. A complementary approach that helps explain the contribution of factors of production and overall efficiency to income per capita is development accounting. It provides a means of decomposing variations in the level of GDP per capita between countries into the different components of input factors (physical and human capital) and TFP (the

[50] Holding constant the total budget, the estimated parameter from introducing each spending component separately is interpreted as the effect of increasing that component and decreasing the rest, maintaining total spending constant (Gemmell, Kneller, and Sanz, 2016).

[51] Wagner's Law suggests that during the process of economic development, the share of public spending in national income tends to expand. Thus, the direction of causality between these two variables is unclear. Since this negative relationship might be also explained by the structural difference between Latin American and OECD countries, robustness checks were conducted: a) for potential reversal causal issues for government size by using IV estimation; b) for the impact of government size on economic growth by restricting the data to the period before the 2008 crises; and c) country-fixed effects were used to purge any country-specific characteristic from the analysis. Results were mostly robust to these tests (Altinok and Pessino, 2018).

Figure 3.13 Evolution of Total Factor Productivity (TFP), ratios to U.S. TFP



Source: Authors' calculation based on Penn World Tables 9.0.

residual, sometimes referred to as the "measure of our ignorance"). Much recent research about the determinants of income differences has aimed to understand the reasons for Latin America and the Caribbean's failure to reduce its income gap of about one-fifth of the output per worker with the United States (and other high-income countries). According to earlier development accounting studies, both capital gaps and efficiency gaps were very large: the average Latin American and Caribbean country has less than half the capital (human and physical) per worker of the United States and uses it less than half as efficiently. Differences in TFP, or efficiency in using the production factors, explained the largest part of Latin America and the Caribbean's persistent income gap (Bils and Klenow, 2000; Hsieh and Klenow, 2010; Caselli, 2016). The region's TFP was about 0.86 that of the United States in 1960 and began to fall in the 1970s to about 0.56 of TFP in the United States in 2014. In contrast, the four Asian Tigers (Taiwan, China; the Republic of Korea; Hong Kong SAR, China; and Singapore), had a TFP gap of 0.47 in 1960, and grew steadily to duplicate and reach a TFP relative to the United States of 0.89 in 1990 and stabilize to 0.73 in 2014 (Figure 3.13A).

Recent development accounting work[52] suggests that the role of human capital is higher than the 20 to 30 percent initially estimated in accounting for income differences. The earlier literature ignored differences in human capital quality, using average years of schooling as the only input, implicitly assuming that one year of schooling in high-income

[52] Hanushek and Woessmann (2012), Schoellman (2012), Manuelli and Seshadri (2014).

countries is as productive as one year of schooling in low-income countries. But if it is more productive, human capital may be able to account for a larger share of income differences than previously thought. Accounting for human capital quantity and quality for 50 countries, Hanushek and Woessmann (2012) find that about 60 percent of the differences in income between Latin America and the Caribbean and the rest of the world can be attributed to human capital. This leaves the residual, that is TFP, with a lower "accounting" role in determining income differences. In other words, its contribution to growth is underestimated and what is pure TFP gap may be overestimated. New literature found that human capital accounts for anywhere from 0.2 to 0.8 cross-country income differences, with TFP, in turn, accounting for anywhere from 0.6 to none (and capital in 0.2).[53]

But lower GDP per capita in Latin America and the Caribbean compared to the United States also depends on distortions in the allocation of labor due to incentives to hire workers in the informal sector. This has the potential to distort another very important component of human capital—on-the-job training (OJT).[54] The excessive tax burden on formal employment, with a social security system that discriminates in favor of formal workers, has forced the region to create parallel noncontributory social security programs for health, pensions, and social transfers. Consequently, the region has reached a point where it levies various fiscal charges (labor related and otherwise) on formality and subsidizes informality, promoting in turn more informality because it creates incentives for businesses and

[53] By how much would income per capita increase in Latin American and Caribbean countries if school attainment and cognitive skills were increased? Increasing enrollment would have an average 134 percent effect on GDP, and improving basic cognitive skills for all students by almost fivefold would increase projected output by 550 percent (with GDP in Honduras increasing more than 12 times, in Peru 9 times, and in Argentina 7 times). This is four times larger than a similar increase in OECD countries. These simulations do not necessarily reflect a rise in education spending; they could reflect education policy reforms, increasing the technical and allocative efficiency of education (Hanushek and Woessmann, 2012, 2015).

[54] The most plausible reason for the low OJT of informal workers is that training has a cost while benefits accrue in the future with higher labor productivity (Becker, 1964). Since usually informal labor and firms are expected to be more short-lived than formal firms, OJT will have lower benefits and, hence, less provided in them. Also, costs of OJT tend to be lower in the formal sector, since usually workers are more educated and learning begets learning (Heckman and Masterov, 2007). OJT for active workers takes place largely in formal firms for workers with some degree of education. Alaimo et al. (2015) analyze this pattern for Chile, Ecuador, and El Salvador, finding that the difference in the incidence of OJT between formal and informal workers is striking. In Ecuador and El Salvador, hardly any informal workers receive training, in contrast to 20 percent and 30 percent of formal workers.

workers to continue to operate in the informal sector in low-productivity activities (Levy, 2015; Busso, Fazio, and Levy, 2012). In fact, informality in the region, defined as the percentage of workers not contributing to social security, is between 40.6 percent (including only salaried workers) and 56.9 percent (including all workers). Given the small proportion of productive capital in the informal sector and the limited size of informal enterprises or firms, largely to avoid labor or other taxes, productivity is extremely low in these economic activities. Through quantification of the dispersion of productivity and distortions, the potential gains in TFP of reallocating resources more efficiently across firms in Latin America and the Caribbean to equalize marginal products in manufacturing would be to raise aggregate TFP in the region between 40 and 120 percent, depending on the countries and years considered (Busso, Madrigal, and Pagés, 2013).

But returns to work experience are also lower in the informal sector, suggesting that not only TFP but human capital accumulation is impaired by informality. Estimating Mincerian wage profiles for countries in the region using household data shows that they are flatter for informal sector workers.[55, 56]

Hence, in an economy with high levels of informality, the stock of human capital is lower, inasmuch as the share of informal labor is high and the return to experience in the informal sector is lower than in the formal sector. OJT is an important source of human capital: in rich countries it accounts for 43 percent of all available human capital and in poor countries it represents 32 percent of the total, suggesting that policies that influence OJT can have a potentially large impact on output per worker (Manuelli, 2015). In short, pervasive informality in the region affects labor productivity through two channels: lowering TFP through misallocation to less-productive informal firms in the region, and negatively affecting the amount of human capital. When experience is included in the human capital production function, the importance of human capital increases

[55] In Mexico the return to experience is about double the size in the formal than in the informal sector by at least 1 percentage point (Arias et al., 2010) and preliminary calculations show a similar pattern for most countries in Latin America.

[56] What is the implication of this formal-informal experience return gap to OJT in terms of human capital accumulation? Using the Mincer representation of an earnings function, aggregate human capital h combines years of schooling S and test scores T according to returns in the labor market, which is added to experience E to obtain a function $h = e^{rS + wT + \gamma E}$. The three parameters r, w, and γ are the earnings gradients for each component of h and are used as weights to map years of schooling S, test scores T, and potential experience E (OJT) into a single human capital indicator, according to their effect on individual earnings.

while that of TFP decreases. Integrating flatter experience wage profiles in development accounting, human capital accounts for 60 percent instead of 40 percent of cross-country income differences (Lagakos et al., 2012).[57] If one accounts for all the components of human capital—quantity, quality, and experience—the role of TFP and physical capital decreases even further and that of human capital increases, likely to more than 60 percent. In the case of Latin America and the Caribbean, while school enrollment has increased in most countries, improving skills and reducing fiscal incentives to informality to increase productivity and the amount and returns to OJT seem to have the highest payoff to converge to higher income.[58]

A Budget for Skills Formation over the Life Cycle

As growth and income per capita depend to a large extent on the quality of workers' skills, this section analyzes how to improve the allocative efficiency of public spending on skills, considering that skills are formed initially within the family, later in school, and finally at work. Identifying the optimal allocation of public resources to skills formation at different stages of the life cycle is crucial to improving the quality of human capital, and the region should be guided by the best available evidence on the returns to different interventions.

Latin American and Caribbean countries have improved educational enrollment rates in recent decades, and educational attainment has risen from about three years of schooling on average in 1950 to nine years in 2010. The expansion in enrollment rates was fueled by significant increases in public spending. The region spends on average 3 percentage points more of its GDP on education than it did 25 years ago, and it is catching up with the spending of developed countries. Skills, however, seem to have improved much less (see Busso et al. [2017]; and Chapters 6 and 9 of this report). Additional efforts are thus needed to improve access to quality skills, especially for the less advantaged, and it is of the utmost importance to increase the effectiveness of spending.

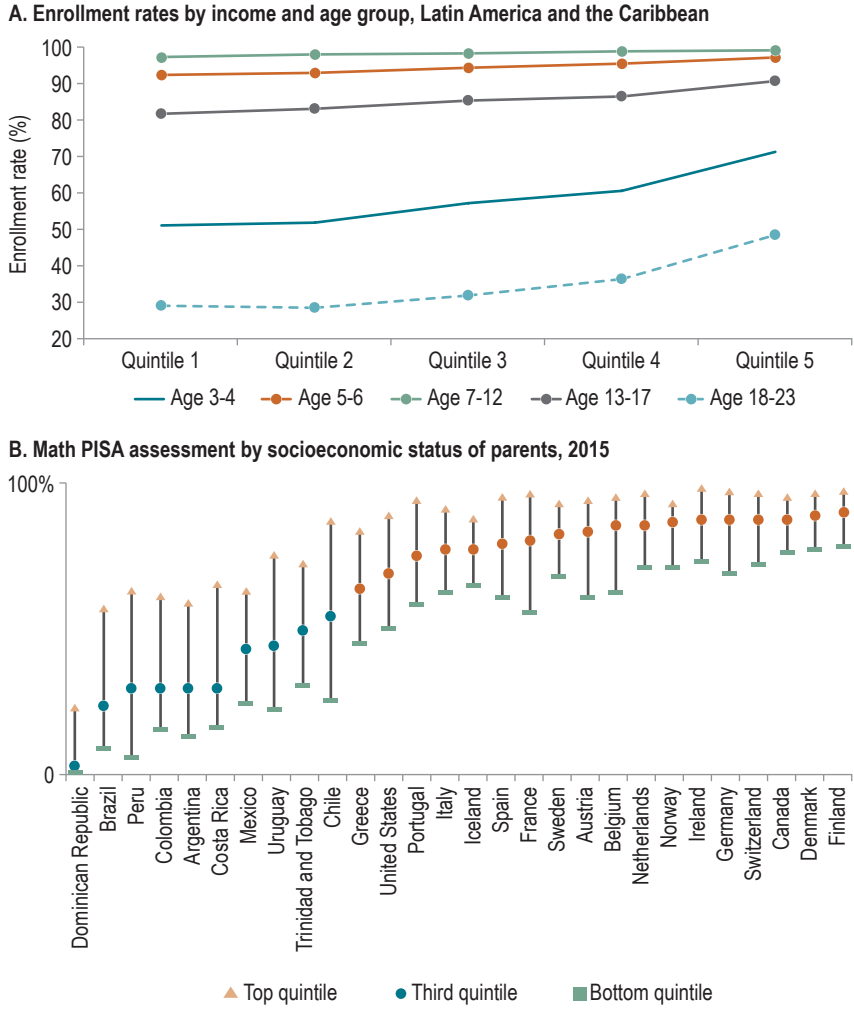
[57] They use international household-survey data to document that experience-wage profiles are flatter in poor countries than in rich countries (although not mentioned, likely the effect also of higher informality).

[58] Individuals "choose" quantity and quality of schooling by maximizing lifetime income and hence human capital increases with wages, and in turn wages increase with TFP. Hence, the exogenous determinant of more demand for human capital is higher productivity (Manuelli, 2015). Digital technological progress, more efficient investment in capital, and lifting of distortions, might be potential exogenous drivers.

Skills can be of different types—socioemotional, cognitive, or academic—and they are not entirely determined by genetics. The benefits of skills are well documented: they raise productivity, promote opportunity, enhance workers' and citizens' flexibility, and hence affect growth. The importance of skills has become even more pronounced in the digital economy, as skill-biased technical change has shifted demand toward the more skilled. The wages of high-skilled labor are consequently expected to increase much faster than those of less-skilled labor in the new digital economy (Heckman and Mosso, 2014; Heckman, 2016).

Differences in skills between the advantaged and disadvantaged begin to appear at very early ages, even well before kindergarten, and there is evidence that these differences persist over time. This early division is hardly surprising, as families produce cognitive and socioemotional skills; in fact, the quality of home environments by family type is highly predictive of child success. The evidence shows dramatic differences in achievement test scores and in social and character skills across children from different economic and social groups. For the United States, Heckman (2008) shows that differences in mathematics tests by income and education of the mother that existed at 6 years old are unchanged at 12 years old. Skills gaps likewise manifest themselves from an early age in Latin America. Enrollment rates for three- to four-year-olds increase significantly according to the parental income quintile (Figure 3.14A), and the enrollment rate for lower-income households is significantly lower than in higher-income quintiles. While all quintiles have increased their enrollment rates over time, a significant gap persists for ages 13 to 17 (secondary education) and an even greater discrepancy for tertiary education. In fact, although government spending has focused on closing the gap in enrollment, skills continue to diverge throughout the life cycle. This divide is manifested in enrollment at critical levels for disadvantaged children, in secondary and tertiary education, and most dramatically in cognitive skills gaps among secondary school students. The region's difference in mathematics skills, for example, is the widest in the world. A student from the poorest households in the region has only an 18 percent probability of performing above level 2 in mathematics, compared to 62 percent for a student from the richest households (Figure 3.14B). In turn, a student from the richest household in the region performs, on average, approximately as well as the poorest students in advanced-country households. Furthermore, the best Latin American country performs on average worse than the worst advanced country; in terms of inequality of performance by socioeconomic status, the absolute gap in performance is even greater. Data from PISA 2015 also show a strong relationship between the number

Figure 3.14 Gaps in Skills by Socioeconomic Status of Parents



Source: Panel A: Authors' calculation based on Cerda and Pessino (2018b). Panel B: Authors' calculation based on UNESCO, World Inequality Database on Education.

of years that 15-year-old students spent in early childhood education and their scores on the PISA science assessment.

Such interventions during the early years have high returns because they take full advantage of brain sensitivity peaks and facilitate future learning, a phenomenon called "dynamic complementarity" (Cunha et al., 2006). Figure 3.15 shows the rates of return to one dollar invested in educational interventions for disadvantaged and well-off children at different stages of the life cycle. Both lines show a similar pattern: the rate of return

decreases as age increases. However, in the first stages of life, the rates of return are much higher for interventions directed to disadvantaged children than to well-off children. At later stages, however, returns are higher when investing in education for wealthier children, although early interventions for the disadvantaged can reduce this gap. Later interventions are less efficient because they take place after a crucial "development window" closes, and they have lower returns if the student lacks the abilities to succeed at later stages. Children from advantaged backgrounds have often already developed these abilities due to major parental investments that disadvantaged children do not receive.

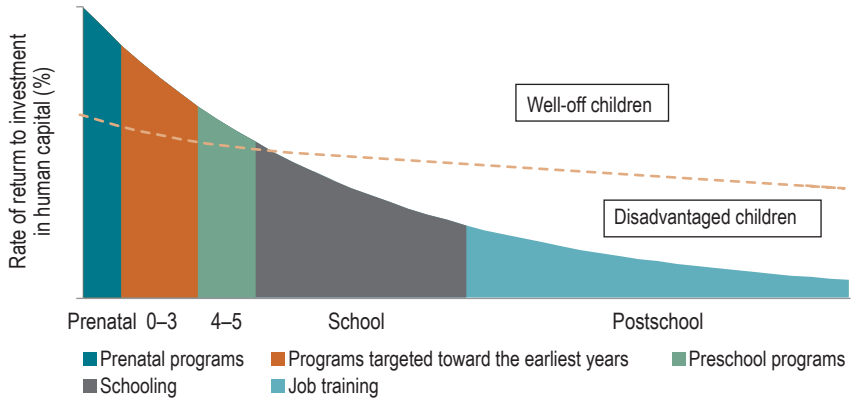
Further evidence suggests that the economic returns are low for the education of low-ability adolescents but higher for more-advantaged high-ability adolescents. Interventions for low-ability adolescents have positive effects, but they generally cost more than early remediation to achieve the same level of adult performance (Cunha and Heckman, 2007, 2008). Indeed, evidence points to returns in the later stages of child schooling being higher for high-ability children from more-advantaged environments, while interventions at very early ages have higher returns for the most disadvantaged.[59] Recent estimates from Heckman's research team show that the internal rate of return to high-quality early childhood investments, such as the Pre-Preschool or Abecederian programs in the United States, is on the order of 13 percent, for a cost-benefit ratio of about 7.[60] Data from Latin America and the Caribbean suggest that, at current levels of public expenditure, investments in early childhood have even higher returns than in the United States, especially when targeted to disadvantaged children. The Jamaica early childhood study (Gertler et al., 2014), found that the intervention increased adult earnings by 25 percent, implying an internal rate of return of about 21 percent (Carneiro and Flores, 2018). Later interventions, such as pre-primary schooling in Uruguay, have a high but nonetheless lower rate of return at 16 percent (Berlinski, Galiani, and Manacorda, 2008).

How should governments prioritize investment in skills? In the case of skills investment, rates of return for the disadvantaged and not for

[59] This literature does not suggest that no investments should be made in schooling or subsequent on-the-job training, which are major sources of skills formation. Indeed, the complementarity or synergy between investments at early and later ages suggests that early investment must be complemented by later investment to be successful.

[60] There have very substantial long-term benefits not only in terms of the employment and earnings of program participants, but also in terms of their health and criminal behavior (García et al., 2016).

Figure 3.15 Returns to a Dollar Invested in the Skills of Disadvantaged Children (Compared to Well-Off Children) at Different Stages of Life Cycle



Source: Authors' elaboration adapted from Heckman (2008, 2016) and Woessmann (2008).

everybody in the population should be compared along the life cycle. Obviously, the returns to secondary or tertiary education for marginal students, for average students, and for those who do not go to school at that level are very different.[61]

In fact, as shown in Figure 3.15, average returns to early education underestimate true returns for low-skilled children, while comparable figures for later education overestimate returns for low-ability children. The opposite is true for students coming from more-advantaged backgrounds, as suggested by evidence from the United States and Europe. Carneiro, Heckman, and Vytlacil (2011) estimate the returns to college for persons at the margin of attending college (MTE, the marginal treatment effect), as well as the average return of those who go to college (ATE, average treatment effect), and what the return would be for those who do not go to college (TUT, average treatment on the untreated effect). The differences are substantial: returns can vary from −15.6 percent (for low-ability individuals who would lose from attending college) to 28.8 percent per year of college (for those with high ability and a high propensity to attend college). Thus, individuals positively select into college in the United States based on gains, and expansion of college to

[61] Carneiro, Heckman, and Vytlacil (2011) studied the impact of higher education on wages in the United States and show that the marginal student induced to attend university by a policy expanding college attendance has lower returns to college than the average individual attending college.

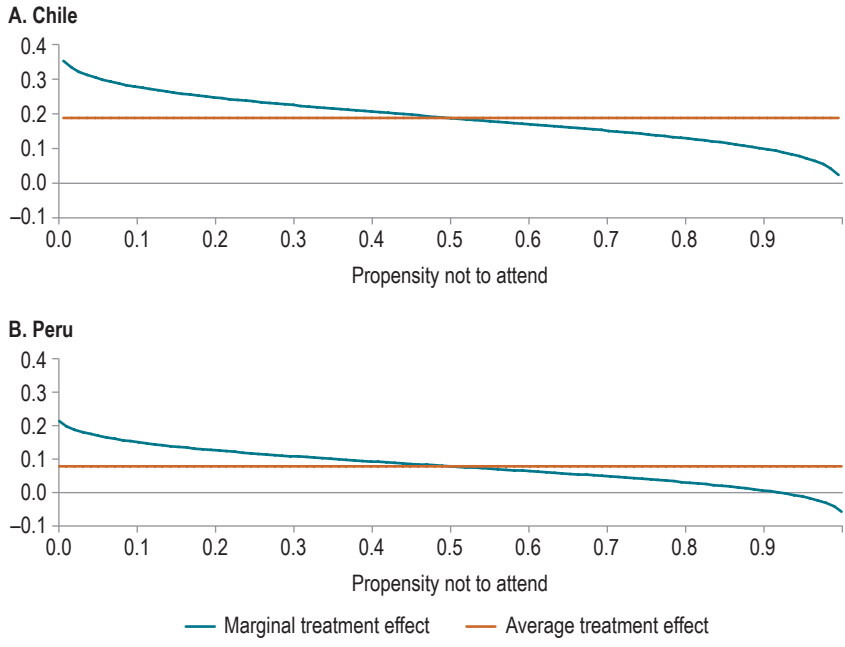
individuals who currently do not attend would not be effective. On the other hand, a study on preschool in Germany found a pattern of reverse selection on gains. Whereas children with high propensity to attend—usually the well-off—do not gain, improvements in skills are substantial for children with low propensity to attend, and usually for low-ability children. Consequently, the TUT of childcare exceeds the ATE and Treatment on the treated (TOT) by 17.3 percentage points (Cornelissen et al., 2016; Schönberg et al., forthcoming). Thus, policies that successfully attract children not currently enrolled in early childhood education may yield large returns. Likewise, programs targeting minority and disadvantaged children are likely to be more cost-effective and beneficial than universal childcare programs. In other words, there is reverse selection on gains for preschool attendance, while there is positive selection on gains for high school and college attendance.

Although the average returns to education in the region vary, the consensus is that average tertiary education has a large return (about 16.6 percent) (Busso et al., 2017).This average, however, masks the wide variation in individual returns. As expansion of access to secondary and higher education is at the center of public policy in the region, it is necessary to know the impact of education on earnings for those affected by the expansions—i.e., marginal rather than average returns. Despite the importance of this topic, there are hardly any estimates of marginal returns to schooling in the region. For Peru and Chile, it was possible to estimate MTE to tertiary education (Figure 3.16). The estimates show ATE of 19 percent in Chile and around 8 percent in Peru, which suggests a potential bias in the Mincerian estimates for tertiary education reported elsewhere (Cerda and Pessino, 2018b).[62] The MTE declines for individuals whose unobservable characteristics made them less likely to attend university. The range of the MTE goes from 2 to 35 percent in Chile and from –6 to +26 percent in Peru.[63] Hence, it is not obvious that policies that seek universal access to tertiary education have positive returns, as individuals with negative private returns might be covered by tuition subsidies. Countries should be cautious when increasing spending on tertiary education, however, as marginal individuals might have lower returns than individuals already attending (from whom average rates of return are large). In fact,

[62] Montenegro and Patrinos (2014) reported an ordinary least square (OLS) rate of return to tertiary education of 17.6 percent for Chile and 12.8 percent for Peru.

[63] The "treated" have rates of return from 20 percent to 35 percent in Chile, and from 10 to 20 percent in Peru. The "untreated" have rates lower than 15 percent in Chile and as low as 2 percent; for Peru those rates are very low or even negative.

Figure 3.16 Heterogeneity: Marginal versus Average Treatment Effects for Returns to Tertiary Education



Source: Authors' elaboration based on Cerda and Pessino (2018b).
Note: The MTE is estimated using household data from Chile and Peru for 2015 on individuals aged 28–34 years for Chile and 26–32 years for Peru. To correct for ability bias, parents' educational level is used as an instrument. To control for the selection of gains, the instruments used are the unemployment rate of individuals aged 18–24; average income of individuals aged 18–24; and the fraction of individuals aged 18 to 24 currently attending higher education, apart from parents' educational level and birth-year cohort dummies. The first two instruments seek to capture relevant labor market characteristics, and the third, the presence of a higher education institution in the region where an individual was living at the time he was 17. The ex-ante probabilities of enrollment are used to correct for the selection on gains (Carneiro, Heckman, and Vytlacil, 2011; Cerda and Pessino, 2018b).

both lower readiness for tertiary studies and credit constraints seem to explain lower rates of return for marginal entrants.[64]

In Latin American and Caribbean countries, much more is spent on primary, secondary, and tertiary education than on early childhood education. Expenditure in preprimary education on children under 6 is only about a

[64] Part of the reason for not attending higher education appears to be due to credit constraints. Evidence from Chile (Rau, Rojas, and Urzúa, 2013; Solis, 2017) and Colombia (Melguizo, Sánchez, and Velasco, 2016) suggest positive enrollment effects from credit availability. Data from Colombia, however, point to incoming students' lack of academic readiness affecting quality. While quality remained stable in education in the 2000s, students have on average lower ability levels (Camacho, Messina, and Uribe, 2016).

fifth of that of children 6–12 years of age or older. As a percentage of GDP, pre-primary spending is 0.4 percent, primary 1.9 percent, secondary 1.6 percent, and tertiary 1.1 percent (World Bank, 2018). For a GDP per capita that is one-third that of the OECD, Latin America and the Caribbean should spend more on the early years than on the late years since the region has a higher percentage of disadvantaged low-income families. Attendance in pre-primary education is about 60 percent in Latin America and the Caribbean for children between 3 and 5, and enrollment (which is lower than attendance) is about 20 percent for children aged two years, and much lower for younger ages. Hence, although expenditure *per student* is fairly high in pre-primary years (at about 12 percent of GDP per capita), spending per child in early childhood is just 4.3 percent of GDP per child.[65] There are even more possibilities to shift spending from upper education spending. Tertiary spending per graduate, considering that the average tertiary dropout rate is greater than 50 percent,[66] is 40 percent of GDP per capita and, hence, almost 10 times higher than pre-primary spending per child (and usually on children of relatively wealthy families).

A shift in resources from higher education toward younger and disadvantaged children would additionally result in a more-efficient (and equitable) allocation of resources. Smart investments in early interventions targeting lower-ability children have much higher economic returns (as they tend to equalize abilities and subsequent rates of return) than remediation programs later in life, such as public job training, adult literacy programs, tuition subsidies, or expenditure on police to reduce crime. Data also show that investing in the developmental growth of at-risk young children is important for economic growth.[67] To increase allocative efficiency, it is first important to prioritize investment in high-quality early childhood

[65] Besides, attendance in early childhood is much lower for less-well-off children (UNESCO databank and OECD statdata).

[66] Dropout rates in Latin America are remarkably high, ranging from 40 percent to almost 70 percent (Busso et al., 2017; Ferreyra et al., 2017).

[67] By using standardized benchmarks for minimum and advanced skill levels, Altinok (2018) finds that while advanced skills have a significant effect on economic growth of high-income countries, the share reaching the basic proficiency level is positive but significantly higher in lower- and middle-income countries. In the same spirit, Izquierdo et al. (2016), in a study analyzing productivity determinants for growth in income per capita, find that education as measured by basic school attainment indicators is one of the most-important determinants for less-developed countries to advance to the second of four cluster groups. However, health (measured largely by quality outcomes such as infant mortality and life expectancy), used as a proxy for quality of human capital, helps in advancing all levels, even to the highest-income cluster. See also Manuelli (2015).

education for at-risk children. Afterwards, it is important to sustain gains with effective education through adulthood. Investments for disadvantaged youth have lower rates of return, meaning that they are more-costly interventions, but to level the playing field, more resources should be devoted to enhance their skills and chances in life.[68] For severely disadvantaged adults with low ability levels, subsidizing work and welfare may be a better response for alleviating poverty than investing in their skills with job training programs.[69] The literature on the financing of tertiary education argues for an increase in private funding, and for the introduction of fees, coupled with well-designed student loans and grants. The latter would ensure that able students from disadvantaged families are provided the financial means to cover tuition and costs. In general, though, such students have a lower probability of entering university. However, the cause seems to be more a lack of basic skills to advance to university, due to insufficient earlier investments, rather than credit constraints, as is the case in some countries such as Chile.

Allocative Efficiency in Centralized and Decentralized Spending

Is the current allocation of expenditure between the central government and SNGs efficient? This is an important question, since during the last 30 years, countries in Latin America and the Caribbean decentralized a growing amount of spending. The rationale was to bring governments closer to citizens and allocate public resources more efficiently[70] (the classical theory of fiscal federalism). Potential benefits of fiscal decentralization include: improving spending efficiency by

[68] Programs for primary school targeted to disadvantaged students have rates of return that range from 16 percent (estimated on the adoption of structured teaching methods from kindergarten to 4th grade in Brazil by Leme et al., 2012), to a 10 percent return from reduction in class size in Bolivia (Urquiola, 2006). However, few remedial programs have important returns. The Heckman team estimates basically zero rates for high school remediation programs in the United States. For Indonesia, Carneiro, Lokshin, and Umapathi (2017) report rates of return to secondary schooling for treated students at 27 percent, but a much lower return for marginal students at 14 percent.

[69] Typical training programs for the unemployed have much lower impacts on skills and earnings, or even zero returns (Heckman, 2016). An exception in Latin America is Colombia's successful training program, Jóvenes en Acción, with an internal rate of return (IRR) of 10 percent. This is not a typical training program, however, as it is provided by private firms with a large incentive to place the trainees in formal jobs.

[70] Political and historical reasons also played a key role in the decision to pursue decentralization in Latin America.

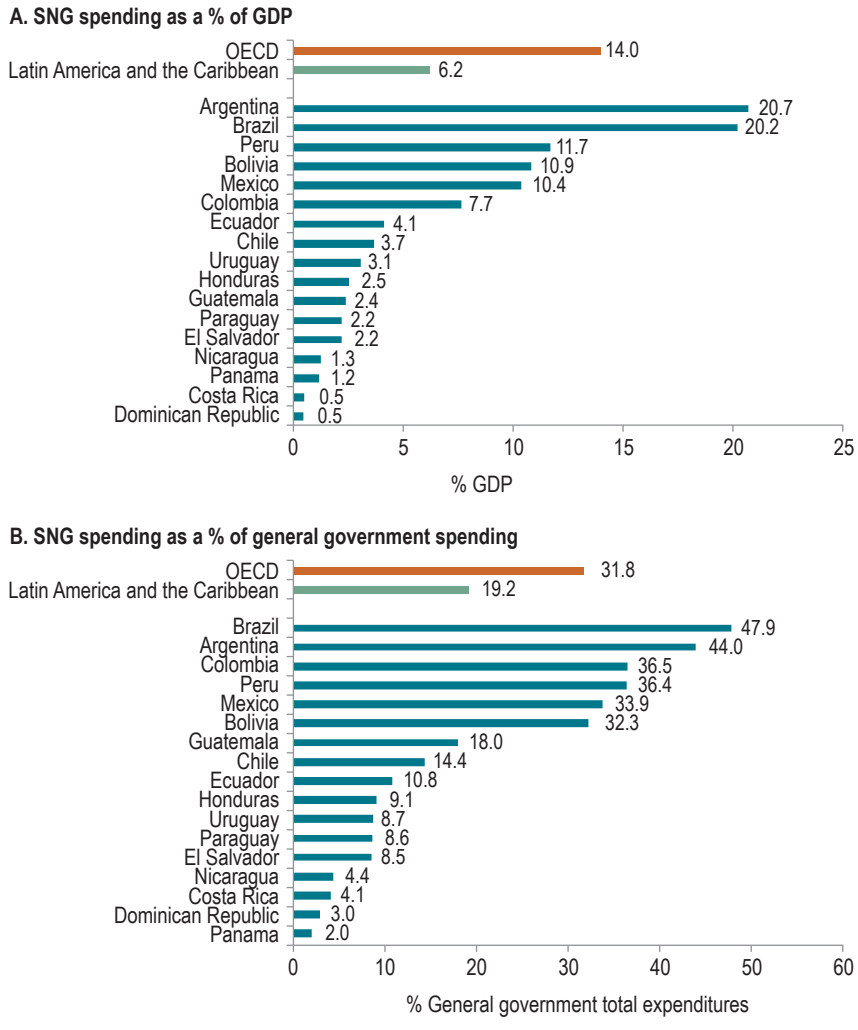
better aligning SNGs' spending to local needs; reducing expenditure waste by better prioritizing the provision of public goods (Hayek, 1945; Tiebout, 1956; Musgrave, 1969); and bolstering accountability between those who produce public goods and services and those who consume them (Faguet, 2012).[71] However, capitalizing on these benefits requires effective fiscal autonomy (the level of control that SNGs exert on their budget expenditures and revenues) on the part of local governments, as well as institutional capacity, accountability, and well-defined spending functions between the different levels of government. These are all critical preconditions for the allocative efficiency hypothesis to operate. Absent these conditions, as is the case in many Latin American and Caribbean countries, fiscal decentralization can worsen the efficiency of public service delivery, as the decentralization process provides SNGs with a significant role in the financing and provision of public goods.[72] In this context, understanding how to make government spending smarter at the local level is crucial.

While the decentralization process has been disparate among countries, reflecting differences in size, history, and economic geography, Latin American countries are clearly more politically and fiscally decentralized today than they were decades ago. Today, there are 17,422 subnational governments: 391 intermediate and 17,031 local governments. On average, they spent 6.2 percent of GDP in 2016, amounting to 19.2 percent of general government spending, compared to 14 percent and 31.8 percent, respectively, in OECD countries. Brazil and Argentina, two federal countries, administer the largest share of SNG spending, which accounts for more than 40 percent of general government expenditures. Mexico, another federal country, administers about 34 percent through SNGs. But Colombia, Bolivia, and Peru also stand out because they are politically unitary countries that display a high level of local spending—about 36 percent of general government spending (Figure 3.17B). These countries' decentralization in spending is the most pronounced in the region,

[71] Some studies find that decentralization had a positive effect on the provision of public goods. In Bolivia, public investment in education was more responsive to local needs (Faguet, 2004). In Colombia, decentralization improved school enrollment (Faguet and Sánchez, 2014). In Argentina, decentralization contributed to a decrease in infant mortality (Habibi et al., 2003).

[72] Of course, this list is far from exhaustive, and factors beyond the nature of intergovernmental fiscal arrangements are of crucial importance. For example, levels of political competition, voter participation, extent of elite capture, or more generally, the functioning of local democracies are important contextual features of decentralization processes (Bardhan and Mookherjee, 2005).

Figure 3.17 Subnational Government Expenditure, circa 2016



Source: Authors' calculation based on data from FMM/IDB Public Expenditure Data, Pessino, Badin, et al. (2018) and OECD (2018c).

surpassing the average level in OECD economies. The rest of the region has undergone some degree of decentralization but remains highly centralized.

Not surprisingly, these entities vary greatly in their ability to raise the revenues needed to comply with their responsibilities. With few exceptions, SNGs have limited tax autonomy, but even in countries with higher degrees of tax autonomy, subnational revenue collection efforts remain

below their potential (Corbacho, Fretes Cibils, and Lora, 2013).[73] This reduces the transparency and accountability of local policy and, therefore, the incentives to spend efficiently.[74] In fact, Latin American spending decentralization outpaced revenue decentralization, creating vertical fiscal imbalances (VFIs), a measure of the gap between SNG spending and SNGs' own revenues. VFIs are larger in Latin America than in OECD countries (Figure 3.18B): approximately two-thirds of SNG spending depends on transfers in the region, while in the OECD it is slightly less than half.

In federal states, where spending has been substantially decentralized, only Mexico's SNGs continue to rely heavily on federal sources of revenue, whereas those in Brazil and to a lower extent in Argentina have more revenue autonomy. On the other hand, unitary states tend to be less decentralized and exhibit high levels of VFIs as a share of spending, meaning that they are heavily dependent on central government transfers. SNGs in Honduras and Guatemala, for example, rely almost exclusively on central government transfers.

Expenditure decentralization on its own is insufficient to improve the efficiency of public service delivery. It must be accompanied by other conditions, particularly revenue decentralization, which shows positive and significant impacts on public service delivery that are not observed with spending decentralization alone[75] (Sow and Razafimahefa, 2015). In Brazil, increases in revenue from local taxes are seen to improve the quantity and quality of local education infrastructure, in contrast to when such increases come from central government transfers (Gadenne, 2017). Panel data on Argentine SNGs from 1990 to 2015 suggest that decreasing VFI by two standard deviations (reducing fiscal imbalance on average from 54 percent to 17 percent) reduces the share of SNG public employment by 2.6 percent (Figure 3.19A) and translates into decreasing public employment by 9.8 percent (Pessino and Benítez, 2018).[76] Therefore, by

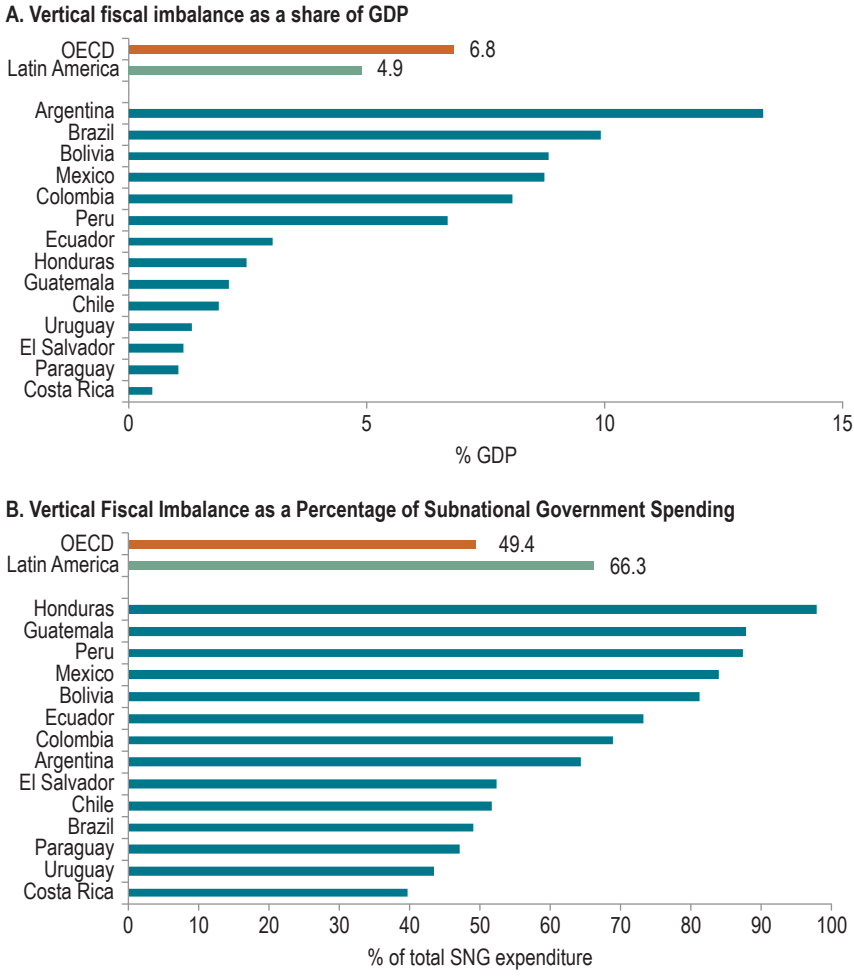
[73] For example, the collection of the real estate property tax barely amounted to 0.5 percent of GDP on average during 2015. This is close to half of what is collected in other developing regions and merely one-fourth of the figure for the OECD (IDB, 2018).

[74] On average, for each 10 percentage point decrease in vertical fiscal imbalances, the general government fiscal balance improves by 1 percent of GDP (Eyraud and Lusinyan, 2013).

[75] In OECD countries, spending decentralization has adversely affected economic growth but revenue decentralization has encouraged it. The empirical results support the prediction that efficiency gains can be improved by a closer match between spending and revenue decentralization (Gemmell, Kneller, and Sanz, 2016).

[76] This finding is consistent with Martínez-Vázquez and Yao (2009), who show that the increase of SNG public employment often exceeds the decrease in that of the central government. Similar findings for Spain are discussed by Marqués Sevillano and Rosselló Villallonga (2004).

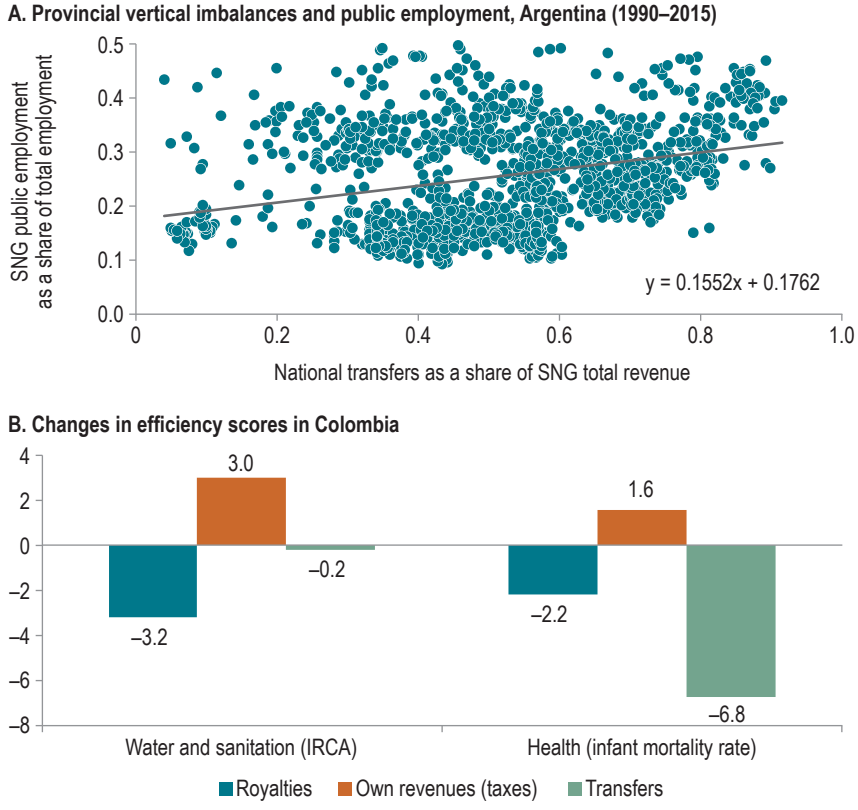
Figure 3.18 Vertical Fiscal Imbalances, circa 2016



Source: Authors' calculation based on data from FMM/IDB Public Expenditure Data, Pessino, Badin, et al. (2018), IDB (2018), OECD (2018c), SNG Structure and Finance Dataset, and OECD et al. (2018).

decentralizing spending and decentralizing taxation to cover most of the expenditure, the provinces would create about 10 percent less (unproductive) employment on average, saving 0.9 percentage points of GDP on the wage bill, which is about 10 percent of GDP at the subnational level in Argentina. In Colombia, SNGs that increased total revenues through royalties and transfers have lower efficiency scores—3.2 percent and 0.2 percent, respectively—in the water and sanitation sector and by 2.2 percent and 6.8 percent in the health sector. Conversely, as

Figure 3.19 The Effect of Revenue Sources on Allocative and Technical Efficiency of Spending



Source: Panel A: Authors' calculation based on Pessino and Benítez (2018). Panel B: Authors' calculation based on Ardanaz and Tolsá Caballero (2015).

shown in Figure 3.19B, higher property taxation at the subnational level improved the efficiency scores in health (1.6 percent) and water and sanitation (3 percent) in Colombia (Ardanaz and Tolsá Caballero, 2015; Martínez, 2017). In Brazil, intergovernmental transfers induce an extreme form of inefficiency, that is, pure waste from a greater level of corruption as measured by random municipal audits (Brollo et al., 2013). At the margin, higher exogenous revenues induce more corruption because incumbents have greater opportunity to appropriate rents without disappointing voters, and additional resources are often given precisely to those regions with weak institutions. A natural experiment of windfall resources to SNGs occurred in Brazil during the latest commodity price cycle, suggesting that while oil royalties increase municipal spending

levels across oil-benefited municipalities, such fiscal expansions were not mostly accompanied by improvements in useful local public good provision projects (Caselli and Michaels, 2013). Why not? It may be that paying taxes provides citizens with incentives to demand greater accountability from elected politicians, and, in turn, provides elected officials with more incentives to invest public monies instead of just increasing current expenditure, since for vertically balanced governments, marginal collection of taxes accrues almost entirely to them. Citizens will thus prefer spending that maximizes growth and revenue. Hence, VFIs are detrimental to allocative spending efficiency as policymakers fail to fully internalize the cost of local spending financing. In fact, tax decentralization provides incentives for growth-enhancing policies that reduce rent-seeking and waste in government (Weingast, 2009; Dynes and Martin, 2017; Paler, 2013).[77] In short, strengthening revenue decentralization and autonomy provides local governments with incentives to spend better.

SNG institutional capacities. Decentralization will not increase efficiency if SNGs do not have adequate administrative capacity. Localities with better institutional capacity secured more infrastructure projects and grants in Chilean municipalities (Piña and Avellaneda, 2017). Similarly, SNGs might not attract investments or provide quality public services if they lack the institutional capacity to engage in good budget planning, revenue management, and spending focalization practices (de la Cruz, Pineda Mannheim, and Pöschl, 2011). In Latin America, spending responsibilities have often been transferred to SNGs without considering disparities in institutional and technical capacity or the small scale at which many SNGs operate (Bonet and Fretes Cibils, 2013). In fact, SNGs vary in the delivery of service outcomes, some of which can be attributed to differences in institutional capacity. A first approximation to measure them is to compare local governments' ability to disburse budget allocations with that of the central government. In Peru, overall disbursement rates of SNGs were 10 percentage points lower than those of the central government in 2008—that is 73 percent compared to 83 percent of budget execution (World Bank, 2010). In turn, municipalities' execution rate of public investment during 2014–2016 was 73 percent of their capital budget, which ranged from less than

[77] Because the value of public goods is capitalized into the value of local property, maximizing revenue from property taxation leads local politicians to choose public goods that maximize local property values. Another reason why large fiscal imbalances can incentivize inefficient spending is that some provinces with larger deficits receive larger transfers (Weingast, 2009).

10 percent to more than 95 percent across almost 1,900 localities (Maldonado, 2015), highlighting differences in capacity.

Spending concurrency. Spending decentralization has led to an overlap in many government functions, potentially creating waste. Expenditure assignments are more often shaped by history and motivated by political and social dynamics than by efficiency (i.e., the principle of subsidiarity).[78] In Latin America, at least 30 percent of countries have concurrent functions in the areas of security and social protection, but principally in primary education and primary healthcare.[79] Whereas concurrency is a common feature, when spending assignments overlap excessively, efficiency is affected. In European countries, a 1 percent of GDP increase in subnational spending resulted in a 0.5 percent of GDP increase in national spending, revealing that subnational spending did not completely substitute for national spending (Eyraud and Moreno Badia, 2013). Moreover, concurrency may lead to situations in which citizens are unsure from whom to demand service improvements, and public officials operate without a clear notion of the scope of their responsibilities or strategically blame one another for lackluster performance. Mexico is a case in point: fewer than half of those interviewed in a survey on SNG spending knew that mayors are responsible for sewage systems, water supply, and lighting (Chong et al., 2015). Residents of a given SNG would presumably better identify the level of government that provides the service if they bore the full cost of raising the marginal dollar of tax revenue used to finance its public expenditures. In the case of Argentina, teachers' unions directed their demands for a wage increase to the federal government rather than local governments, as the former has greater capacity and incentives to increase revenues.

For better or for worse, SNG spending represents an important and growing amount of total government expenditure. To improve overall efficiency, spending decentralization should be accompanied by better administrative capacity at the local level, better definitions of concurrent spending, and revenue decentralization to ensure greater accountability and to preclude extreme situations where government officials engage in nonproductive expenditure or corrupt behavior.

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[78] Ter-Minassian and de Mello (2016). Based on SNG surveys. In a similar vein, Fedelino and Ter-Minassian (2010) review country case studies in Bolivia, Colombia, and Mexico. A common finding is that spending responsibilities overlap in health and education and that spending responsibilities are not clearly defined.

[79] FMM/IDB Subnational Platform.

Toward Greater Efficiency

Even though Latin America and the Caribbean displays some of the most inefficient public spending in the world, this spending has been increasing strongly in recent decades to reach 29.7 percent of GDP in 2016. In fact, some countries in the region currently spend more than the average OECD country. The issue can be further divided into two separate sets of questions. The first involves technical efficiency, or the inefficiencies within each expenditure component. The second involves allocative efficiency, which entails prioritizing among alternative spending items and allocating expenditure to programs with higher social rates of return.

This chapter first estimated technical inefficiency from the losses incurred by spending inefficiently in procurement, wages, and subsidies and transfers. Waste in procurement is estimated at about 16.7 percent of procurement spending, or 1.4 percent of GDP for the average country. Waste in wages is another important issue. Latin America has one of the world's highest public-private wage gaps in favor of public sector workers. Considering that part of the gap is not warranted, about 14.2 percent of the wage bill spending for the average country is waste. Finally, leakages in energy subsidies, social programs, and tax expenditure amount to 65 percent of theoretical targeted spending. Overall, in procurement, civil service, and targeted transfers, the total average amount of waste is approximately 4.4 percent of GDP and about 16 percent of average government spending. This is equivalent to $220 billion, somewhere between the GDP of Peru ($190 billion) and Chile ($250 billion), two of the region's largest economies. These inefficiency estimates represent a first attempt at the extremely difficult exercise of capturing inefficiencies in sectors that, although sharing some trends, are quite different among countries and require detailed country diagnostics. Such caveats, however, do not make the analysis any less relevant: to date, no comparative analysis of inefficiencies in all inputs used by the government, including the wage bill, is available for the region.

Second, while allocative inefficiency of public spending is pervasive in the region, policymakers face several crucial trade-offs in allocating expenditure by function: 1) between older and younger generations; 2) among physical capital, human capital, and transfers; 3) across ministries and along the life cycle of individuals to maximize much-needed skills formation in the region; and 4) between central and subnational levels. The total allocative inefficiency of these programs is substantial and difficult to estimate in most cases, but some indication of the size is provided in some case studies.

In regard to the first trade-off, several Latin American countries spend heavily on the elderly, some four times what is spent per capita on the youngest cohorts, as coverage and replacement rates of pension systems have increased to levels that rival or exceed those of developed countries. As the population ages, both pension and health spending are expected to more than double. Under these circumstances, it is critical for Latin America and the Caribbean to address this intertemporal budget constraint. In the medium term, even if spending on the elderly increases for demographic reasons alone, other public spending will have to shift or decrease to accommodate that change if no reforms are enacted; and given current contribution levels (high in many countries already), pension systems' deficits may rise to unprecedented proportions. At the same time, the window of opportunity for improving the quality of physical and human capital will be totally lost unless investment is strengthened today and policies are enacted soon to accommodate aging and assure the well-being of current and future generations.

Fiscal policy, particularly the composition or allocative efficiency of public spending, has played an important role in the region's low growth in recent decades. Improving the quality and investment in human capital are important determinants for increasing long-run growth. Moreover, certain public spending items (public investment) boost potential growth, while others (mainly current spending on pensions and transfers) lower potential growth. In addition, spending more on education does not have a direct effect on economic growth, confirming that the link between the quality-adjusted years of schooling indicator is more suited for estimating the impact of education on economic growth. This implies that reallocating spending toward infrastructure and improving quality education spending can raise growth rates over the long run. However, higher spending beyond a particular threshold can decrease growth if not accompanied by better government institutions.

Until recently, Latin America's relative long-term stagnation or low growth was blamed largely on low productivity of factors of production despite an increase in the number of workers and the capital stock. Recent research, however, shows that when human capital is properly accounted for (including not only quantity but quality and OJT), the relative importance of human capital (or labor augmented by quality) explains a larger part of the difference in income per capita. Physical capital and TFP are important in triggering demand (and more productivity) for human capital in the first place. Latin American and Caribbean countries should start to improve conditions for acquiring skills rather than just spending on education and should aim to facilitate OJT by

lifting distortions in the labor market, especially incentives to informality. While school enrollment has increased in most countries, improving cognitive (and noncognitive) skills and reducing fiscal incentives to informality to increase productivity and the amount and returns to OJT seems to have a higher payoff and greater potential for permanently increasing incomes.

Since skills need to be enhanced in the region at the family, school, and work levels, improving the allocative efficiency of public spending on skills is paramount. To maximize returns at minimum costs, spending should be allocated to the highest social return at each stage in the life cycle. But today only a fifth of spending is allocated to children under 6 compared to primary school children. Average rates of return to early education are underestimated for low-skilled children from disadvantaged families, while average returns to secondary and tertiary education overestimate the return to disadvantaged children. The opposite is true for students from more advantaged backgrounds. Since average returns are often perceived as being based on skills acquired along the life cycle rather than at particular crucial times, public spending tends to overemphasize higher learning and underemphasize spending on the earlier years of the life cycle when disadvantaged students will gain the most. Hence, public spending on skills suffers from tremendous allocative inefficiency, affecting growth and equity.

Finally, unless governments decentralize both spending and revenues efficiently, improve the definition of functions between central and subnational governments, and enhance the capabilities of local governments, it will be difficult to advance the regional allocative efficiency of public spending. The average Latin American country spends 19 percent of consolidated spending at the subnational level; with six countries spending between 32 and 47 percent. However, SNGs rely on central government transfers for about two-thirds of their spending. The region's current decentralization structure is not conducive to allocative efficiency in spending, as SNGs are more efficient when they spend revenues that they levy themselves through subnational taxes rather than central government transfers or natural resource windfalls.

Governments in the region risk low, stagnant growth and fiscal sustainability problems. They do so by being excessively large or by spending heavily on transfers and pensions before their populations become relatively old and wealthy without at the same time improving the quality of investment in infrastructure and human capital—especially skills. How, then, can governments make room in their budgets to increase human and physical capital expenditures? One way is to reduce waste in procurement,

civil service payrolls, and transfers, which currently equal about 4.4 percent of GDP. Another is to reallocate expenditures away from transfers, particularly those that have proven least effective in reducing poverty and inequality. Chapter 9 of this report, which focuses on institutions, presents lessons learned from countries in the region and elsewhere to improve the design of public expenditure policy and management in order to increase the efficiency of public spending.

4 The Impact of Public Spending on Equity: Not Always as Intended

Economic growth and sound macroeconomic policies are essential to reduce poverty and income inequality. Governments can play a key role by using fiscal policy and public spending to further reduce poverty and inequality, and more importantly, ensure that these declines are long-lasting. However, because people and governments, and their behaviors, are involved, the effect of public spending is not always as intended. The relationship between spending and equity is complicated, indeed.

Governments can use fiscal policies (e.g., taxes and transfers) to target specific groups and redistribute resources from rich to poor individuals, households, and regions within a country. They can also provide in-kind transfers: quality services in education, health, and other public services that improve human capital, potentially enabling citizens to access more productive jobs, better remuneration, and an improved quality of life. Policies designed to increase human capital and overall productivity improve equity directly and indirectly through economic growth.

During the commodity boom at the beginning of this century, Latin America and the Caribbean experienced a period of economic growth marked by significant reductions in poverty and inequality. However, these gains were mainly driven by a favorable international environment—not productivity gains. During that period, Latin American and Caribbean countries also increased public spending—particularly social spending. Importantly, since the mid-1990s noncontributory social spending (NCSS) has risen to protect the huge number of informal workers without social insurance from various risks. Such widely praised policies to cover informal workers have indeed improved the lives of the poor but have created major problems for long-term poverty reduction, productivity, and the acquisition of human capital.

Hence, fiscal policy and public spending in the region seem to be making progress—albeit with several inefficiencies—in improving equity in the short run but still have a long way to go to achieve a long-run decline in poverty. If

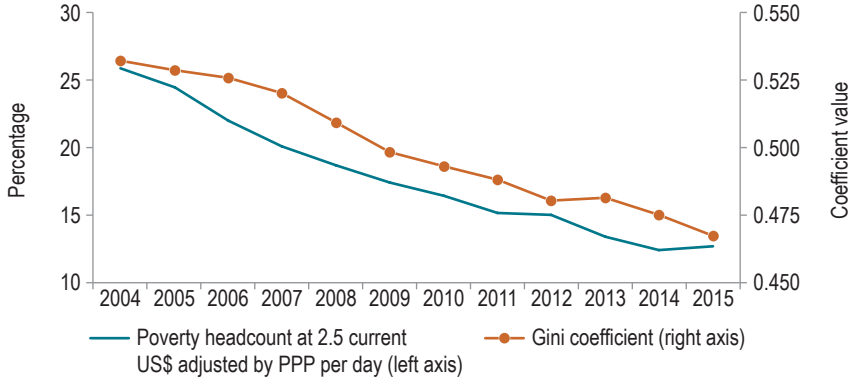
governments want to sustain the reduction in poverty and inequality, they need to change priorities: improve targeting, decrease reliance on noncontributory social spending, enhance the quality of education and health for the poor, and increase the overall efficiency of social spending.

This chapter focuses on the effect of public spending on the welfare state, providing evidence that public spending in Latin America and the Caribbean was not efficient in achieving a sustained decrease in poverty and inequality over the last decade. Important problems remain and this chapter identifies and quantifies: 1) the low redistributive capacity of fiscal policy, particularly spending policy; 2) high spending on regressive programs and low spending on progressive programs; 3) the low targeting capacity of social programs; 4) ever-greater noncontributory spending, which elicits behavioral responses that diminish the effect of social policy; 5) spending on health and education that, when quantified at cost, seems progressive, but when analyzed by its coverage and quality, is actually regressive; and 6) the increasing share of subnational governments' contributions to social spending, which adds an additional challenge for equity.

Past, Present, and Future

Over the last decade, poverty and inequality declined until leveling off in 2014 (see Figure 4.1). Poverty fell in virtually every country, and the fraction of people in the region living on less than $2.50 per day halved from 25.9 percent in 2004 to 12.7 percent in 2015. The declines in inequality are similarly impressive. In 2004, the (disposable income) Gini

Figure 4.1 Poverty and Inequality in Latin America and the Caribbean



Source: Authors' calculation based on World Bank LAC Equity Lab and CEDLAS.
Note: Both series are calculated considering 11 countries from Latin America and the Caribbean.

coefficient[1] was 0.532 on average, and by 2015, it had fallen by more than 6 percentage points to 0.467.

Despite this decline in inequality, Latin America and the Caribbean continues to be one of the most unequal regions in the world.[2] The simple average for the Gini coefficient outside the region was 0.319 in the Organisation for Economic Co-operation and Development (OECD) economies (excluding Latin American and Caribbean countries), 0.360 in South Asia, 0.372 in East Asia, and 0.423 in Sub-Saharan Africa.[3] With deteriorating external conditions since 2010, further declines in inequality are unlikely in Latin American and Caribbean countries, as their fiscal space shrinks and limits their ability to further increase social spending.

The region's continuous fall in poverty between 2003 and 2014 was primarily driven by economic growth rather than income redistribution. Between 2003 and 2007, about 73 percent of poverty reduction was due to economic growth; this share dropped to about 56 percent between 2007 and 2012, as redistribution played a more important role (World Bank, 2014). This growth fostered a relatively strong increase in labor income among the poor (Azevedo, Inchauste, and Sanfelice, 2013; Cord et al., 2017; Gasparini, Cruces, and Tornarolli, 2016). Of course, growth alone is not enough. How much and how efficiently public, and particularly social, spending contributes through cash and in-kind transfers to the decline in poverty and inequality is the subject of this chapter.

Most programs that affect equity directly are included in social spending and can be divided among programs that provide social insurance; programs that redistribute income; and those that build human capital, including education. Social insurance helps households manage adverse events like losing one's job (unemployment insurance), becoming sick (health insurance), suffering an accident (disability insurance), or facing old-age poverty (retirement pensions). Programs that redistribute income, on the other hand, focus on a subset of households—usually the poor—and aim to increase those households' consumption.

Countries in Latin America and the Caribbean increased public spending—particularly social spending—in recent decades. Social expenditure

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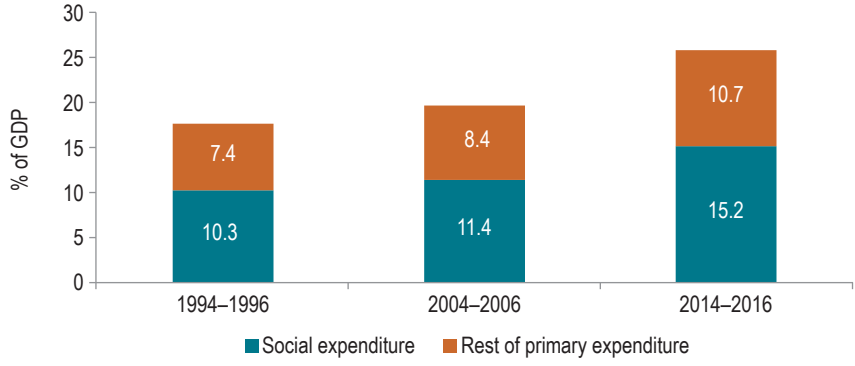
1 The Gini coefficient was calculated using the disposable income of households, that is, income after taxes and transfers.

2 A growing literature analyzes the possible reasons for the decrease in inequality: López-Calva and Lustig (2010); Azevedo, Inchauste, and Sanfelice (2013); Lustig, López-Calva, and Ortiz-Juárez (2016); Levy and López-Calva (2016); de la Torre, Messina, and Silva (2017); and Busso et al. (2017), among others.

3 The average of Gini coefficients in countries in each region for the latest year available between 2011 and 2015 (World Development Indicators, World Bank).

Figure 4.2 Average Primary and Social Expenditure in Latin America and the Caribbean



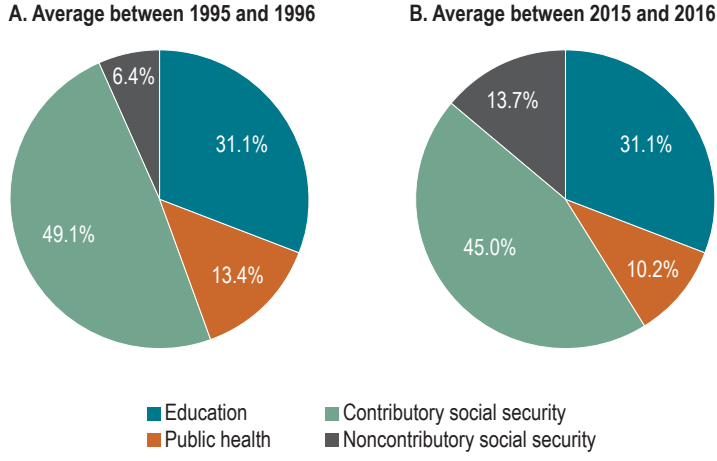
Source: Authors' calculation based on IDB/FMM Public Expenditure database and CEPALSTAT.
Note: Social expenditure includes: culture and religion; education; environmental protection; health; housing and community amenities; recreation; and social protection. It is based on 12 Latin American and Caribbean countries.

rose from 10.3 percent of gross domestic product (GDP) in 1990–1996 to 15.2 percent of GDP in 2014–2016 (while maintaining its participation in total expenditure at around 58 percent; Figure 4.2). This increase in spending occurred in a favorable international environment, with resource-rich countries enjoying a relatively long period of high commodity prices and more U.S.-dependent economies enjoying low interest rates; together these factors contributed to significant growth and a decline in poverty and inequality.

A major development since the mid-1990s has been a rise in noncontributory social spending; many governments introduced noncontributory pensions and health insurance, and cash transfers targeted to the poor. A growing consensus developed around the need to ensure a minimum income floor for the poor to allow them to escape poverty. The problem was that, since the origins of social insurance in the region in the mid-20th century, access has been limited to wage-employed workers.[4] But many people are self-employed, while others are employed by firms that evade social security contributions. As a result, many workers—referred to as informal workers—have no access to social insurance, which explains Latin America's "truncated welfare state": formal workers are covered, informal ones are not. But informal workers also become sick, lose their jobs, have accidents, or face old-age poverty. Hence, governments began to expand noncontributory social spending. While in 1995–1996 noncontributory social spending accounted for 7 percent of total social spending,

[4] This is an inheritance from Bismarck's first social insurance programs in Germany at the end of the 19th century (Kaplan and Levy, 2014).

Figure 4.3 Average Composition of Social Spending in Latin America and the Caribbean



Source: Authors' calculation based on IDB/FMM Public Expenditure database.

20 years later it had doubled to 14 percent (Figure 4.3). During the same period, the share of education remained at 31 percent (hence increasing as a percentage of GDP); thus, the increase in noncontributory social spending came at the expense of contributory social spending and public health.

First-Round Fiscal Incidence: No Behavioral Effects[5]

The tax and transfer system potentially plays an important role in reducing poverty and inequality. Fiscal incidence analysis consists of allocating taxes (personal income tax and consumption taxes, in particular) and public spending (social spending and consumption subsidies) to households or individuals and comparing incomes before and after taxes and transfers. Transfers include both cash transfers and benefits in kind, such as government services in education and health care. The incidence analysis

[5] For this section and the next, part of the data and indicators—as cited—were developed by the Commitment to Equity (CEQ) Institute, which contributed kindly with papers and data from the CEQ Data Center on Fiscal Redistribution. The authors acknowledge its inputs although the opinions in this and other chapters are the authors' own, not endorsed by the CEQ Institute. Led by Nora Lustig since 2008, the CEQ project is an initiative of the Center for Inter-American Policy and Research (CIPR) and the Department of Economics, Tulane University, the Center for Global Development, and the Inter-American Dialogue. The CEQ project is housed in the CEQ Institute at Tulane. For more details visit www.commitmentoequity.org. The information on the incidence of fiscal policy for each country comes from evidence recorded in each country from 2009 to 2016.

starts by defining the various types of income: market income, disposable income (equal to market income plus cash transfers less direct taxes and social security contributions), consumable income (post indirect taxation and subsidies), and final income (adding education and health spending to consumable income) (see Immervoll et al., 2009; and Lustig, 2017).

Benefit and tax incidence analysis show the first-round effects, that is, before the behavioral responses take place. This section aims to understand why fiscal policy in Latin America, especially spending policy, reduces inequality less than in more advanced economies, even without considering behavioral effects.

Inequality is much higher in Latin American countries than in advanced countries. According to the latest available incidence analysis for each country in Latin America and advanced countries (about 2012), Gini coefficients after direct taxes and cash transfers were 73 percent higher in Latin America than in advanced countries (Figures 4.4 and 4.8). Is this the result of differences in primary income of factors of production (market income), or of the incidence of taxes and expenditure? The answer lies in the differential effects of taxes and transfers among the regions. Inequality before direct taxes and transfers is only about 5.3 percent higher in Latin America (with a Gini of 0.515) than in advanced countries (with a Gini of 0.488), which is not that big a difference.[6] Hence, the enormous difference in disposable income inequality between regions is due mostly to fiscal policy. In fact, for 16 Latin American countries, direct taxes and cash transfers reduce inequality by only 4.7 percent on average, while in a sample of advanced countries the decline is 38 percent.[7] Uruguay, the country that redistributes the most in Latin America, redistributes less than the least-redistributing European country. Other high redistribution countries in Latin America are Argentina and Brazil (Figure 4.4).[8]

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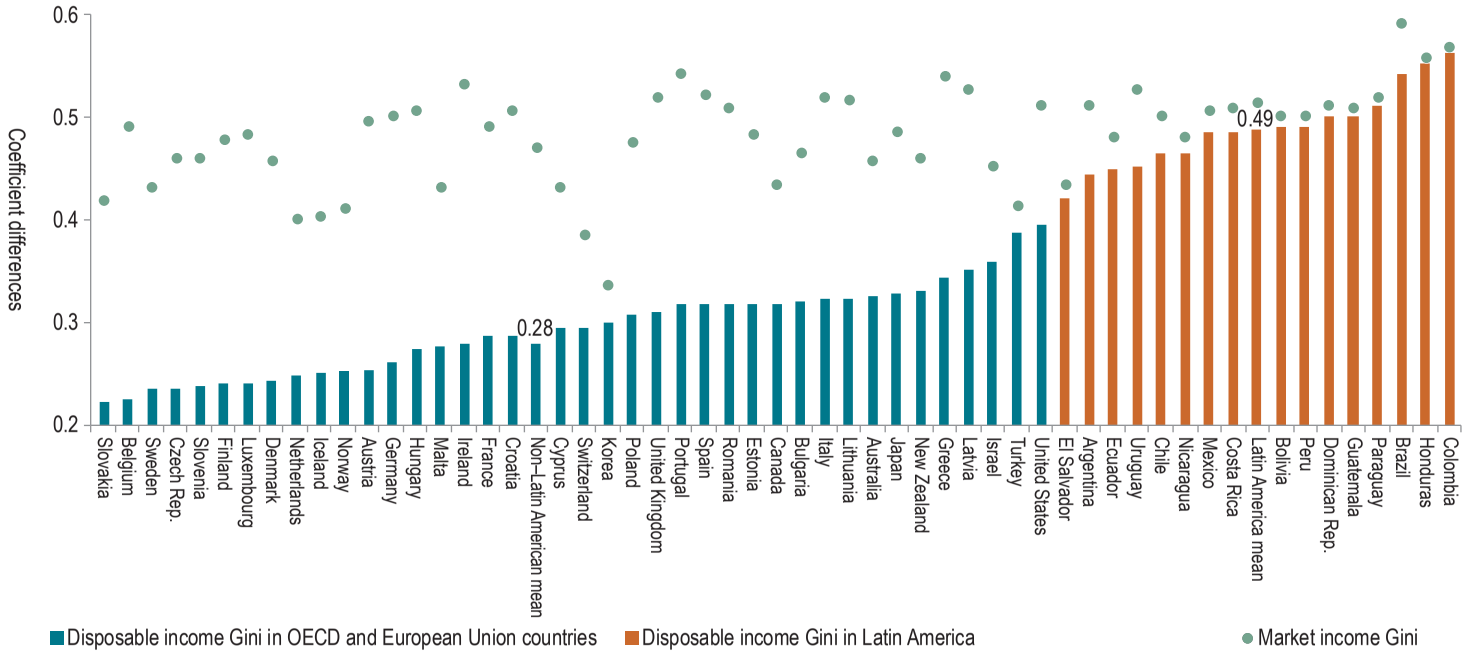
6 Even some advanced OECD countries such as Germany, Ireland, the United Kingdom, Italy, and the United States have market income Gini coefficients higher than 0.500, and thus higher than those of several countries in Latin America.

7 Including only the more "progressive" European Union countries, the reduction in inequality is even higher at 42 percent.

8 While this analysis focuses largely on the impact of spending on equity, the redistributive power of expenditures is higher than that of taxes. In OECD countries, direct taxes reduce inequality by about 30 percent, with the remaining 70 percent coming from cash transfers. In Latin America the relative impacts of cash transfers (65 percent) and direct taxes (35 percent) are similar to those in the OECD. Only direct taxes are included and, to compare with the OECD (2016a), a similar methodology is adopted, comparing sequential market income with market income after direct taxes and then with transfers, to obtain disposable income and the effect of direct taxes separated from spending. See Lustig (2017) for an explanation of the methodology using the marginal contribution of taxes and spending that does not depend on sequence and the effect of introducing consumption taxes in Latin America.

Figure 4.4 **Differences in Income Inequality Pre- and Post-Taxes and Government Cash Transfers in Latin America, Compared with OECD and European Union, Circa 2012**



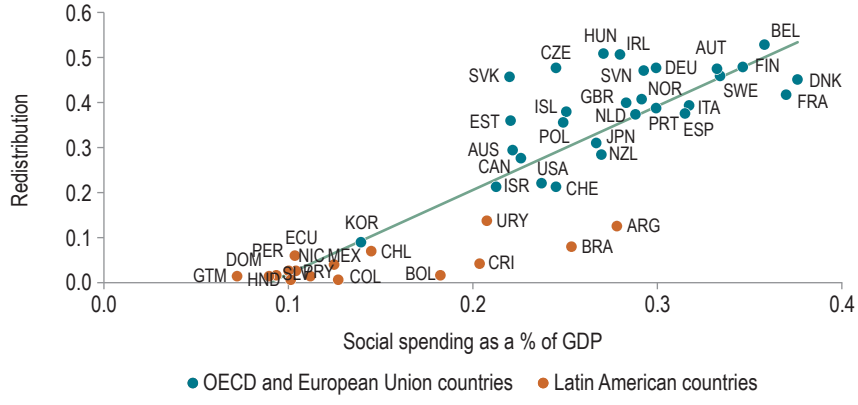
Source: Author's elaboration based on the following works: a) Commitment to Equity Institute Data Center on Fiscal Redistribution. Based on information from: Argentina (Lustig and Pessino, 2014; Rossignolo, forthcoming); Bolivia (Paz Arauco et al., 2014); Brazil (Higgins and Pereira, 2014); Chile (Martínez-Aguilar et al., forthcoming); Colombia (Lustig and Meléndez, 2015); Costa Rica (Sauma and Trejos, 2014); Dominican Republic (Cabrera et al., 2016); Ecuador (Llerena Pinto et al., 2015); El Salvador (Beneke, Lustig, and Oliva, forthcoming); Guatemala (ICEFI, 2016a); Honduras (ICEFI, 2016b); Mexico (Scott, 2014); Nicaragua (ICEFI, 2016c); Paraguay (Higgins et al., 2013; Giménez et al., 2017); Peru (Jaramillo, 2014); and Uruguay (Bucheli et al., 2014); b) all countries (Lustig, Pessino, and Scott, 2014; Lustig, 2017); c) EUROMOD version no. G4.0 for countries belonging to the European Union and OECDstat for OECD countries.
Note: Redistribution is defined as the difference between market income and disposable income inequality, expressed as a percentage of market income inequality.

Several reasons explain the substantial difference in redistribution between Latin American and advanced countries. Essentially, two characteristics of the fiscal system determine its degree of redistribution: the size of tax and expenditure interventions; and the progressivity or regressivity of each intervention, which is related to the degree that cash transfers leak out to the nonpoor.

Size Matters for Redistribution—But It's Not Everything

There is a positive relation between the size of spending and redistribution. However, when comparing Latin American countries with OECD countries that spend roughly the same, advanced countries redistribute much more (Figure 4.5). The Latin American countries that reduce inequality most (between 6 percent and 14 percent) are Uruguay, Argentina, and Brazil, and they are also among the countries that spend most on social programs (Argentina leads in social spending with 28 percent of GDP, followed by Brazil with 25 percent, and Uruguay with 21 percent). However, size is not everything; European countries with similar levels of social

Figure 4.5 Social Spending and Redistribution in Latin America, OECD and European Union, Circa 2012



Source: Author's elaboration based on the following works: a) Commitment to Equity Institute Data Center on Fiscal Redistribution. Based on information from: Argentina (Lustig and Pessino, 2014; Rossignolo, forthcoming); Bolivia (Paz Arauco et al., 2014); Brazil (Higgins and Pereira, 2014); Chile (Martínez-Aguilar et al., forthcoming); Colombia (Lustig and Meléndez, 2015); Costa Rica (Sauma and Trejos, 2014); Dominican Republic (Cabrera et al., 2016); Ecuador (Llerena Pinto et al., 2015); El Salvador (Beneke, Lustig, and Oliva, forthcoming); Guatemala (ICEFI, 2016a); Honduras (ICEFI, 2016b); Mexico (Scott, 2014); Nicaragua (ICEFI, 2016c); Paraguay (Higgins et al., 2013; Giménez et al., 2017); Peru (Jaramillo, 2014); and Uruguay (Bucheli et al., 2014); b) all countries (Lustig, Pessino, and Scott, 2014; Lustig, 2017); c) EUROMOD version no. G4.0 for countries belonging to the European Union and OECDstat for OECD countries.
Note: Redistribution is defined as the difference between market income and disposable income inequality, expressed as a percentage of market income inequality.

spending reduce inequality at least four times as much (from 40 percent in the United Kingdom to 53 percent in Hungary and Ireland).

The composition of social spending and the size of each component are important determinants of redistributive success. The largest differences between advanced and Latin American countries are pensions and direct transfers. Indeed, health and education spending are 20 to 50 percent higher in advanced countries than in Latin America, while cash transfers and contributory pensions are almost three times larger. Even where the levels and composition of social expenditure are similar to those of the average advanced country, as in Argentina and Brazil, redistribution capacity is still lower.

The average expenditure on contributory pensions for the 16 Latin American countries was 3.3 percent of GDP compared to 8.8 percent for the OECD (Figure 4.6). Even though some countries in the region, such as Brazil and Uruguay, spend close to the OECD average on pensions as a percentage of GDP, the effect on inequality is much smaller. Regarding cash transfers, Latin America spends 1.6 percent of GDP on direct transfers, while the OECD spends 4.4 percent on average.[9] Again, average cash transfers in the countries that redistribute the most—Argentina, Brazil, and Uruguay—are similar to the OECD average of 4.4 percent of GDP.

Contributory Pensions, Noncontributory Spending, and Conditional Cash Transfers: Breaking It Down

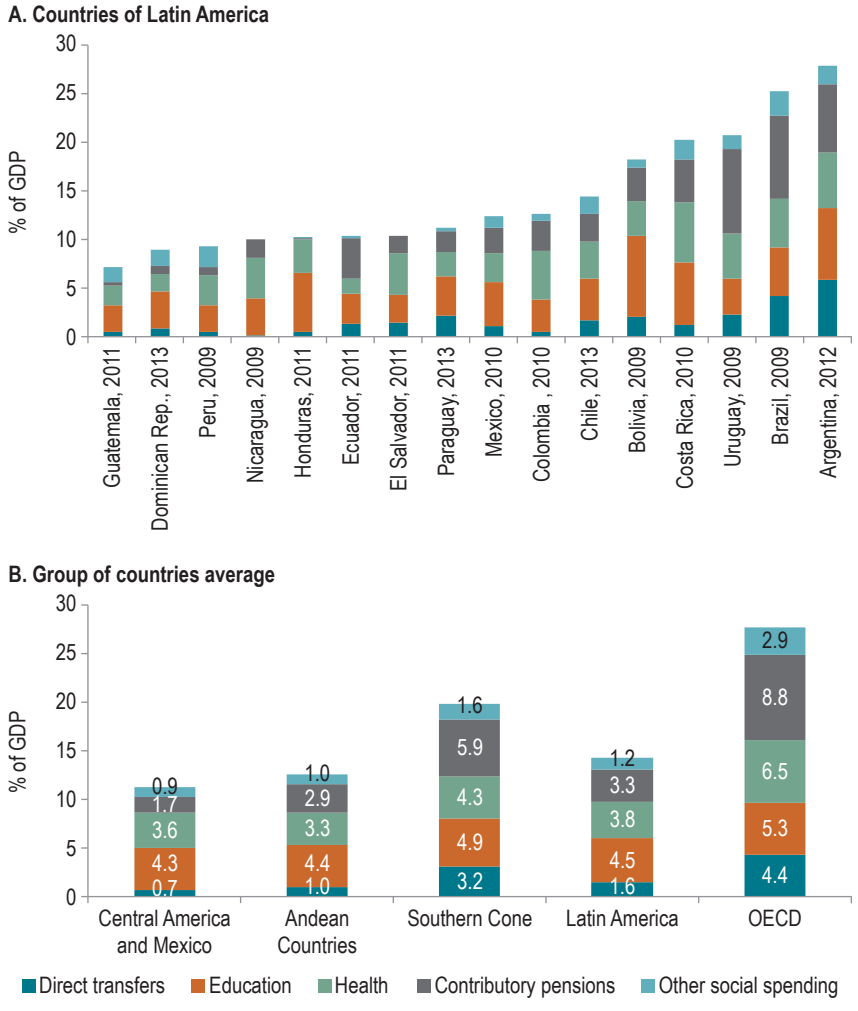
While the size and composition of public spending explain part of its redistributive capacity, the progressivity of each expenditure item—contributory, noncontributory pension spending, and conditional cash transfers—and its relative size explain the incidence on inequality and poverty (see Box 4.1 for definitions of redistributive analysis).

Contributory Pensions

Contributory pension spending in Latin America is pro-rich, meaning that the transfer increases with pre-fiscal income; hence, the rich receive a higher proportion than the poor in pension benefits. The exceptions are Argentina and Uruguay, where pension spending is slightly pro-poor. In fact, the distribution of contributory pension income by per capita income quintile ordered by pre-pension market income is quite different for

[9] The figures in this section are from the same year of incidence study available in the Commitment to Equity (CEQ) project. For some countries, this spending continues to increase, especially in NCPs.

Figure 4.6 Composition of Government Social Spending



Source: Author's elaboration based on the following works: a) Commitment to Equity Institute Data Center on Fiscal Redistribution. Based on information from: Argentina (Lustig and Pessino, 2014; Rossignolo, forthcoming); Bolivia (Paz Arauco et al., 2014); Brazil (Higgins and Pereira, 2014); Chile (Martínez-Aguilar et al., forthcoming); Colombia (Lustig and Meléndez, 2015); Costa Rica (Sauma and Trejos, 2014); Dominican Republic (Cabrera et al., 2016); Ecuador (Llerena Pinto et al., 2015); El Salvador (Beneke, Lustig, and Oliva, forthcoming); Guatemala (ICEFI, 2016a); Honduras (ICEFI, 2016b); Mexico (Scott, 2014); Nicaragua (ICEFI, 2016c); Paraguay (Higgins et al., 2013; Giménez et al., 2017); Peru (Jaramillo, 2014); and Uruguay (Bucheli et al., 2014); b) all countries (Lustig, Pessino, and Scott, 2014; Lustig, 2017); c) OECDstat for OECD countries.

Argentina and Brazil than for El Salvador and Guatemala. In the first two countries, the two richest quintiles receive between 39 and 44 percent of pension income, similar to what the poorest two quintiles receive. However, in El Salvador and Guatemala, the two richest quintiles receive 80

BOX 4.1 DEFINITIONS OF REDISTRIBUTIVE ANALYSIS

The concentration coefficient provides a summary measure of the magnitude of pro-richness or pro-poorness of the transfer. If the transfer concentration or quasi-Gini coefficient is positive, the transfer or benefits increase for the higher-income population (pro-rich). If the concentration coefficient is negative, the transfer decreases with income (pro-poor), benefiting proportionally more poor than rich individuals. A concentration coefficient will be zero if all income units receive the same absolute amount of transfers.

The Kakwani index for transfers is defined as the difference between the Gini for market income and the concentration coefficient of the transfer (Kakwani, 1977). Spending is defined as regressive whenever the concentration coefficient is higher than the Gini for market income, or the Kakwani index is negative. While pro-poor spending is always absolutely progressive, pro-rich spending can be progressive when the concentration coefficient is lower than the Gini coefficient of market income

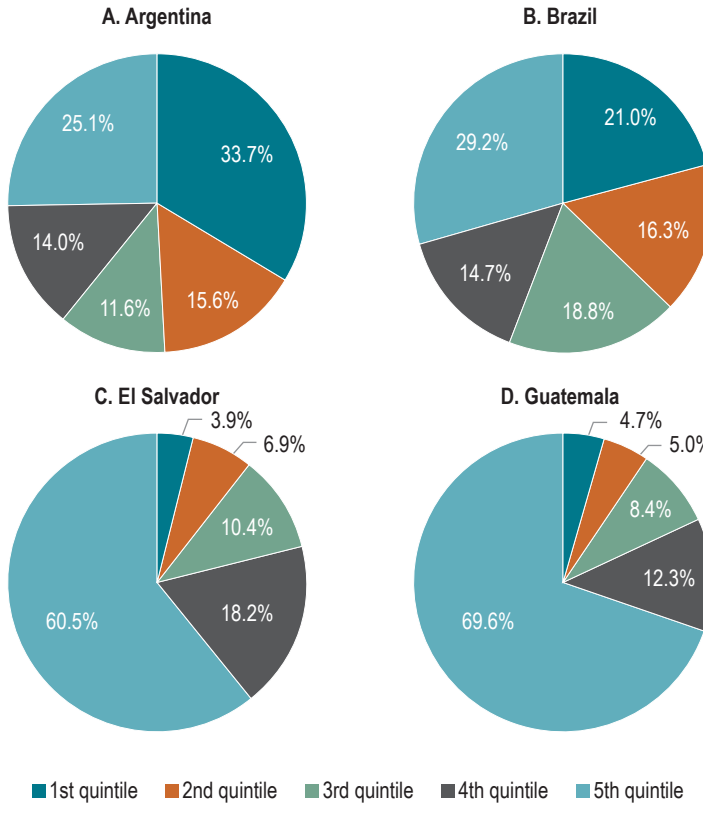
The redistributive effect can be captured by the difference in the Ginis of pre- and post-transfer income. Redistribution depends on the interaction between the size of the transfer, and progressivity (or targeting). A typical indicator of the redistributive effect of fiscal policy is the difference between the market income Gini and the Gini for income after taxes and transfers. If the redistributive effect is positive (negative), fiscal policy is equalizing (unequalizing) (Reynolds-Smolenski coefficient).

percent while the two poorest quintiles receive only 10 percent of total pension income (Figure 4.7).

For most of the 15 countries, the concentration coefficient is positive (hence, pension spending is pro-rich); but in about half the concentration coefficient is smaller than the market Gini coefficient, making pensions relatively progressive (Brazil has pro-rich spending but is relatively progressive when ranked by market income); in the other half, pro-rich pension spending is regressive. When considering the equalizing or unequalizing effect, which takes into consideration both the progressiveness and the size of the transfer,[10] in half the countries pensions slightly improve the income distribution, while in the other half, pensions have an unequalizing effect. On average, Latin American contributory pensions decrease inequality slightly. However, contributory pensions are pro-poor and largely equalizing in the EU-27 (Figure 4.8). Hence, much of the difference in the redistributive

[10] See Urban (2009) and Lustig (2017) for more details.

Figure 4.7 Distribution of Income from Pensions by Quintile of Per Capita Income (ranked by market income), Circa 2012



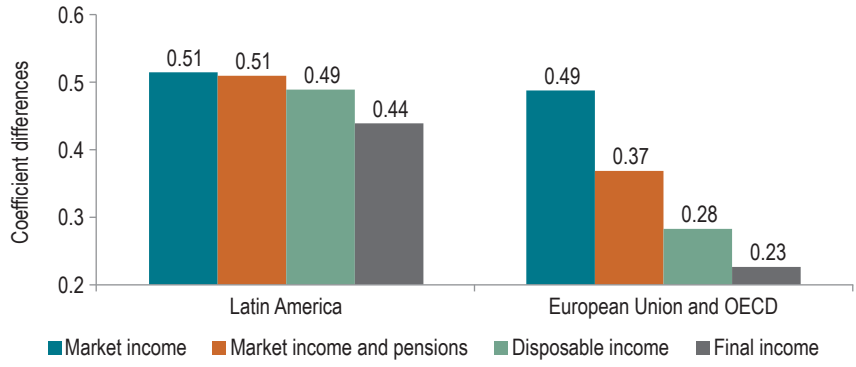
Source: Authors' calculation based on the following works: Lustig and Pessino (2014) for Argentina; Higgins and Pereira (2014) for Brazil; Beneke, Lustig, and Oliva (forthcoming) for El Salvador; ICEFI (2016a) for Guatemala; and Lustig, Pessino, and Scott (2014) and Lustig (2017) for all countries.

effect of social spending between the OECD and Latin America reflects differences in their pension redistributive power.[11]

This difference in the redistributive power of pensions derives in part from the high informality of Latin American labor markets and the resulting segmentation of social security systems; informal workers, who tend to be poorer, are left out of the system. Contributory pensions in Latin America and the

[11] Since the effect of pensions can be overstated if considered a transfer rather than a part of market income, Lustig (2016, 2017) shows that the redistributive effect is six times larger between advanced and Latin American countries if pensions are considered a transfer and still large but only four times larger if pensions are considered part of market income.

Figure 4.8 Differences in Income Inequality, Pre- and Post-Pensions, and Government Cash and In-Kind Transfers in Health and Education



Source: Author's elaboration based on the following works: a) Commitment to Equity Institute Data Center on Fiscal Redistribution. Based on information from: Argentina (Lustig and Pessino, 2014; Rossignolo, forthcoming); Bolivia (Paz Arauco et al., 2014); Brazil (Higgins and Pereira, 2014); Chile (Martínez-Aguilar et al., forthcoming); Colombia (Lustig and Meléndez, 2015); Costa Rica (Sauma and Trejos, 2014); Dominican Republic (Cabrera et al., 2016); Ecuador (Llerena Pinto et al., 2015); El Salvador (Beneke, Lustig, and Oliva, forthcoming); Guatemala (ICEFI, 2016a); Honduras (ICEFI, 2016b); Mexico (Scott, 2014); Nicaragua (ICEFI, 2016c); Paraguay (Higgins et al., 2013; Giménez et al., 2017); Peru (Jaramillo, 2014); and Uruguay (Bucheli et al., 2014); b) all countries (Lustig, Pessino, and Scott, 2014; Lustig, 2017); c) EUROMOD version no. G4.0 for countries belonging to the European Union and OECDstat for OECD countries.
Note: Redistribution is defined as the difference between market income and disposable income inequality, expressed as a percentage of market income inequality.

Caribbean cover about 40 percent of workers, who tend to be better off, making the system highly unequal (Bosch, Melguizo, and Pagés, 2013; Berstein et al., 2018). Moreover, benefits have outpaced workers' contributions and led to deficits in pension systems that have been covered by public revenues.

With the current systems in place and a rapidly aging population, pension deficits will increase over the next few decades. Hence, pensions today can be regarded in part as market income and in part as transfers since the government is financing them and partially running a deficit in all countries and the deficit will continue to increase in the absence of reforms. If eventually pensions are covered more from general taxes, it will be important to rethink their uneven coverage, inequality bias, and segmentation with a unique system of pensions (i.e., all noncontributory pensions).[12]

[12] However, there is another troublesome implication of formal-informal transits. Pension systems in the region, of either variety, usually require workers to contribute a minimum number of years to qualify for even the minimum pension. For a majority of those contributing, who have many or long formal-informal transits, the promise of a pension will be unfulfilled—surely a major social and political issue in the future. And this is not a result of low contribution rates in several countries (Levy, 2017).

Noncontributory Cash Benefits

Lack of coverage for pensions and family and children allowances, particularly among low-income workers and families, represents a major social problem. In response, Brazil and Argentina in the 1990s, followed by the rest of the region, introduced or expanded pension programs for the elderly, even if they never contributed to the pension system as workers or participated in the labor force. These are called noncontributory pensions, or NCPs. Also, conditional cash transfers (CCTs) were introduced in Brazil in the mid-1990s, in Mexico (through Progresa) in 1997, and eventually spread to most countries in the region. CCTs and NCPs were key initiatives to reduce poverty. As of 2014–2015, CCT programs served one-fifth of the region's population—132 million people and 30 million households—with spending equivalent to 0.3 percent to 0.5 percent of regional GDP (Levy and Rodríguez, 2005; Robles, Rubio, and Stampini, 2015; Cecchini and Atuesta, 2017; Figure 4.9A). Since workers receive benefits without contributing,[13] the incentive is for workers on the margin of informality to become informal; this "subsidy" to informality has second-round negative consequences on poverty and productivity (efficiency).

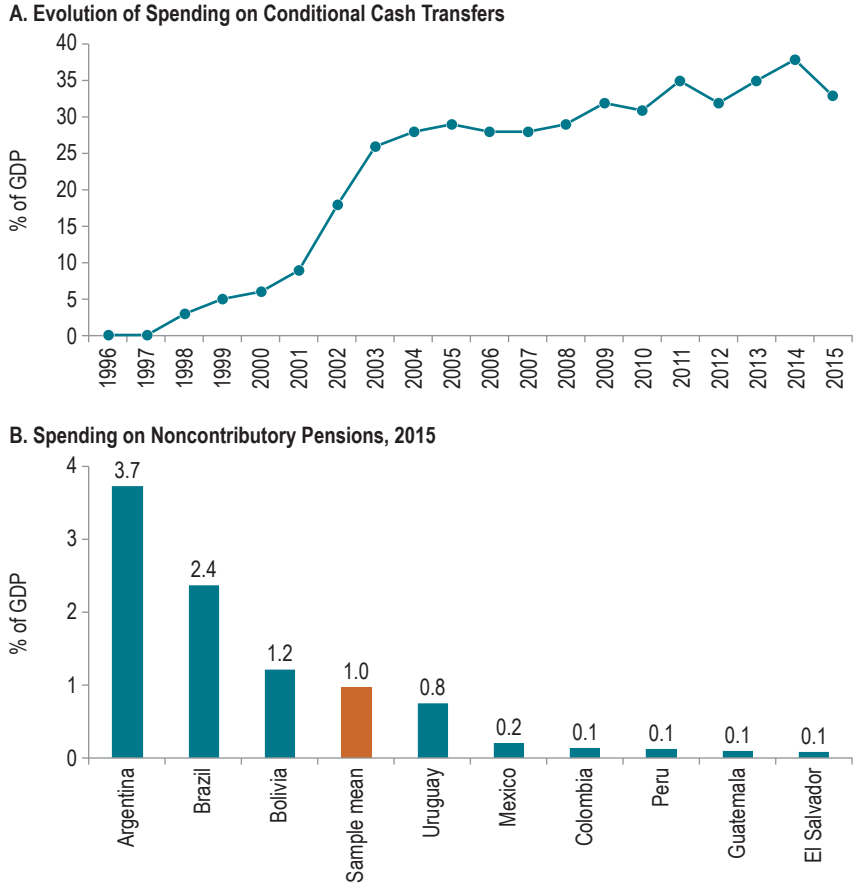
NCPs are usually given to people over 65 or 70 years of age, although they vary across countries. The amounts paid are the same for all recipients, although the rules to qualify vary: in some cases, subject to a means test, in others subject to the beneficiary not having access to a contributory pension, and in other cases, universal. This variation is reflected in the average spending, which can range from 0.7 percent in Uruguay, to 2.4 percent in Brazil, 1.2 percent in Bolivia, and 3.7 percent in Argentina (Alaimo, Dborkin, and Izquierdo, 2018; Figure 4.9B).[14]

CCTs are one of the most progressive programs, with concentration coefficients ranging from the most progressive, –0.65 in Peru (with Juntos) and –0.61 in Uruguay (with Family Allowances), to less progressive programs. In all, the average concentration coefficient for CCTs is –0.46 for the Latin American countries considered. NCPs are much less progressive than CCTs. Since NCPs are larger programs than CCTs, even though they are less progressive, in some countries they have a higher impact on redistribution than CCTs because of their size (Figure 4.10).

[13] Because these benefits are financed from general government revenues and not from a tax on wages, they are usually labeled "noncontributory programs."

[14] In Argentina this includes effects of the long-standing Social Pensions, in effect since 1948, and the more recent Pension Moratorium, in effect since 2005.

Figure 4.9 Spending on Conditional Cash Transfer Programs and Noncontributory Pensions in Latin America and the Caribbean



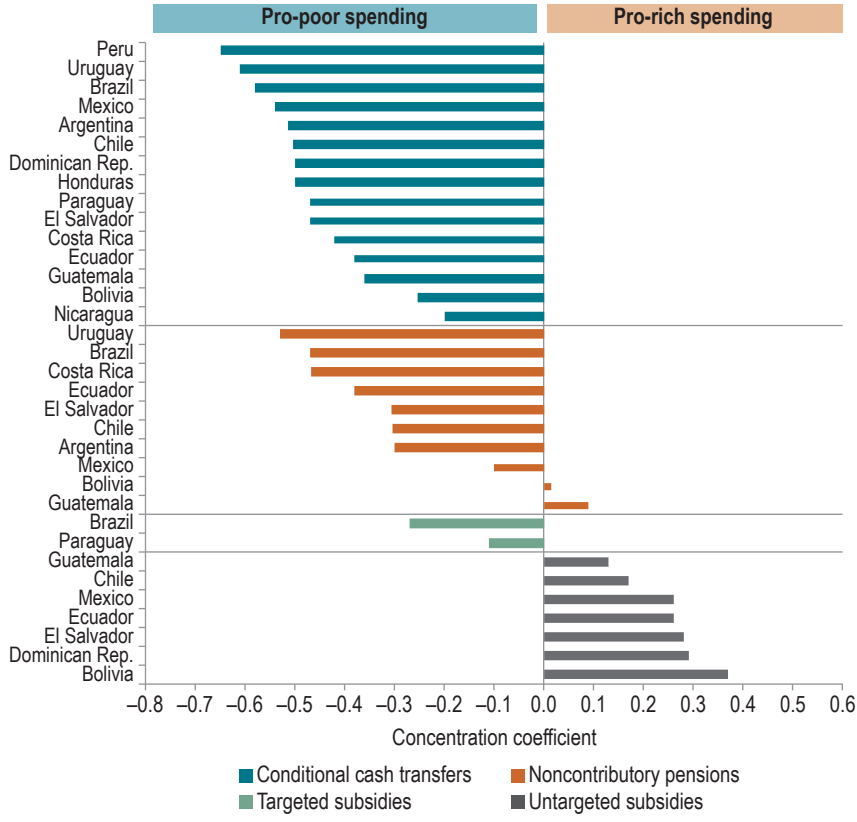
Source: In Panel A, authors' calculation based on Cecchini and Atuesta (2017). In Panel B, authors' calculations based on Pessino and Zentner (2018) and Alaimo, Dborkin, and Izquierdo (2018).
Note: In Panel B, Argentina includes "Moratoria Previsional"; Social Assistance Pensions; and Former Malvinas Soldiers. Bolivia includes "Renta Dignidad"; Brazil includes "Beneficio de Prestación Continuada" and "Beneficio Previsional Rural Semi-Contributivo"; Colombia includes "Colombia Mayor"; El Salvador includes "Pensión Básica Universal Adulto Mayor"; Guatemala includes "Programa Aporte Adulto Mayor"; Mexico includes "Pensión para Adultos Mayores"; Peru includes "Pensión 65"; and Uruguay includes "Pensión no Contributiva por Vejez e Invalidez."

Subsidies

Several studies on the impact of public spending on inequality and poverty ignore the regressive effect of subsidies, which are economically inefficient, poorly targeted if targeted at all, and thus, in most cases, pro-rich.

Price-based subsidies generate a high fiscal cost and result in a loss of economic efficiency. Energy subsidies are a clear example of untargeted pro-rich

Figure 4.10 Pro-Poor or Pro-Rich Transfer Spending (ordered by market income), Circa 2012



Source: Author's elaboration based on the following works: 1) Commitment to Equity Institute Data Center on Fiscal Redistribution. Based on information from: Argentina (Lustig and Pessino, 2014; Rossignolo, forthcoming); Bolivia (Paz Arauco et al., 2014); Brazil (Higgins and Pereira, 2014); Chile (Martínez-Aguilar et al., forthcoming); Colombia (Lustig and Meléndez, 2015); Costa Rica (Sauma and Trejos, 2014); Dominican Republic (Cabrera et al., 2016); Ecuador (Llerena Pinto et al., 2015); El Salvador (Beneke, Lustig, and Oliva, forthcoming); Guatemala (ICEFI, 2016a); Honduras (ICEFI, 2016b); Mexico (Scott, 2014); Nicaragua (ICEFI, 2016c); Paraguay (Higgins et al., 2013; Giménez et al., 2017); Peru (Jaramillo, 2014); and Uruguay (Bucheli et al., 2014); 2) all countries (Lustig, Pessino, and Scott, 2014; Lustig, 2017).
Note: Concentration coefficients are ranked in the scenario where contributory pensions are considered part of market income.

expenditure. These subsidies are distortionary, since many times they benefit the entire population through the final sales price of the subsidized products, regardless of the consumers' income level. Some countries in Latin America and the Caribbean spend 5 to 10 times more on regressive subsidies of this type than on CCTs, which are predominantly progressive and help reduce poverty. According to FIEL (2015, 2017) and Cavallo and Serebrisky (2016), energy subsidies in Latin America and the Caribbean represented 0.5 percent of GDP and about 61 percent of total subsidies in the region in 2015, down from 0.8

percent in 2013 (see the estimated efficiency loss from subsidies, transfers, and tax expenditures in Chapter 3). In several countries, propane gas, diesel, and electricity subsidies benefit the higher-income population, with the 10th decile receiving one-quarter of all the benefits and the first decile receiving only 5 percent; in other words, the wealthy receive five times more subsidies than the poor (Izquierdo, Loo-Kung, and Navajas, 2013; FIEL, 2017; Puig and Salinardi, 2015).

Equity can be improved by replacing subsidies with transfers that target low-income populations and even save resources. In the countries studied, untargeted subsidies were all pro-rich but relatively progressive (Figure 4.10). But the solution is easier said than done; since nonpoor beneficiaries will suffer from the loss and eventually protest, a phasedown of subsidies and consensus building will be needed for the change even if equity and efficiency increase.

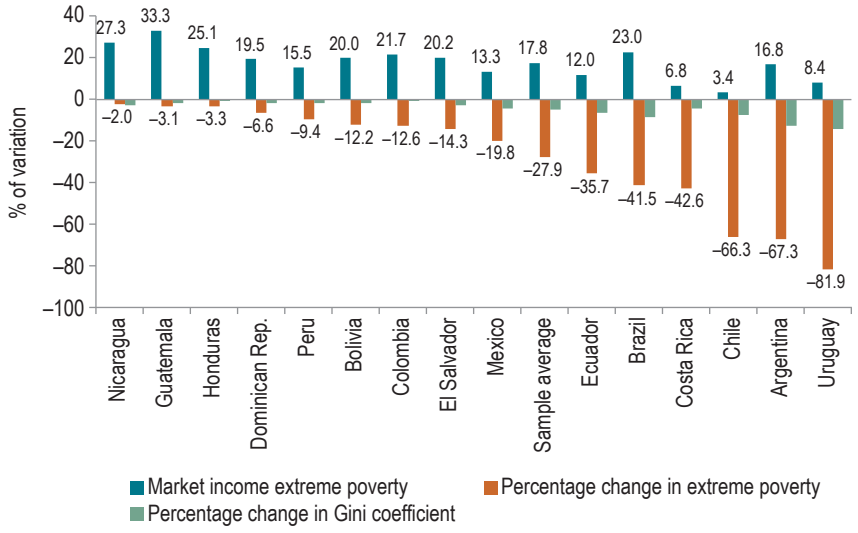
Closing the Extreme Poverty Gap

From a welfare perspective, a more progressive system that decreases poverty is desirable. Countries that rely on relatively less progressive transfers but of greater size might be better ranked in terms of reducing poverty than inequality. The sum of direct taxes, contributory pensions, and noncontributory cash transfers reduces extreme poverty rates in the 15 countries analyzed (Figure 4.11). Uruguay, Argentina, and Chile, the countries that reduce poverty the most, have also seen the largest decrease in income inequality. Costa Rica ranks fourth in poverty reduction, while Brazil is third in reducing inequality.

The impact of the cash transfers in the first round is to reduce extreme poverty from an average of 17.8 percent to 14.1 percent.[15] The effectiveness in reducing poverty and inequality depends on the size of the transfer, the proportion of the poor population covered, and the amount of the transfer that is leaked to the nonpoor. As noted, a key challenge of expenditure policy is targeting, that is, guaranteeing that subsidies and transfers reach the poorest segments of the population. What percentage of benefits of cash transfers goes to the extreme and moderate poor and how much ends up in the pockets of the nonpoor (leakages)? According to 2013 data, the percentage of the extreme poor who are beneficiaries of CCTs and NCPs is only 46.9 percent and 12.8 percent, respectively. Since NCPs are targeted to the elderly who do not receive a contributory pension, in that more specific

[15] The incidence of indirect taxes and subsidies diminishes the overall action of the fiscal system on poverty when compared to the effect of direct taxes and transfers alone (see Lustig, 2017).

Figure 4.11 Changes in Extreme Poverty and Inequality from Market Income to Disposable Income in Latin America



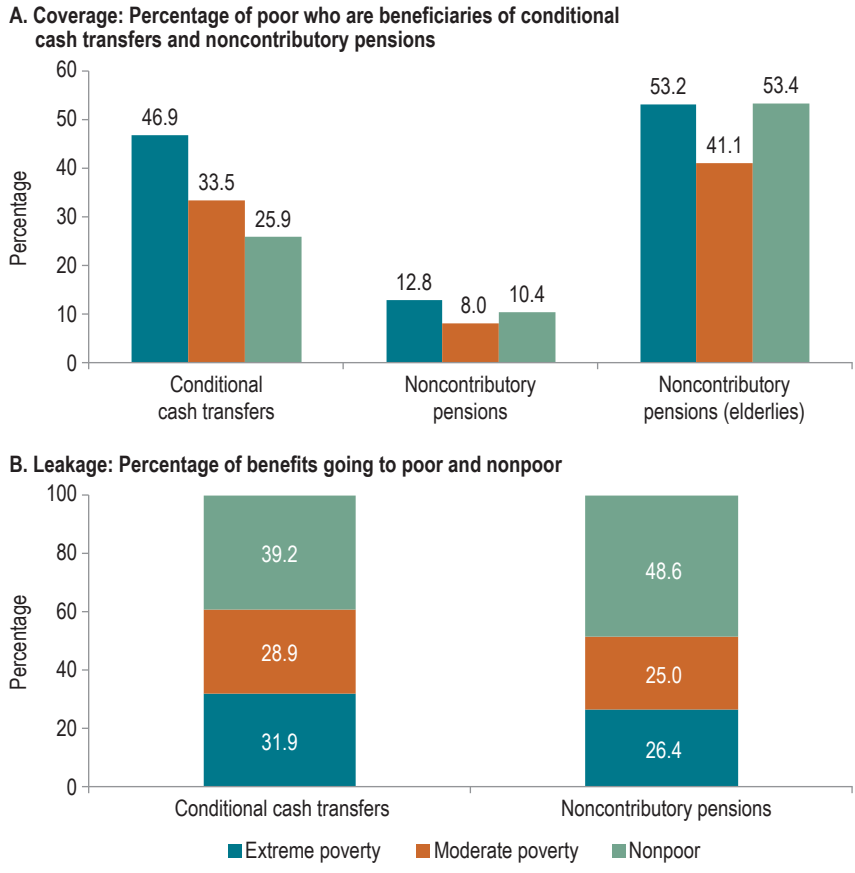
Source: Author's elaboration based on the following works: a) Commitment to Equity Institute Data Center on Fiscal Redistribution. Based on information from: Argentina (Lustig and Pessino, 2014; Rossignolo, forthcoming); Bolivia (Paz Arauco et al., 2014); Brazil (Higgins and Pereira, 2014); Chile (Martínez-Aguilar et al., forthcoming); Colombia (Lustig and Meléndez, 2015); Costa Rica (Sauma and Trejos, 2014); Dominican Republic (Cabrera et al., 2016); Ecuador (Llerena Pinto et al., 2015); El Salvador (Beneke, Lustig, and Oliva, forthcoming); Guatemala (ICEFI, 2016a); Honduras (ICEFI, 2016b); Mexico (Scott, 2014); Nicaragua (ICEFI, 2016c); Paraguay (Higgins et al., 2013; Giménez et al., 2017); Peru (Jaramillo, 2014); and Uruguay (Bucheli et al., 2014); b) all countries (Lustig, Pessino, and Scott, 2014; Lustig, 2017).
Note: Extreme Poverty defined at 2.5 current US$ per day adjusted by PPP.

population the coverage is about 53 percent (Figure 4.12, panel A). About 39.2 percent of CCT beneficiaries and 48.6 percent of NCP beneficiaries are nonpoor (Figure 4.12, panel B). (Robles, Rubio, and Stampini, 2015).[16]

Although they do not represent a large share of GDP, the resources used for CCTs would be sufficient to cover the entire poor population, or at least the extreme poor, if they were retargeted. In fact, the number of beneficiaries from these programs is almost 2.5 times (148 percent) as large as the number of extreme poor. The potential savings from these leakages is estimated at 0.7 percent of GDP, which is about half the level

[16] A measure of spending effectiveness used previously in CEQ assessments and in Bibi and Duclos (2010) divides the change in poverty by the amount spent as a proportion of GDP. Under this measure, Uruguay is more effective than Argentina and Brazil in reducing poverty per point of GDP spent. But Chile, with 4.6 percent of GDP spending on cash transfers, achieves the greatest effectiveness. This measure of effectiveness should be addressed with caution since the change is not linear for big spenders and might rank them incorrectly as less effective ones (Enami, Lustig, and Taqdiri, 2016).

Figure 4.12 Coverage and Leakage of Transfers in Latin America and the Caribbean

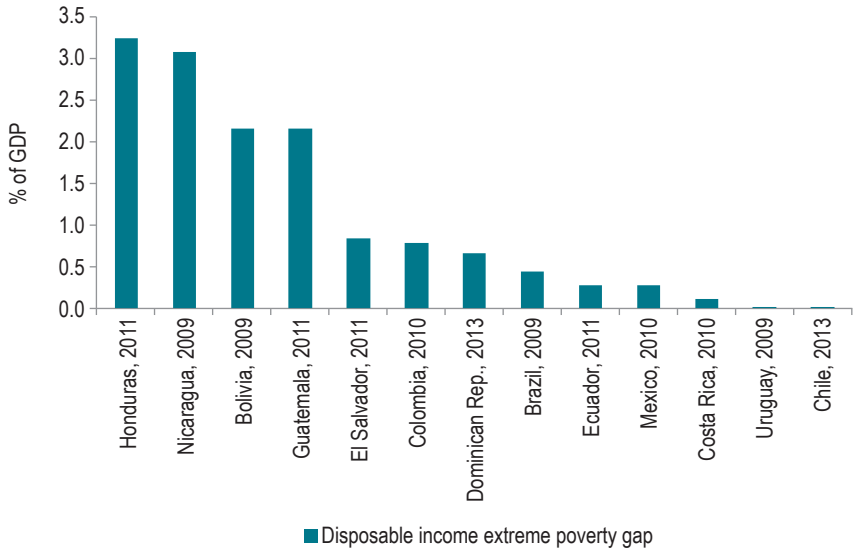


Source: Authors' calculation based on Robles, Rubio, and Stampini (2015).

of spending devoted to these categories (Izquierdo, Loo-Kung, and Navajas, 2013; Cavallo and Serebrisky, 2016).

One important reason for inefficient targeting is that several countries in the region use means-tested or geographical targeting systems, which provide an estimate of per-capita income or consumption based on demographic characteristics and ownership of assets, but account for only 50 percent to 60 percent of the observed variability in living standards (Robles, Rubio, and Stampini, 2015). The integrated information systems implemented in Argentina in 1997 and in Brazil in 2001, based on up-to-date administrative data, could serve as initial models to improve targeting in the region's countries (Pessino and Fenochietto, 2007; Azevedo, Bouillon, and Irarrázaval, 2011; see also Chapter 9).

Figure 4.13 Disposable Income Extreme Poverty Gap, % of GDP in Latin America



Source: Author's elaboration based on the following works: a) Commitment to Equity Institute Data Center on Fiscal Redistribution. Based on information from: Argentina (Lustig and Pessino, 2014; Rossignolo, forthcoming); Bolivia (Paz Arauco et al., 2014); Brazil (Higgins and Pereira, 2014); Chile (Martínez-Aguilar et al., forthcoming); Colombia (Lustig and Meléndez, 2015); Costa Rica (Sauma and Trejos, 2014); Dominican Republic (Cabrera et al., 2016); Ecuador (Llerena Pinto et al., 2015); El Salvador (Beneke, Lustig, and Oliva, forthcoming); Guatemala (ICEFI, 2016a); Honduras (ICEFI, 2016b); Mexico (Scott, 2014); Nicaragua (ICEFI, 2016c); Paraguay (Higgins et al., 2013; Giménez et al., 2017); Peru (Jaramillo, 2014); and Uruguay (Bucheli et al., 2014); b) all countries (Lustig, Pessino, and Scott, 2014; Lustig, 2017).

It is also possible to quantify the cash transfers that would be needed to lift all inhabitants out of extreme poverty in each country, assuming perfect targeting. The extreme poverty gap indicator weights the percentage of the poor by the average gap between their incomes and the poverty line; thus, it considers how poor the poor are and, hence, the exact amount of resources needed to lift every person out of poverty. Closing the extreme poverty gap (below $2.50 PPP per capita a day) would require somewhat more than 3 percent of GDP in Honduras and Nicaragua and 1 percent or less in Costa Rica, Uruguay, or Chile (Figure 4.13).

Considering the percentage of subsidy spending that is still high in several countries, and the leakages in all programs, there is scope to cover all the extreme poor without increasing spending, at least in all the countries that would require less than 1 percent of GDP.

Policymakers may wish to evaluate whether to increase the size of transfers or improve effectiveness by better targeting beneficiaries. Moreover, dependence on social assistance is another side effect of social insurance and protection that should be avoided. Latin America and the

Caribbean must avoid permanent welfare dependency and greater informality. After achieving complete coverage of chronic extreme poverty, the greatest triumph of CCTs would be their gradual reduction until they are no longer necessary. Regarding NCPs, expanding their coverage and generosity, which will have effects for decades to come, together with rapid aging of the population, can make these transfers unsustainable.

Argentina during the 2000s is an emblematic case of welfare dependency and unsustainability in the wake of high growth (Lustig and Pessino, 2014).[17] In the early part of 2002, Argentina had emerged from a crisis and default that had increased poverty to almost 50 percent. From 2003 to 2006, with a booming economy and increasing commodity prices, poverty and inequality declined thanks to an increase in market income and not social transfers. However, after 2006, with a deteriorating economy, inflation, and higher distortionary taxation, cash transfers replaced market forces in combating poverty and inequality. In particular, the Pension Moratorium, which increased the coverage of pensions to more than 3 million older individuals who never or only sporadically contributed to social security, became a true, noncontributory pension program. While the program did not target the poor and suffered from significant leakage to the nonpoor, it served to decrease moderate poverty. However, it also increased the proportion of households dependent on welfare payments from the government from a low of less than 10 percent in the 1990s to more than 40 percent by 2010, thereby increasing pension spending to a highly unsustainable level in the long run (see Chapter 3). Several other Latin American and Caribbean countries also expanded welfare programs after the 2008 crises, and spending has not returned to previous levels since then (World Bank, 2014). Transitory and decreasing cash transfers over time may better target extreme poverty in the short run, while more permanent skills programs targeted to the poor should be used to decrease poverty permanently.

In-Kind Transfers: Adding the Value of Public Services

The previous analysis does not consider the impact of in-kind benefits: public spending on health and education. Although CCTs provide incentives to improve human capital through school retention and expanded coverage of vaccinations, their effects are limited by size and target population;

[17] Indicators for Argentina are based on Lustig and Pessino (2014) in most of the chapter, where imputations for direct taxes were not calculated (see Rossignolo, forthcoming, for an update).

moreover, the latest evidence shows few, if any, long-run effects.[18] But, at least 50 percent of social spending in the region is on universal educational programs, and contributory and noncontributory health systems. Education spending accounted for an average 4.5 percent of GDP circa 2012 (5.3 percent in the OECD) and health spending 3.8 percent of GDP (6.5 percent in the OECD), with significant differences among countries (see Figure 4.6).

Once in-kind transfers are considered, inequality in all countries is reduced considerably more than by cash transfers, reflecting their relative size and progressive nature (Lustig, Pessino, and Scott, 2014; Lustig, 2017). In advanced countries, in-kind transfers, measured at cost, reduce the disposable income Gini by about 20 percent (OECD, 2011a) while they only reduce it by 10 percent in Latin American countries (although in both regions it is about 5 Gini points). Thus, the percentage gap with OECD countries increases even more (Figure 4.8). In-kind transfers further widen the difference in redistributive capacity between Latin American and advanced countries, even though the differences in health and education spending are smaller than with cash transfers. When analyzing their progressivity, while spending on pre-primary and primary education is pro-poor and equalizing in all Latin American countries, spending on secondary education is pro-poor in nine of the countries considered and slightly pro-rich in El Salvador and Mexico. Finally, spending on tertiary education is pro-rich in all Latin American countries since it primarily benefits the middle- and upper-income population (Figure 4.14).

Most countries spend less than 30 percent of the education budget on tertiary education. On equity grounds, education spending does not seem biased toward pro-rich and regressive spending; however, it is worrisome that early childhood spending was on average 0.4 percent of GDP while tertiary spending was about four times higher (see Chapter 3 and Figure 4.15).[19]

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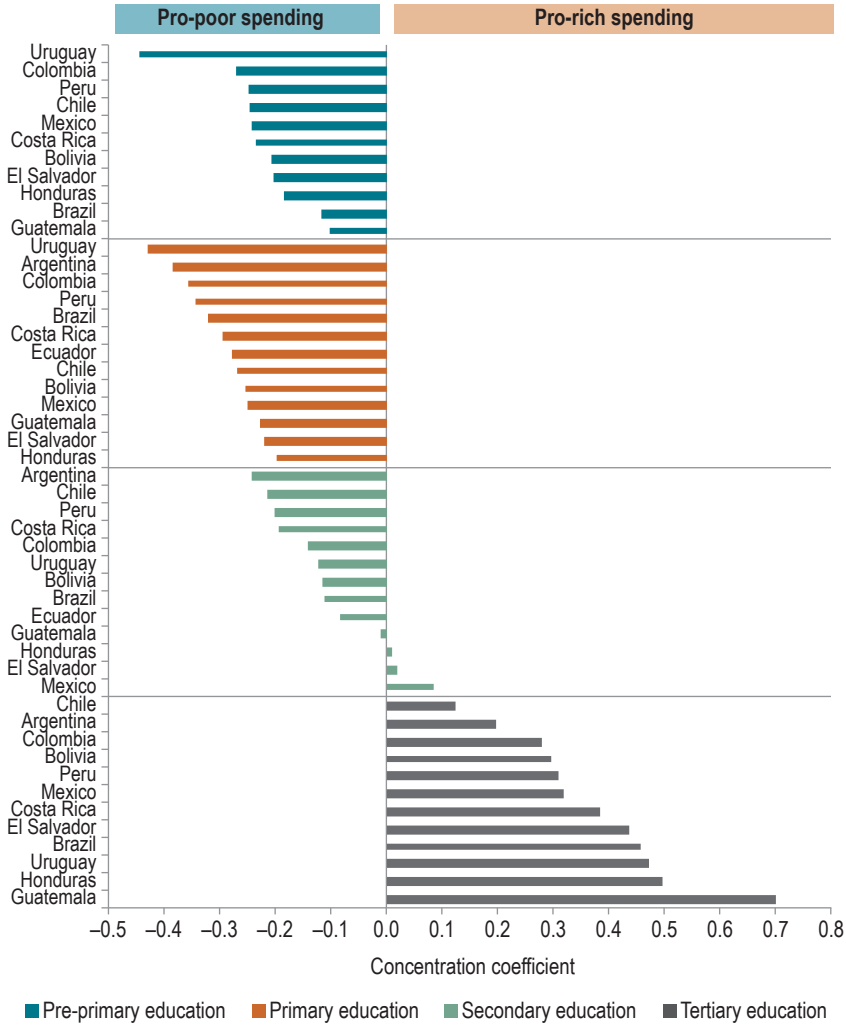
[18] While results differ among Latin American and Caribbean countries, program evaluations reveal an increase in years of schooling, decrease in child labor, and improvements in key health indicators (Bouillon and Tejerina, 2006; Fiszbein and Schady, 2009). However, a recent review claimed that no evidence exists on the long-term effects on human capital (Sandberg, 2015) and some of the latest long-run evidence of these CCT programs based on 20 years of data corroborate this claim. Araujo, Bosch, and Schady (forthcoming), evaluating the 10-year effects of Ecuador's Bono de Desarrollo Humano program, conclude that "...any effect of cash transfers on the intergenerational transmission of poverty in Ecuador is likely to be modest." For similar claims in an international context and a different program in Malawi, see Baird, McIntosh, and Özler (2016).

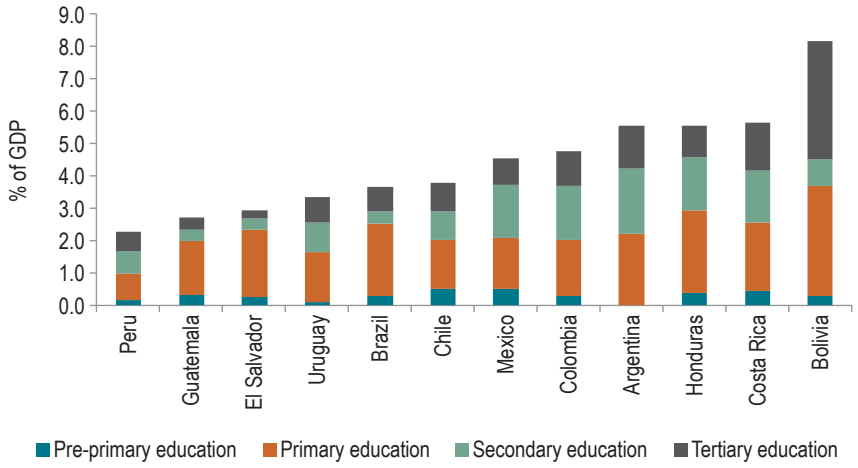
[19] On efficiency grounds, higher-level education spending might help generate innovation, adaptation of technologies, and, hence, foster growth. However, this rationale by itself does not warrant such a difference.

Figure 4.14 Pro-Poor or Pro-Rich Spending on Education by Level, Ordered by Market Income, Circa 2012



Source: Author's elaboration based on the following works: a) Commitment to Equity Institute Data Center on Fiscal Redistribution. Based on information from: Argentina (Lustig and Pessino, 2014; Rossignolo, forthcoming); Bolivia (Paz Arauco et al., 2014); Brazil (Higgins and Pereira, 2014); Chile (Martínez-Aguilar et al., forthcoming); Colombia (Lustig and Meléndez, 2015); Costa Rica (Sauma and Trejos, 2014); Dominican Republic (Cabrera et al., 2016); Ecuador (Llerena Pinto et al., 2015); El Salvador (Beneke, Lustig, and Oliva, forthcoming); Guatemala (ICEFI, 2016a); Honduras (ICEFI, 2016b); Mexico (Scott, 2014); Nicaragua (ICEFI, 2016c); Paraguay (Higgins et al., 2013; Giménez et al., 2017); Peru (Jaramillo, 2014); and Uruguay (Bucheli et al., 2014); b) all countries (Lustig, Pessino, and Scott, 2014; Lustig, 2017).
Note: Concentration coefficients are ranked in the scenario where contributory pensions are considered part of market income.

Figure 4.15 Public Spending on Education by Level, as % of GDP in Latin America Circa 2012



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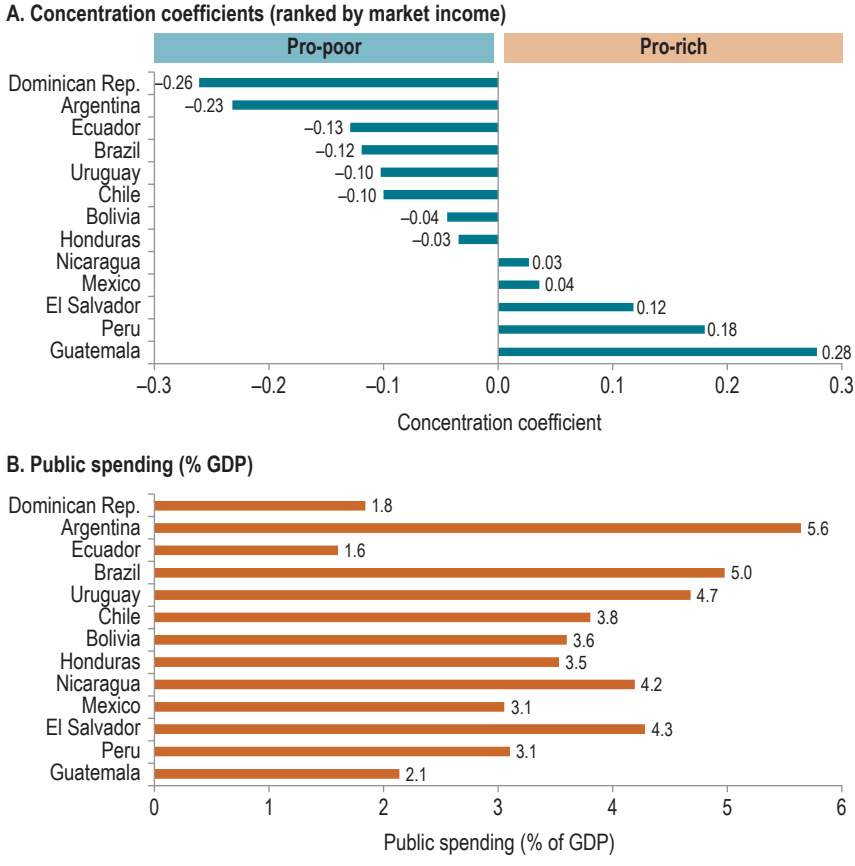
Health spending in most countries,[20] is only moderately pro-poor and slightly pro-rich but equalizing in El Salvador, Peru, and Guatemala (Figure 4.16).

The cost of providing a service can be different from the value assigned to it by the consumer of the service. Progressivity might be only the result of rich and middle-class individuals opting for private services, leaving the lower- quality public services to the poor (see Ferreira et al., 2013). The concern for Latin America is that the progressivity of health and education spending is being seriously undermined by the expenditures' inefficiencies and low quality. Typically, most fiscal incidence studies measure the distribution of budget or inputs such as access to public health establishments but fail to account for the distribution of results. While the distribution of

[20] Contributive health insurance is not included in some countries when not explicitly subsidized. In the case of Mexico, while noncontributory health insurance through Seguro Popular is pro-poor, contributory health insurance is pro-rich (Scott, de la Rosa, and Aranda, 2017).

Figure 4.16 Pro-Poor or Pro-Rich Spending in Health (Concentration coefficients) and Public Spending in Health in Selected Latin American Countries (ranked by market income), Circa 2012



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Note: Concentration coefficients are ranked in the scenario where contributory pensions are considered part of market income.

"quantity" might be somewhat progressive (because it concentrates on the poor, albeit insufficiently), the distribution of quality is mostly regressive. Thus, the positive effect of coverage is reduced by the negative effect of quality differences by socioeconomic status.

Inequality of Opportunity

One of the objectives of fiscal policy should be equality of opportunity. Governments should ensure that circumstances such as gender, ethnicity, place of birth, or socioeconomic and family environment, which are beyond a person's control, do not influence the opportunities available to an individual or the results of his or her efforts. Success should depend on personal choices, effort, and talent rather than on the circumstances surrounding a person's birth (Roemer, 1998). Less access or lower-quality services in health and education highlight the marked inequality in access and outcomes of the most important public spending aimed at developing human capital.[21] Poor children from disadvantaged families should benefit the most from human capital investments in market skills. However, apparently, the poor rarely overcome their unfortunate birth circumstances in Latin America and the Caribbean since investments in developing their hard and soft skills are insufficient in the early years of their life and not compensated for later on.[22]

Even though life expectancy increased, and maternal and infant mortality decreased in Latin America and the Caribbean in recent decades,[23] inequality in health outcomes continues to be widespread (WHO, 2015). While health access and outcomes are broadly similar across income groups in advanced countries, large disparities persist in Latin America and the Caribbean (Figure 4.17A). This might be one reason why health outcomes, such as the infant mortality rate, are twice as high among the poor as the rich in the region and six times higher than in more advanced economies (Figure 4.17B).

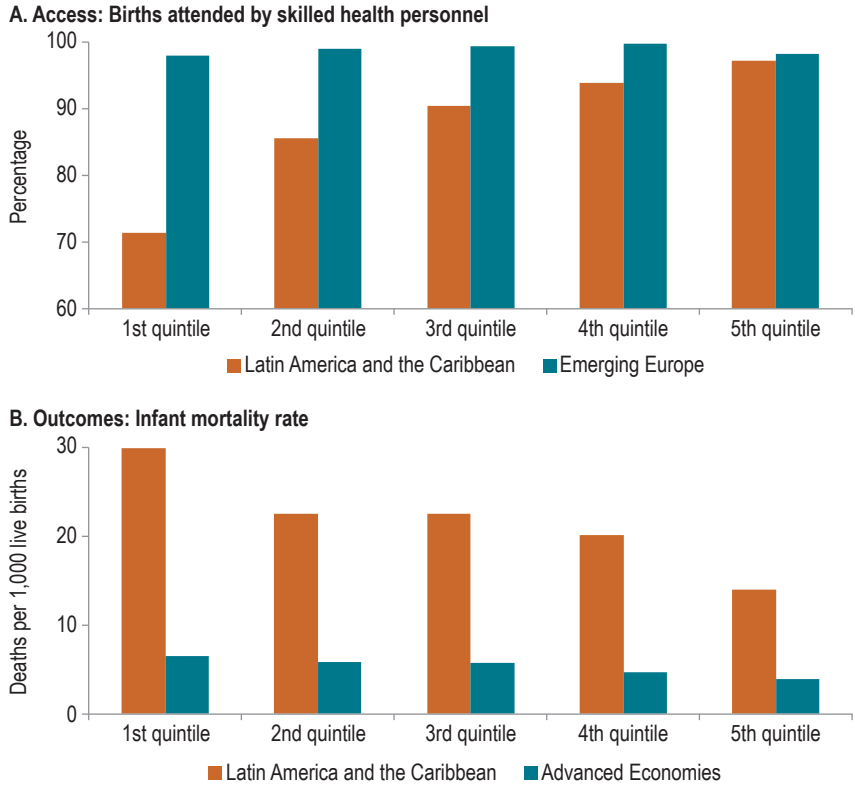
Education access and outcomes remain much worse for disadvantaged groups, partly because of pro-rich biases in access and quality. Indeed, about 50 percent of the poorest youth in the region does not finish lower secondary education, compared to 10 percent in the richest quintile (Figure 4.18A). The contrast is even greater for upper secondary and tertiary education. The same pattern prevails across education outcomes (see Figure 4.18B), as measured by the Program for International Student

[21] There is a growing literature measuring inequality of opportunity (see, for example, Ferreira and Gignoux, 2011; Molinas Vega et al., 2012).

[22] Heckman (2006, 2011a) notes that later investments are much costlier and less effective in improving skills and overall welfare of disadvantaged children than early childhood investments.

[23] Between 1990 and 2010, infant mortality in Latin America and the Caribbean fell from about 120 to 60 deaths per 1,000 live births, maternal mortality fell from 50 to 25 per 100,000 live births, and chronic malnutrition (or stunting) among children age 5 and younger fell from 25 percent to 12 percent of the population (Levy and Schady, 2013).

Figure 4.17 Inequalities in Health-Care Access and Outcomes in Latin America and the Caribbean and More Developed Countries



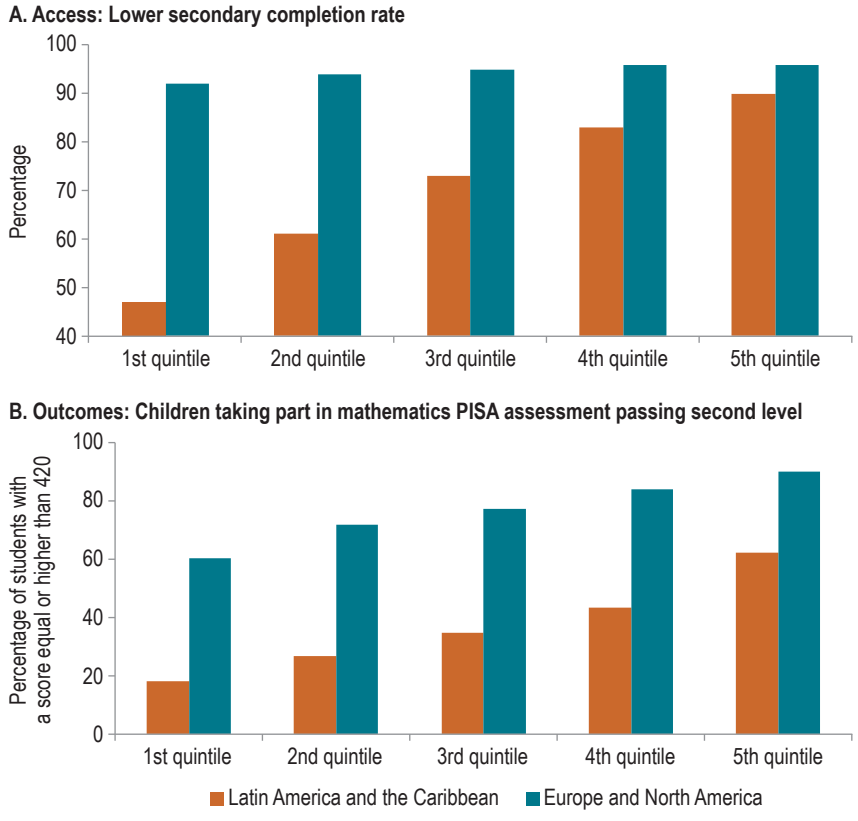
Source: Authors' calculation based on World Health Organization Global Health Observatory metadata.
Note: Latest available data from 2008 to 2013 for both Panel A and Panel B. In Panel A, Latin America and the Caribbean includes Belize, Bolivia, Colombia, Costa Rica, the Dominican Republic, Haiti, Honduras, Panama, Peru, and Trinidad and Tobago, while Emerging Europe includes Belarus, Georgia, Serbia, and Ukraine. In Panel B, Latin America and the Caribbean includes Bolivia, Colombia, the Dominican Republic, Honduras, and Peru, while Advanced Economies includes England, Wales, and Canada.

Assessment (PISA) results (Busso et al., 2017). While on average, the best Latin American country performs worse than the worst advanced country, in terms of inequality of performance by socioeconomic status, the gap in performance is even wider.

Better schools are not the only factor shaping success in school; early life experiences also matter. Fifteen-year-old students in the OECD who attended early childhood education tend to perform better on standardized tests than those who did not, even after accounting for their socioeconomic backgrounds.[24] This early investment is essential

[24] (OECD, 2010, 2013b).

Figure 4.18 Inequalities in Education Access and Outcomes in Latin America and the Caribbean, and in More Developed Countries



Source: Authors' calculation based on UNESCO World Inequality Database on Education.
Note: In Panel A, Latin America and the Caribbean includes 21 countries, while Europe and North America includes 39 countries .The sample include the last available data from each country included from 2006 to 2015 (most 2015). In Panel B, Latin America and the Caribbean includes Argentina, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, Mexico, Peru, Trinidad and Tobago, and Uruguay, while Europe and North America includes 34 countries. The sample includes most of the observations from PISA 2015. All indicators are broken down by a measure of household socioeconomic status.

for a child's future and tends to be absent in more disadvantaged households. Higher and better-quality spending on early childhood is both equitable and pro-growth; there is no equity-efficiency trade-off for programs that target disadvantaged children (see Box 4.2). According to James J. Heckman, a Nobel laureate in economics, families play a powerful role in shaping adult outcomes. A mountain of evidence shows that gaps in ability open up long before kindergarten (see evidence for Latin America in Berlinski and Schady, 2015). That is true for cognitive skills, like math and reading, and for noncognitive skills, like industry and

BOX 4.2 JAMAICA EARLY CHILDHOOD PROGRAM: AN EXAMPLE FOR THE REGION

- Between 2004 and 2010, the estimated number of children under 5 years of age in Latin America and the Caribbean who suffered from stunting or extreme poverty declined slightly from 11.6 million to 9.7 million (from 20 percent to 18 percent of children).
- Jamaica implemented and conducted the first long-term experimental evaluation of an early childhood development program in a developing country. Participants in a randomized intervention conducted in 1986–1987 that gave psychosocial stimulation to growth-stunted Jamaican toddlers, have reported 25 percent more earnings as adults than a control group. The intervention compensated for the economic consequences of early developmental delays and reduced later-life inequality (Gertler et al., 2014).
- According to data from 58 low- and middle-income countries (LMICs), 31.4 percent of all 36-to-59-month-old children had access to early education programs, with enrollment rates more than twice as high among children from the top wealth quintile (47.3 percent) compared with children from the lowest quintile (19.5 percent). Jamaica and Barbados lead the sample with more than 85 percent of all 36-to-59-month-old children having access to early education programs and with enrollment in the lowest quintile almost as high as in the wealthiest quintile (Black et al., 2017).

self-control. This evidence is corroborated by intergenerational inequality evidence in the region.[25]

The Geography of Spending Equity

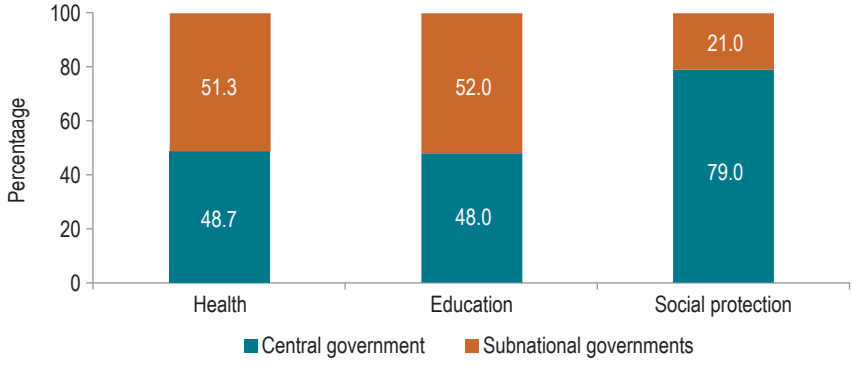
Social and economic disparities among territories are a critical factor in explaining inequality in Latin America and the Caribbean. In fact, there seems to be persistent vertical and horizontal disequilibrium in fiscal revenues and expenditures in the region (Fretes Cibils and Ter-Minassian, 2015). However, there is almost no literature regarding the nexus between personal income distribution and territorial inequality (ECLAC, 2017). In

[25] Intergenerational inequality in mobility is highly correlated with intragenerational income inequality. Most societies in Latin America and the Caribbean are not traditionally mobile. Recent studies show that intergenerational educational (attainment) mobility has been rising (Ferreira et al., 2013; Neidhöfer, Serrano, and Gasparini, 2018), but as with the literature on intra-generational inequality, there is no clear evidence of improvements in income and, hence, no room for complacency. These findings demonstrate that the region has improved in making education attainment more independent of family background and other circumstances; however, outcomes and achievements continue to be dependent on parents' outcomes.

the typical Latin American country, the ratio of per capita GDP between the wealthiest and poorest region is 9; that is four times higher than in the OECD. In some countries like Argentina and Mexico (both federal countries), this difference is 16 times larger (Muñoz, Pineda, and Radics, 2017). Taking the dispersion in subnational GDP per capita within countries as a measure of interregional inequality, GINI coefficients in a sample of Latin American countries are on average twice as large as in OECD countries (Muñoz, Pineda, and Radics, 2017). Territorial disparities in wealth, fiscal revenues, and expenditures, and more importantly, inequality in access to quality basic services across subnational governments, might be responsible for personal income inequality.

Of the fiscal policy instruments available, in-kind transfers in education and health have the largest impact on reducing per capita income inequality in the region (at least in terms of access, but not necessarily outcomes). Education and health are among the most important types of decentralized services, with more than 50 percent of spending in health and education executed by subnational governments in Latin America (Figure 4.19). Hence, analyzing whether subnational government spending is associated with more or less income inequality is central to a discussion of spending equity. Decentralization is expected to improve the efficiency of resource allocation since it can make government spending more responsive to local needs by tightening the loop of accountability between those who produce public goods and services and those who consume them (Faguet, 2012). However, it is uncertain that it would reduce territorial inequality.

Figure 4.19 Share of Social Spending by Central and Subnational Governments in Latin America, Circa 2015



Source: Authors' calculation based on IDB/FMM Public Expenditure database, and data from Ministries of Finance and Statistics and Central Banks of Latin America.
Note: Latin America includes Argentina, Bolivia, Brazil, Colombia, Guatemala, Mexico, and Peru.

While Latin American countries use intergovernmental transfers with some equalization features, they do not have true equalization transfers based on fiscal capacity or expenditure needs to alleviate territorial inequality (Muñoz, Pineda, and Radics, 2017). In advanced countries, these transfers help assure a similar level and quality of public services among citizens of different subnational territories.

In addition, territorial inequalities are large considering the quality of public services delivered. The World Bank's subnational Human Opportunity Index (HOI),[26] a measure of coverage in basic services corrected by the inequality in their distribution across income quintiles, shows large spatial inequalities in these indicators. In the region, territorial differences in the completion of primary education average 31 percent and can be as large as 67 percent (Figure 4.20, panel A). Something similar occurs with sanitation services (Figure 4.20, panel B).

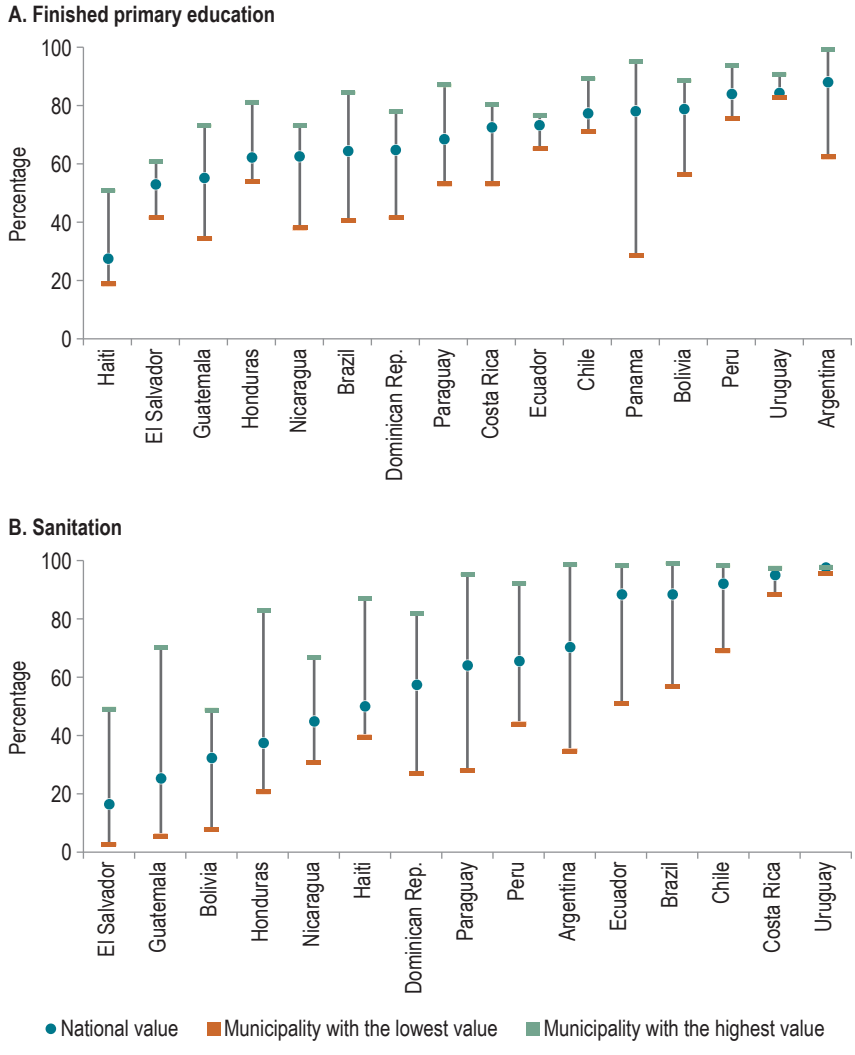
While more research is needed on decentralization and inequality in the region, there is evidence that territorial inequality translates into fiscal outturns and these, in turn, to outcomes in skills acquisition and quality of life. Better institutions, higher own revenues, and equalization and other types of transfers from the central government might help reduce these inequalities.

Second-Round Fiscal Incidence: Good Intentions, Bad Outcomes

Redistributive policies such as cash transfers can reduce incentives to work, save, and invest, and can even alter fertility decisions. These ("unwanted") behavioral effects likely increase market income inequality; therefore, fiscal incidence analysis exaggerates the true effect of the redistributive policies on disposable or final-income inequality. Transfers are likely to have a direct (first-round) distributive effect but, when the behavioral disincentive (second round) is considered, the result could be the opposite, counteracting the initial impact. Behavioral responses can also lower productivity (Bosch, Cobacho, and Pagés, 2014; Attanasio, Meghir, and Otero, 2014). Behavioral effects occur when individuals change their behavior to become eligible for benefits. They may cut back on their levels of work or turn to informal

[26] The HOI measures the availability of services necessary to progress in life "penalized" by how unfairly the services are distributed in the population. For example, two countries that have identical coverage may have a different HOI if the citizens that lack the service are all female, or black, or poor, or more generally, share a personal circumstance beyond their control. In other words, the HOI is coverage corrected for equity. In theory, one can increase it by changing people's circumstances (the "composition effect"), providing more service to all ("scale effect"), or distributing service more fairly ("equalization effect").

Figure 4.20 Subnational Human Opportunity Index: Gap between Municipalities with the Highest and Lowest Scores, 2014



Source: Authors' calculation based on World Bank LAC Equity Lab and Molinas Vega et al. (2012).
Note: Argentina and Uruguay only include urban data.

activities, save less to avoid asset ineligibility, or alter their family structure to avoid having other income-producing members of the household.

Studies of the undesired effects of cash transfer programs on adult workers concluded that they had little or no impact on the propensity to work or hours worked (Alzúa, Cruces, and Ripani, 2013; Banerjee et al., 2017). But, in most countries, high contributions to social security,

sometimes with low benefits, combined with weak enforcement of labor regulations, do impact informality. Firms and workers in formal activities are obliged to pay for a bundled set of health, pension, and related programs. Informal workers benefit from an unbundled set of parallel programs paid by the government, so-called "noncontributory programs." This acts as a subsidy to informality, which is, in fact, very high in the region: the percentage of workers not contributing to social security is between 40.6 percent (for salaried workers) and 56.9 percent (for all workers). While noncontributory pensions serve a critical role in reducing old-age poverty, workers will question why they should participate in the contributory system when it is not even sure they will qualify for a pension, especially when they can obtain a pension in old age without saving while working. The same logic applies to other noncontributory programs that have a counterpart in the formal sector. They also represent a growing fiscal burden for countries and reduce productivity and growth (Levy, 2015).

Transfers significantly affect the choice between formal and informal work (Alaimo, Garganta, and Pessino, 2018).[27] However, most studies on the disincentive effects of government transfers do not translate the behavioral effects into estimates of counterfactual incomes, which requires an additional estimate of a microsimulation model (Ben-Shalom, Moffitt, and Scholz, 2012). Ignoring behavioral responses generally leads to overestimates of the impact of programs on poverty, as the levels of market income observed in the data are lower than they would have been in the absence of the program. In the language of causal analysis, what is needed is the counterfactual income of the family had it not received benefits. If that income could be determined, the difference between it and posttransfer income would be the measure of the impact of a program on income.

Garganta and Gasparini (2015) estimated the effect of a CCT program on informality in Argentina: the Asignacion Universal por Hijo (AUH) targeted to households with children under 18 years old and with no formal jobs.[28] This cost the government 0.72 percent of GDP, or about 17 percent of pre-transfer income covering roughly 15 percent of households. While moderate poverty fell from 31.4 percent to 28.6 percent, (first-round)

[27] For example, after the introduction of a large noncontributory health insurance program in Mexico, Bosch and Campos-Vázquez (2014) find that the stock of formal workers would have increased by 2.4 percent between 2002 and 2009 in the absence of Seguro Popular. For the Subsidized Regime in Colombia, informality increased between 2 and 4 percentage points (Camacho, Conover, and Hoyos, 2013). Bosch and Guajardo (2012) estimate the Pension Moratorium in Argentina reduced formal employment among women by 2.5 percentage points, indicating it induced them to retire.

[28] The country offers this type of assistance to formal workers through contributions.

Table 4.1 Poverty and Inequality Incidence before and after Transfers with and without Disincentive Adjustment in Argentina, 2015 (1st Semester).

	Pre-transfer (actual, with formal moving to informality)	Pre-transfer (simulated, without formal moving to informality)	Post-tranfer
Total households			
Income	12,753.82	12,810.06	13,023.16
Extreme poverty	7.71	7.51	4.09
Moderate poverty	31.35	30.75	28.56
Gini index	0.417	0.414	0.399
Eligible households (current program)			
Income	7,872.12	8,204.23	9,462.57
Extreme poverty	24.82	24.01	10.51
Moderate poverty	71.14	68.76	60.12
Gini index	0.376	0.380	0.319

Source: Authors' calculation based on Alaimo, Garganta, and Pessino (2018). Estimated from Permanent Household Survey Argentina (EPH) 2015, 1st semester.

informality increased between 2.8 and 3.6 percentage points.[29] Analyzing AUH transfers, Alaimo, Garganta, and Pessino (2018) estimate how the counterfactual behavioral response (some workers employed in the formal sector chose to have an informal job) affects poverty and public spending. This is the first study for Latin America and the Caribbean, estimating through microsimulation techniques the counterfactual market income and poverty that would have existed in the absence of the program.[30]

Table 4.1 shows the pre-transfer market income and poverty measures for the AUH in the first column compared to counterfactual pre-transfer market income in the second column. Poverty without the AUH would have been 30.8 percent instead of 31.4 percent (the size of the behavioral effect is 0.6 percentage points less poverty incidence, as formal workers would not switch to the informal sector). Hence, first round incidence

[29] Another unintended effect of cash transfer programs conditional on having children is the increased probability of childbearing: both in Honduras and Argentina it increased more than 2 percentage points (Stecklov et al., 2007; Garganta et al., 2017).

[30] Assuming no taxes, if the income of a recipient is written as DI=MI+B, where MI stands for market income and B is the program benefit received, then the actual income change from the introduction of the program is $\Delta DI = \Delta MI + \Delta B$, which is smaller than the $\Delta DI = \Delta B$ used in the poverty-impact calculations, if $\Delta MI < 0$ (as is the case when individuals move from the formal into the informal sector). $\Delta MI/\Delta B$ is the factor by which the observed difference in income should be reduced to arrive at the true increase in income, and hence this is the factor to decrease the estimates of poverty reduction (Ben-Shalom, Moffitt, and Scholz, 2012).

effects exaggerate the "true" effect of the AUH by 0.6 percentage points: while the first-round effect of the AUH is a 2.8 percentage point decrease in poverty (31.4 percent to 28.6 percent), the true impact including the behavioral effect is only 2.2 percentage points (30.8 percent to 28.6 percent), or 21 percent lower.

Many CCT programs in Latin America and the Caribbean are large: the Ecuador Bono de Desarrollo Humano covers roughly one-quarter of households, while Progresa and Bolsa Familia in Mexico and Brazil cover about a fifth of households (Araujo et al., 2017). Clearly, the generosity of a program affects its impact on informality. Thus, even if the effect of one program might seem small, when combined with other programs, the effect can be significant. New data documenting public spending on noncontributory programs shows that in 2014 the region spent 1.8 percent of GDP on them, ranging from only 0.2 percent in Jamaica to 4.2 percent in Argentina (Figure 4.21 panel A).[31] Most of this spending finances health and old-age pensions (Figure 4.21, panel B).[32]

The overall effect of the subsidy to informality is hard to estimate. A program like AUH that spends 0.72 percent of GDP, generates a market poverty increase of 0.6 percentage points because it encourages informality in order to be eligible. Then, a gross estimate of the overall effect of the "subsidy to informality" (that is 4.2 percent for 2014 in Argentina) must be much larger: assuming a linear relationship, the behavioral effect would provoke a 3.5 percentage point increase in poverty that, in turn, would demand more public spending to eradicate poverty created by inefficient government spending; that is a pure waste of resources.

In sum, one possible—but difficult to implement—solution is to gradually decrease the tax on formality and the subsidy to informality and provide all workers with the same social insurance programs. This could be achieved by reducing labor contributions and replacing them with general taxes (Levy, 2008). Above all, poor workers need a more productive job; but they also need to benefit from social insurance and protection. Reaching this goal is essential for genuine social inclusion. It is time for Latin America and the Caribbean to move on and tackle new social challenges beyond those solved through CCTs (Antón, Hernández, and Levy, 2012).

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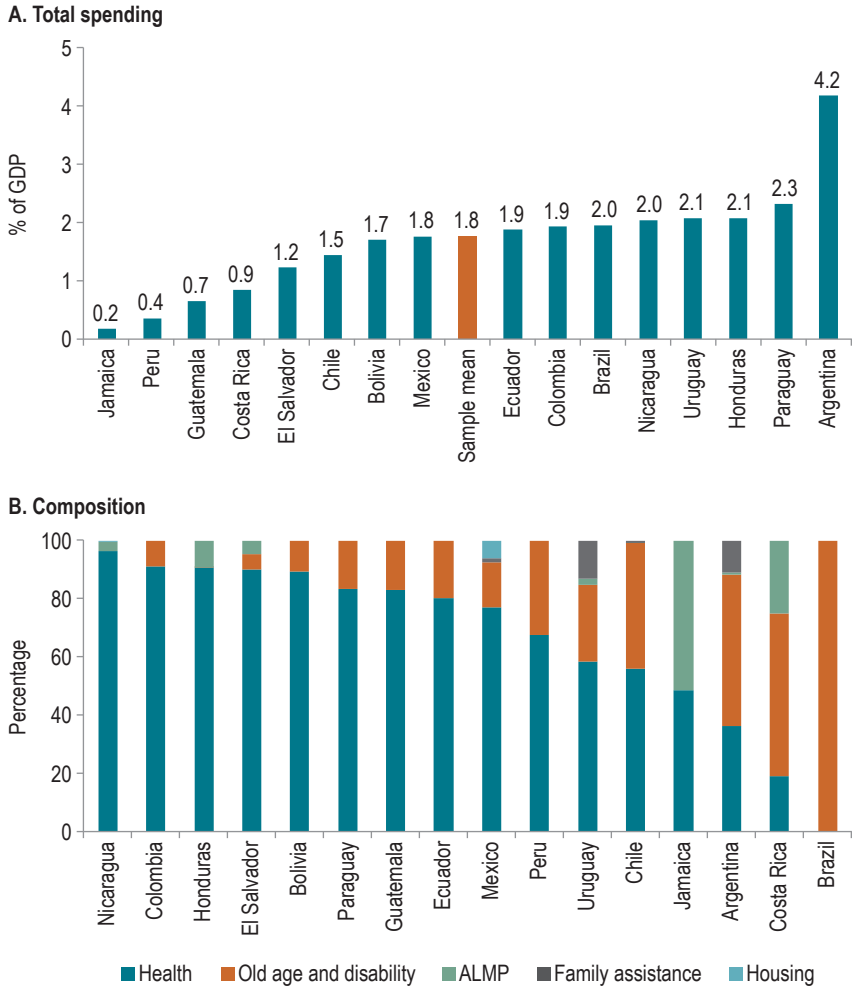
[31] In Argentina, the Pension Moratorium allowed workers of retirement age to receive a pension regardless of whether they had completed the full 30 years of social security contributions through formal employment. The difference between the amount of completed contributions and the 30-year benchmark would be reconciled by discounting their "debt" from their pension benefit.

[32] Moreover, public spending on noncontributory programs more than doubled between 2000 and 2015.

Figure 4.21 Noncontributory Social Spending in Latin America and the Caribbean, 2014



Source: Authors' calculation based on Alaimo, Dborkin, and Izquierdo (2018).
Note: ALMP is Active Labor Market Policies.

The Policy Puzzle

Latin America and the Caribbean continues to be one of the most unequal regions in the world. Fiscal policy partially offsets the unequal distribution of income in some countries, mainly through expenditure policy. However, it reduces income inequality and poverty less than in advanced countries because programs are either not progressive enough or too small. Still, more spending does not necessarily lead to better outcomes for the poor.

Noncontributory programs help diminish inequality and poverty in the region, but subsidize informality. Coupled with high payroll taxation, they foster a truncated welfare state, reduce the distributive capacity of spending, and take a toll on productivity and growth.

While Latin America and the Caribbean advanced in equality of income and access to services, the provision of good-quality services for the poor remains highly unequal. The quality of human capital received by the higher- and lower-income groups varies dramatically, creating a gap in access to opportunities between the richest and the poorest. To create equal opportunities for all, the government must spend better rather than more.

Policymakers must weigh whether to increase the size of transfers or better target beneficiaries. They should not only consider first-round fiscal incidence analysis but also assess whether increasing the amount of transfers would be counterproductive (e.g., decrease labor force participation or increase participation in informal, less-productive activities). Latin America needs to avoid permanent welfare dependency and increased informality. It should focus on the chronic poor who cannot easily be lifted from poverty with economic growth. After achieving complete coverage of those in chronic need, the greatest triumph of CCTs would be their gradual disappearance over time with the whole region benefiting from economic stability, sustained growth, and a healthier, more educated, and more productive workforce.

In addition to leveling the playing field in terms of opportunities and outcomes, interventions should improve the quality of early childhood investments and later interventions for poor children, closing the gap in skills as early as possible. It would be prohibitively costly to postpone this investment. For adolescents and older individuals, remediation policies such as formal schooling, training, and mentoring require higher investments to level the playing field. Latin America and the Caribbean needs more policies that prevent inequalities from occurring in the first place (i.e., more predistribution) and not only policies that deepen redistribution. In recent decades, the balance between pre-distribution and redistribution has mostly shifted to redistribution to promote more "access" than "achievement." It has produced clear, short-run results in several countries, but the region has not invested enough and in a smart way in long-term reductions in poverty and inequality. For these reasons, an accurate diagnosis of the causes of inequality and poverty must be performed before designing specific policies to mitigate them. Failure to do so can render these policies ineffective, further complicate the situation, and possibly transform a temporary poverty problem into a more permanent one, which can have concomitant effects on overall growth.

5 Public Infrastructure: Less Waste for Better Building

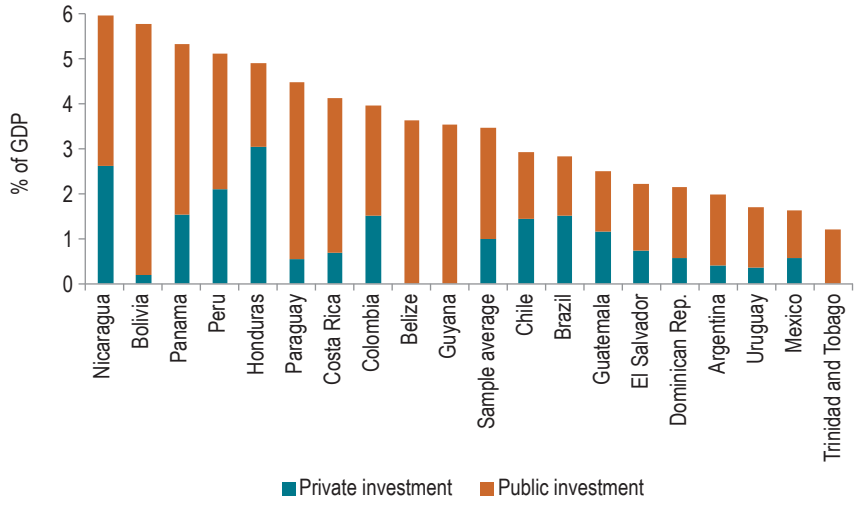
The decrepit state of infrastructure in Latin America and the Caribbean is well known. From pot-hole-ridden roads and bridges in disrepair to substandard airports and sea ports, the region's growth and the quality of life of its citizens suffers from its crumbling infrastructure. While bricks and mortar alone cannot assure growth and prosperity, without acceptable infrastructure services, a country is hard pressed to compete in today's world.

Why is infrastructure so subpar in the region? To begin with, countries in Latin America and the Caribbean do not invest enough in infrastructure. Public and private investment in infrastructure in Latin America and the Caribbean reached an average of 2.75 percent of GDP between 1992 and 2015 and an average of 3.8 percent from 2008 to 2015 (Figure 5.1). This level of spending is low compared with, for example, China (8.5 percent), Japan and India (5 percent), and the average in industrial countries (4 percent) (Powell, 2016). Moreover, as noted in Chapter 2, current investment figures have even dipped below those prevailing in the 1980s. To fill the infrastructure gap, the region would need to invest about 5 percent of its GDP over the next 20–30 years, which is equivalent to an additional $100 billion a year (Perrotti and Sánchez, 2011; Barbero, 2013; Serebrisky, 2014).[1]

Not surprisingly, low investment in infrastructure has led to poor infrastructure services. The quality of infrastructure in most Latin American and Caribbean countries—particularly in Argentina, Brazil, Paraguay, and Venezuela—is considerably lower than it should be given their income levels (World Bank, 2017). Only a few exceptions in the region—mostly in

[1] Perrotti and Sánchez (2011) calculate infrastructure investment needs based on estimates of consumer and producer demand, under the assumption of an average GDP growth rate of 3.9 percent. Investment needs in infrastructure are consistent with reaching an infrastructure stock that allows the region to grow at the aforementioned rate.

Figure 5.1 Investment in Infrastructure (Average between 2008 and 2015)

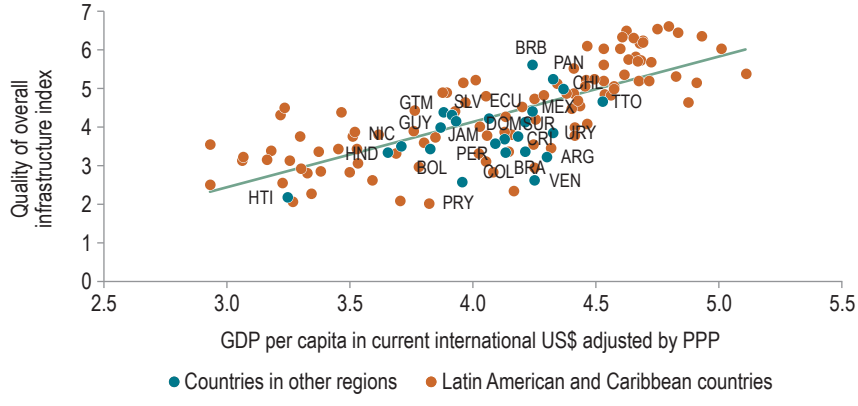


Source: Authors' calculation based on 2017 data from INFRALATAM, http://infralatam.info/.

Central America (Guatemala, Panama, and El Salvador)—have better-than-expected infrastructure quality (Figure 5.2).

Figure 5.2 Relationship between Quality of Overall Infrastructure and Income Level, 2014

Positive relationship between the quality of infrastructure and a country's level of development



Source: Authors' calculation based on the World Bank World Development Indicators Database and the World Economic Forum's Global Competitiveness Index dataset 2007–2017.
Note: Quality of overall infrastructure index ranges from 0 (worst infrastructure quality) to 7 (best infrastructure quality).

Policy reforms to attract private sector investment in infrastructure began in the mid-1990s, and increased private investment from a negligible amount to 1 percent of GDP by 2015 (Serebrisky et al., 2015). Despite the growing role of the private sector, the public sector however, accounts for more than two-thirds of total infrastructure investment in Latin America and the Caribbean (Figure 5.1). Private investment in infrastructure has varied across countries and sectors, and more can be done to mobilize it through policies supported by multilateral development banks (MDBs) in the region (UNDP, 2016).[2] But the experience of recent decades in Latin America and the Caribbean shows that the public sector may still play a substantial role in the funding of infrastructure.

The role of the public sector in infrastructure is important not only because the sector makes up the lion's share of total investment but also because infrastructure investment has public good characteristics, including strong externalities and network effects. Providing electricity requires an efficient transmission and distribution network; urban transport systems need both trunk routes and feeders to provide adequate access to jobs and housing. If infrastructure development is not properly planned, the efficiency of services provided by the assets will be low. In addition, global agreements like the Paris Accord and the Sustainable Development Goals require governments to plan and set standards in order to create infrastructure that is resilient and meets mitigation targets.

Growth in Latin America and the Caribbean is declining and the region's macroeconomic prospects are weak. The region's baseline growth for 2017–2019 is 2 percent (Powell, 2017). Given this outlook, public investment in infrastructure is likely to face significant cuts in the next few years. Capital expenditures are procyclical in Latin America and suffer disproportionately large cuts when the economy faces difficult times (Ardanaz and Izquierdo, 2017; see also Chapter 2 for more details). Between 1987 and 1992—a period of financial and fiscal crises in the region—one-third of the improvement in fiscal accounts came at the expense of lower investment in infrastructure (Carranza, Daude, and Melguizo, 2014). At least since 1995, current expenditures have grown almost without interruption. Capital expenditures have been more volatile, including prolonged periods of cuts. Total public expenditure in Latin America and the Caribbean increased by 3.7 percent of GDP between 2007 and 2014, but more than 90 percent of it went to current expenditures; only 8 percent was devoted to longer-term investments (Cavallo and Serebrisky, 2016). These figures are consistent with the bias against public investment highlighted in Chapter 2.

[2] See G20 International Financial Architecture Working Group (2017).

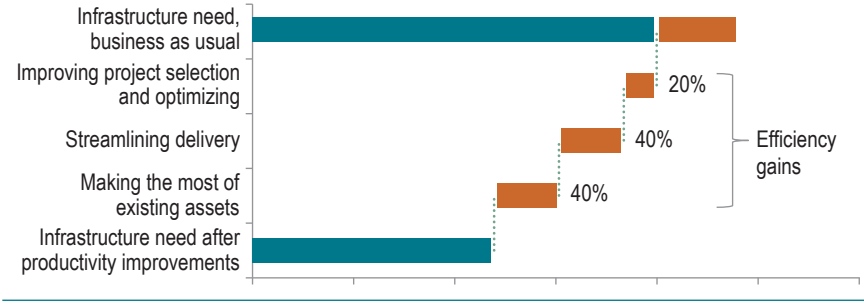
While this bias is resolved (see Chapter 9 on public expenditure composition rules to protect public investment), having fewer resources to invest forces countries to find ways to provide infrastructure services more efficiently. A study by the McKinsey Global Institute (Dobbs et al., 2013) concludes that countries could satisfy future demand for infrastructure services by investing just 60 percent of what demand forecasts indicate they should—that is, just by investing resources more efficiently, countries could save up to 40 percent on infrastructure expenditure (Figure 5.3). McKinsey's report identifies three components and processes of the project cycle of infrastructure service delivery that need to be improved to reach the 40 percent in efficiency gains: 1) improving project selection and optimizing infrastructure portfolios, 2) streamlining service delivery, and 3) making the most of existing assets. Each of them explains, respectively, 20 percent, 40 percent, and 40 percent of potential efficiency gains. This chapter adopts McKinsey's analytical structure and attempts to provide quantitative estimates of Latin America and the Caribbean's potential efficiency gains in public investment in infrastructure (Figure 5.3).

Making the Right Choices

Picking the right projects and optimizing infrastructure portfolios can go a long way toward improving the efficiency of infrastructure spending. Project selection can be improved in several areas. Proper planning can help countries take advantage of network effects and avoid expensive changes during implementation. Early-stage planning and design can offer key savings by reducing the need to make changes after construction begins.

One of the most powerful ways to reduce the overall cost of infrastructure is to avoid investing in projects that neither address clearly defined needs nor deliver sufficient benefits (Dobbs et al., 2013). Investing in the

Figure 5.3 Potential Efficiency Gains in Infrastructure Spending



Source: Authors' elaboration adapted from Dobbs et al. (2013).

investment process can raise returns on both public and private investment and ensure that investment generates the required growth dividends while maintaining fiscal and debt sustainability (Collier and Venables, 2008). Choosing the right combination of projects and eliminating wasteful ones could save $200 billion a year globally (McKinsey Global Institute, 2017). When upstream planning is done properly, countries select the projects with the highest social rates of return, avoiding white elephants (e.g., "bridges to nowhere").

The Public Investment Management Index (PIMI) developed by the International Monetary Fund (IMF) assesses the institutional environment underpinning public investment management systems at four project stages: appraisal, selection, implementation, and evaluation. Its sample of 71 countries includes 10 countries from Latin America and the Caribbean. The index—which ranges from 0 (least efficient) to 4 (most efficient)—indicates that while Latin America and the Caribbean performs well relative to other regions, it still has a long way to go in terms of efficiency. Its average (1.83) is slightly lower than the average for Eastern European countries (1.91) but relatively higher than the lowest-scoring region, Africa (1.56).[3] Brazil, Colombia, Peru, and Bolivia score above the average of the 10 Latin American and Caribbean countries included (Table 5.1). Nonetheless, the region is far from the best performer in the sample, South Africa, which has an efficiency score of 3.53.

The PIMI includes only 10 countries in Latin America and the Caribbean. To overcome this limitation, Contreras et al. (2016) of the IDB revised this methodology and used it to assess all countries in the Network of National Public Investment Systems (SNIP).[4] They added one new dimension and two subdimensions to the PIMI. A new dimension, labeled as "general characterization of the public investment cycle," captures operational characteristics with respect to all stages of the public investment cycle. The subdimension

[3] Countries in Africa are weak at all stages of the public investment management process. However, cross-country variations are large and for example, South Africa is the world's top PIMI performer.

[4] The Latin American and Caribbean region has tried to improve project selection by creating national systems of public investment (SNIPs, to use their Spanish acronym). SNIPs regulate public investment processes guiding projects from the early stages of formulation and feasibility to ex post evaluation. The hypothesis underlying the creation of SNIPs is that better analysis and evaluation of projects improve the quality and quantity of infrastructure projects. In 2010, a SNIP Network was created to help strengthen the functioning of these systems. The network, which is supported by the Economic Commission for Latin America and the Caribbean (ECLAC) and the IDB, includes Argentina, Bolivia, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, and Uruguay.

Table 5.1 Public Investment Management Index, 2015

Country	Appraisal	Selection	Implementation	Evaluation	Total
Brazil	3.00	2.80	3.33	3.33	3.12
Colombia	4.00	2.80	2.13	3.33	3.07
Peru	2.83	3.60	2.67	1.33	2.61
Bolivia	2.83	2.00	2.93	2.00	2.44
El Salvador	0.83	1.60	3.33	1.33	1.77
Jamaica	1.83	2.40	1.33	1.33	1.72
Barbados	0.50	2.00	0.93	1.33	1.19
Trinidad and Tobago	0.00	2.40	1.33	0.67	1.10
Haiti	0.00	1.20	1.73	1.33	1.07
Belize	0.00	0.80	0.27	0.00	0.27
Top performer (South Africa)	4.00	4.00	2.80	3.33	3.53
Average for Eastern Europe	1.63	2.18	2.34	1.48	1.91
Average for Latin American and Caribbean sample	1.58	2.16	2.00	1.60	1.83
Average for Asia	1.64	1.72	2.04	1.45	1.71
World average	1.33	1.60	2.00	1.33	1.57
Average for Africa	1.38	1.75	1.80	1.31	1.56

Source: Authors' elaboration based on Dabla-Norris et al. (2012).
Note: Values range from 0 (least efficient) to 4 (most efficient). Countries are ordered from most efficient to least efficient based on the total average index, i.e., a simple average of the four subcomponents.

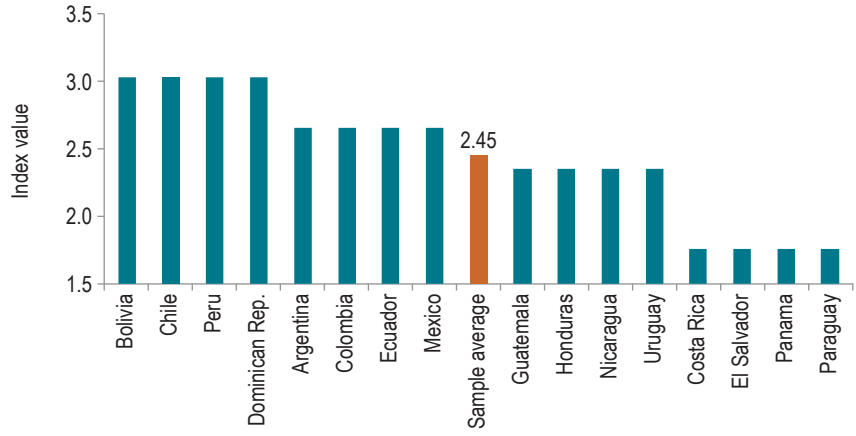
"methodologies on project preparation and evaluation/social pricing" is included in the "strategic guidance and project appraisal" dimension and the subdimension "selection criteria" is included in the "project section" dimension.

By this new measure, Bolivia, Chile, Peru, and the Dominican Republic are the top performers in the region (Figure 5.4). Countries that need institutional strengthening to reach the regional average level include Paraguay, Panama, El Salvador, Costa Rica, Uruguay, Nicaragua, Honduras, and Guatemala. Yet again the region's performance leaves considerable room for improvement, with an average of 2.45 out of a total possible score of 4.

No country in Latin America and the Caribbean reaches the highest efficiency performance level (4) on the Strategic Planning and Evaluation or Project Selection indices (Figure 5.5).[5] These results are consistent with other efficiency-related public management indices, such as the World Economic Forum's Global Competitiveness Index and the World Bank's Governance Index. One would expect a positive correlation between

[5] The other dimensions of the index are project implementation, project evaluation and audit, and general characterization of the public investment cycle.

Figure 5.4 Efficiency of Public Investment Management, 2016



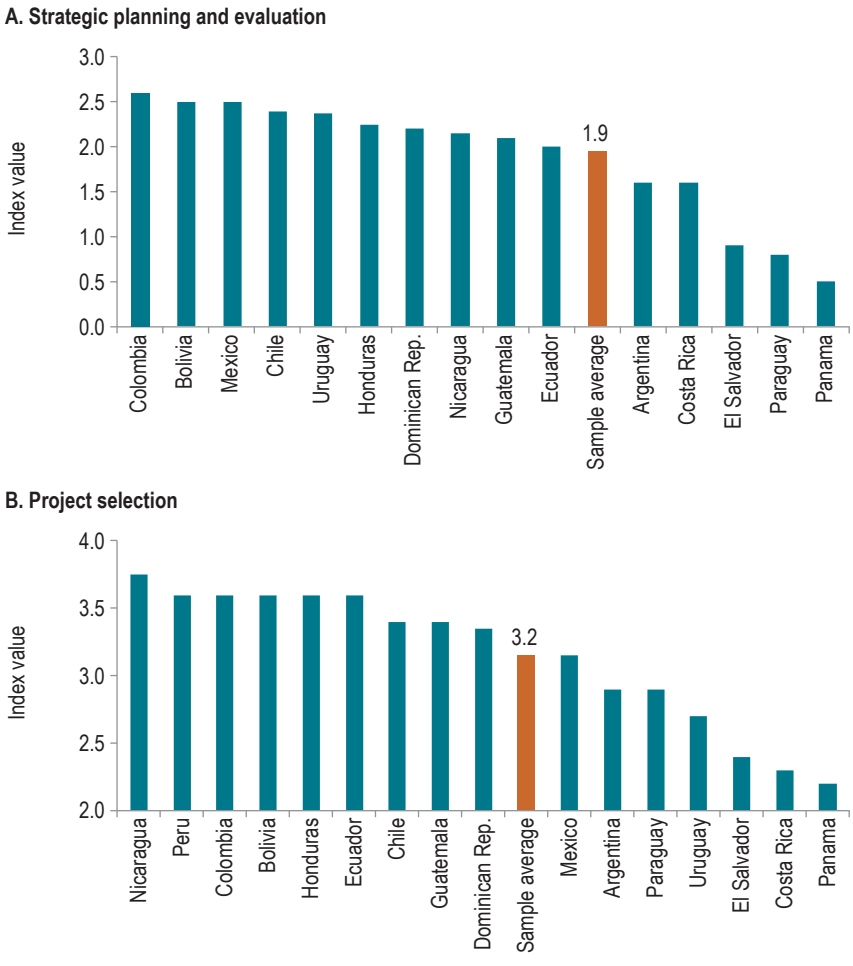
Source: Authors' calculation based on Contreras et al. (2016).
Note: Values range from 0 (least efficient) to 4 (most efficient).

efficiency of public investment management and competitiveness and governance. However, the correlation between the IMF and IDB efficiency indices and either competitiveness or governance indices is not significant. In fact, some countries with low PIMIs, such as Costa Rica, Uruguay, and Panama, have good competitiveness and governance rankings. Thus, even good levels of competitiveness and governance do not guarantee high efficiency of public investment management.

Another way to evaluate the efficiency of the public management of investment is to examine the private sector's views of the public procurement cycle. Since 2013, the World Bank has been measuring how the private sector does business with governments. Its Benchmarking Public Procurement (BPP) database assesses 180 economies and scores them from 0 (worst) to 100 (best). Among other dimensions, this indicator includes a needs assessment, a call for tenders, and bid preparation. Figure 5.6 shows the results for selected countries in Latin America and the Caribbean.

The 2017 BPP index identifies Russia (100), Canada (98), and the United States (98) as the top performers. The average for Latin America and the Caribbean is 62. Its top performers—Colombia, Mexico, Nicaragua, and Peru—have a score of 80. Surprisingly, the correlation between the bid preparation dimension of the BPP index and the PIMI efficiency scores for Latin American and Caribbean countries included in the sample is close to zero, a counterintuitive result as one would expect a positive correlation. However, this shows again that countries may be efficient in some

Figure 5.5 Indices of Subdimensions of Efficiency in Public Investment Management, 2016



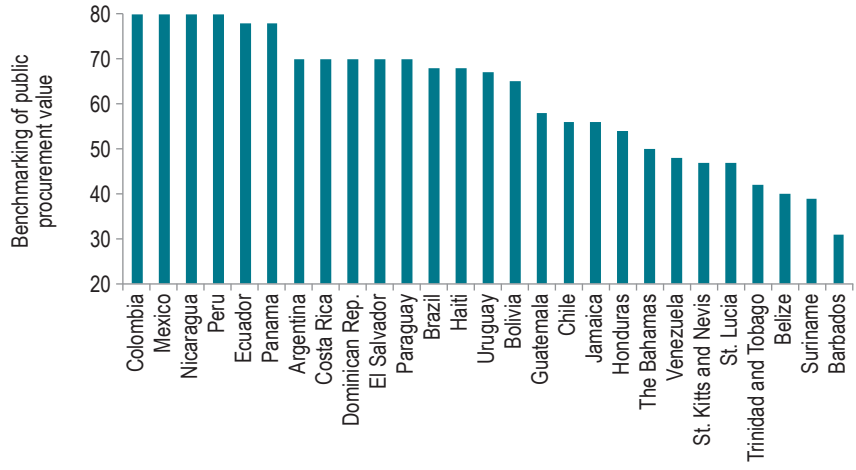
Source: Authors' calculation based on Contreras et al. (2016).
Note: Values range from 0 (least efficient) to 4 (most efficient).

dimensions and not in others—all the more reason to look at efficiency from different angles.

In 2017, the Global Infrastructure Hub[6] launched InfraCompass, an initiative that identifies the foremost policies and practices that lead to sustainable and equitable infrastructure through efficient markets, better

6 GIH https://www.gihub.org.

Figure 5.6 Benchmarking of Public Procurement, 2017



Source: Authors' calculation based on World Bank Procuring Infrastructure Public-Private Partnerships database.
Note: Values range from 0 (worst) to 100 (best).

decision-making, and improved delivery. InfraCompass analyzes 49 countries, which together account for 90 percent of global GDP and 75 percent of the world's population. It indicates that emerging economies have dominated the list of top improvers over the past decade. Policy development—including better governance through reduced corruption, improved regulatory quality via enhanced rule of law, and simplified permit procedures and land administration—contributed to these economies' strong performance.[7] No country in Latin America and the Caribbean performed at the level of advanced economies or high-performing emerging economies.

Table 5.2 summarizes the results of Contreras et al. (2016), who expand coverage of the IMF's Public Investment Management Index for Latin America and the Caribbean, the World Bank's Benchmarking Public Procurement, and InfraCompass. Despite the differences in country scores observed among these indices, it is possible to rank Latin American and Caribbean countries into four groups in terms of their capacity for infrastructure planning and project selection optimization:

- Group 1 (very strong): Chile, Colombia, Mexico, and Peru
- Group 2 (strong): Bolivia, the Dominican Republic, Ecuador, and Nicaragua

[7] For more information on the specifics of data and methodology, see http://infracompass.gihub.org/static/data/GIH_InfraCompass_Technical_Methodology.pdf.

Table 5.2 Indicators of Infrastructure Delivery Institutional Capacity, 2017

	Public Investment Management Index			World Bank Benchmarking Public Procurement database	Global Infrastructure Hub InfraCompass**	
Country	Appraisal	Selection	Implementation	Preparation*	Evaluation	Total
Argentina	2.66	1.60	2.90	70	Medium	Low
Bolivia	3.03	2.50	3.60	65	Low	Low
Chile	3.03	2.40	3.40	56	Medium	High
Colombia	2.66	2.60	3.60	80	Medium	High
Costa Rica	1.76	1.60	2.30	70	Low	Low
Dominican Rep.	3.03	2.20	3.35	70	Low	Low
Ecuador	2.66	2.00	3.60	78	Low	Low
El Salvador	1.76	0.90	2.40	70	Low	Low
Guatemala	2.35	2.10	3.40	58	Low	Low
Honduras	2.35	2.25	3.60	54	Low	Low
Mexico	2.66	2.50	3.15	80	Medium	Very high
Nicaragua	2.35	2.15	3.75	80	Low	Low
Panama	1.76	0.50	2.20	78	Low	Low
Paraguay	1.76	0.80	2.90	70	Low	Low
Peru	3.03	2.7	3.6	80	Low	High
Uruguay	2.35	2.37	2.7	67	Medium	Low

Source: Authors' calculation based on Contreras et al. (2016), World Bank Benchmarking Public Procurement database, and G20 Global Infrastructure Hub.
Note: Values range from "very weak" (cells colored by red) to "very strong" (cells not colored). The darker the area, the worse the performance.
* It assesses procurement life cycles in 180 economies, which it scores from 0 (worst) to 100 (best).
** Framework to help countries deliver infrastructure more effectively, and to provide a better understanding of a country's infrastructure market.

- Group 3 (weak): Argentina, Costa Rica, Guatemala, Honduras, and Uruguay
- Group 4 (very weak): El Salvador, Panama, and Paraguay.

Streamlining Infrastructure Delivery

Streamlining the delivery of infrastructure requires action in several project-related areas and can account for 40 percent of the total potential efficiency gains in infrastructure delivery, according to Dobbs et al. (2013) (Figure 5.3). A variety of bottlenecks raises infrastructure construction costs. Land acquisition processes, environmental permits, and resettlement agreements usually lack institutional coordination and involve lengthy bureaucratic processes that delay project implementation. Failure

to use advanced construction techniques, the high incidence of informal labor, and weak incentives to implement lean supervision systems all increase construction costs. This section focuses on providing quantitative estimates of potential gains in public investment in infrastructure in order to avoid cost overruns and project implementation delays.

Trimming Construction Cost Overruns

Cost overruns are common in infrastructure (Box 5.1). In practical terms, cost overruns in an infrastructure project imply that the assets in the project could be built using fewer financial resources. There is a caveat, however: cost overruns are not always necessarily bad, or the result of inexperience, ineptitude, or corruption. Building infrastructure is a difficult endeavor, and cost overruns are often to be expected. Investment in infrastructure is large, lumpy, and involves high construction risks, mostly driven by the impossibility of anticipating contingencies. Complex geology, archeological remains, natural disasters, and physical and social constraints (for instance, resettlement processes that might trigger legal disputes) are among some of the variables that cause unavoidable cost overruns.[8] Other overruns are avoidable, though, and reducing or eliminating them can yield substantial savings.

Globally, cost overruns account for 28 percent of the total cost of infrastructure investment (Flyvbjerg, 2016). They usually arise because of incomplete information, lack of competition and transparency in bidding processes, weak project supervision, and an optimistic bias that underestimates costs. Box 5.1 shows the main theories for cost overruns in infrastructure projects.

Based on a sample of 806 projects worldwide, Flyvbjerg (2016) shows that projects in Latin America and the Caribbean have much higher cost overruns (48 percent) than the average project in the world (28 percent) (Table 5.3), and higher than in North America (24 percent) and Europe (26 percent). Flyvbjerg and Sunstein (2016) report that cost overruns have increased in Latin America and the Caribbean but decreased in Asia

[8] Further nontechnical reasons for cost overruns could stem from changes in inflation and the exchange rate. For example, if over the life of a loan, inflation in the destination country increases faster than in the country of origin of the funds (e.g., the United States) and/or the local currency appreciates, the project costs in US$ terms increase. If these changes were not anticipated, they can drive up costs significantly. Especially in the Latin American and Caribbean context, these macroeconomic considerations might have played an important role in recent decades.

and Europe (for Africa and Oceania there were no statistically significant trends). Other sources, based on anecdotal evidence, indicate that on average 75 percent of Latin American infrastructure projects experience cost overruns and 65 percent of projects experience delays of 6–18 months (Guasch, Suárez-Alemán, and Trujillo, 2016).

Is there a good benchmark against which cost overruns in Latin America can be compared? For this report, a novel dataset was built and analyzed on cost overruns on public infrastructure projects financed by multilateral development banks (MDBs), which usually provide 10–12 percent of public infrastructure investment funds in Latin America and the Caribbean (more than 20 percent in small economies, mostly in Central America) (Serebrisky et al., 2015). The working hypothesis is that infrastructure projects

BOX 5.1 COST OVERRUNS IN INFRASTRUCTURE: WHY THE PRICE IS NEVER RIGHT

The development of infrastructure projects takes time. Combining this fact with incomplete information sets the scene for cost overruns. First, contractors may have less incentive to minimize costs as projects are in more advanced stages because the threat of downsizing and removal is less credible as the project progresses (Arvan and Leite, 1990; Lewis, 1985). Secondly, the complexity of infrastructure projects often makes designs imperfect. This complexity, coupled with the impossibility of writing complete contracts, incentivize contractors to present lower costs for getting the contract, and then renegotiate a higher price later (hold-up) (Ganuza, 2007).

The literature points out four dimensions of cost overruns in infrastructure projects: technical, economic, political, and sociological (Flyvbjerg, Skamris Holm, and Buhl, 2002, 2003, 2007, 2008, 2016). Among the technical factors, the most important are forecast errors and risks, which in infrastructure projects are complex and difficult to specify (and quantify). Economic grounds include principal-agent problems among the public officials who assign the projects and the members of society who benefit (in principle) from them. The objectives of public agents and the public may differ. Thus, incentives are not always aligned, and the decision of public agents may not in fact maximize social welfare. Third, competition between cities or regions frequently leads to proposals with underestimated costs, with the aim of gaining the chance of developing the project in their territory and taking political advantage of it. Once the work is assigned to one city, reassigning it to another one is costly, especially once construction has begun. Finally, beyond strategic reasons, there is "appraisal optimism." This means that agents tend to think that the costs, the risks, and the execution time of the projects are smaller than is realistically possible. There is a bias toward

(continued on next page)

BOX 5.1 COST OVERRUNS IN INFRASTRUCTURE: WHY THE PRICE IS NEVER RIGHT *(continued)*

overestimating one's own capacity to carry out complex projects, which is reflected in underestimating costs and risks, and overestimating the benefits associated with projects (Flyvbjerg, Skamris Holm, and Buhl, 2002, 2004). Table B5.1 summarizes causes and explanations based on Flyvbjerg's categorization.

Table B5.1 Causes and Explanations for Cost Overruns in Infrastructure Projects

Explanation	Causes	Explanation	Causes
Technical	• Forecasting errors including price rises, poor project design, and incompleteness of estimations • Scope changes • Uncertainty • Inappropriate organizational structure • Inadequate decision-making process • Inadequate planning process	Psychological	• Optimism bias among local officials • Cognitive bias of people • Cautious attitudes toward risk
Economical	• Deliberate underestimation due to lack of incentives, lack of resources, inefficient use of resources, dedicated funding process, poor financing/contract management, strategic behavior.	Political	• Deliberate cost underestimation • Manipulation of forecasts • Private information

Source: Adapted from Cantarelli et al. (2010).

Table 5.3 Cost Overruns in Infrastructure Projects (Average between 1927 and 2012)

	Average cost overrun (percentage of the project value)	
Project type	Latin America and the Caribbean	Rest of the world
Dams	103	95
Rail	59	40
Power plants	36	36
Roads	53	23
Total	48	28

Source: Authors' calculation based on Flyvbjerg (2016).

financed by MDBs have lower cost overruns than other projects because they have higher quality standards for preparation and implementation, usually reflected in strict conditions regarding feasibility, procurement,

and supervision, than do national systems. These projects must also comply with rigorous internal requirements established by the banks. MDBs use standardized processes to estimate construction costs and are required to report actual construction costs at the end of construction. Some countries generate similar information, but national reporting systems vary and are seldom used to evaluate infrastructure. Thus, cost overruns financed by MDBs could represent a lower-bound estimate of cost overruns against which cost overruns in the region can be measured. In plain language, it can be assumed that cost overruns in projects financed by MDBs represent the minimum or "natural" level of cost overruns that can be expected from the process of building infrastructure. Countries could compare the level of cost overruns with that found in this analysis to identify potential efficiency gains in public spending in infrastructure.

The sample includes 231 infrastructure projects financed in Latin America and the Caribbean by the IDB (83 projects) and the World Bank (148 projects) between 1985 and 2012.[9] It includes 142 transport projects (road construction, maintenance, and rehabilitation); 73 water and sanitation projects (treatment plants, improvement and expansion of distribution networks); and 16 energy projects (generation and transmission).

Among projects financed by the IDB, 82 percent suffered cost overruns. In 5 percent of cases, the country asked for additional financing from the IDB; in the remaining 95 percent of cases, national counterparts assumed the cost. Cost overruns were, on average, 22 percent of the total costs of the projects. Among projects financed by the World Bank, 53 percent suffered cost overruns. In 20 percent of those cases, the World Bank covered those costs. Cost overruns accounted for 17 percent of the total costs of the projects on average.[10] A first look at the data can lead to the conclusion that cost overruns are generalized because most of the

[9] The IDB sample is distributed as follows: 35 percent of projects were in Brazil, 7 percent in Colombia, 6 percent in Haiti, 6 percent in Peru, 6 percent in Uruguay, and 5 percent in Bolivia. The remaining 35 percent was distributed among Argentina, the Bahamas, Barbados, Belize, Costa Rica, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Jamaica, Mexico, Panama, Paraguay, and Trinidad and Tobago. The World Bank sample is distributed as follows: 26 percent of projects were implemented in Brazil, 10 percent in Argentina, 7 percent in Colombia, 6 percent in Peru, 5 percent in Honduras, 4 percent in Haiti, and 4 percent in Mexico. The remaining 28 percent was distributed among Belize, Bolivia, Chile, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Jamaica, Nicaragua, Panama, Paraguay, St. Lucia, Uruguay, and Venezuela.

[10] Awojobi and Jenkins (2015) seem to be the only other researchers to have estimated cost overruns in World Bank infrastructure projects. They found that cost overruns on hydroelectric dams financed by the World Bank were 27 percent.

projects have them. However, when the size of cost overruns is studied in more detail, less than 15 percent of IDB and World Bank projects have cost overruns of more than 50 percent, while 74 percent of IDB projects and 79 percent of World Bank projects have cost overruns of less than 20 percent.

Regarding the relationship between cost overruns and specific infrastructure sectors, on average, transport projects present slightly higher overruns than water and sanitation and energy projects (Table 5.4). However, the difference is not statistically significant.

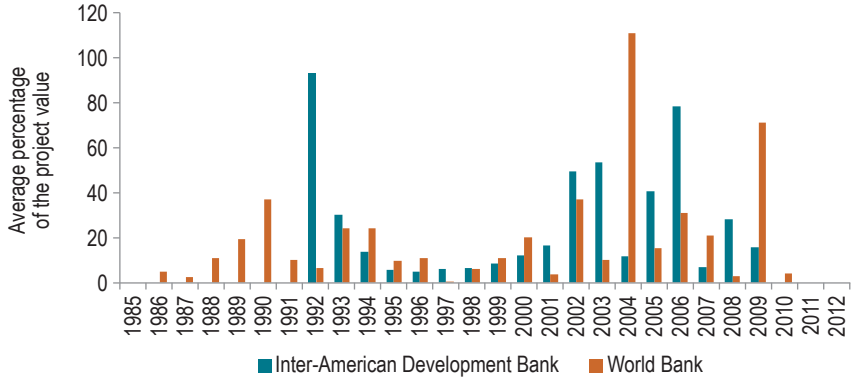
Cost overruns did not appear to be higher for complex projects such as dams, bridges, or tunnels, and the share of overruns did not appear to decline over time (Figure 5.7). Indeed, a large share of projects with high cost overruns (more than 60 percent) occurred from 2002 onward.

Table 5.4 Cost Overruns in Infrastructure Projects Financed by the Inter-American Development Bank and World Bank by Subsector (Average between 1996 and 2010)

	Transport	Energy	Water and sanitation
Inter-American Development Bank average	23%	16%	19%
World Bank average	18%	9%	17%
Inter-American Development Bank standard deviation	33%	21%	28%
World Bank standard deviation	38%	19%	34%
World Bank maximum value	144%	93%	138%
Inter-American Development Bank maximum value	191%	47%	174%

Source: Authors' calculation based on project loan documents and project completion reports from the Inter-American Development Bank and World Bank.

Figure 5.7 Cost Overruns in Public Infrastructure Projects Financed by the IDB and the World Bank in Latin America and the Caribbean



Source: Authors' calculation based on IDB and World Bank project databases.

In summary, cost overruns do not seem to vary substantially by infrastructure sector or size of project, and there is no clear indication that cost overruns have decreased over time.

In sum, cost overruns on projects financed by MDBs in Latin America and the Caribbean averaged 17–22 percent—less than half the 48 percent estimated for all infrastructure projects in the region. Assuming that cost overruns of projects financed by MDBs represent a lower bound for cost overruns in the region, the potential for substantial cost overrun reductions is in the 26–31 percent range.[11] As public expenditure on infrastructure accounts for about 2.5 percent of regional GDP, reducing overruns to the lower bound could result in cost savings of more than 0.65 percent of regional GDP.

Avoiding Delays in Construction

Delays in the construction of infrastructure receive much less attention than cost overruns, but they can increase a project's financial costs significantly. Delays immobilize physical and financial capital. During the delay, unit prices can increase, trained staff can leave the project, and the needs and priorities of beneficiaries can change (Leurs, 2005).

As with the cost overrun analysis, this analysis of the costs of delay draws on data from projects financed by MDBs. It focuses on two types of delay: in authorizing the start of construction and in disbursements. The analysis is based on a sample of 317 IDB infrastructure projects approved between 1997 and 2016.[12,13]

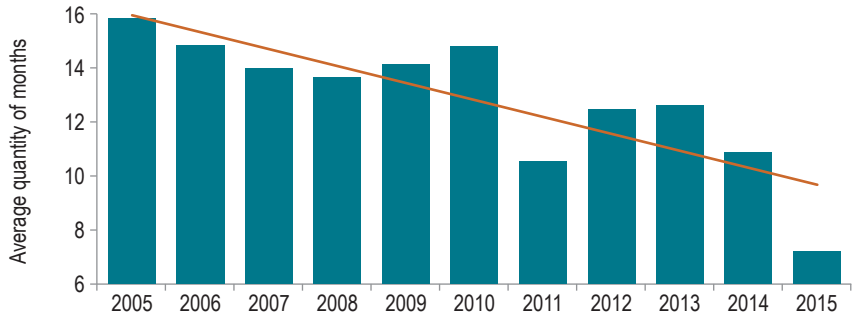
An investment loan approved by an MDB is ready to be implemented only when the authorities of the borrowing country (usually the executive and/or the legislative branch of government) declare it eligible. Figure 5.8 shows that the time between approval and eligibility has decreased over time. In 2005, for example, the average time between the approval of a

[11] The assumption in the calculation is that cost overruns are reduced from 48 percent (regional average according to available literature) to 17–22 percent (result from the analysis of cost overruns in IDB and World Bank projects).

[12] The dataset started with 407 projects. It was reduced to 317 projects after the data were filtered for missing values and inconsistencies. The average project size was $97 million.

[13] The unit of observation is annual project disbursements (2,152 observations). For each project, information is available on the amount disbursed, the project approval date, the project expiration date, the signature date, the eligibility date, and the total amount disbursed or expected to be disbursed. The analysis includes only investment projects. Disbursements for emergency loans, policy-based loans, and other types of loans are handled differently and usually do not involve the financing of public works that require laying out a disbursement scheme at the time of loan negotiation.

Figure 5.8 Months Between Approval and Eligibility of a Sample of IDB-Financed Infrastructure Projects

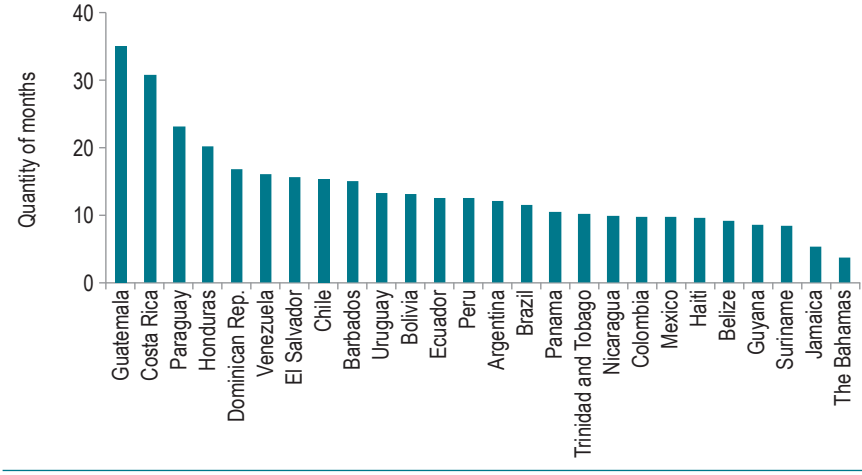


Source: Authors' calculation based on IDB project database.

loan and eligibility was 16 months; by 2015 this gap had decreased to 7 months. This reduction is clearly good news and indicates the region is becoming more agile in granting bureaucratic approvals needed to start project construction.

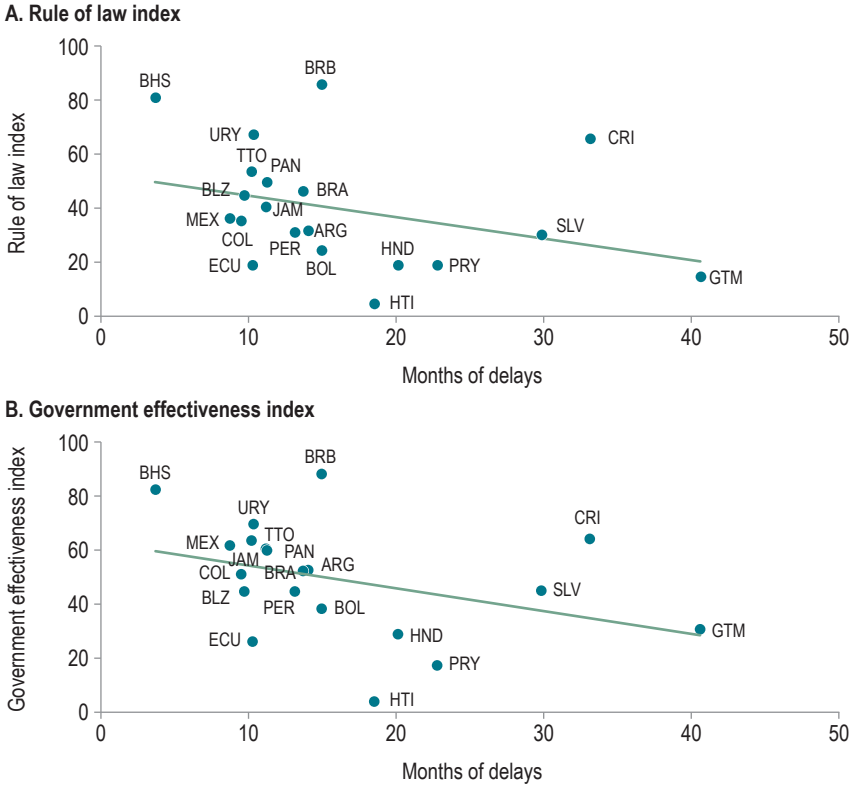
An analysis of delays in IDB infrastructure projects reveals significant variation among countries in the region. Some can take up to 35 months between approval and eligibility—as in Guatemala—while others can take less than a year. Projects in the Bahamas move the fastest, with only 4 months between approval and eligibility on average between 2005 and 2015 (Figure 5.9).

Figure 5.9 Months Between Approval and Eligibility of IDB-Financed Infrastructure Loans (Average between 2005 and 2015)



Source: Authors' calculation based on IDB project database.

Figure 5.10 Relationship between Delays in Approving Infrastructure Projects and Rule of Law and Government Effectiveness Indices (Average between 1996 and 2015)



Source: Authors' calculation based on IDB project database and World Bank Government Effectiveness Index.
Note: Applies to a sample of IDB-financed infrastructure projects. Rule of law and government effectiveness indices range from 0 (worst value) to 100 (best value).

Are delays in obtaining all necessary approvals and paperwork required to start project implementation related to government ineffectiveness or a country's institutional characteristics? While the evidence is not conclusive, there seems to be a negative correlation between project delays and institutional proxies such as the World Bank's Government Effectiveness Index and the Rule of Law Index. This implies that better-ruled and more effective governments tend to have shorter delays (Figure 5.10).

How do these delays compare with international standards? A clear-cut comparison is not possible because data on MDB delays are not readily available or may be nonexistent in developed countries. But a comparison can still be made relying on data that identify delays in obtaining all necessary approvals and permits (most of them related to environmental safeguards) to start

Figure 5.11 Days Required to Complete Permitting and Approval Procedures for Infrastructure Projects, 2016

Source: Authors' elaboration based on World Bank's Doing Business 2016.

construction. As expected, developed countries have shorter delays than developing countries (Figure 5.11). The Republic of Korea has the shortest delays, with only 27.5 days to complete all permitting and approval procedures. The average delay in Latin America and the Caribbean is 181.5 days—about a month longer than in Organisation for Economic Co-operation and Development (OECD) countries. In Barbados, the worst performer in Latin America and the Caribbean, it takes 442 days to obtain all permits and approvals. Overall, Latin America and the Caribbean is the worst performer as it has the longest delays.

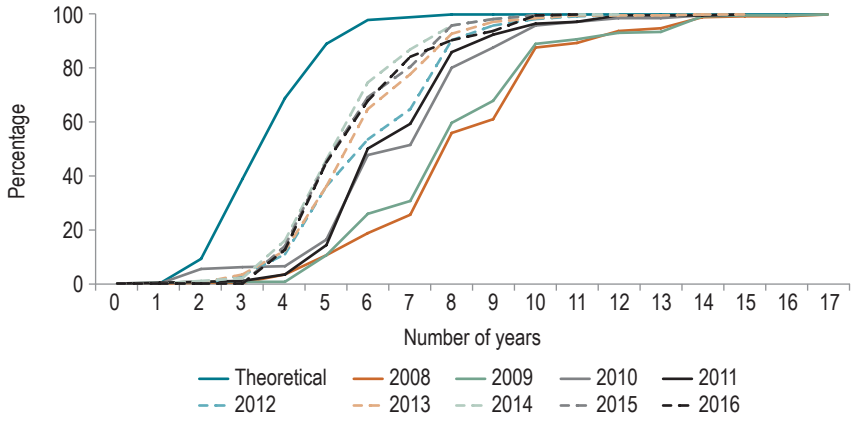
Delays not only increase the financial costs of infrastructure projects, but they also reduce political credibility and improvements in services and tie up resources that could be allocated to alternative uses.

Only limited data are available on the financial costs of delays, however, because it is extremely difficult to obtain information about both planned implementation schedules and actual implementation milestones. Most of the evidence is, therefore, based on case studies and anecdotal information.

To better understand the costs of delays, a theoretical project disbursement curve was built based on information on programmed disbursements for more than 100 project documents prepared for approval by the Board of Directors of the IDB between 2003 and 2016. This curve is compared against a curve based on data on actual disbursements for 317 infrastructure projects.

The leftmost line in Figure 5.12 shows the disbursements that should have been made, according to program documents (i.e., the theoretical

Figure 5.12 Theoretical and Actual Cumulative Disbursements of IDB-Financed Infrastructure Loans (by year)



Source: Authors' calculation based on IDB and World Bank project databases.

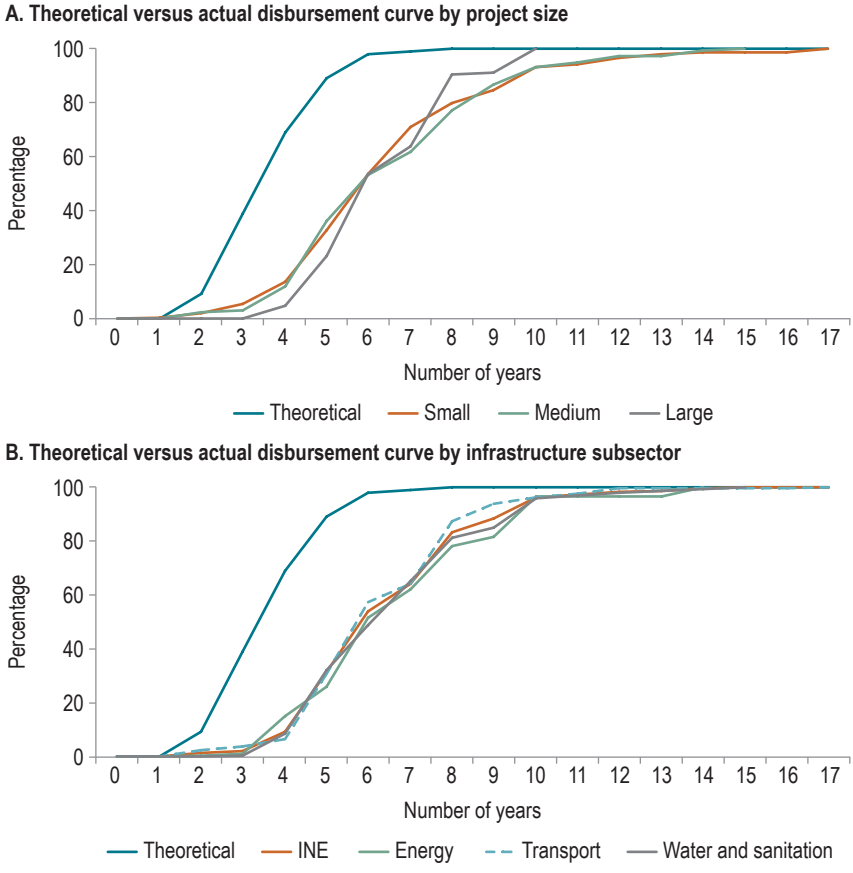
disbursement curve). The other lines show actual disbursements over the years. Although performance improved between 2008 and 2016—that is, a larger share of loans was disbursed according to schedule, indicating that a learning process was taking place as projects approached the theoretical disbursement curve—delays remain and there is some additional room for improvement.

Moreover, no significant differences in disbursements seem to exist across project sizes (Figure 5.13A) or infrastructure subsectors (Figure 5.13B). However, disbursements of infrastructure projects vary across sectors (that is, among purely infrastructure projects and those in social sectors such as health and education). As shown in Figure 5.14, the disbursement gap is larger in infrastructure than in social sectors.

What does this gap between the theoretical and actual curves imply? All these delays represent substantial inefficiencies in disbursement that in turn generate further costs. Time is money and delayed disbursements could be invested elsewhere. The opportunity cost of the money that was not disbursed as scheduled was estimated using potential interest rates that could be earned on the (immobilized) capital. Calculations were carried out using the difference between the theoretical curve and the average disbursement curve. The results assume an average-sized project ($100 million) and a total implementation time of 14 years.[14] Considering

[14] By the tenth year, 96 percent is already disbursed. The remaining 4 percent represents closing-related procedures.

Figure 5.13 Theoretical and Actual Cumulative Disbursements of IDB-Financed Infrastructure Loans (Average between 2003 and 2016)

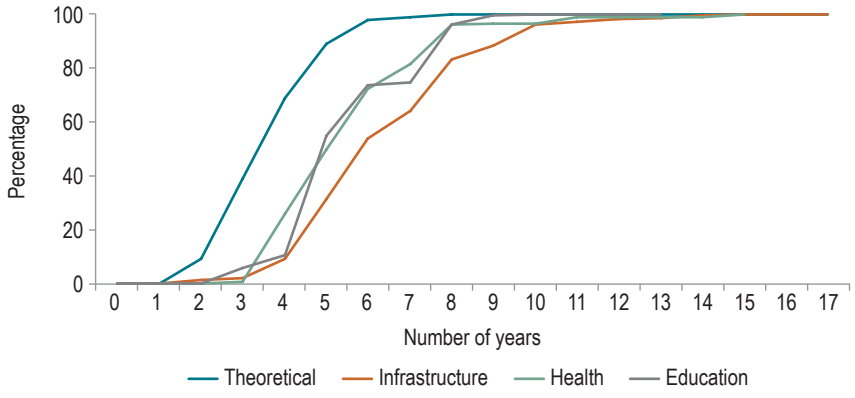


Source: Authors' calculation based on IDB and World Bank project databases.

the average IDB interest rate over the period of analysis (3.1 percent), disbursement inefficiencies would add up to 10.5 percent of project costs. However, because of interest rate variation over time, these disbursement inefficiencies can range anywhere between 2.8 percent and 19.7 percent of project costs.[15] These figures show that timely implementation can

[15] The analysis has considered the interest rate effectively charged by the IDB, which is between 0.99 percent (the lowest interest rate historically since 1997) and 7.03 percent (the highest interest rate historically since 1997). The interest rate varies over time and this causes variation in the results shown. However, these interest rates were used to obtain lower and upper bound scenarios in order to identify the potential size range of the savings.

Figure 5.14 Theoretical and Actual Cumulative Disbursements of IDB-Financed Infrastructure Loans by Sector (Average between 2003 and 2016)



Source: Authors' calculation based on IDB and World Bank project databases.

increase efficiency, and if disbursements follow the stipulated schedule, savings could account for up to 19.7 percent of the total of the project. Since public expenditure on infrastructure is about 2.5 percent of regional GDP, savings from an improved disbursements schedule could reach up to 0.5 percent of regional GDP.[16]

Making the Most of Existing Assets

According to Dobbs et al. (2013), making the most of existing assets could save about 40 percent of infrastructure spending (see Figure 5.3). And what about improving the efficiency of the existing stock of infrastructure? By increasing the efficiency of supply (that is, the capacity of service providers to supply more services with the same assets), savings could be obtained by avoiding construction of new infrastructure to respond to demand growth.

How efficient are the various infrastructure subsectors in Latin America and the Caribbean? Unfortunately, few studies assess the efficiency of infrastructure asset performance. Serebrisky et al. (2016) find that the average technical efficiency of ports in the region rose from 52 percent in 1999 to 64 percent in 2009. Suárez-Alemán et al. (2016) find that ports in Latin America and the Caribbean are far less efficient than top-performing

[16] If the difference between the theoretical curve and the actual curve for 2014 (the most efficient one) were used instead, disbursement inefficiencies would add up to 6.4 percent of the project costs and could reach up to 0.16 percent of regional GDP.

ports in China. They show that private sector participation, less corruption in the public sector, improvements in liner connectivity, and the existence of multimodal links increase port efficiency in developing regions. Based on information on 150 airports worldwide, Serebrisky (2012) concludes that Latin American and Caribbean airports are less efficient than airports in Asia and North America. Technical efficiency in Latin America and the Caribbean varied widely, with only 6 of the 22 Latin American and Caribbean airports in the sample on the efficiency frontier. On average, airports in the region were only 69 percent as efficient as the most efficient airports.

Other infrastructure sectors, such as energy, water, and sanitation, are far from being efficient benchmarks. As an example, Estache, Rossi, and Ruzzier (2004) find that South America's electricity sector averages 76 percent out of 100 in efficiency levels.

Bonifaz and Itakura (2014) analyze urban water utilities in Latin America and the Caribbean. They find that private sector firms outperform public enterprises and that inefficiency is positively correlated with firm size and network length. According to their estimates, inefficiency raises the costs of water infrastructure in Latin America and the Caribbean by an estimated 32 percent. Table 5.5 summarizes the findings of these studies, showing that infrastructure sectors in the region are far from efficient.

In 2015, the IMF attempted to aggregate inefficiencies in making the most of existing assets with its Public Investment Efficiency (PIE-X) indicator, following a Data Envelopment Analysis (DEA) methodology. Using a large sample of countries, it estimates the relationship between the public capital stock and indicators of access to and the quality of infrastructure assets. Countries are given efficiency scores based on their distance from

Table 5.5 Results of Selected Studies on Infrastructure Efficiency

Study	Sector	Main results	Year
Bonifaz and Itakura (2014)	Water and sewerage	Inefficiency increased costs 32 percent.	1999–2010
Estache, Rossi, and Ruzzier (2004)	Electricity	Efficiency was just 76 percent (intraregional average).	1994–2000
Serebrisky (2012)	Airports	Efficiency was just 69 percent (intraregional average).	Average 2005–2006
Serebrisky et al. (2016)	Ports	In intraregional comparison, port infrastructure efficiency in Latin America and the Caribbean was just 64 percent (intraregional average).	Average 2000–2010
Suárez-Alemán et al. (2016)		In comparison across developing regions, efficiency in Latin America and the Caribbean was just 55 percent. Efficiency increased 10 percent from 2000 to 2010 (interregional average).	Average 2000–2010

Source: Authors' elaboration summarized from Serebrisky et al. (2017).

the frontier of best performers (the less efficient the country, the greater the distance to the frontier and the lower its PIE-X efficiency score).[17] Inputs are the public capital stock and income per capita; output is an aggregate physical indicator comprising the coverage of infrastructure networks (the length of road network, electricity production, access to water), social infrastructure (number of secondary teachers and hospital beds), and a quality of infrastructure indicator from the World Economic Forum (WEF) database. Results show that the efficiency gap is 40 percent in low-income developing countries, 27 percent in emerging markets, and 13 percent in advanced economies. Given that Latin American countries fall within the first two groups, room for improvement in the use of existing assets seems substantial. Of course, such a complex aggregation may be subject to several caveats, but results do suggest that much remains to be done in Latin America and the Caribbean to make more of existing assets.

These aggregate measures have very palpable counterparts in a myriad examples: average electricity losses in Latin America and the Caribbean were 16 percent of total electricity produced in 2012—far higher than the 6 percent lost in OECD countries (Jiménez, Serebrisky, and Mercado, 2014). More particularly, the World Bank's Business Enterprise Survey data show that losses from power outages in Latin America reached $68 billion in 2012.[18] Losses from electrical outages in the region were 3.1 percent of sales—almost 3.5 times higher than in OECD countries, according to the World Bank's 2017 Enterprise Survey. Similar losses resulted from water shortages and interruptions in water supply. In the transport sector, unpaved roads are associated with low quality and inefficient transport services. Road safety is also receiving greater attention as the direct consequence of inadequate services provided by infrastructure assets and poor regulation of traffic rules. The density of the transport infrastructure in Latin America and the Caribbean is low given the region's income level. Its paved road density is similar to Africa's, and about one-quarter of the next-lowest region (World Bank, 2017). Road safety is also weak, with more than 100,000 people a year dying in road accidents. Road accidents are the main cause of death for people 15–29 and cost the region's economy an estimated 1–3 percent of GDP (Serebrisky, 2014).

The World Bank's Logistic Performance Indicators (LPIs) show that the region ranks poorly, close to Sub-Saharan Africa. Logistics costs are higher than in East Asia and South Asia, and it takes longer to export from

[17] Values range from 0 to 100, with the latter being the most efficient value, which belongs to the frontier.

[18] http://www.enterprisesurveys.org/.

Latin America and the Caribbean than from East Asia. Moreover, losses from breakage or deterioration of merchandise during shipping exceeded $70 billion in 2012 (Serebrisky, 2014).

Yet another source of concern is infrastructure maintenance. Once infrastructure is built, policymakers often take for granted that it will continue to provide services at the level of quality observed immediately after construction is completed. But infrastructure deteriorates over time. Adequate maintenance is a necessary condition for infrastructure assets to provide infrastructure services compatible with the standards defined when they were first designed and built. Depreciation of infrastructure assets is nonlinear and is generally not visible until routine maintenance can no longer reverse the damage. At that point, rehabilitation or rebuilding is required, at much higher costs.

Lack of proper maintenance increases costs to infrastructure providers. It also imposes operational costs on infrastructure users. In the case of roads, for example, deteriorated infrastructure is associated with vehicle depreciation, increased travel times, higher gas consumption, and more accidents. In the case of electricity, lack of maintenance increases electricity losses, power tripping, system instability, breakdowns, and fires. Poorly maintained infrastructure sometimes leaves firms with no option but to invest in infrastructure themselves (buying generators, for example) (Rioja, 2013).

There are several reasons for the bias against maintenance. They include limited resources; poor execution capacity; and corruption, favoritism, and rent-seeking opportunities during the bidding process, which create incentives to ignore maintenance. Construction is more politically attractive than maintenance, and citizens seem to value maintenance projects less, while the press focuses on new projects or waits until tragedies occur to call attention to deferred maintenance (Jaffe, 2015). Proper maintenance could help the region make the most of its existing assets. Improving maintenance accountability in national accounts, as well as in utilities' balance sheets, could help shield maintenance costs in times of fiscal constraints.

Paving the Way to a Brighter Future

The state of infrastructure in Latin America and the Caribbean is well below what it should be for a region at its level of development—and the consequences are devastating. Thirty million people in the region lack access to electricity, 34 million lack access to drinking water, and 106 million lack access to improved sanitation (Serebrisky et al., 2017).

This unacceptable state of infrastructure reflects both insufficient and inefficient spending. The region invests about 3.5 percent of its annual GDP in infrastructure—considerably less than what the region should to meet its needs. But increasing infrastructure spending is likely to be difficult given a weaker growth outlook for the region and the need for fiscal consolidation in several Latin American economies. Thus, the focus should be not only on fighting the bias against public investment in government budgets discussed in Chapters 2 and 10, but also on increasing the efficiency of infrastructure investments.

The estimated gains from increasing efficiency are considerable. They come from three main sources: improving project selection and optimizing infrastructure portfolios, streamlining infrastructure delivery by reducing cost overruns and delays, and making the most of existing assets.

Actionable findings from this chapter include the following:

- Cost overruns on projects financed by MDBs in Latin America and the Caribbean average 17–22 percent—less than half the 48 percent estimated for all infrastructure projects in the region. Reducing overruns to this lower level could result in cost savings of more than 0.65 percent of regional GDP. Since cost overruns are endemic to infrastructure construction, several tools have been recently developed to help governments improve costing and delivering projects and now need to be implemented.[19]
- Failing to make disbursements on schedule can add an estimated 10.5 percent to project costs. Eliminating these costs can save as much as 0.5 percent of regional GDP.
- Infrastructure efficiency levels in the region are low across sectors (transport, energy, water, and sanitation). Increasing efficiency requires action on several fronts, including: improving corporate and regulatory governance and providing incentives to earmark and shield maintenance expenditures.

This chapter has provided efficiency gains estimates in public investment that taken together add up to more than 1 percent of GDP. This is a sizable amount, as it represents more than 30 percent of public investment in infrastructure in Latin America and the Caribbean.

[19] An example is a practical guide developed by the IDB in 2016 to generate accurate cost estimates and track them throughout construction. See Monteverde, Pereyra, and Pérez (2016)

To increase the efficiency of public investment in the region the most pressing policy recommendations include the following:

1. Improving institutions and processes to develop a practice of ex ante and ex post project evaluation. The region has made important efforts creating SNIPs. However, not all countries have them in place, and in some countries that do, several projects bypass these institutions. Developed countries like Australia and the United Kingdom recently created institutions to improve cost-benefit analysis, project selection, and project monitoring, an effort that Latin America and the Caribbean would do well to undertake.
2. Countries in Latin America and the Caribbean do not produce comprehensive national infrastructure plans. Plans are usually sector specific and ignore the linkages and interdependencies of infrastructure systems. More worrisome is that the latter tend to be plans produced by each new administration, sometimes ignoring consistency with previous plans. The region needs infrastructure plans that are the outcome of consensus-building exercises.
3. Recognizing that cost overruns are a natural outcome of infrastructure construction, several tools have been recently developed to help governments improve costing and project delivery. The use of these tools should be accompanied by constant efforts to: (i) increase the transparency of procurement processes and (ii) work closely with regulators and competition agencies to foster competition in the design of contracts and bidding processes.
4. Latin America and the Caribbean ranks poorly in terms of the time it takes to complete all permitting and approval procedures for infrastructure projects. Without compromising the need to comply with rigorous social and environmental standards, the region can certainly improve, and one possible action is the creation of a national single window for permit approval.

6 Making Spending Count in Education

Spending on primary and secondary education has increased significantly in Latin America and the Caribbean in recent decades. Since 2000, public expenditure per student has increased in real terms by almost 80 percent at the primary level, and almost 45 percent at the secondary level, surpassing $2,000 per student at both levels.[1] These growth rates are more than double those in primary school spending and quadruple those in secondary school spending over the same period in OECD countries. This increase in spending has occurred in a favorable macroeconomic environment highlighted by higher per capita income, lower poverty rates, and declining socioeconomic inequality—all in the context of a heightened focus on education (see Table 6.1). Between 1995 and 2013, investment in education grew from 3.6 percent to 5.3 percent of GDP in Latin America and the Caribbean.

Happily, the investments have paid off in better service delivery. The student-teacher ratio decreased from 24.4 to 17.3 between 2000 and 2014, implying increasingly smaller class sizes.[2] School infrastructure is also improving. One common proxy for investment in school facilities is the availability of computers per student; according to data from the PISA study,[3] in Latin America and the Caribbean the ratio of computers to students grew 20 times between 2000 and 2015.[4] Still, according to a recent

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1 Expenditure increase rates were computed using constant PPP dollars and data collected by UNESCO.

2 In some countries like Uruguay, El Salvador, and Jamaica, the smaller class sizes may also be due to changing demographics, since the population between 5 and 14 years old has declined since 2000. In these countries the teaching force might not be adjusting to demographic changes, which would result in smaller class sizes.

3 The Programme for International Student Assessment (PISA) is a triennial study in place since 2000, which tests 15-year-old students from different countries in science, reading, and mathematics.

4 This computation is based on the Latin American and Caribbean countries participating in both the 2000 and 2015 studies: Argentina, Brazil, Chile, Mexico, Peru.

Table 6.1 Education Indicators: Latin America and the Caribbean and OECD

	Latin America and the Caribbean			OECD		
Indicator	1999–2001	2013–2015	Var % or Var p.p.	1999–2001	2013–2015	Var % or Var p.p.
Expenditure						
Primary	$1,202	$2,191	82.2%	$5,986	$8,215	37.2%
Secondary	$1,480	$2,137	44.4%	$7,623	$8,251	8.2%
Context						
Population between 5 and 14 years old	256,000,000	281,000,000	9.8%	470,000,000	502,000,000	6.8%
GDP per capita	$11,036	$11,748	6.5%	$32,627	$39,097	19.8%
Tax revenue	18.9	17.5	–1.4	20.2	19.9	–0.3
GINI index	53.4	47.6	–5.8	32.5	31.7	–0.8
Inputs						
Student-teacher ratio	24.4	17.3	–29.2%	16.3	13.7	–16.0%
Number of computers per students in modal grade	3.0	58.0	55.0	8.6	94.2	85.6
Outputs						
Cumulative drop-out to the last year of primary education	22.0	12.3	–9.8	2.3	2.3	0.0
Adolescent out of school (% lower secondary school age)	15.2	9.6	–5.6	3.9	1.5	–2.4
Repeaters	6.6	4.4	–2.2	1.3	1.5	0.2
PISA math	356.4	391.6	9.9%	498.2	491.9	–1.3%
PISA reading	394.2	416.8	5.7%	497.8	494.0	–0.7%
PISA science	387.3	407.9	5.3%	497.1	495.1	–0.4%

Source: Authors' calculation based on the following: UNESCO Institute for Statistics: (http://data.uis.unesco.org) for expenditure indicators; World Bank for context and outputs indicators excluding PISA scores; and PISA 2000–2015 for inputs and PISA scores.
Note: Var % corresponds to percent variation (percentage variation between 1999–2001 and 2013–2015 averages) while Var p.p. stands for variation in percentage points (subtraction of the two percentages). The symbol % next to the number shows the percent variation; when this symbol is absent the variation is in percentage points.

study based on TERCE[5] data, educational infrastructure remains insufficient and unequal in spite of improvements over the last decade (Duarte, Jaureguiberry, and Racimo, 2017).

[5] The Third Regional Comparative and Explanatory Study (TERCE), is a study of math, reading, writing, and science learning in third and sixth grades of primary school. The testing was conducted in 2013 in 15 Latin American and Caribbean countries: Argentina, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, and Uruguay.

The performance of school systems in the region is also improving. Data from the Economic Commission for Latin America and the Caribbean (ECLAC) show that the percentage of adolescents aged 15–19 who finished primary school increased from 86.9 percent to 92.4 percent between 2000 and 2015. Additionally, the PISA study shows that student learning has improved in the region. Overall, between 2000 and 2015 math, reading, and science scores for the region increased almost 10 percent, 6 percent, and 5 percent, respectively. Specifically, the PISA study shows that learning is improving in Brazil, Chile, Colombia, Mexico, and Peru.[6]

These data suggest that the increase in expenditures may have been effective in improving school services and educational outcomes. However, while spending per student is growing at a comparatively higher rate in the region, Latin American and Caribbean governments, on average, still only allocate a quarter of the amount OECD countries spend per student and have much lower educational outcomes. More concretely, in the PISA 2015, while close to 15 percent of 15-year-old students from the OECD achieved advanced learning in science, math, or reading, less than 1.5 percent of Latin American and Caribbean students performed at this level. For Latin American and Caribbean countries to reach the performance levels of the most developed countries, investment in education needs to continue to rise. While the level of financial resources is important, and some have suggested a minimum per-pupil spending threshold for a country to be able to deliver a minimum quality of service,[7] the growing consensus among scholars is that, beyond a minimum spending threshold, how resources are spent is much more important than how much is spent. Spending more money is not the most important factor. Making that spending count is the key.

School Efficiency and Equity

Before increasing investment in education, it is crucial to know how efficiently resources are being used in order to justify future investments (Psacharopoulos, 1996). On the one hand, this means investing money in public education where it will benefit society the most (allocative efficiency). On the other hand, it also means ensuring that each country's

[6] Similarly, the TERCE study shows that between 2006 and 2013, most of the participating countries improved their learning outcomes. For example, math learning for 3rd grade improved in all countries but Paraguay. That is, Chile, Costa Rica, Uruguay, Mexico, Brazil, Argentina, Peru, Ecuador, Colombia, Guatemala, Panama, Nicaragua, and the Dominican Republic improved their math scores.

[7] For example, Vegas and Coffin (2015) estimate that this threshold is US PPP $8,000 per student annually.

educational system makes the best possible use of available resources (technical efficiency) (Bessent and Bessent, 1980).

No less important than the efficiency of spending, however, is the equity of its distribution. Since the Universal Declaration of Human Rights in 1948, education has been recognized as a human right to be enjoyed on the basis of equality of opportunity (UNICEF/UNESCO, 2007). In line with this, the school finance literature suggests that fairness in resource allocation implies the absence of a relation between the school community's wealth and a school's funding, equitable treatment of students with similar backgrounds, compensatory programs to account for social disparities, and equality of educational opportunity (BenDavid-Hadar, 2016).

Educational Efficiency: Two Sides of the Same Coin

How does the efficiency of school systems in Latin American countries compare with countries in other regions? What are the challenges in the way educational resources are invested? These questions can be addressed in terms of the two most studied types of efficiency: allocative efficiency and technical efficiency (Haelermans and Ruggiero, 2013). While both types of efficiency will be discussed, due to data constraints[8] the focus of the analysis is on technical efficiency.

Resource Allocation: Investing Wisely

In the context of school finance, allocative efficiency is reached when educational funds are distributed in the most socially efficient way across educational levels. Although there is no research consensus on how educational resources should be ranked, prioritizing public education funding for preschool (0 to 5 years old) appears to have the highest social returns (Heckman, 2012). Early experiences often have persistent and significant effects on a wide array of important adult outcomes (Berlinski and Schady, 2015). Moreover, investments made in the early years of child development

[8] The best way of analyzing whether educational resources are allocated efficiently is estimating and comparing the *social returns* associated with investments at different educational levels. There are no comparable data between countries to perform this type of analysis including pre-primary, primary, secondary, and tertiary education. Montenegro and Patrinos (2014) estimate *private returns* to education using comparable data from 139 economies with a total of 819 harmonized household surveys. Unfortunately, this unique and intensive data work excludes the pre-primary level and does not consider social benefits.

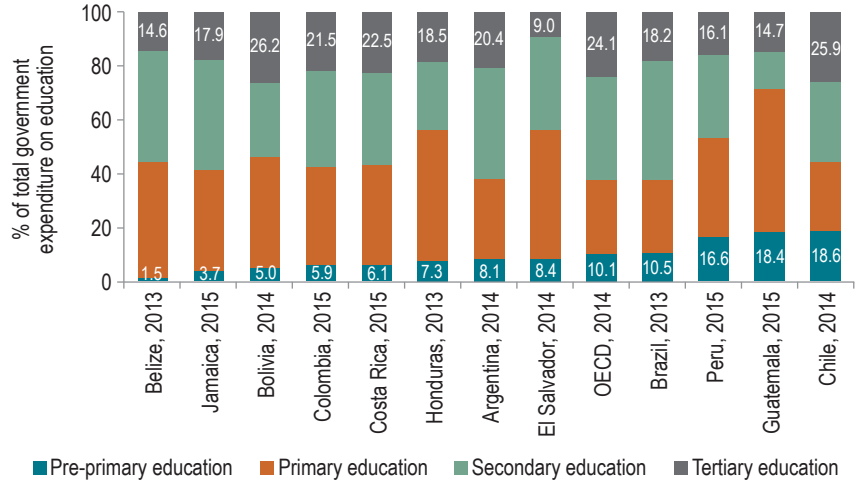
might increase the return on investments made later in life (Cunha and Heckman, 2007).

Despite this evidence, the debate persists over expenditure allocation at different educational levels. For example, a study by Mingat and Tan (1996) suggests that the focus of educational investments should depend on the country's income level. Specifically, low-income countries benefit the most from investments to expand primary education, while in middle-income countries, investments to expand secondary education show the highest social returns. In high-income countries, investing to expand higher education coverage yields the greatest returns.

The two perspectives presented above imply different policy approaches. On the one hand, focusing educational investments on the early years can be cost-effective since it can save on future investments by increasing individuals' readiness to learn new abilities as adolescents or adults, and enhancing work productivity in the economy. On the other hand, from a macro perspective, poorer countries might need to begin investing in the improvement of basic conditions in their school system before boosting investments in preschool or post-secondary education. Both perspectives complement each other and help explain the different combinations countries use to allocate their educational resources.

Figure 6.1 shows UNESCO data on the allocation of government expenditure on education by level in Latin American and Caribbean countries

Figure 6.1 Composition of Government Expenditure on Education by Education Level



Source: Authors' calculation based on the UNESCO Institute for Statistics: (http://data.uis.unesco.org).

and in OECD countries as a benchmark. The data suggest that most Latin American and Caribbean countries are not focusing their investments on preschool. Only three of the 12 countries for which data were available allocate a significantly higher share of their educational funds to pre-primary education than the OECD average (Chile, Guatemala, and Peru). Additionally, higher-income countries tend to invest more in tertiary education, with four of the five highest-income countries (Chile, Argentina, Costa Rica, Brazil, and Colombia) investing more than 20 percent of their education funds at this level. The exception is Brazil, which spends 18 percent on higher education, 6 percentage points less than the OECD average. Similarly, four of the five lowest-income countries (Honduras, Bolivia, Guatemala, Belize, and Jamaica) invest less than 20 percent of their education funds in post-secondary education. In this case, the exception is Bolivia, which spends 26 percent on tertiary education.

Technical Efficiency: Same Investment, Better Results

Technical efficiency examines the efficient use of resources once they have been allocated (De Witte and López-Torres, 2017). Given availability of data, this analysis of technical efficiency focuses on the school level using the 2015 PISA dataset. The 2015 PISA study assessed the learning of approximately 540,000 students, representing almost 29 million 15-year-olds enrolled in schools in the 72 participating countries. The focus of the PISA 2015 assessment was on science, with reading, mathematics, and collaborative problem-solving as the secondary domains. School principals also completed a questionnaire providing information on the school system, the learning environment, and the availability of resources at the school level (OECD, 2016b). The original PISA dataset is constructed at the student level, but the data were aggregated to perform the analysis at the school level using only information from schools that receive public funds.[9]

Technical efficiency can be measured by assuming that schools transform inputs into outputs through a production process (Worthington, 2001; Rice and Schwartz, 2015). Measuring the average school efficiency of each educational system that participated in PISA 2015 begins by examining the concept of productivity in education (e.g., Hanushek, 1979). In manufacturing, "average productivity" is typically defined and measured as the

[9] Schools that did not receive public funds were deleted from the database. Included are all public and private schools for which public fund contributions represent more than 0 percent of total funding, according to school principals.

amount of output produced per unit of input.[10] This seemingly straightforward concept is much more complex when applied to education (Rice and Schwartz, 2015). There is no general agreement on the fundamental goals of public education. While standardized tests that measure learning in math, language, and science are the most common metric for assessing efficiency in education, many scholars and policymakers question whether other outputs such as civic responsibility, cultural awareness, and social and economic mobility should also be considered (Brighouse et al., 2018).

A debate persists over what inputs generate the desired outputs in education. The education production function usually focuses on the inputs that produce learning. There is relative agreement that adequate infrastructure, class size, teacher salaries, and teacher qualifications are key determinants of school spending. However, less consensus exists on the optimal level of investment in each schooling input or under what circumstances a particular input is most effective in producing student learning (Rice and Schwartz, 2015). Also, learning measured by scores on standardized tests reflects not only the potential impact of schooling inputs but also the influence of students' families and communities.

Thus, the literature has divided inputs into two categories: i) discretionary and ii) non-discretionary. Discretionary inputs are factors under the control of the education system, and can be defined as physical inputs, such as teacher training, class size, infrastructure quality, and other resources in the school. They can also be expressed in terms of expenditure. However, a shortcoming of this definition is that disparities in expenditure across countries may reflect differences in the labor market that are unrelated to availability of resources, such as teacher bargaining power. Non-discretionary inputs are composed of environmental inputs that are not under the direct control of the education system. The most important environmental factors are family socioeconomic status and student innate ability (Sutherland, Price, and Gonand, 2009).

The choice of outputs and inputs is based on the work of De Witte and López-Torres (2017). The PISA science score serves as the output since it is the focus of the 2015 assessment. In relation to inputs, physical inputs are used instead of expenditure per student. Efficiency results using expenditure per student as an input would be difficult to interpret because they would reflect both potential inefficiencies and differentials in cost provision between countries (Afonso and St. Aubyn, 2006). Six of the seven cross-country studies reviewed used the following physical inputs: teacher/student

[10] This analysis uses a non-parametric method known as order-m Data Envelope Analysis. For further details, see Cazals, Florens, and Simar (2002) and Tauchmann (2012).

ratio, computer availability, and students' socioeconomic status.[11,12,13] The teacher/student ratio can be thought of as a proxy for the quantity of human resources (teachers); the number of computers per student (in one representative class in each school) is used as an indirect measure of school facilities; and socioeconomic status is a control for student background.[14]

Outputs and inputs at the school level were used to identify inefficient schools (below the threshold), efficient schools (on the threshold), and super-efficient schools (above the threshold). The method described above assigns an efficiency score to each school. When this score is less than 1, it means that the school could organize and use its inputs in a more efficient way. If the score is equal to 1, it means that the school is on the threshold, and if the score is above 1, then the school is *super-efficient,* given its inputs.

The average efficiency score by country is reported in Figure 6.2, along with the schools located in percentiles 10 and 90 in each system. Seven of

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11 The index was created by the PISA study based on the following variables: the International Socio-Economic Index of Occupational Status (ISEI); the highest level of education of the student's parents, converted into years of schooling; the PISA index of family wealth; the PISA index of home educational resources; and the PISA index of possessions related to "classical" culture in the family home, such as works of classical literature, poetry, and art (e.g., paintings). See https://stats.oecd.org/glossary/detail.asp?ID=5401.

12 Although this analysis followed the literature closely to select the inputs, it could have considered other inputs in the analysis. For example, teacher quality, infrastructure quality, instruction time at the school, and instruction time outside the school might be relevant inputs that are omitted from the analysis due to data constraints in several countries. Some exercises compute the efficiency levels, including the percentage of teachers holding a master's degree as a proxy for teacher quality. However, these results were not reported given the debate on whether holding a master's degree is a good proxy for teacher quality (Ladd and Sorensen, 2015). For the case of infrastructure quality, a variable reported by principals in the PISA study is physical infrastructure shortages, but answers depend on what the principal considered to be inadequate or poor-quality physical infrastructure. Thus, this variable is not included in the analysis. Regarding time in and outside the school, students report the minutes per week they study out of school and learning time in school. However, this information is not available for several countries so it was not included as an input.

13 Some 66 countries participating in PISA 2015 have information for all of these inputs. These countries are used for the analysis.

14 Student socioeconomic status can also be thought of as a proxy for teacher quality since research shows that higher-quality teachers tend to work in schools with a higher proportion of advantaged students (Lankford, Loeb, and Wyckoff, 2002; Jackson, 2009; Bonesrønning, Falch, and Strøm, 2005). However, evidence suggests that this may not be the case in every education system. For example, research on the Republic of Korea shows that the distribution of qualified teachers is skewed toward disadvantaged children (Luschei, Chudgar, and Rew, 2013). This is likely due to the mandatory teacher rotation policy in that country.

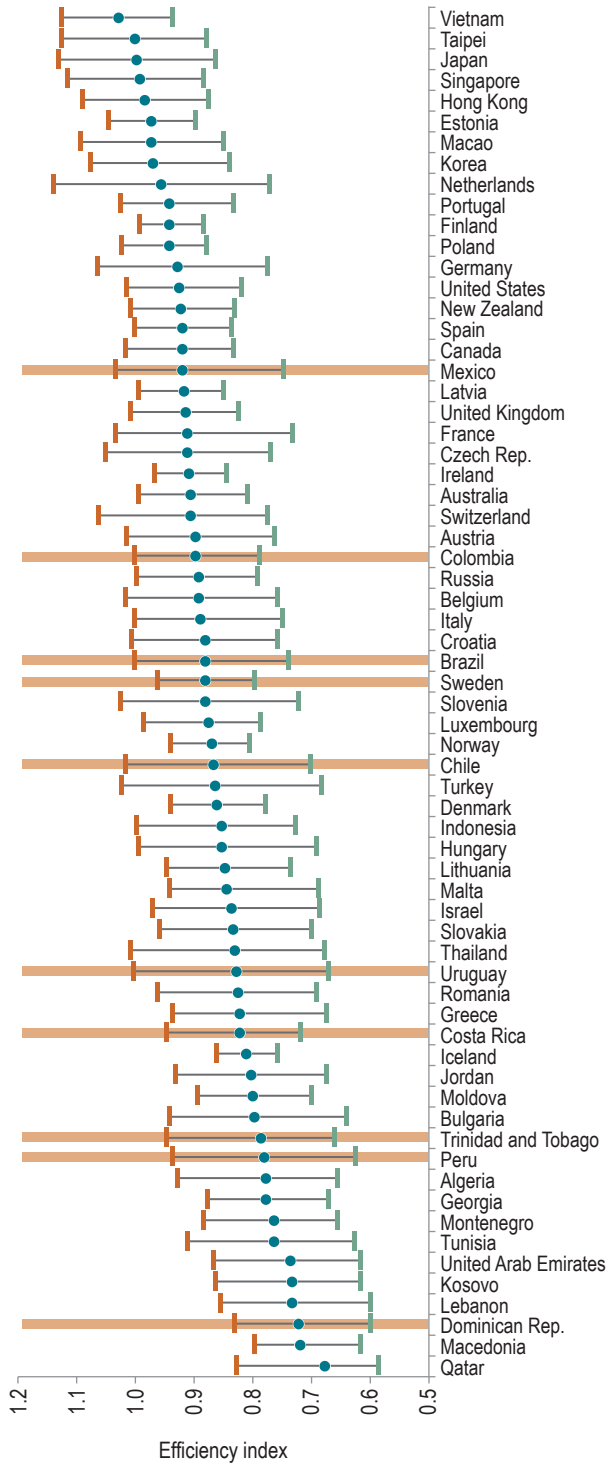


Figure 6.2 Efficiency Index Computed at School Level, 2015

Source: Authors' calculation based on PISA (2015).
Note: Bars highlighted denote countries from Latin America and the Caribbean while the dotted bar denotes the median of the sample when ordered by efficiency level.

the eight most efficient systems are from East Asia,[15] and the least efficient countries tend to be from Latin America, Western Asia, Africa, and Southeast Europe.

In Latin America and the Caribbean, the results indicate that 90.2 percent of schools are below the threshold and could improve their output by an average of 17.3 percent by reallocating education inputs. These values are 86.8 percent and 12.5 percent for OECD countries, respectively.

The results above vary significantly by country. While all schools in the Dominican Republic and 98 percent of Peruvian, Trinidadian, and Costa Rican schools are below the threshold, a significantly smaller proportion of Mexican schools are inefficient (71 percent). For other Latin American and Caribbean countries, the proportion of schools below the threshold is around 90 percent (Brazil, Chile, Colombia, and Uruguay).

The degree to which these below-the-threshold schools can improve also varies by country. In the Dominican Republic, schools using the same level of inputs could improve their output by 28 percent, in Peru and Trinidad and Tobago 22 percent, Uruguay 20 percent, Costa Rica 18 percent, Chile 16 percent, Brazil 14 percent, and Mexico and Colombia 12 percent.

In highly efficient systems, such as those of Vietnam, Japan, and Estonia, the percentage of schools below the threshold is much lower (32 percent, 52 percent, and 70 percent, respectively), and the degree to which they could improve keeping the same level of input is much smaller (5 percent, 9 percent, and 6 percent, respectively).

The number of Latin American countries participating in PISA tests is relatively low; only nine countries in the region had PISA scores available for this analysis. It is hard to understand how well educational systems are doing when scant information is available on student and school performance.

The results above show that efficiency levels vary among Latin American and Caribbean countries. While Mexico and Colombia seem to be doing well (conditional on the amount of resources allocated to education), with efficiency levels higher than the median, the Dominican Republic, Peru, Trinidad and Tobago, and Costa Rica are below the median. Finally, Brazil and Chile are close to the median. It must be noted that being more

[15] In East Asia, the phenomenon of "shadow education," that is, the provision of extra lessons for a fee directed to students already in the school public system is a widespread practice. For example, in South Korea over 80 percent of elementary school students received supplementary private tutoring. In Hong Kong and Japan more than 70 percent of secondary students also received private tutoring (Bray and Kwo, 2014). Because of lack of data on this practice at the school level, this issue is not addressed in our efficiency computations. Thus, the high efficiency levels of East Asia's countries might be overestimated.

efficient does not necessarily mean that results (i.e., outputs) are better, but rather that, given the amount of resources available, a particular country is closer to the efficiency threshold.

Educational Equity

While efficiency is an important issue in education policy reform discussions, most governments are also concerned with equity in their school systems. School systems that distribute country and school resources more equitably tend to perform better academically (see Chiu, 2010). Thus, in Latin America and the Caribbean, with its high levels of income inequality and poor academic performance, educational equity has become a salient policy issue.

The design of an equitable education system, in which outcomes are independent of factors that lead to educational disadvantage, would attempt to provide a fair distribution of inputs, processes, and outputs among all participants in education (Kelly, 2012). The school finance literature has identified five criteria of fairness in resource allocation: 1) neutrality, minimizing the link between school communities' wealth and schools' funding; 2) horizontal equity, meaning that students who are alike should be treated the same; 3) vertical equity, or the recognition that some groups of students need more resources than others to achieve fairness; 4) need-based, that is, fairness is achieved through differential per-student compensation for initial deficits; and 5) equality of educational opportunity, implying that there is a fair starting point, especially for students from disadvantaged and/or minority groups (BenDavid-Hadar, 2016).

The two most studied dimensions of equity are horizontal and vertical (Bandaranayake, 2013; Levačić, 2008b; Toutkoushian and Michael, 2007). Horizontal equity is based on the principle of "equal treatment of equals," which means that funds should be allocated equally among schools that share certain characteristics. Vertical equity follows the philosophy of "unequal treatment of unequals," which implies that if students have different educational needs, an equitable funding system should provide different levels of resources to meet these needs. Typically, educational needs are defined in terms of educational inputs needed to achieve a defined level of performance (Rubenstein, Doering, and Gess, 2000; Berne and Stiefel, 1999).

Various indicators have been proposed to measure horizontal and vertical equity (Nina et al., 2006; Verstegen, 2015; Kelly, 2015). For horizontal equity, the most common indicators are the McLoone and GINI indices. The former measures equity only for the lower half of the distribution of educational resources, in the range 0 to 1; higher values are associated

with greater horizontal equity. The GINI indicates how far the distribution of educational resources is from providing each proportion of schools with an equal proportion of resources. It ranges between 0 and 1, but in this case higher values are associated with lower horizontal equity.

Vertical equity is a more complex concept and difficult to operationalize since educational needs vary by student and how to identify those needing greater compensation is subject to debate (Vesely and Crampton, 2004). Different studies have attempted to identify the factors that put children at risk of academic failure to justify a greater allocation of resources to these students. These factors vary by education system and by region. For example, while in Latin American and Caribbean countries the indigenous population might be at a disadvantage, in the United States and European Union, black and immigrant children may be the most disadvantaged (McEwan and Trowbridge, 2007; Condron et al., 2013; Schnell and Azzolini, 2015). Among the most cited risk factors for students' academic failure are poverty, race, ethnicity, disability, poorly educated parents, and remoteness of school location. According to some studies, poverty is the most consistent predictor of academic failure (Bandaranayake, 2013; Land and Legters, 2002).

Given the above, the measure of vertical equity in this analysis assumes that poorer students should have more educational resources than richer students. For reasons of simplicity, other factors of disadvantage are not considered. The two indicators commonly used to measure vertical equity are: 1) the Concentration index and 2) the reformulated McLoone index. The former is frequently used to measure inequality in one variable over another variable, and it is usually employed to capture the extent to which educational resources differ across schools ranked by a socioeconomic indicator. Its range is between –1 and 1; negative values indicate that educational resources are higher for poorer schools and positive values indicate the opposite. The second index is a variation of the original McLoone index, but the ordering variable for identifying the half of schools to examine is the socioeconomic index. Its range is between 0 and infinity, and values greater than 1 represent systems that target disadvantaged students.[16]

In general, educational resources are measured by the expenditure per student in each school, but some studies use the availability of schooling inputs (e.g., Rao, 2011). Many of the educational systems that participate in PISA do not have data on expenditure per student at the school level; it is not clear whether those systems without such data available are comparable across systems. For this reason, equity indices are based on the same

[16] For more details about the indices see Kelly (2015) and Verstegen (2015).

Table 6.2 Equity Indicators Based on Availability of Inputs by Region, 2015

Equity indicator	Latin America and the Caribbean	OECD	Other regions
Horizontal equity			
GINI index ↓	0.40	0.31	0.34
McLoone index ↑	0.59	0.73	0.70
Vertical equity			
Concentration index ↓	0.02	–0.03	–0.01
McLoone reformulated index ↑	1.23	1.16	1.22
Number of countries	9	35	22

Source: Authors' calculation based on PISA (2015).
Note: The different arrows indicate whether the equity levels increase (↑) or decrease (↓) when the value of the index increases.

schooling inputs used for the efficiency analysis (i.e., teacher/student ratio and availability of computers).[17] Specifically, each equity indicator is computed separately for each input and then averaged among the two input results.

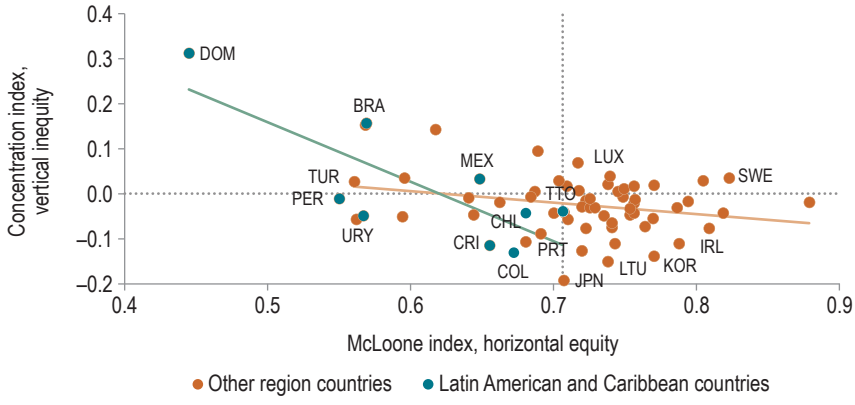
Table 6.2 shows the averaged equity indicators on educational resources at the school level for Latin America and the Caribbean, the OECD, and other regions. The results suggest that Latin American and Caribbean countries have lower levels of horizontal equity compared to the OECD and other regions, but relatively similar levels of vertical equity.

The relatively lower levels of horizontal equity with respect to vertical equity could reflect a combination of factors. On the one hand, there may be a lack of transparency related to (1) the rules regulating the distribution of inputs across schools, (2) the sources of funding of inputs, and (3) the level of government at which decisions are made on the level of inputs. Indeed, the design of specific resource allocation rules, the sources of funding, and the decision-making authority over educational inputs can impact the equitable distribution of resources within education systems. On the other hand, the relatively higher results for vertical equity could reflect the presence of compensatory mechanisms in the systems under consideration (e.g., teacher incentives to work in more disadvantaged areas in Peru, Colombia, and Chile, weighted per-pupil subsidies in Chile, and targeted programs in most systems).

The regional averages mask the heterogeneity within the Latin American and Caribbean region. Figure 6.3 displays the position of each system regarding vertical inequity (y-axis showing the concentration index) and horizontal equity (x-axis showing the McLoone index). No Latin American or Caribbean country is above the McLoone average, indicating low levels

[17] Due to data limitations the equity analysis is based on the availability and distribution of only two inputs.

Figure 6.3 Relationship between Vertical Inequity and Horizontal Equity, 2015



Source: Authors' calculation based on PISA (2015).
Note: The horizontal line in the graph is located where the vertical axis is equal to zero. It separates countries into those that allocate more inputs to lower socieconomic status (SES) schools (concentration index less than zero) and those that allocate more inputs to higher SES schools (concentration index greater than zero). The vertical line in the graph is located where the horizontal equity axis is equal to the average of the sample, dividing systems above and below the average.

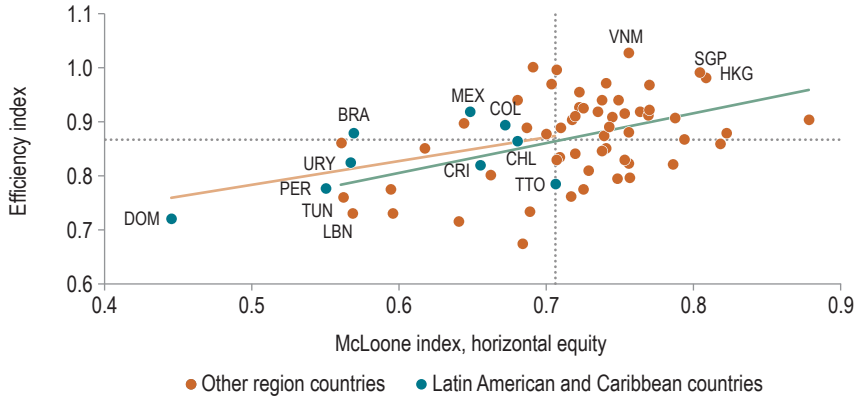
of equity in the availability of educational resources among the poorer half of schools. The Dominican Republic is the most horizontally unequal system in the study, followed by Peru. Uruguay is the fifth most horizontally unequal system and Brazil the seventh.

The concentration index shows that in six of the nine Latin American and Caribbean systems, educational resources tend to favor disadvantaged students, especially in Colombia and Costa Rica, where levels of vertical inequity are as low as in Portugal, Ireland, Korea, and in Lithuania, which has the second lowest level, after Japan, in the OECD. For the other three systems, the Dominican Republic and Brazil are the two most vertically unequal countries in the study. Mexico's level of inequity is similar to that of Turkey, Sweden, and Luxemburg, where it is positive but rather small, implying the equal availability of educational resources for poorer and richer schools. This, in effect, favors the affluent since they benefit from more resources in their home environment (as positive values indicate that educational resources are lower for poorer schools).

The Worst of Both Worlds

To deepen the analysis of efficiency and equity, the efficiency measure is correlated with the McLoone index (horizontal equity), and with the concentration index (vertical inequity). Figure 6.4 shows the first set of these

Figure 6.4 Relationship between Efficiency Index and Horizontal Equity, 2015



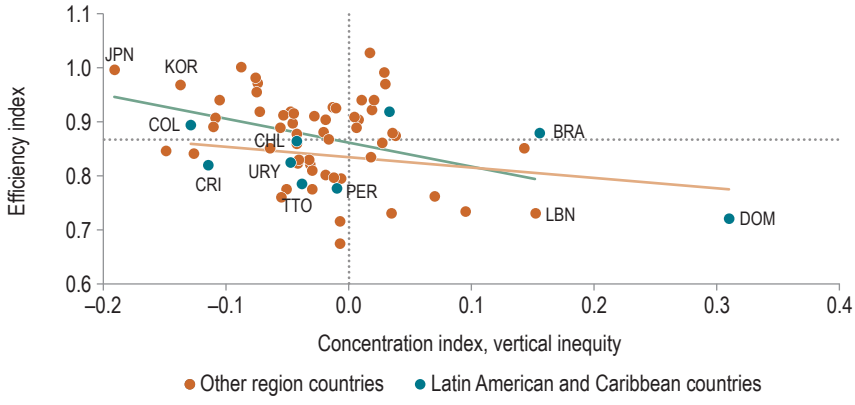
Source: Authors' calculation based on PISA (2015).
Note: The horizontal and vertical lines in the graph are located where the corresponding axis is equal to the average of the sample, dividing systems above and below the averages.

associations and divides systems according to whether they are above or below the mean on each indicator. Vietnam, Singapore, and Hong Kong are highly efficient and horizontally equitable systems. On the other hand, the Dominican Republic, Peru, Tunisia, and Lebanon are relatively inefficient and horizontally inequitable at the same time. Figure 6.4 also shows that more efficient systems tend to be more horizontally equitable.

Figure 6.5 shows the correlation between efficiency and vertical inequity and divides systems according to whether they are above or below the efficiency mean, and whether they allocate more inputs to lower socioeconomic status (SES) schools (Concentration index less than zero) or to higher SES schools (Concentration index greater than zero). Japan and Korea are highly efficient and distribute schooling inputs progressively. Conversely, the Dominican Republic and Lebanon are relatively inefficient and vertically inequitable. More efficient systems are less likely to be vertically inequitable or less regressive in the allocation of school inputs.

Despite data constraints and limitations, the results for efficiency and equity shed light on how challenges related to school finance policy vary across countries. For example, Colombia has relatively greater efficiency and equity levels than other Latin American and Caribbean countries, which might suggest that increasing the amount of resources invested in public schools may have a positive impact on achievement and narrow test score gaps. Brazil's school system appears to be relatively efficient but has high levels of both types of inequities. Thus, increasing and targeting future investments in the most disadvantaged schools might be an

Figure 6.5 Relationship between Efficiency Index and Vertical Inequity, 2015



Source: Authors' calculation based on PISA (2015).
Note: The vertical line in the graph is located where the horizontal axis is equal to zero. It separates countries into those that allocate more inputs to lower socieconomic status (SES) schools (concentration index less than zero) and those that allocate more inputs to higher SES schools (concentration index greater than zero). The horizontal line in the graph is located where the efficiency index axis is equal to the average of the sample, dividing systems above and below the average.

effective policy. In the Dominican Republic, the low levels of efficiency and equity suggest the need for a policy to boost the system's efficiency prior to increasing investment in public schools.[18] Comparing the efficiency and equity of the Latin American and Caribbean school systems with other regions of the world reveals challenges in all.

Something in the Air? Explaining Efficiency and Equity

Reviewing efficiency and equity in school education spending for 66 countries revealed that while vertical equity is close to average, horizontal equity and efficiency are relatively low in Latin America and the Caribbean. Moreover, these indicators vary considerably within the region. The next step is to ask why and identify country-level factors associated with these outcomes, following two approaches. First, reviewing available cross-country studies, each of the most widely used variables is correlated with each of three educational outcomes identified earlier in this chapter. Second, focusing on the

[18] In the Dominican Republic, spending as a percent of GDP per capita has doubled over the last 10 years. However, a large proportion of additional funding was used to hire administrative employees. In less than four years, the Dominican Republic increased the number of administrative employees by 78 percent. Currently, in the Dominican Republic there is one teacher for every administrative employee, compared to 12 in El Salvador and 16 in Guatemala EDUCA, 2016.

institutional components of school finance systems, their main dimensions are assessed in relation to either efficiency or equity outcomes.

Country Factors

While most research on school education and efficiency is based on within-country comparisons of schools, some studies measure student learning across countries to understand the factors that influence school efficiency from an international perspective (Agasisti and Zoido, 2015).

This scant but growing body of evidence examines whether different country factors are related to school efficiency. Cordero, Santin, and Simancas (2017) explore the potential influence of the public expenditure level on education, gross domestic product per capita, and cultural values of the society on technical efficiency. To measure the latter, they use data from the World Values Survey that collects information on which qualities are most valued when raising a child. Specifically, respondents are given a list of qualities (independence, hard work, responsibility, imagination, tolerance, thrift, perseverance, religious faith, unselfishness, and obedience) that children can learn at home and then asked to choose up to five traits that they think are most important. The authors assess the potential influence of three of these variables (hard work, responsibility, and perseverance), arguing that these comprise the trait known as conscientiousness, which the literature has shown to be highly correlated with educational achievement (Heckman, 2011b).

Agasisti (2014) attempts to gain insight into the relationship between efficiency and contextual country-level variables, which he divides into two categories: 1) educational system factors, including public expenditure, teacher salary, and instruction time, and 2) different socioeconomic factors such as GDP per capita.

Another dimension that may affect the efficiency of educational systems is teacher quality. The literature on this issue is scant, though, since measuring teacher quality at comparable levels across countries can be a challenge. Nonetheless, Hanushek, Piopiunik, and Wiederhold (forthcoming) recently computed measures of teachers' numeracy and literacy skills, providing an internationally comparable measure of teacher skills for 31 countries, which may be used to assess links between teacher quality and efficiency in education systems.[19]

[19] Each of the skill domains is measured on a 500-point scale, and Chile is the only participating country in Latin America and the Caribbean.

Regarding equity, apparently no cross-country statistical analyses examine potential factors related to inequity in school inputs, but recent studies do associate country-level factors with inequity in school outputs, specifically student learning. Chmielewski and Reardon (2016) conduct a multivariate analysis to associate the achievement-income gap in 19 countries with measures of poverty, income inequality, educational differentiation, and curricular standardization. A similar paper examines the influence of curricular tracking on the income-achievement gap in 15 countries (Cimentada, 2017). Both studies base their measure of curricular tracking on the work of Bol and Van de Werfhorst (2013), who compute a tracking index combining country-level information on the length of tracked curriculum, age of first tracking selection, and number of tracks at 15 years old. This measure is relevant because if students are segregated into ability tracks at early ages, the chances of incurring horizontal inequity are good. These authors also compute measures of the standardization of education in both inputs and outputs. Standardized inputs refer to the extent to which schools have limited control over the use of pedagogical decisions in education (for example, restrictions on what is taught and how, which books are used, etc.). Standardized outputs describe the extent to which educational performance is tested against external standards.

The limited results from these cross-country efficiency and equity analyses shed light on what variables might be related to efficiency or equity. Following these studies, efficiency and equity are correlated with 18 factors grouped into four categories: 1) expenditure level, 2) education system variables reflecting different policy decisions, 3) socioeconomic variables, and 4) societal values.

Table 6.3 shows the number of observations for each of the chosen factors, the average difference between Latin American and Caribbean countries and countries in other regions, and the bivariate correlations with efficiency, horizontal equity, and vertical equity. While these correlations do not imply causality, they do show interesting patterns. More efficient and equitable systems tend to have a higher level of expenditure per student, and their teachers are better trained, as shown by their higher numeracy and literary skills. In countries with more efficient and equitable education systems, citizens seem to understand the need to control corruption, and value responsibility and perseverance. For all these factors, the average value for Latin American and Caribbean countries is lower than that of countries in other regions. Thus, progress along these dimensions could help improve efficiency and equity in the school systems of the region.

Three other interesting results are pertinent to the discussion on education policy. First, systems with a higher salary at the top of the teacher pay

scale tend to have higher levels of efficiency, but not necessarily equity. Second, greater levels of curricular tracking appear to be related to lower levels of horizontal equity, but not to efficiency or vertical inequity. In other words, separating students by abilities at early ages could be associated with allocating different amounts of resources to similar students. Third, systems that standardize what schools can teach and the way they can teach seem to be less efficient. Countries in Latin America and the Caribbean have room to improve top teacher salaries (paying more to those that are better trained) and reduce their tracking levels. The first measure may be beneficial for efficiency, and the second one, for equity. In terms of standardized pedagogical decisions, the region as a whole has less standardization than other regions, which may help increase efficiency. Finally, those countries with higher GDP per capita and lower levels of income inequality measured by the GINI index tend to be more horizontally equitable. Probably, a higher national income that is distributed more equally is associated with a more homogeneous school system.

The Role of School Finance Systems

School finance can affect learning outcomes and is, therefore, another policy that can influence efficiency and equity. A school finance system can be defined as the set of formal rules and incentives that affect how resources are raised, governed, allocated, and monitored (Hansen et al., 2007). The literature on school finance system design identifies four key dimensions (OECD, 2017b; Atkinson et al., 2005): 1) sources of funding and transfers between levels of government (i.e., national, subnational, local, and school level); 2) decision-making authority at different levels of government; 3) information and accountability systems; and 4) resource allocation rules. For each dimension a debate rages on the impact of alternative policy designs on the efficiency and equity of education spending.[20]

First, the sources of school funding can be either private or public. Evidence for Argentina and Chile suggests that expanding private funding sources could trigger an increase in spending inequality (Mezzadra and Rivas, 2010; Elacqua, Montt, and Santos, 2013). While public funds may be collected at the central, subnational, local, and school levels,[21] research

[20] See Bertoni et al., 2018, for details on school finance systems in Latin America.

[21] The subnational administrative level is immediately below the national level—for example, subnational divisions are considered *provincias* in Argentina and *estados* in Brazil. Local administrative divisions are all those that fall under the subnational level. These might include, for example, municipalities, communes, counties, districts, and/or villages.

Table 6.3 Bivariate Correlation between Efficiency, Equity, and Country-Level Variables

Country	Number of observations	Latin America and the Caribbean/ other regions	Efficiency index	Horizontal equity	Vertical inequity
Educational outcomes					
Efficiency index	66	–0.04	1.00	0.48*	–0.36*
Horizontal equity	66	–0.11	0.48*	1.00	–0.43*
Vertical inequity	66	0.04	–0.36*	–0.43*	1.00
Expenditure level					
Expenditure per student	49	–$5,293	0.41*	0.39*	–0.15
Control of corruption index	63	–0.77	0.36*	0.50*	–0.22
Educational system					
Teachers numeracy skills	31	–30.80	0.39*	0.40*	–0.05
Teachers literacy skills	31	–33.40	0.57*	0.54*	–0.09
Teachers starting salary	39	–$15,491	0.26	0.38*	0.03
Teachers top salary	37	–$17,483	0.39*	0.23	0.00
Instructional time	39	–30.27	0.05	0.05	–0.11
Out of school study time	39	1.25	–0.11	–0.16	0.21
Tracking index	37	0.52	–0.06	–0.54*	0.07
Standardization of pedagogical decisions	48	–0.10	–0.60*	–0.24	0.11
Standardization of education outcomes	43	0.24	0.03	–0.07	–0.15
Private management	65	0.03	0.17	0.03	0.02
Socioeconomic variables					
GDP per capita, PPP (constant 2011 int.$)	66	–$18,031	0.16	0.36*	–0.02
GINI index	54	14.86	–0.12	–0.52*	0.16
Poverty headcount ratio at $3.10 a day (%)	31	1.50	–0.04	–0.26	0.31
Society values					
Hardwork	28	–0.24	0.08	0.14	–0.17
Responsibility	28	–0.02	0.42*	0.18	–0.52*
Perseverance	28	–0.09	0.51*	0.36	–0.35

Source: Authors' calculation based on the following: PISA 2015 student questionnaire; OECD, 2017a; Quality of Governance Basic Dataset 2016; World Bank Development Research Group and International Comparison Program Database; World Values Survey; OECD's Programme for the International Assessment of Adult Competencies (PIAAC); UNESCO Institute for Statistics: (http://data.uis.unesco.org); Eurostat database; Hanushek, Piopiunik, and Wiederhold (forthcoming); Bol and Van de Werfhorst (2013); and Acerenza and Gandelman (2017).
Note: * indicates statistical significance of 5%.

shows that where subnational/local governments are the main source of funding, there may be a risk of generating spending inequality across jurisdictions (Farvacque-Vitkovic and Kopanyi, 2014). While wealthier regions are more likely to raise sufficient funds from local tax revenues to provide an adequate level of funding, more disadvantaged jurisdictions may be unable to raise enough money.

In systems where a sizable proportion of funds is generated at the subnational/local level, intergovernmental transfers may be an important instrument for equalizing the spending capacity of different territorial units. School finance reforms have often incorporated equalization grants to address inequality. In Brazil, the Fund for the Maintenance and Development of Basic Education and Teacher Appreciation (FUNDEB), is a federally mandated redistributive program intended to reduce regional inequities in per-pupil spending. FUNDEB is a state fund that receives revenues from specific state and municipal taxes. This fund is then redistributed to state and municipal governments based on student enrollments. If per-pupil funds in a state do not meet the national minimum, the federal government provides additional resources to the state's FUNDEB account. Evidence on the effects of FUNDEB indicates that the program decreased interstate inequalities in educational spending (Cruz, 2017).

Second, an ongoing discussion focuses on whether decentralization improves equity and efficiency in the provision of public services. Arguments in favor of decentralized decision-making posit that local leaders may have a better sense of local preferences, and will allocate resources more efficiently (Oates, 2006; Barankay and Lockwood, 2007; Tiebout, 1956). In this scenario, the needs of individual schools can be better addressed because of the closer proximity to decision-making (European Commission, 2000).[22] Additionally, by bringing decisions closer to the interested local community, decentralization may improve the monitoring of teachers and schools by parents and local communities (Galiani, Gertler, and Schargrodsky, 2008).

On the other hand, critics contend that strong reliance on subnational decision-making may raise equity concerns (OECD, 2017b). Arguments for a strong centralized role emphasize the lack of capacity at subnational levels of government to exercise responsibility for public services (Treisman, 2007; Gordon, 2015). Moreover, to the extent that some education-related activities have large fixed costs, such as research and development,

[22] In fact, economic models of school governance often suggest that greater autonomy at the school level could lead to increased efficiency of public schools (Hoxby, 1999; Nechyba, 2003) because autonomy offers the possibility of using superior local knowledge, with positive consequences for outcomes.

centralized provision allows efficient pooling of resources to operate at scale (Gordon, 2015).

Evidence in Latin America shows that a 2001 reform that decentralized the provision of public education in Colombia improved enrollment rates (Faguet and Sánchez, 2014) but reinforced performance gaps between more and less developed municipalities (Brutti, 2016). In Bolivia, the decentralization of education financing made government more responsive to re-directing public investment to the areas of greatest need (Faguet and Sánchez, 2008).

Third, authorities who make funding decisions are usually held accountable for complying with budgetary laws and regulations and for distributing resources in an efficient and equitable way. In decentralized school systems, controlling the finances of lower level authorities is assumed to be a necessary strategy to ensure adequate allocation of resources (Hanushek , Link, and Woessmann, 2013; Burns and Köster, 2016; OECD, 2017b).

Multi-level governance systems may deal with different types of accountability: governments can be made accountable to citizens (bottom-up accountability), to public agencies (horizontal accountability), and to higher-level authorities (vertical accountability) (Schaeffer and Yilmaz, 2008). Bottom-up accountability includes citizens who hold governments accountable through elections, civil society organizations, and the media. Parental choice of schools also represents a form of bottom-up accountability because it gives parents more power to pressure schools to deliver better education. In Latin America, Chile's school voucher system is the best-known example of school choice.[23]

Peru, Chile, and Colombia have implemented high-stakes vertical accountability in which the central government determines financial incentives for schools, local governments, or teachers based on student achievement and other outcomes. The Chilean system imposes the most severe consequences for low-performing schools: if they do not improve their performance in three years, the Ministry of Education will encourage families to consider another schooling option, as well as facilitate transportation. Moreover, if the low-performing school does not improve for two additional years, the ministry will revoke its license to operate and receive public funding. Low-performing schools in Chile respond to these

[23] Despite the theoretical argument, the empirical evidence is not conclusive on the effects of school choice on student learning. Moreover, critics question whether all parents have the capacity to make informed decisions and pressure schools to improve (Schneider, Teske, and Marschall, 2002). Also see Schneider, Elacqua, and Buckley (2006) for evidence from Chile.

accountability pressures by adopting time-efficient measures to improve test scores in the short term, such as relocating effective teachers to grade levels that are evaluated by Chile's high-stakes testing systems (Elacqua et al., 2016). Similarly, Murnane et al. (2017) argues that the combination of more resources and accountability introduced in Chile by the Preferential School Subsidy Law (SEP) in 2008 were the critical mechanisms to increase student learning.

Another example of vertical accountability is when schools condition financial transfers on performance. For example, in Colombia the funding formula that determines how many resources are transferred from the central government to local authorities includes a performance component that allocates more funds to higher-performing regions. No robust empirical evidence evaluates the impact of performance-based funding formulas on school effectiveness.

Additionally, in 2015 Peru implemented a nationwide teacher bonus program that ranked schools according to their performance on the national standardized test. Schools were ranked within groups of similar school districts, instruction time, and location (urban and rural). Every teacher and principal in the top 20 percent of the ranking within each group received a fixed payment of more than a month's salary. Despite these efforts, Bellés Obrero and Lombardi (2017) find no effect of the program on students' performance. They hypothesize that teachers in Peru had no guidance on how to improve their instruction to raise their students' scores on the standardized test. Thus, incentives may need to be properly studied and coupled with additional tools for them to be effective in raising student performance.

Fourth, there is a discussion about the advantages and disadvantages of the mechanisms to define the amount and transfer of funds to different administrative levels (subnational and local governments) and to schools. In many systems, a funding formula (a formal procedure based on predetermined criteria) is defined to avoid discretionary decisions.

Funding formulas can promote equity because they require equal treatment of administrative units (local governments and schools), while administrative discretion and historical criteria could lead to idiosyncrasies due to incremental adjustments and political games (Levačić, 2008a). Funding formulas may also increase efficiency, since they eliminate the accumulated inefficiencies of historical criteria. Lastly, formulas can increase transparency, because administrative units and stakeholders can anticipate the amount of resources schools will receive (Levačić and Downes, 2004).

At the same time, formulas can cause problems too. They might not be the optimal option to allocate resources for all types of expenditures. For instance, they may be less effective for less permanent spending categories,

like infrastructure, where project-based funding is more common (Levačić and Ross, 1999; OECD, 2017b). Additionally, the implementation of funding formulas requires reliable information on student enrollment and teacher allocation, not always available in less developed countries.

In some Latin American and Caribbean countries, most transfers are based on funding formulas. For instance, Colombia uses well-defined formulas to transfer resources from the national government to Territorial Entities (mainly for the Sistema General de Participaciones—SGP—that represents 65 percent of total spending), and national rules that define salary spending allocation among schools, because pay scale and teacher needs by school are defined at the central level. For the rest of the spending categories, certified entities (ETCs) have more discretion to allocate the resources among different spending categories and among schools.

Chile also has a formula for most spending categories, because central government transfers via per-student vouchers account for approximately 80 percent of total revenue.[24] The voucher subsidies are transferred directly to school owners that can be public (municipalities) or private, and they are allocated based on student attendance rates. Although over the last decade a series of mechanisms have been incorporated to address some of these differences (e.g., base funding for small rural schools and an additional subsidy for full-day schools and for disadvantaged students), many small and medium-sized urban schools are unable to pay minimum payroll and operational costs with the subsidy (Bertoni et al., 2018).

Given the relevance of teachers and the fact that teacher salaries are the main source of expenditure in education, the way teachers are allocated is a key policy topic (Bertoni et al., 2018). In some systems, such as Brazil and Colombia, a fraction of the money transferred from the central government is earmarked and can only be spent on teacher salaries, imposing constraints on local governments' budgets and managerial decisions.

Teacher allocation involves several processes, the most important ones being the hiring process and the allocation of new and experienced teachers. Improving the hiring process has the potential to be a cost-effective policy since it can help avoid the costs of remedial programs by preventing students from being exposed to ineffective teachers (Staiger and Rockoff, 2010). It can also reduce the probability of costly dismissals of ineffective teachers (Rothstein, 2015).

[24] The subsidy system in Chile has 24 different transfers with different assignment criteria. Among the 24 transfers two central subsidies are important to analyze separately: the per-pupil subsidy (Subvención de Escolaridad) and the preferential student subsidy (Subvención Escolar Preferencial). These two transfers account for almost 70 percent of overall governmental K-12 funding.

In 2002, the hiring process of Colombian public school teachers was reformed with a selective recruitment process and performance incentives. Brutti and Sánchez Torres (2016) estimate how new quality-screened teachers impact students' high school performance. The authors exploit the fact that the new regulation applied only to newly hired teachers, whereas those already employed in 2002 remained exempt, creating a mix of new-regulation and old-regulation teachers in Colombian schools. Using data at the school-year-subject level, and controlling for school-level confounders, they report a positive and significant effect of new-regulation teachers on student performance.

Once teachers are hired, the way they are placed in schools varies by education system, but a common pattern in Latin America and the Caribbean is that applicants are matched based on entry exam scores in the screening process and applicants' preferences. Applicants with a higher score can usually choose the school of their preference (Bertoni et al., 2018). This may foster inequities since teachers generally prefer to work in schools with fewer disadvantaged students (e.g., Loeb and Wyckoff, 2002). The sorting of effective teachers may be exacerbated in Latin American and Caribbean systems, most of which have few incentives to attract teachers to hard-to-staff schools (Bertoni et al., 2018).

Keeping these debates in mind, comparable data between countries that proxied the main school finance dimensions were correlated with the efficiency and equity measures. Table 6.4 reports the bivariate correlations for nine variables grouped in the four main types of school finance. The reported results show interesting patterns but cannot be interpreted as causal.

Regarding the sources of funding, the data suggest that a higher share of funds that originate from private sources is related to both lower efficiency and lower equity. This association could be relevant for Latin America and Caribbean countries since the private share of their schools' funds are 12 percentage points higher than countries in other regions.

In relation to autonomy, results show that more decentralized systems tend to be more horizontally equal in the decision-making process of teacher hiring and firing, which is consistent with the argument that the needs of individual schools can be better addressed by local authorities because of their closer proximity to conditions on the ground (European Commission, 2000). Additionally, by bringing decisions closer to the interested local community, decentralization may improve the monitoring of teachers and schools by parents and local communities (Galiani, Gertler, and Schargrodsky, 2008).

Table 6.4 Bivariate Correlation between Efficiency, Equity, and School Finance Variables

Country	Number of observations	Latin America and the Caribbean/ other regions	Efficiency index	Horizontal equity	Vertical inequity
Educational outcomes					
Efficiency index	66	–0.04	1.00	0.48*	–0.36*
Horizontal equity	66	–0.11	0.48*	1.00	–0.43*
Vertical inequity	66	0.04	–0.36*	–0.43*	1.00
Funding sources					
Private funds	51	11.87	–0.39*	–0.60*	0.23
Public sources					
Central	44	20.23	–0.23	–0.12	–0.16
Subnational	44	–3.26	0.28	0.04	–0.04
Local	44	–16.97	0.02	0.13	0.26
Transfers from central government to other levels	44	–0.63	0.02	0.19	–0.23
Decision-making authority					
Personnel autonomy	66	–12.94	0.07	0.30*	0.03
Budget autonomy	66	1.73	0.05	0.06	0.01
Accountability					
School externally evaluated (%)	66	–6.32	0.01	0.19	–0.02
School choice	57	–0.03	0.29*	0.23	–0.03
Resource allocation rules					
Staff compensation (%)	50	0.36	–0.29*	–0.25	–0.14

Source: Authors' calculation based on OECD's Education at a Glance 2017; PISA 2015 principals' questionnaire; and UNESCO Institute for Statistics: (http://data.uis.unesco.org).
Note: * indicates statistical significance of 5%.

The more efficient countries tend to have a higher degree of school choice. In the Latin American and Caribbean region, parent involvement in school management varies considerably. The extent of school choice in Chile is high, but parents in most other systems have fewer choices (Elacqua, Ibarren, and Santos 2016) and may not have sufficient information about school performance to make informed decisions.

Finally, the measure for resource allocation indicates that a higher percentage of funds allocated for staff compensation is related to lower efficiency. This result is interesting for Latin American and Caribbean countries since they, on average, rely relatively more on human resource inputs than other countries. The percentage spent on staff compensation is 36 percentage points higher than the other regions considered, perhaps

because of the relevance of teachers' unions in the region and their power in setting wages that may not be necessarily aligned with performance.

Improving Efficiency and Equity: Lessons Learned

Efficiency estimates in education are limited by a lack of internationally comparable data on schooling inputs and on the design of school finance systems. Despite these shortcomings, available research consistently shows that East Asian countries have the most efficient school systems in the world (Agasisti and Zoido, 2015; Sutherland, Price, and Gonand, 2009). This analysis is consistent with this finding and contributes to the literature by estimating the efficiency level for 66 countries including several in the Latin American and Caribbean region, using data at the school level, something that has been rarely done when analyzing efficiency using DEA models in cross-country studies. Results show that efficiency levels in the region are low: no Latin American and Caribbean countries are in the top 15 systems, and three appear among the 15 least efficient. Only Mexico, Brazil, and Chile are above the average efficiency level of the 66 systems analyzed.

This analysis also examined the equity levels of input distribution between schools across school systems. Vertical equity in Latin America and the Caribbean is, on average, similar to that of more developed countries. This suggests that the increased number of compensatory programs and weighted subsidies (e.g., in Chile and Colombia) introduced in the region in recent decades might have reduced funding disparities. While encouraging, this result should not breed complacency, as countries such as Brazil and the Dominican Republic are among the most unequal in terms of vertical equity in the sample. Regarding horizontal equity, results indicate that schools with similar student demographics receive unequal resources. This type of inequity could improve in the region if the level of transparency in the transfer of resources improved.

In order to improve efficiency and equity in school systems in Latin America and the Caribbean, measures that increase expenditure per student are promising, but not in isolation. Higher spending per student must be accompanied by better accountability measures that reduce corruption, better trained teachers, and better pay for top performers.

Policies related to school finance can also affect efficiency or equity. Latin American countries vary widely in the school finance dimensions of their systems, but it is encouraging that some systems in the region are implementing reforms to increase the efficiency and the equity of public spending in education.

A wide array of school finance policies can be implemented to increase educational outputs by more efficiently allocating inputs. For example,

Colombia's 2001 reform, which changed the spending allocation rule from an input-based to a per-student formula, successfully incentivized territorial entities to increase enrollment rates while preventing overspending on school personnel (Faguet and Sánchez, 2014). The timeliness of a discussion on allocation rules is exemplified in the heated debate in Brazil that occurred in the wake of the recent economic recession; the discussion centered on whether federal contributions to FUNDEB funds should be tied to the performance of school systems, in order to incentivize governments to make better use of resources. Of course, allocation rules must be accompanied by accountability. Studies show that strengthening accountability measures improves education results by reducing corruption (Olken, 2007; Ferraz, Finan, and Moreira, 2012), and by changing in-school behavior in educationally meaningful ways (Elacqua et al., 2016).

With respect to policies that aim to improve equity in the distribution of resources, most evidence shows that when school funding strongly relies on local sources, spending inequalities may arise across jurisdictions (e.g., regions or municipalities). To address these inequities, school finance reforms have incorporated equalization funds as a compensatory tool to overcome these imbalances worldwide. For example, the redistributive role of FUNDEB in Brazil led to a 12.2 percent reduction in the inequality index of municipal resources between 2006 and 2011 (Araújo, 2013). Targeted voucher programs have also been perceived as an effective instrument to tackle learning inequities within school finance systems, particularly when they are weighted, meaning that vouchers for disadvantaged students are more valuable. Evidence from Chile shows that the achievement gap between high and low-income students has narrowed by one third since the government implemented the school subsidy law in 2008 (Murnane et al., 2017). Thus, equalization funds from the central government and weighted vouchers can be effective tools to improve learning overall and to narrow the socioeconomic learning gap.

Regarding decentralization, more autonomy for schools and local governments could allow them to use their knowledge of the local context to make more equitable decisions. However, for this to be an effective policy, the central government will need to support schools and subnational governments that lack the capacity to manage and allocate resources efficiently.

Latin America and the Caribbean shows a much higher share spent on teachers and other human resources than other regions—perhaps hinting at the effect of stronger unions—implying that there may be fewer resources for ancillary services and pedagogical inputs. Providing all the services and materials for students with diverse needs is key to improving efficiency and equity.

7 Smart Spending on Citizen Security: Beyond Crime and Punishment

Historically, the debate on citizen security has swung between two poles, both regionally and globally: the "iron fist" or "tough on crime" on the one hand and a social approach to structural causes of crime on the other. Citizen pressure to achieve rapid results and media coverage of high-profile crimes have led many governments to take a hard line and position themselves in the first camp. A harsher and more militarized type of policing, longer prison sentences, and massive incarceration are examples of this punitive view of crime. According to this view, the greater the repression and punishment, the larger the reduction of crime. The opposite side argues that the focus should be on changing the structural causes of crime and violence. Government programs aim to reduce the inequality and social exclusion that favor crime and violence: school dropout, family disintegration, urban poverty, and youth unemployment, among others. Fortunately, a third way combines both preventive and punitive elements backed by scientific evidence of their impact on crime. This approach, known in the Anglo-Saxon world as *smart on crime* (Waller, 2014), is slowly but surely permeating thinking and practice in the Latin American and Caribbean region.

This chapter argues that before spending more, the region must learn to spend better. And to do that, it must invest more in policies aligned with this third way. Resource availability does not seem to be the main problem. In the past decade, the region increased its spending on safety and justice. However, results do not match this greater fiscal effort. The good news is that many opportunities exist to achieve better results with the same resources. This chapter shows that levels of police efficiency, for example, vary greatly between organizations in the

same country, as well as between countries. Thus, many of them are in a position to produce more services with the same resources. A second step is to make smarter choices about where resources are invested. The emphasis should be on targeted preventive programs, based on evidence of impact. Carrying out these reforms will require influential advocates capable of delivering a powerful argument in favor of smarter spending on security.

Not many public services in the region are like citizen security, where citizens' concerns about the quality and quantity of the service are so great, and where information on allocation and efficiency of spending is so opaque and scarce. This chapter helps to narrow this knowledge gap by presenting the first analysis of the quality of public spending on security for the entire region.[1]

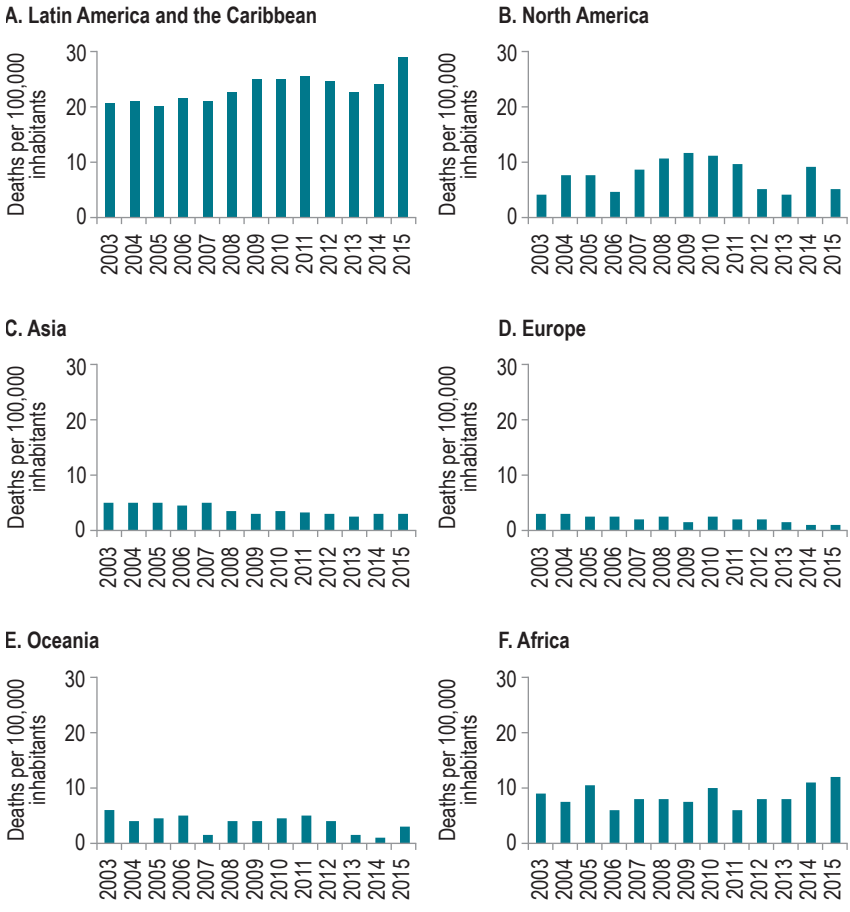
Fighting Crime: A Regional Priority

Latin America and the Caribbean is the most violent region in the world. It has 9 percent of the population, but 33 percent of the world's homicides. The homicide rate (24 per 100,000 inhabitants in 2015) is four times the world average (Figure 7.1). Of the 50 most violent cities in the world, 43 are in the region (CCSPJP, 2018). Almost 140,000 lives are lost every year, distributed very unequally. Although Central America and the Caribbean have the highest rates in the region, just three countries in South America account for 63 percent of the cases (Brazil, 41 percent, Venezuela, 13 percent, and Colombia, 9 percent) (Figure 7.2A). Other South American countries such as Argentina, Peru, Paraguay, and Chile have low homicide rates, but very high rates of property crime (robbery and theft), which translates into high rates of general victimization (Figure 7.2B). One of every five Latin Americans has been a victim of a robbery in the past year and six of every ten robberies involved violence.

The cost of crime to regional welfare is very high, estimated at 3.5 percent of gross domestic product (GDP) (Figure 7.3). It is no surprise then that safety has been the main concern of Latin Americans since 2010 (Figure 7.4).

[1] The few studies that exist on public spending on security in Latin America and the Caribbean focus on a subregion such as Central America (Pino, 2011) or deepen the analysis in only one country (for the case of El Salvador, see World Bank, 2012).

Figure 7.1 Intentional Homicide Rate (mean) by Region, 2003–20015

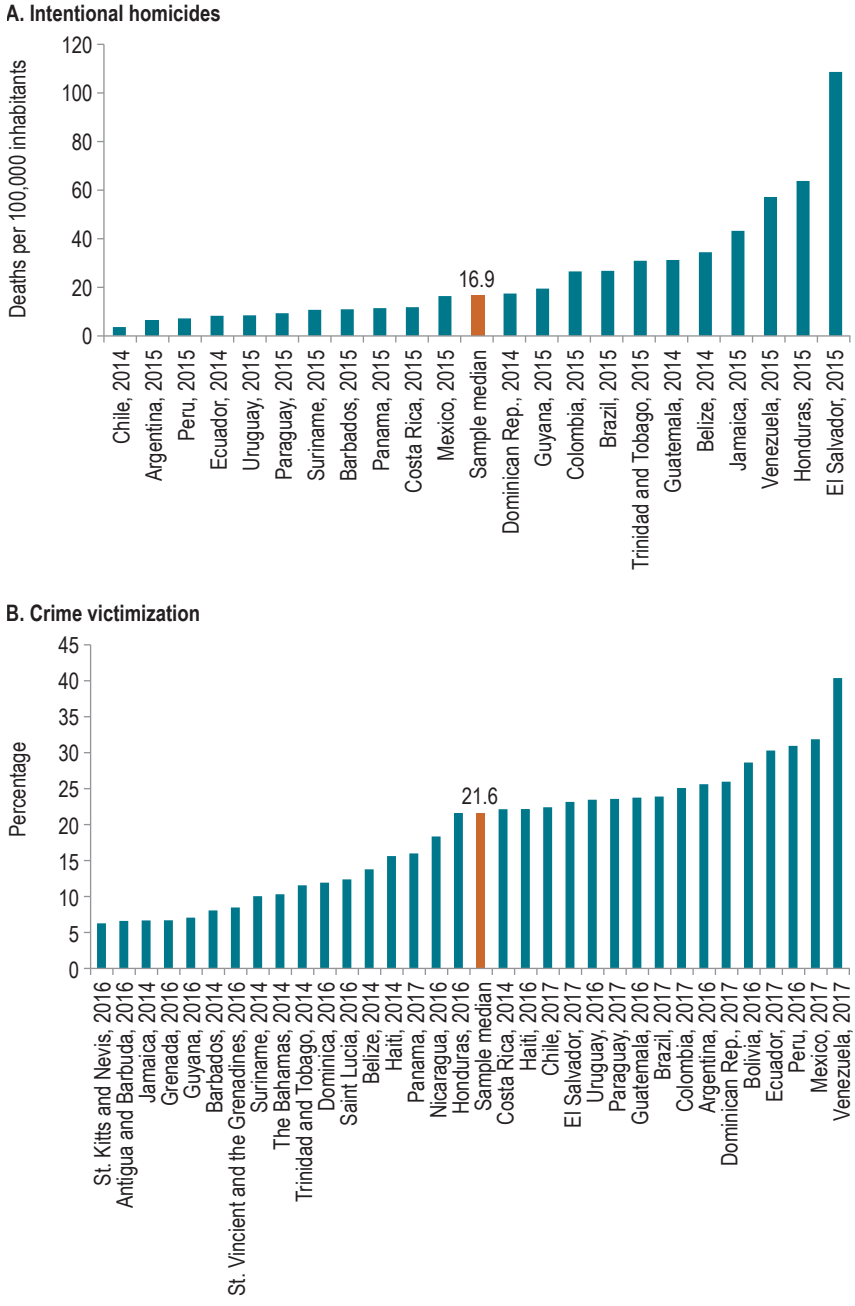


Source: Authors' elaboration based on the United Nations Office on Drugs and Crime's (UNODC's) International Homicide Statistics.
Note: Data include countries with armed conflicts.

The Region's Spending Profile

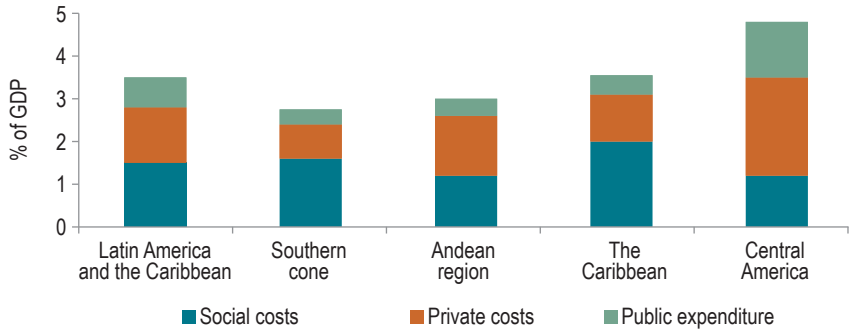
The region makes a significant fiscal effort in the security sector, spending 5.4 percent of its total budget, almost double the 3.3 percent of Organisation for Economic Co-operation and Development (OECD) countries (Figure 7.5). In GDP terms, this spending represents 1.6 percent for Latin America and the Caribbean and 1.5 percent for the OECD. In per capita spending, however, at purchasing power parity (PPP) the median for the OECD ($532) is double that of Latin America and the Caribbean ($218), despite its much smaller crime problem.

Figure 7.2 Intentional Homicides and Crime Victimization in Latin America and the Caribbean



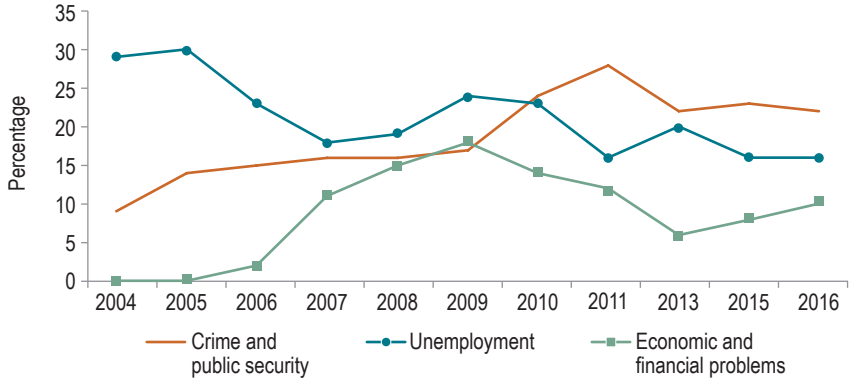
Source: Authors' elaboration based on the United Nations Office on Drugs and Crime's International Homicide Statistics (UNODC database, May 2017 data) and the Latin America Public Opinion Project data for 2014.

Figure 7.3 Cost of Crime in Latin America and the Caribbean, by Subregion, 2014



Source: Jaitman and Torre (2017).

Figure 7.4 Main Concerns of Citizens in Latin America and the Caribbean, 2014

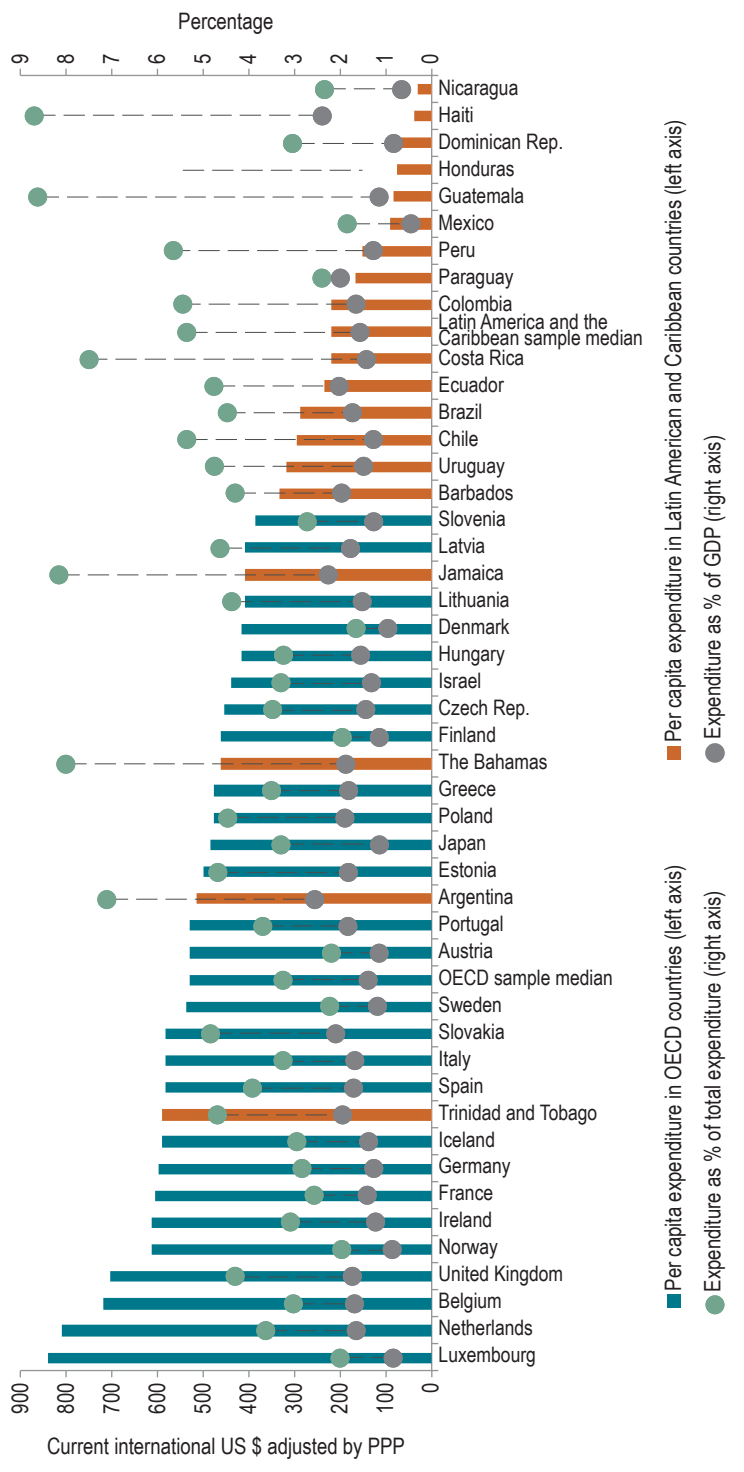


Source: Authors' elaboration based on the Latinobarometro database.

Latin American and Caribbean countries invest most of their security spending on the police (63.4 percent), followed by criminal justice (22.3 percent), and then prisons (8.7 percent).[2] In PPP dollars, this represents $74 billion on police, $26 billion on justice, $10 billion on prisons, and $6.5 billion on other security-related elements. Compared to OECD countries, the region invests proportionately about the same in police, more in

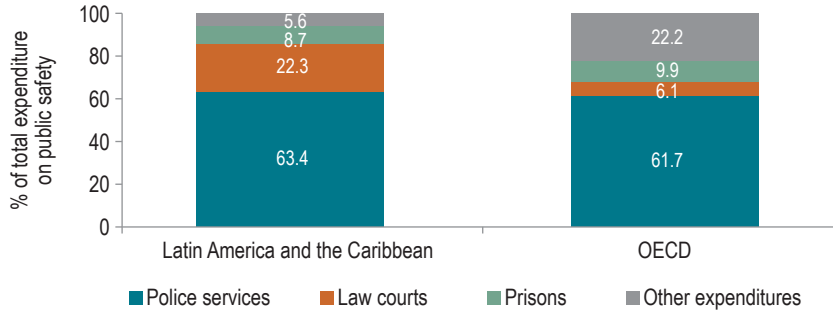
[2] The International Monetary Fund's classifier for the order and public security function, includes as subfunctions: police, justice, and prisons. Given that spending on justice includes not only criminal but also labor, commercial, and others, 30 percent of justice spending was computed as corresponding to the criminal jurisdiction, following estimates from the literature (Jaitman and Torre, 2017).

Figure 7.5 Expenditure on Public Safety in Latin America and the Caribbean and OECD Countries, 2014



Source: Authors' elaboration based on official statistics, OECDSTAT and IMF World Economic Outlook.

Figure 7.6 Spending Profiles of Latin America and the Caribbean and the OECD, 2014

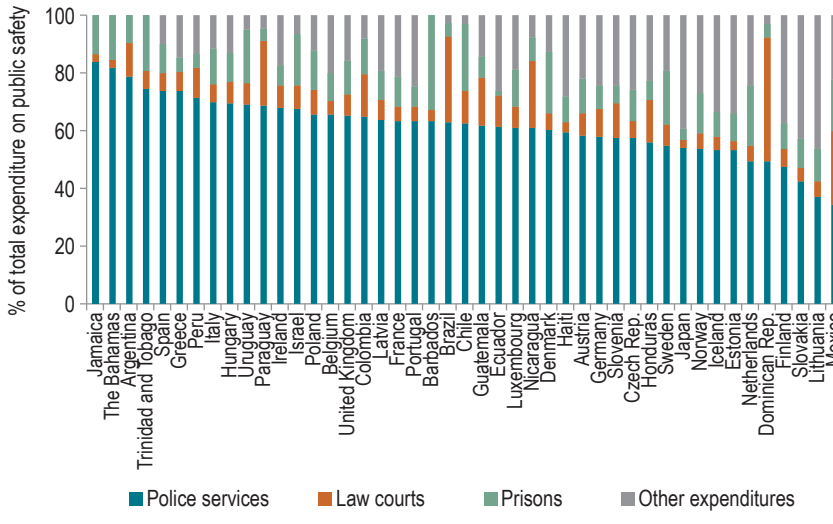


Source: Authors' elaboration based on official statistics and OECDSTAT.

justice, and less in prisons and other areas (particularly research and development) (Figure 7.6).

The spending profiles of countries in both Latin America and the Caribbean and the OECD vary considerably (Figure 7.7). A comparison of each country's position with respect to the "average" of the sample shows that countries such as Argentina and Jamaica concentrate their spending more on police than the average, while Brazil and the Dominican Republic focus more on justice.

Figure 7.7 Spending Profiles, by Country, 2014



Source: Authors' elaboration based on official statistics and OECDSTAT.
Note: Argentina considers expenditure at a national level while Mexico considers expenditure at a federal level.

Analyzing the weight of each type of spending in the total and its relation to per capita GDP suggests that the more developed a country, the greater the proportion of spending on prisons (and others) compared to police and justice (Figure 7.8). This may be partly because in countries

Figure 7.8 Spending Profile and per Capita GDP PPP, 2014

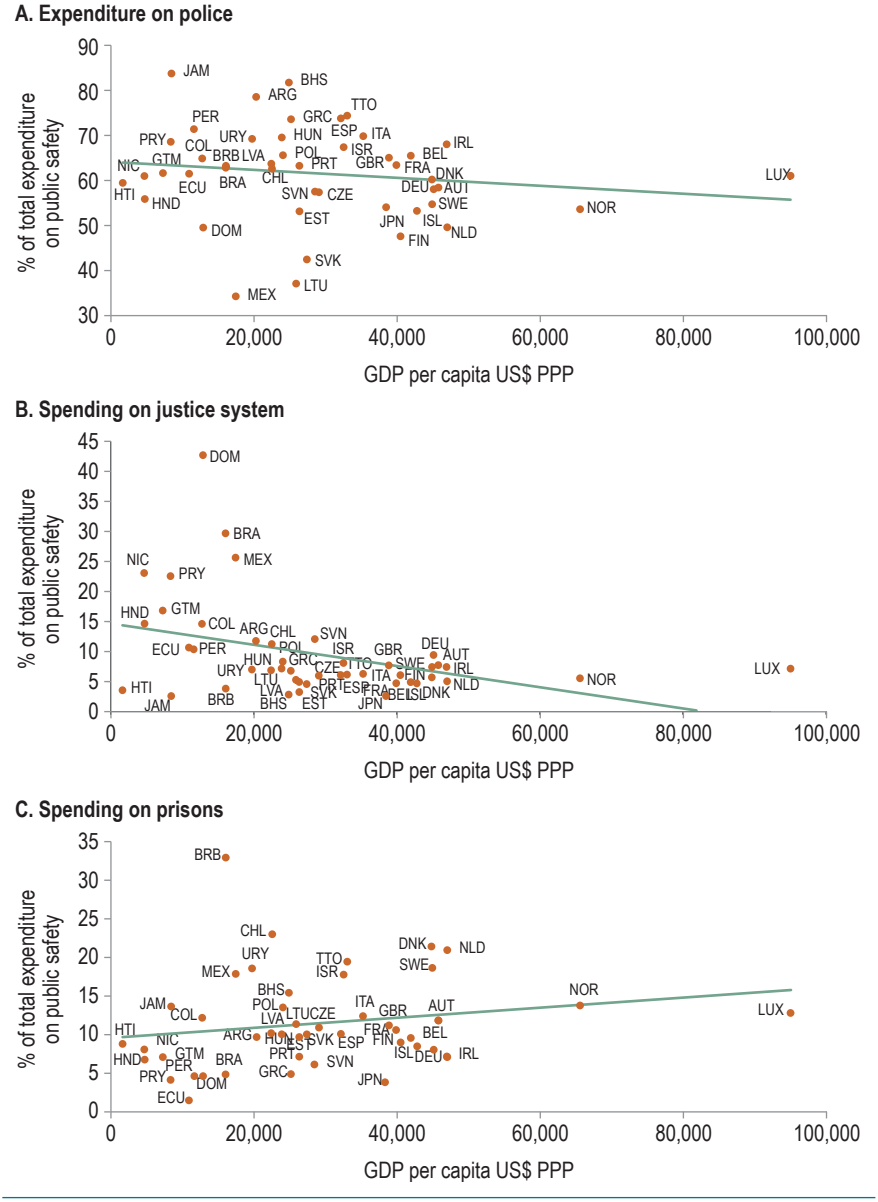


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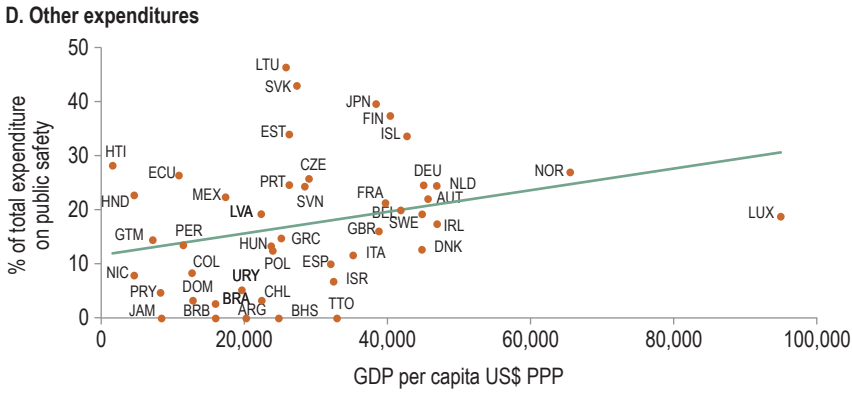
Figure 7.8 Spending Profile and per Capita GDP PPP, 2014 *(continued)*



Source: Authors' elaboration based on official statistics, OECDSTAT, and IMF World Economic Outlook.
Note: Argentina considers expenditure at a national level while Mexico considers expenditure at a federal level.

with lower per capita incomes, crime rates tend to be higher; thus, police spending is prioritized over other spending.

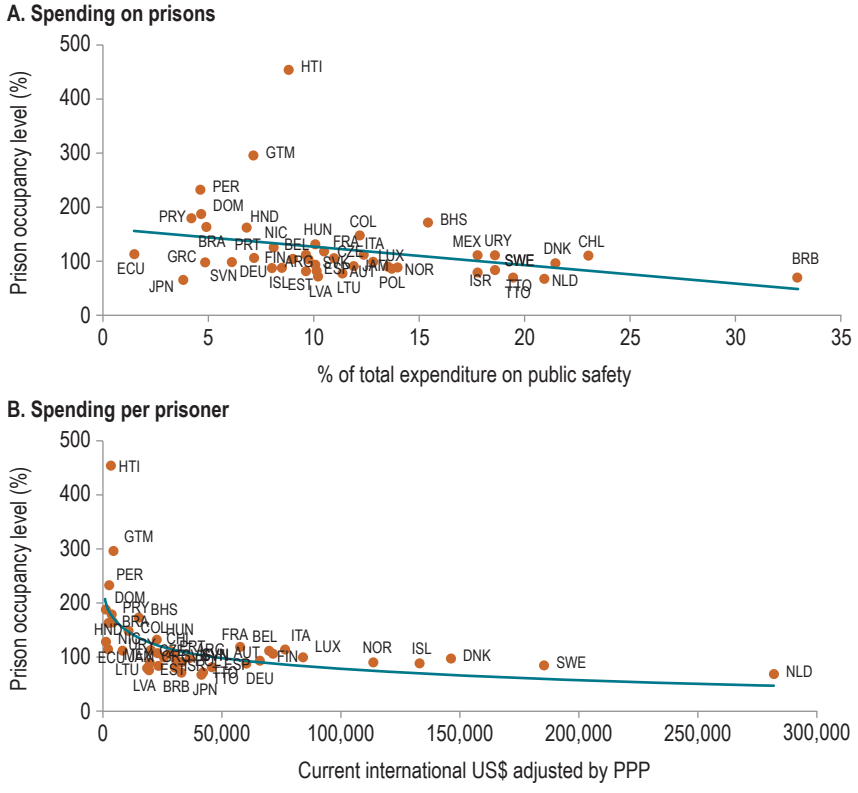
Developed countries, on the other hand, may spend more on prisons because they are under more public pressure to guarantee basic rights for inmates (i.e., lower rates of overcrowding). There is a negative correlation between the proportion of prison spending and the rate of overcrowding, as well as between public spending per prisoner and the rate of overcrowding, which seems to support this hypothesis (Figures 7.9A and 7.9B).

Most spending is invested in personnel—between 50 and 80 percent—and mainly in the police. Median spending on personnel in Latin America and the Caribbean is 10 percentage points higher than in the OECD (80 percent vs. 70 percent, Figure 7.10). In the available sample, Chile and Peru spend the least and Paraguay and Uruguay spend the most on personnel. In all countries, except Chile, personnel spending represents a higher proportion of the police and justice sectors' budget than of the prison budget. (Figure 7.11).

Per capita spending on security increased 34 percent between 2008 and 2015, from $196 to $262 per capita, for a group of ten countries in the region (Figure 7.12A). While some countries doubled their spending such as Costa Rica (126 percent) and Paraguay (115 percent), others had smaller increases, such as Brazil (19 percent), Honduras (20 percent), and the Dominican Republic (34 percent) (Figure 7.12B).

Per capita spending on security varies significantly among countries. In 2015, Argentina spent $583 per capita, compared to $312 by Uruguay, $313 by Brazil, $70 by Honduras, and $32 by Nicaragua (Figure 7.13).

Figure 7.9 Overcrowding and Percent of Spending on Prisons

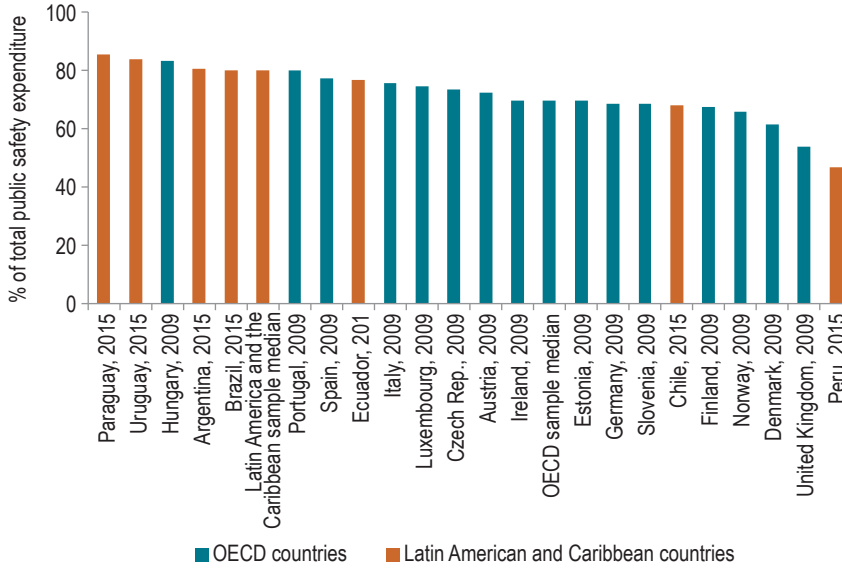


Source: Authors' elaboration based on official statistics, OECDSTAT, and the World Prison Brief.
Note: Argentina considers expenditure at a national level while Mexico considers expenditure at a federal level. Both figures are elaborated using the latest data available by country from the World Prison Brief in September 2017.

While all countries increased their per capita spending on security, the factors that influenced this increase vary. Economic growth (light green bar in Figure 7.14) played an important role in all countries. The expansion of total public expenditure (orange bar) was positive in eight countries, particularly Paraguay (49 percent), Argentina (36 percent), and Mexico (52 percent). The weight of security spending in total spending (blue bar) increased in seven countries, particularly Costa Rica (32 percent) and Argentina (20 percent), while it fell in two: Brazil (–13.9 percent) and Nicaragua (–12.7 percent) (Figure 7.14).

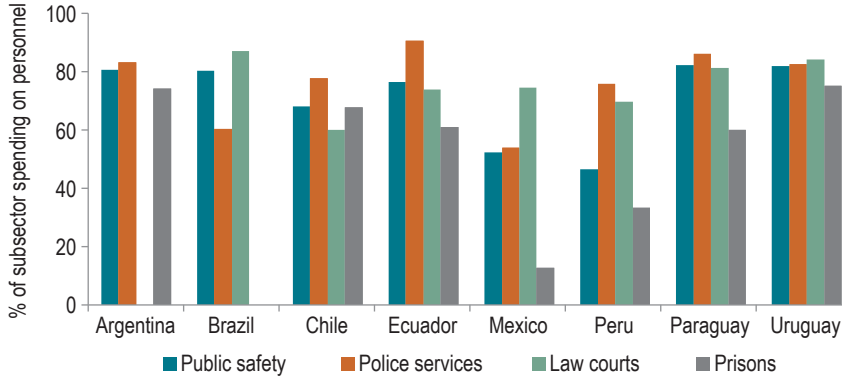
Although all subsectors enjoyed higher spending during this period, the largest increase in absolute terms was for police, followed by prisons (Figure 7.15A). In relative terms, prisons received the biggest boost (169 per-

Figure 7.10 Share of Wages in Public Safety Spending



Source: Authors' elaboration based on official statistics and OECDSTAT.
Note: Latin America and the Caribbean, 2015; OECD, 2009. Mexico considers expenditure at a federal level.

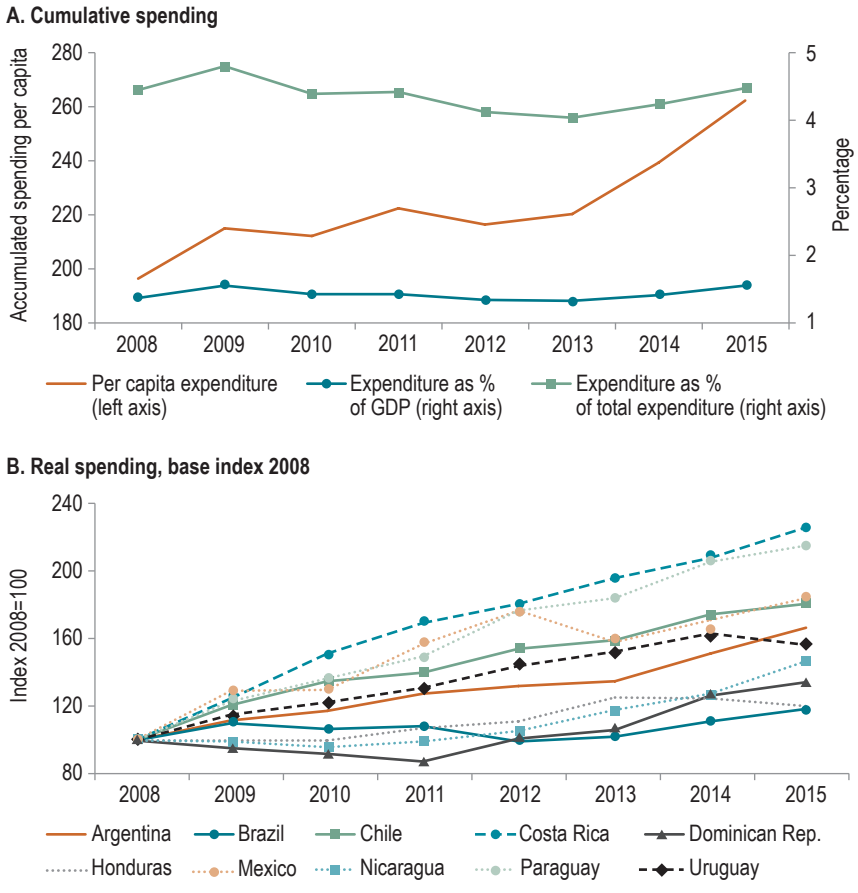
Figure 7.11 Share of Wages by Subsector, 2015



Source: Authors' elaboration based on official statistics.
Note: Mexico considers expenditure at a federal level.

cent), while criminal justice received the least in absolute and relative terms (Figure 7.15B). In relation to the destination of spending, in the three countries where changes for 2011–2015 could be computed, the relationship between personnel, operations, and investment remained virtually unchanged.

Figure 7.12 Spending on Public Order and Security, 2008–2015

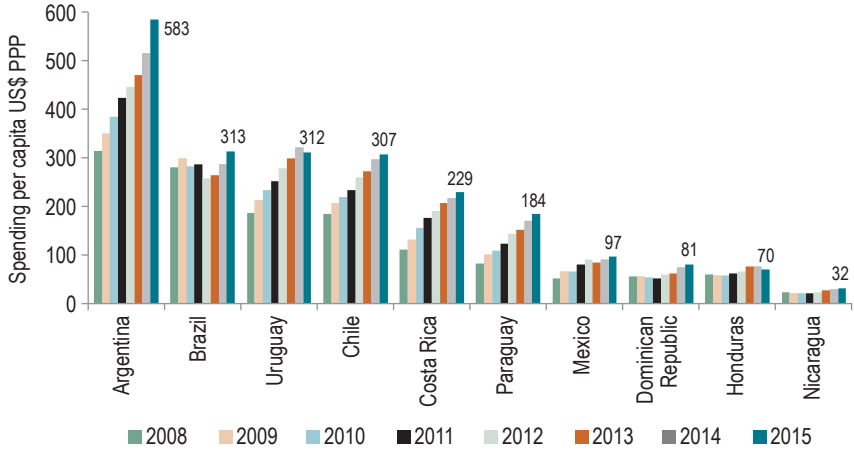


Source: Authors' elaboration based on official statistics and IMF World Economic Outlook.

Can Money Buy Safety?

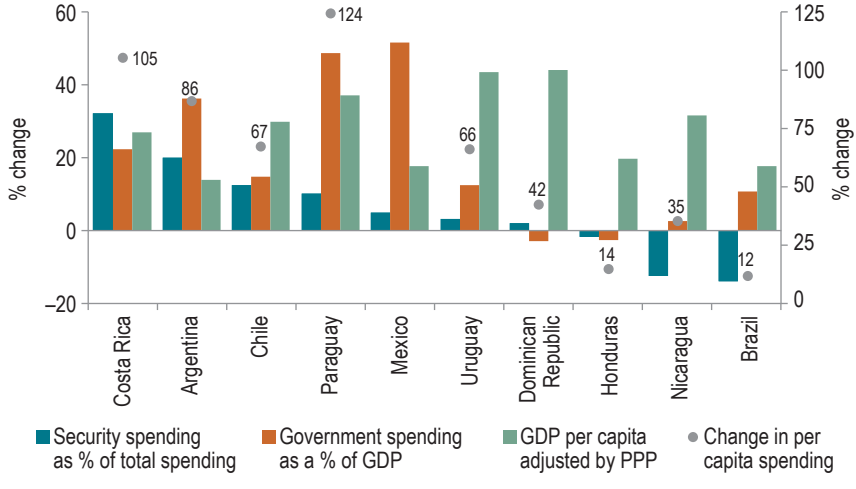
At first blush, large increases in spending have a weak relationship with security performance indicators in the region (Figures 7.16 and 7.17). Among the countries that boosted their spending above the average between 2010 and 2012, some improved their security indicators above the average between 2012 and 2014 (bottom right quadrant), while others performed worse (top right quadrant). Additionally, while the expected negative relationship exists between changes in victimization and changes in per capita spending on security, the opposite is true for homicides. The underlying methodological challenge is to determine the relationship between these

Figure 7.13 Spending Per Capita on Public Safety (US$ PPP)



Source: Authors' own analysis.
Note: Countries ranked by change in per capita spending, 2015.

Figure 7.14 Factorial Breakdown, 2008 and 2015

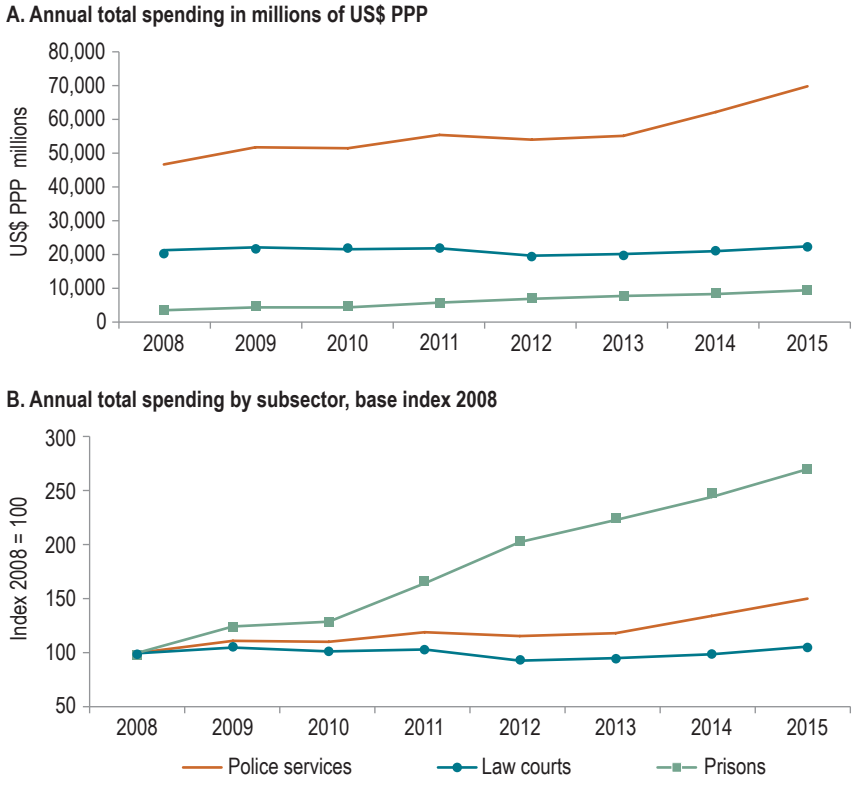


Source: Authors' elaboration based on official statistics and IMF World Economic Outlook.

variables: does greater spending lead to lower crime, or does higher crime lead to increased spending?

An in-depth study of Brazil using data from the 26 Brazilian states sheds light on this question and suggests that raising security spending

Figure 7.15 Evolution of Annual Total Spending by Subsector (selected countries), 2008–2015

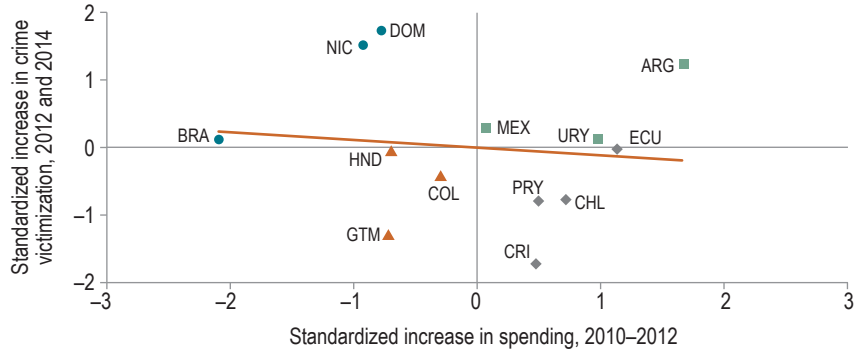


Source: Authors' elaboration based on official statistics.
Note: This series considers data from Argentina, Brazil, Chile, Costa Rica, Honduras, Mexico, Nicaragua, Paraguay, and Uruguay.

can significantly improve public safety.[3] A Brazilian real (R$) 10 increase in annual state spending on per capita policing in Brazil is associated with a 0.6 percent drop in the number of homicides per 100,000 inhabitants. Considering average security spending of R$196 per capita and an average homicide rate of 29, a 1 percent increase in security spending could lead to an estimated 0.4 percent fewer homicides in Brazil. This is good

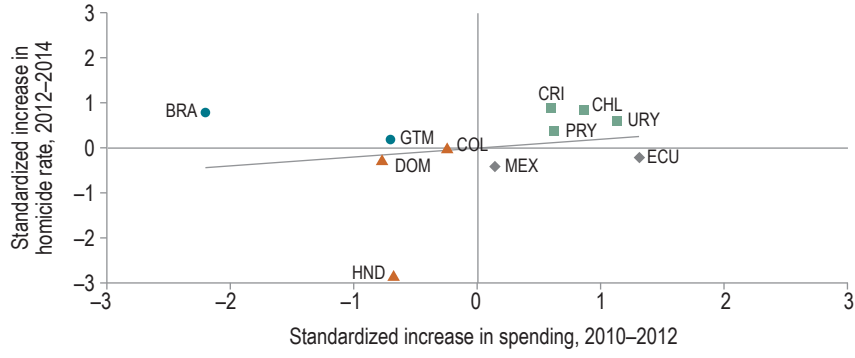
[3] Gomes (2018) uses an instrument inspired by Bartik to address endogeneity, using data from 26 Brazilian states between 2002 and 2014. The work uses average national growth spending on security to produce a measure of state public spending on security that is not related to the state homicide rate and then analyzes how this spending affects homicides at the state level.

Figure 7.16 Standardized Increase in Spending Per Capita and Rate of Victimization



Source: Authors' elaboration based on official statistics and the United Nations Office on Drugs and Crime's International Homicide Statistics.
Note: To standardize, the following was used: (Dif – mean(Dif))/sd(Dif), Dif being the difference between two periods. It produces a standardized increase that can be interpreted in standard deviations from the mean. If a country has a value of 2 in the spending section, it is because in the period there was an increase of two standard deviations greater than the average observed during the period.

Figure 7.17 Standardized Increase in Spending Per Capita and Homicide Rate



Source: Authors' elaboration based on official statistics and the United Nations Office on Drugs and Crime's International Homicide Statistics.
Note: To standardize, the following was used: (Dif – mean(Dif))/sd(Dif), Dif being the difference between two periods. It produces a standardized increase that can be interpreted in standard deviations from the mean. If a country has a value of 2 in the spending section, it is because there was an increase of two standard deviations greater than the average observed during the period.

news because it gives scope for sectoral policy actions to improve impact as the efficiency of spending in the sector increases.

Thus, the evidence reviewed so far suggests that more and better spending on public safety is needed. The magnitude of the security problem in the region, low levels of investment per capita (compared to the OECD), and the probable elasticity of crime in relation to certain inputs (such as the number of police) suggest that more public spending on

security in the region could have positive results. However, before spending more, it is important to analyze how authorities can improve efficiency and effectiveness by spending better.

Getting More Bang for the Buck

The higher the efficiency level of security institutions, the greater the saving of resources and, therefore, the less spending needed to improve security in the region. How can governments raise the efficiency of security services and improve their quality? A first step is to measure the efficiency of security services in each country with respect to the best country with the same level of inputs. The Data Envelopment Analysis (DEA) methodology calculates the level of efficiency of a country (or region, state, municipality) and its distance in relation to the efficiency frontier, which is determined by the most efficient units. This section presents the first efficiency frontier analysis for Latin American and Caribbean police services. Police services were chosen because they absorb most of the total spending on security. The DEA analysis was applied *globally*, comparing Latin America and the Caribbean with the world (but will later also be applied at the *subnational* level).

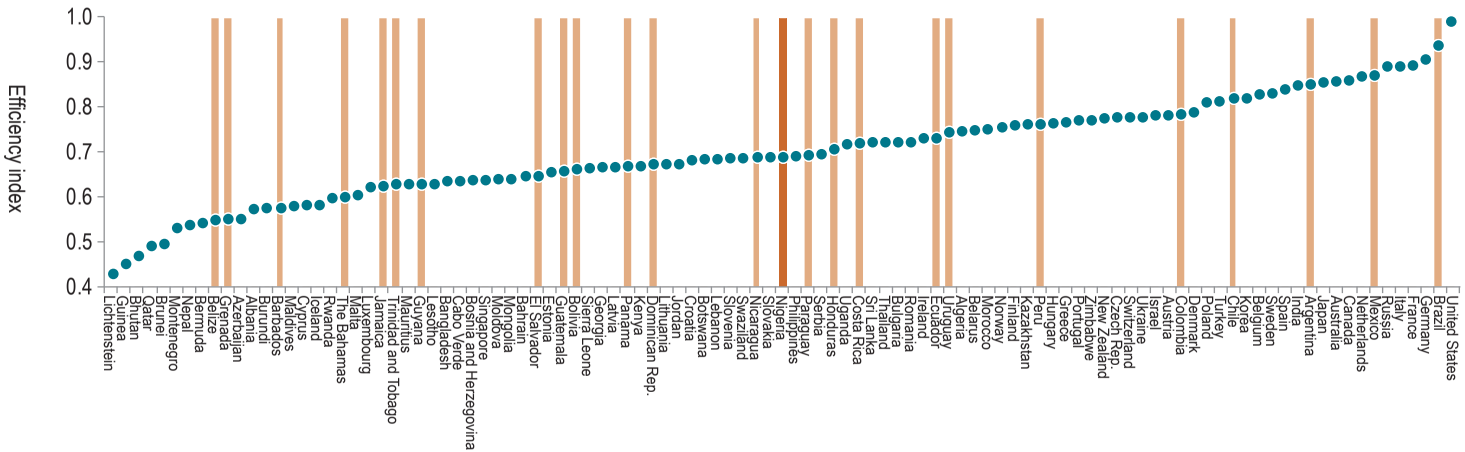
Police Efficiency, Global and Regional

Efficiency can be achieved in two ways: doing the same with fewer resources or doing more with the same resources. The first way allows countries to maintain the same level of output using fewer inputs. The second way, which this chapter analyzes, allows countries to maximize outputs using the same inputs.[4] A comparison of Latin American and Caribbean police with the rest of the world gives an average relative efficiency of 70 percent (Figure 7.18), which means that by bringing efficiency to frontier levels, crime prevention in the region could be increased by 30 percent.

Police efficiency is positively correlated with per capita income levels (Figure 7.19). Countries with higher per capita income tend to have greater institutional capacity, which translates into greater efficiency in the use and allocation of resources (Acemoglu, Johnson, and Robinson,

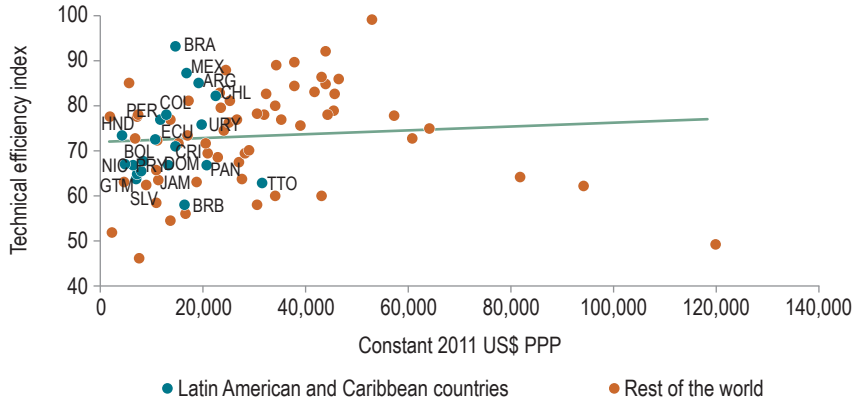
[4] The number of police officers in each country was used as input and, as output, the reciprocal of the total number of violent and property crimes combined. Using the reciprocal value of violent and property crimes implicitly captures the level of security produced.

Figure 7.18 Public Spending Efficiency Index at Global Level



Source: Authors' elaboration based on official statistics and the United Nations Office on Drugs and Crime.
Note: Highlighted bars denote countries from Latin America and the Caribbean while the dark red bar denotes the median of the sample when ordered by efficiency level. Figures correspond to the median value in the period 2004–2014.

Figure 7.19 Technical Efficiency and GDP per capita



Source: Authors' elaboration based on official statistics and the United Nations Office on Drugs and Crime and World Bank's World Development Indicators.
Note: Figures for the technical efficiency variable correspond to the median value in the period between 2004 and 2014, while figures for GDP per capita are represented for the same year.

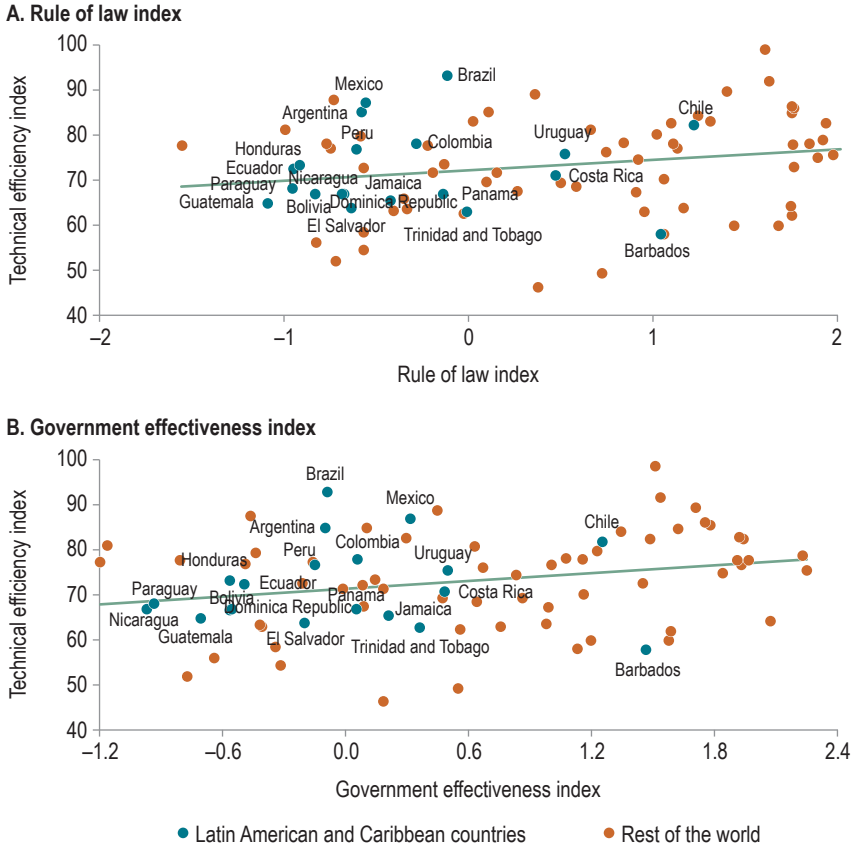
2005). The results highlight the extreme variation in the region; countries with relatively high per capita incomes—such as Trinidad and Tobago, the Bahamas, or Barbados—are less efficient than other countries with similar income levels, such as Brazil, Mexico, or Argentina. Likewise, efficiency goes hand in hand with indicators of institutional capacity such as government effectiveness and rule of law, which indicates that greater efficiency usually comes along with improved institutional capacity (Figure 7.20).

Context Matters for Efficiency

Police in the region do not act in isolation; they interact constantly with socioeconomic, demographic, and institutional factors in the context in which they operate. Factors related to crime and violence such as poverty, economic inequality, unemployment, the proportion of young people in the population, or rapid urbanization are beyond the control of the police and, consequently, can influence their performance. These factors, therefore, are important to consider when measuring and comparing efficiency in countries with police with different capabilities and different socioeconomic, demographic, and institutional conditions.

After correcting for exogenous factors, differences between countries' degrees of efficiency change and allow a more realistic comparison of performance. Figure 7.21 shows the distribution of Latin American and Caribbean countries in the global sample, with scores adjusted for

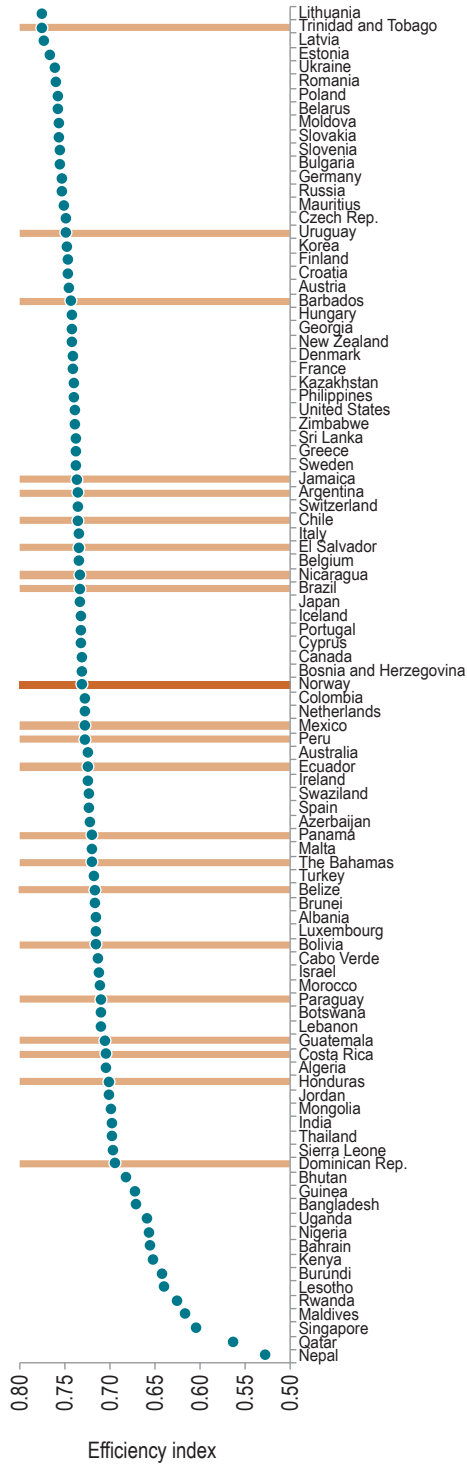
Figure 7.20 Technical Efficiency, Rule of Law, and Government Effectiveness Index



Source: Authors' elaboration based on official statistics and the United Nations Office on Drugs and Crime and World Bank's World Development Indicators.
Note: Figures for the technical efficiency variable correspond to the median value in the period between 2004 and 2014, while figures for rule of law and government effectiveness are represented for the same year.

exogenous factors. For example, countries such as Barbados and Jamaica, which the previous analysis showed to be inefficient, rise considerably in the efficiency ranking when considering their more difficult socioeconomic situation relative to their peers in the region. The opposite is true of Costa Rica, which falls behind in the ranking when taking into account its better socioeconomic levels. Importantly, although most countries in the region are below median efficiency, they vary widely. Regardless of which efficiency measure is used, some countries in the region, particularly in South America, have efficiency levels above the global median. However, most still have significant room for improvement.

Figure 7.21 Public Spending Efficiency Index Adjusted by External Factors



Source: Authors' elaboration based on official statistics and the United Nations Office on Drugs and Crime and World Bank's World Development Indicators.
Note: Highlighted bars denote countries from Latin America and the Caribbean, while the dark red bar denotes the median of the sample when ordered by efficiency level. Figures correspond to the median value in the period 2004–2014.

Spotlighting the Subnational Level

Police efficiency can be measured more accurately when comparing units within the same country (at the subnational level) than when comparing between countries. The institutional, organizational, and cultural differences are easier to measure and control for. Within-country analysis also helps clarify how well police resources are allocated, and their efficiency, in all geographic corners of a country.

This section presents subnational efficiency for five countries.[5] Figure 7.22 provides a wealth of information on the considerable differences in police efficiency between departments or provinces in all countries. The color contrasts, ranging from the darkest (highest efficiency) to the lightest (lowest efficiency) suggest that many different "countries" coexist within the same national borders. Moreover, efficiency is measured within a country, meaning even the most efficient division could probably improve if compared to the international level. Even so, in all countries, police agencies at the provincial level could significantly boost their efficiency with the same level of police inputs with better management. Moving the states or provinces of each country to the frontier would increase police efficiency 66 percent in Ecuador, 62 percent in Honduras, 40 percent in Guatemala, 32 percent in Nicaragua, and 30 percent in Mexico.[6]

Police Organization and Efficiency

In a region with scant information on the issue, Mexico provides a rare opportunity to examine the effect of types of police organization on efficiency, using information from municipal police forces (Alda, 2018). Half of the municipalities experience reductions in efficiency from the influence of external and internal organizational factors. After controlling for socioeconomic and demographic factors, the weight of police organization still has an impact on efficiency, though lower than the one from external factors.

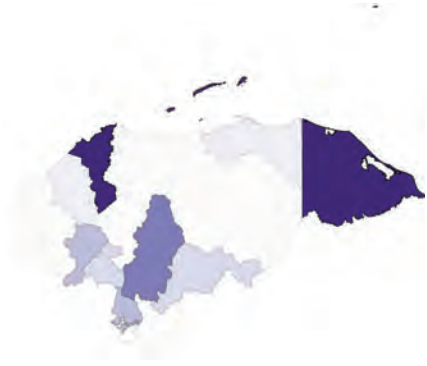
In Mexico, the organizational structure of municipal police forces affects the provision of security in two ways. The greater the organizational complexity, the lower the level of efficiency. In particular, the greater

[5] The *outputs* measured vary: in Guatemala, Honduras, Nicaragua, and Mexico it is the percentage of solved crimes, while in Ecuador it is the total number of crimes prevented. The *inputs* measured are the total number of police officers and vehicles in all the studies; Peru and Mexico also use variables on technology (computers, tablets, telephones, etc.). See Alda (2017, 2018), and World Bank (2016).

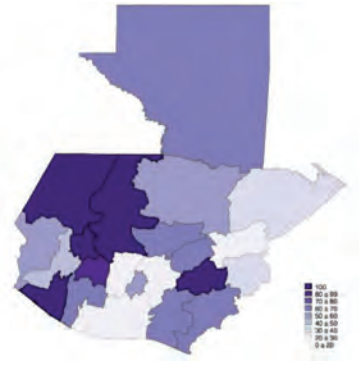
[6] These studies are not strictly comparable.

Figure 7.22 DEA Maps with Output Variation, Selected Countries

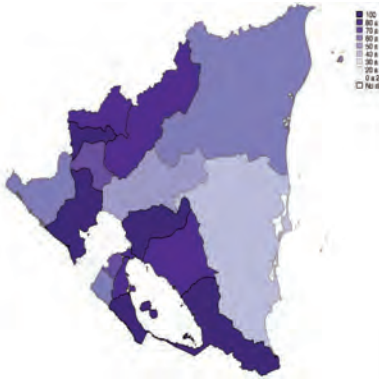
A. Honduras DEA by province, 2011



B. Guatemala DEA by department, 2011

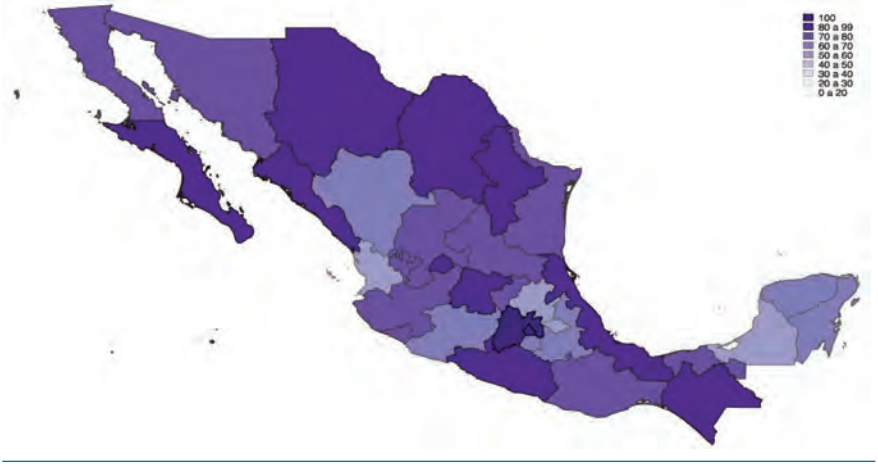


C. Nicaragua DEA by department, 2011



D. Ecuador DEA by province, 2014

E. Mexico DEA by state, 2014



Sources: Authors' elaboration based on Alda (2013) for Panel A; Alda (2014) for Panel B; Alda (2013) for Panel C; Alda (2017) for Panel D; and Alda (2014) for Panel E.

the functional differentiation (larger number of departments or technical units) and spatial differentiation (more stations in the territory), the lower the efficiency. Thus, excessive functional and territorial fragmentation appears to compromise efficiency. In contrast, the greater the organizational control, the higher the efficiency. In particular, the more centralized decision-making is and the more formal and organizational rules and guidelines that exist, the greater the efficiency. These results provide interesting lessons for Mexico and other countries in the region.

Rewarding Efficiency with Resources

Police efficiency in the region is not—on average—far worse than that of more developed countries at the aggregate level. However, the margins for moving toward the efficiency frontier at the regional, national, and subnational levels are significant. Consequently, resources should be reallocated following an efficiency criterion. At the national level, mechanisms to allocate resources to subnational governments present an opportunity. Many countries do not have a formula for determining where and how to allocate resources more efficiently. Or if they do, they do not use it well. Adopting a performance-based budget that uses efficiency-improvement metrics would help promote better performance and more efficient resource allocation by rewarding municipalities or provinces that improve the use of resources.

Preventive, Targeted, and Informed Spending

For every additional dollar a government has to protect its citizens, it must make a crucial decision: how can it best use this resource to protect the physical integrity of both its inhabitants and their property? Hire more police officers to increase patrols, raise their pay to increase motivation, equip forensic laboratories to capture more offenders? Invest in social programs to deter young people from embarking on criminal careers or build more prisons to accommodate more offenders for longer? The list is long. Fortunately, the academic literature agrees on three key principles to guide spending on security: preventive rather than reactive and punitive; targeted instead of dispersed; and based on scientific evidence of impact—preferably cost-benefit—instead of intuition.

Prevention Is Best

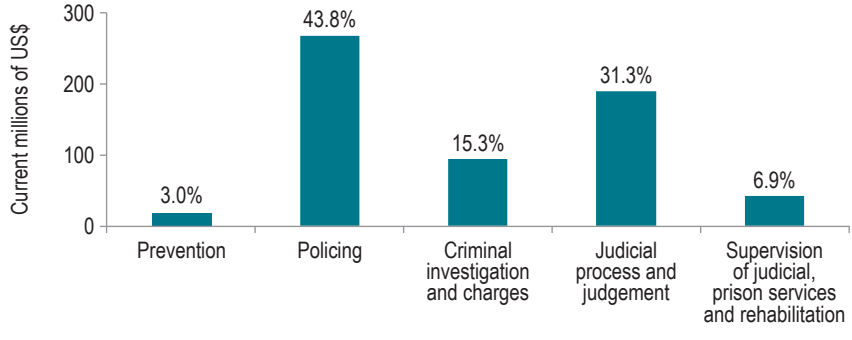
Preventing crime not only avoids the suffering of personal and material losses, it is also cheaper than reacting to committed crimes and their

consequences. This is common sense. When a crime is committed, the state activates four key functions on which it must spend public funds: 1) police to pursue and apprehend offenders; 2) justice services to investigate and judge criminals; 3) the sanction system to apply a punishment and promote rehabilitation; and 4) reparation services for damage to victims. This spending adds up and when compared with the cost of preventing a crime, the balance is clearly in favor of prevention. This is even truer after considering the private and social costs of the crime, and the costs of future crimes prevented. For example, intensive tutoring programs for at-risk adolescents, such as "Becoming a Man" in Chicago, resulted in 44 percent fewer arrests for violent crimes (in addition to educational improvements) (Heller et al., 2015). The cost-benefit evaluation awarded a benefit of almost eight dollars for every dollar invested (WSIPP, 2017a).

How much is currently spent on prevention? With no agreed definition of prevention or systems to record this spending, the answer is unclear. One way to measure this spending is to include only programs whose objectives specify the prevention of crime and/or violence. Measured this way, spending on prevention can represent 3 percent of total spending on security and justice, as in El Salvador in 2011 (Figure 7.23), or 10 percent annually in Chile between 2012 and 2015 (Paz Ciudadana Foundation and IDB, 2017).

To more accurately capture prevention spending, the definition should include not only social prevention programs (as in El Salvador and Chile), but also police prevention (such as hot-spot policing) and judicial prevention (such as conciliation or mediation services). Regrettably, systems for recording public accounts are not usually prepared to make these measurements.

Figure 7.23 Budget Allocation for Citizen Security, El Salvador, 2011



Source: World Bank (2012).

An expanded definition of prevention spending should also include programs that may not list prevention among their explicit objectives but promise to help reduce crime in the country. Special programs (Heckman et al., 2010) including those focused on early childhood education, parenting, and school retention, and involving conditional cash transfers, among others, can have important effects on crime prevention if they are well designed. The private and social returns from education in terms of their impact on crime reduction are estimated to exceed 20 percent (Busso et al., 2017).[7]

Targeting High-Risk Places, People, and Behaviors

The second important metric for evaluating the allocation of security spending pertains to targeting. Crime is disproportionately concentrated in a small number of high-risk places, people, and behaviors (Abt, 2017). The more that security and justice spending targets these three areas, the greater is its impact.

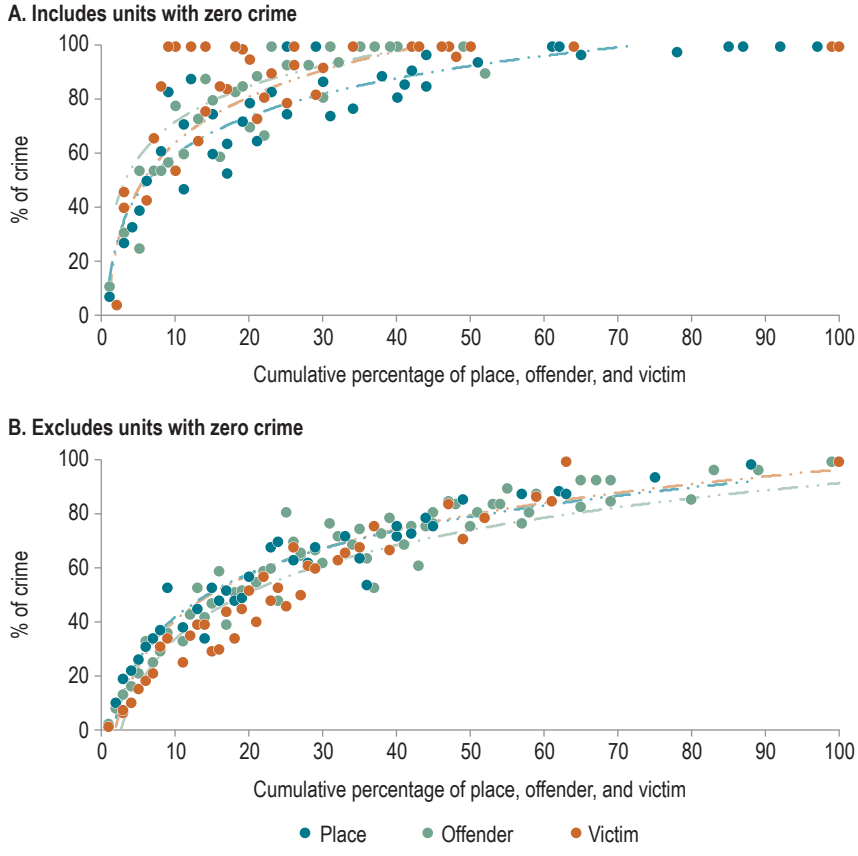
- *Places*: Some 50 percent of crime is concentrated in 5 percent of street segments in cities in the United States and Europe (Weisburd, 2015) and between 3 percent and 7.5 percent in Latin American cities (Jaitman and Ajzenman, 2016).
- *People*: Some 10 percent of the population is responsible for 66 percent of crimes (Martínez et al., 2017). In Boston, 1 percent of young people aged 15 to 24 were responsible for 50 percent of gunshots in the city (Braga and Winship, 2015). In Montevideo, a survey of the adolescent school population revealed that 2 percent are responsible for 70 percent of violent incidents (Trajtenberg and Eisner, 2014). Targeting prolific offenders can prevent more crimes with fewer resources.
- *Behavior*: Bearing a firearm, particularly if illegal; alcohol abuse, due to its association with violence; and association with groups of lawbreakers or gangs, increases the probability of committing crimes.[8]

A systematic review of studies on the spatial and criminal concentration of offenders and victims shows a consistent pattern, although the level varies depending on whether crime-free units are included or not. (Figure 7.24).

[7] Berlinski and Schady (2015) also evaluated early stimulation programs in Jamaica which resulted in lower involvement in crime.

[8] WHO, 2010a.

Figure 7.24 Results of Studies on Crime Concentration



Source: Eck et al. (2017).

Measuring the degree of targeting of security spending is complex. To approximate a response, the Inter-American Development Bank (IDB) conducted a survey in six countries to measure the targeting of citizen security and criminal justice programs. (Table 7.1). The survey found that less than half of these programs are focused on antisocial or criminal risk behaviors (100 programs, or 38 percent of programs). Moreover, targeting is much less common when it comes to high-risk places (12.5 percent).

The analytical methods and programmatic approaches for targeting exist; the challenge is to adopt them. For example, hot-spot policing has been implemented for decades around the world as a way to target high-risk places but has only recently reached the region. Targeted interventions demand the systematic and sustained incorporation of scientific knowledge and crime analysis into decision-making to reduce discretion

Table 7.1 Targeting of Citizen Security Programs, Selected Countries

State/ Country	Total programs	Estimated as targeting			Not enough targeting information
		Places of risk	People at risk	Risk behaviors	
Chile	72	8	13	41	10
Ceara/Brazil	54	7	6	22	19
Ecuador	17	3	9	5	0
Guatemala	51	9	21	21	0
Paraguay	11	0	8	2	1
Uruguay	59	6	44	9	0
Total	**264**	**33**	**101**	**100**	**30**

Source: Authors' elaboration based on IDB and Grupo Precisa (2018).

and inertia. They also increase the possibility of external control and accountability. Strong political leadership is an essential condition for these changes. The COMPSTAT model in New York, and its adaptations in eight Brazilian states, are good examples of the relevance and challenges of sustained leadership.[9] Effective leadership requires institutional capabilities (good information systems, analytically driven decision-making processes, knowledge of successful interventions, etc.), which take time to build. The region has the opportunity to move toward security policies strongly backed by data and scientific evidence. However, a cultural change is required to create the conditions for adopting a more modern citizen security paradigm.

Science over Intuition

The third and last metric for evaluating the quality of spending allocation has to do with using practices and programs based on evidence of their impact and a cost-benefit analysis. A robust base of scientific evidence exists on cost-effective interventions to prevent crime and violence, mainly in developed countries. The most prominent online repositories of evidence include *Blueprints for Violence Prevention* of the University of Colorado, *CrimeSolutions* of the National Institute of Justice of the U.S. government, *What Works on Crime Reduction* of the College of Policing of Great Britain, Campbell Collaborations, etc. To make this information more accessible to governments in the region, the IDB is developing a repository with evidence from more than 400 interventions.

[9] Behn, 2014.

Any citizen security policy that aims to spend smartly needs to build and finance a portfolio of interventions based on this global evidence. Achieving this is a gradual and complex process. The first step is to compile global evidence about what works and does not work, and to develop locally adapted interventions and programs based on that knowledge. The second step is to rigorously evaluate their impact and cost-effectiveness, discarding what does not work, scaling up what works, and continuing to test innovative solutions to local problems. At the city level, the University of Chicago Crime Lab is an example of this approach. At the state level, the Washington State Institute of Public Policy (WSIPP), created by the state's congress, stands out for its systematic application of cost-benefit analysis to policy decisions. For each component of the citizen security value chain, the interventions with the best cost-benefit ratio and the highest likelihood of working in the region were selected from the WSIPP repository (Table 7.2). Also included are popular interventions in the region whose cost-benefit is negative.

Regrettably, few programs based on evidence are adopted in Latin America and the Caribbean. Of 283 programs in six countries, only 22 (8 percent) include content or intervention techniques in their design substantiated by empirical evidence of efficacy or cost-effectiveness (Table 7.3).

Opportunities and Challenges for Spending Better

Preventive, targeted, and evidence-informed interventions have more impact when they are part of a systemic approach that integrates them into each of the three major components of the security and justice value chain: social and urban services, police services, and criminal justice services. Achieving this is not easy. Each component faces obstacles associated with the inertia of the reactive, dispersed, intuitive approach that characterizes much decision-making in Latin America and the Caribbean. This section identifies, for each component, a particular challenge and an example of the type of interventions being implemented in the region to successfully overcome the problem. Putting together an integrated portfolio of interventions that addresses all these issues is perhaps the greatest challenge of all.

Who's in Charge? Institutional Leadership for Social and Urban Prevention

Smarter spending on social and urban policies meant to promote citizen security requires stronger government leadership. Currently, the social prevention of crime is everyone's and nobody's business. Most countries

Table 7.2 Security Interventions Selected by Integrated Approach and Cost-Benefit Analysis (2016 US$)

Intervention	Total benefits	Fiscal benefits	Non tax benefits	Costs	Benefits minus costs (NPV)	Cost-benefit ratio	Chance that benefit exceeds cost
Social prevention							
Parenting Program (Triple P-Level 4 individual)	3,331	1,168	2,162	**(992)**	2,339	3.36	86%
Home visits (Nurse Family Partnership)	19,157	7,489	11,668	**(10,170)**	8,988	1.88	61%
Community interventions (Communities that Care)	3,148	863	2,286	**(593)**	2,555	5.31	82%
Police							
Hot-spot policing**	518,405	66,942	451,463	**(96,637)**	421,768	5.36	100%
Criminal justice							
Drug treatment courts	13,926	4,888	9,038	**(4,924)**	9,002	2.83	100%
Sanction							
Multi-system therapy for adolescents (MST)	18,965	4,651	14,284	**(7,834)**	11,102	2.42	84%
Cognitive behavioral therapy/adolescents	14,957	3,672	11,284	**(395)**	14,562	37.87	94%
Cognitive behavioral therapy/adults	8,817	2,732	6,085	**(1,395)**	7,422	6.32	100%
Ineffective interventions							
D A R E	*(423)*	*(184)*	*(239)*	**(55)**	*(478)*	*(7.71)*	*49%*
Scared Straight	*(9,370)*	*(2,546)*	*(6,825)*	**(106)**	*(9,477)*	*(88.14)*	*4%*

Source: WSIPP, 2017b.
Note: One additional police officer was deployed per hot spot.

lack a clear institutional "champion" that assumes this responsibility as a core part of its agenda and mandate. For different reasons, neither the ministries of social development, education, or health, nor the ministry of security, make it a priority. Consequently, targeted, evidence-informed social programs aimed at crime prevention are scarce and of poor quality. At the same time, interventions with great potential for preventing violence do not have the institutional and budgetary traction needed to adopt and implement them.

A clear example is programs to prevent young people and adolescents from embarking on criminal careers. These programs are some of the most cost-effective interventions in terms of security. Many of them use a proven,

Table 7.3 Number of Citizen Security Programs Informed by Evidence

Country/State	Total programs	Potentially based on evidence
Chile	72	6
Ceara/Brazil	54	4
Ecuador	17	1
Guatemala	51	2
Paraguay	11	1
Uruguay	59	8
Total	264	22

Source: Authors' elaboration based on IDB and Grupo Precisa (2018).

evidence-based approach called Cognitive Behavioral Therapy (CBT), which aims to change an individual's antisocial way of thinking in favor of pro-social and constructive behaviors. CBT is a key ingredient in multiple types of interventions for different age groups, adapted to risk levels. One of its best-known applications is Multisystemic Therapy (MST). MST can reduce the probability of recidivism of an adolescent offender by up to 70 percent after 5 months of treatment in the most complex cases (Sawyer and Borduin, 2011) with net benefits of $11,000 per participant. Chile is the only Latin American country to implement MST as part of a comprehensive strategy to protect vulnerable children and adolescents (see Box 7.1).

BOX 7.1 MULTISYSTEMIC THERAPY IN CHILE'S 24 HOUR PROGRAM

Since 2012 Chile has been implementing the "PAIF 24 Horas" program. Weekly, the police send to municipal governments a list of those children and adolescents that have been arrested or taken to police units. Victims of violations of rights are referred to the municipal Office of Protection of Rights and attended by the child protection services network. Cases admitted for law-breaking behavior are referred to a specialized team that applies a brief socio criminal risk assessment to empirically estimate the probability of reoffending. The child's family is invited to participate in a care service whose intensity is proportional to the risk level. The highest risk cases are offered Multisystemic Therapy (MST). This component is financed by the Under-secretariat of Crime Prevention of the Interior Ministry, with the supervision and technical support of the international MST Group. Recently, a quasi-experimental study conducted by the Paz Ciudadana Foundation evaluated the impact of the program. Overall, they found statistically significant reductions in recidivism of 6 percentage points after a one year follow-up. They also found reductions of 6.5 to 13.4 percentage points for the highest-risk subgroup, and of 10.5 to 14 percentage points for young people aged 16 to 18.

Chile's 24 Hour Program incorporated MST thanks to the financial support and technical leadership of the Under-secretariat of Crime Prevention of the Interior Ministry. Smarter spending on citizen security requires identifying and strengthening champions like this; agencies should be capable of promoting a portfolio of evidence-based social and urban prevention programs. Such a portfolio should include both targeted interventions as well as universal programs with important spillover effects on crime prevention.

Proactive Policing

Smarter spending on police services demands that the region replace its traditional reactive model, based on random patrolling and responding to emergencies, with a proactive approach that anticipates crime and prevents it from happening. To do this, three areas that need proper funding are: crime analysis, to identify the dynamics and concentration of crime (at spatial, individual, and behavioral levels); preventive policing strategies, to preemptively target crime concentration; and police investigation, to catch prolific offenders (Coupe, 2016).

Interventions that reduce opportunities to commit crimes in hot spots are an example of preventive strategies. Hot-spot policing (HSP) deploys police resources to places and at times with high criminal activity (Weisburd and Telep, 2014). A systematic review of 25 rigorous HSP tests found significant reductions in crime in 20 of them (Braga, Papachristos, and Hureau, 2014). Ten of the tests were randomized controlled evaluations. Cost-benefit studies show a return of more than $5 for every dollar invested.

Although HSP has spread widely in the northern hemisphere, its penetration in Latin America and the Caribbean is still very limited. An IDB survey conducted in 15 countries in the region found that only three have HSP. In Uruguay, impact evaluations already show positive results (see Box 7.2).

HSP in Uruguay is not an isolated initiative, but part of a police reform process that for more than seven years has been moving the police from a reactive model to a more preventive one (Serrano-Berthet, 2018).

Judging the Justice System

Despite the region's significant investment in criminal justice, high levels of impunity and preventive detention speak to poor performance. The criminal justice system is highly ineffective and inefficient at apprehending and prosecuting offenders, conducting a quick and effective trial, and carrying out sentencing.

BOX 7.2 HOT-SPOT POLICING: URUGUAY TAKES THE LEAD

In April 2016, the Uruguayan National Police began the High Dedication Operational Program (PADO) as a strategy to reduce violent robberies. The PADO is the first program in Latin America and the Caribbean with a police force dedicated exclusively to patrolling hot spots in Uruguay's main cities. It started in Montevideo where the program deployed patrols in 120 street segments, organized into 28 circuits representing 7 percent of the Montevideo area and accounting for 43 percent of the robberies committed in 2015.

An impact assessment using a difference-in-difference design attributed to the PADO a 22 percent drop in the rate of violent robberies in the areas intervened in during the period.[a] These results are consistent with studies that found a 23 percent reduction in violent crimes in Philadelphia (Ratcliffe et al., 2011) and 20 percent in robberies in Minneapolis (Sherman and Weisburd, 1995). The evaluation of the PADO not only did not find displacement of crime, but a slight diffusion of benefits to nearby areas, which is also consistent with the global empirical literature.

[a] Prepared based on Chainey, Serrano, and Veneri (2018).

Three out of four (76 percent) homicides in the region go unpunished (Figure 7.25). This is the result of an analysis of homicides and convictions between 2010 and 2015.[10] Unfortunately, the calculation is based on fewer than half the countries in the region, given the lack of information.[11] Comparatively, in Asia and Europe impunity is 30 percent.

Some 41 percent of people imprisoned in the region do not have a sentence and are under the preventive detention regime.[12] Lack of sentencing varies significantly from less than 10 percent in some countries to more than 70 percent in others (Figure 7.26). This is not a new problem. Between 1999 and 2017, the regional average was 44 percent (Figure 7.27). In the last decade, the region introduced important criminal reforms to speed up procedures and trials (Bergman and Fondevila, 2018), which has sparked a downward trend in most cases (Figure 7.28). However, in relative terms, the number of prisoners without conviction remains high.

10 The methodology for calculating direct impunity is: year X = (100 – [Convicted for intentional homicide in year X / Incidence of intentional homicide in year X]).

11 Brazil, with more than 40 percent of homicides in the region, has statistics on crimes solved in only 6 of the 27 of the federation (Sou da Paz, 2017).

12 Based on data from the World Prison Brief, the number of prisoners without conviction was averaged for the years available in each country in the period 1999 to 2017.

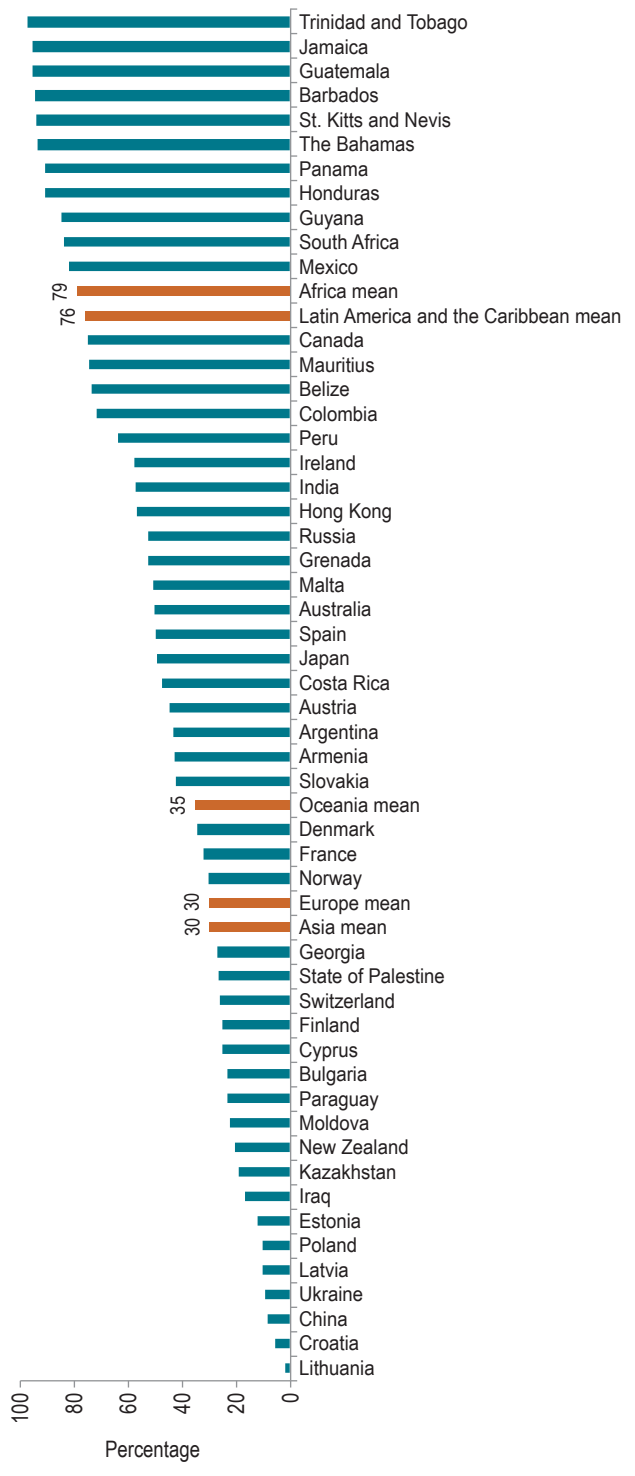
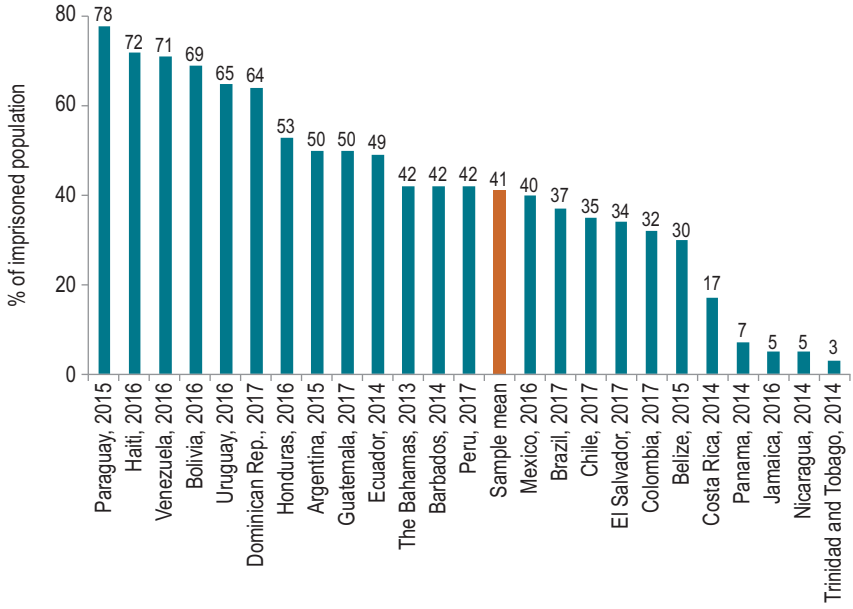


Figure 7.25 Direct Impunity, Average 2010–2015

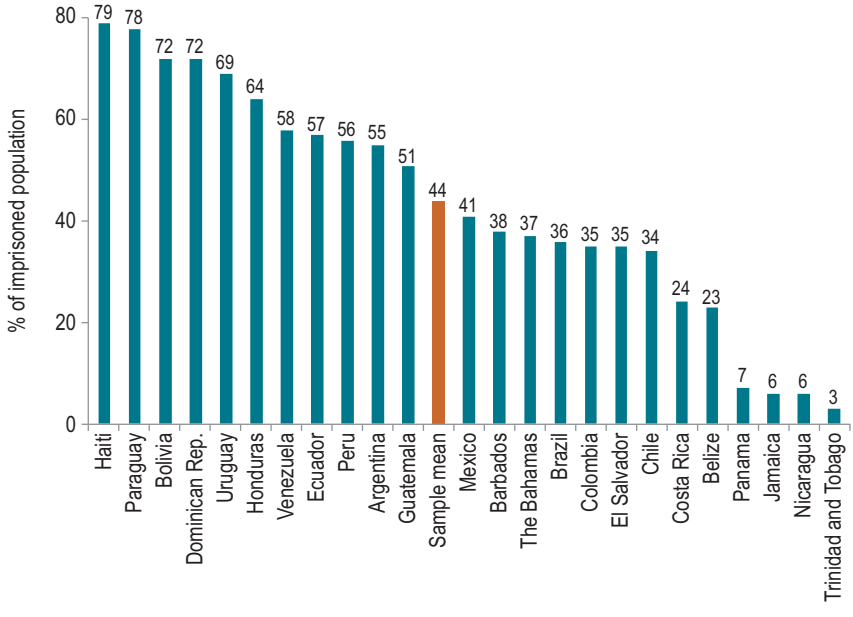
Source: Authors' elaboration based on the United Nations Office on Drugs and Crime's International Homicide Statistics.

Figure 7.26 Prisoners in Preventive Detention



Source: Authors' elaboration based on the World Prison Brief.

Figure 7.27 Prisoners without Conviction, Average 1999–2017



Source: Authors' elaboration based on the World Prison Brief.

Figure 7.28 Prisoners without Conviction, by Country

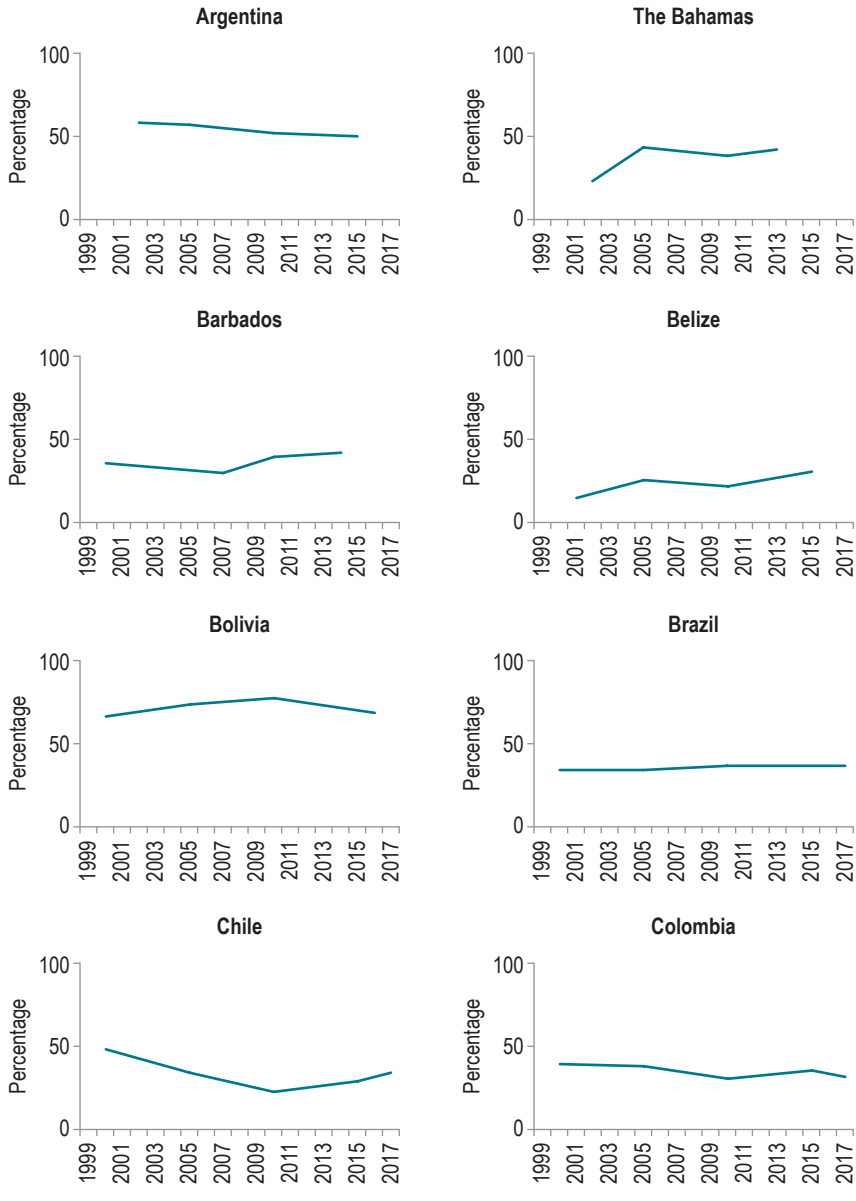


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Figure 7.28 Prisoners without Conviction, by Country *(continued)*

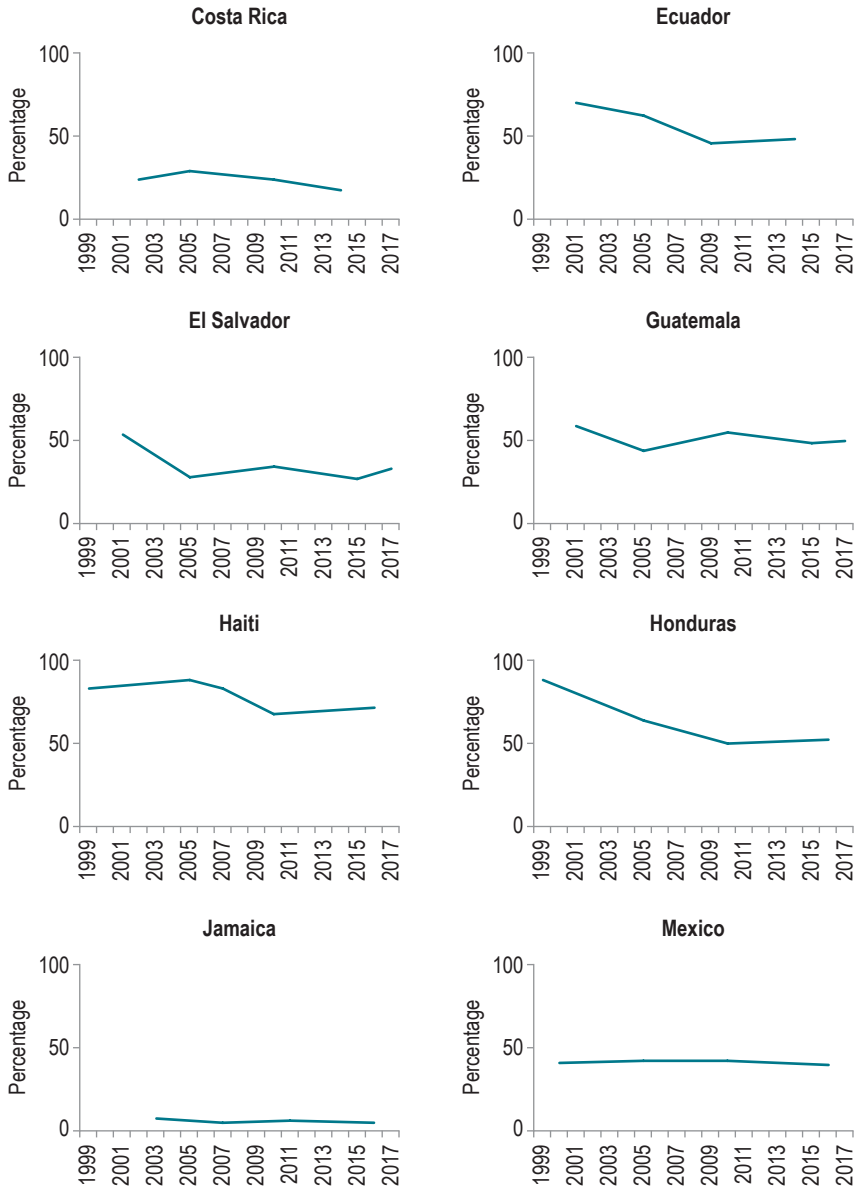

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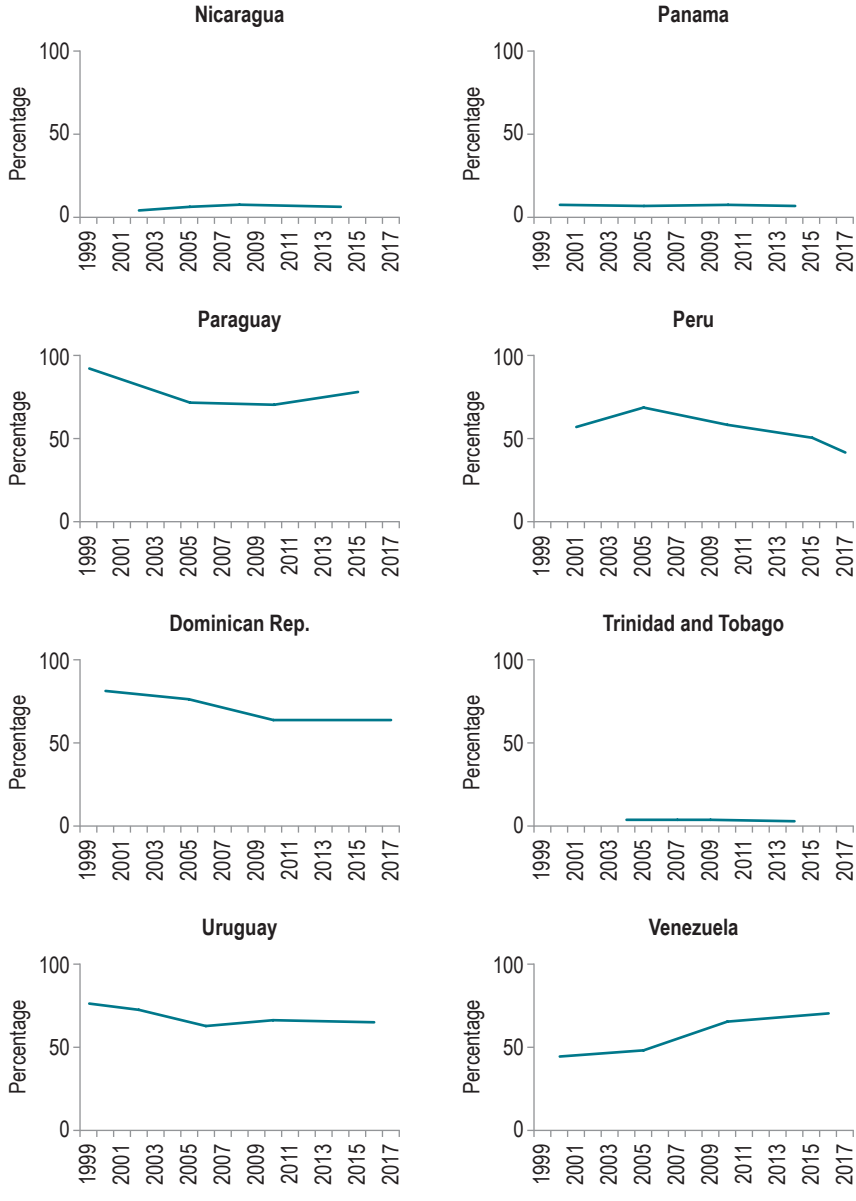
Figure 7.28 Prisoners without Conviction, by Country *(continued)*



Source: Authors' elaboration based on the World Prison Brief.
Note: Figures are elaborated using data available by country.

BOX 7.3 OBJECTIVE TOOLS FOR DETERMINING PREVENTIVE DETENTION

In the United States, the Laura and John Arnold Foundation developed an analytical tool to provide judges with a scientific, objective, data-driven assessment of the level of risk of the accused and the need for preventive detention. The tool, known as the Public Safety Assessment-Court (PSA-Court), analyzed more than 1.5 million data points taken from the criminal history of the defendants in 300 jurisdictions to identify which factors best predict the probability of committing a new crime, a violent crime, or not appearing in court. The tool only uses data from criminal history, the case for which the defendant is being processed, and age (previous arrests and convictions, failure to appear in court, drug and alcohol use, mental health, etc.). It does not consider race, gender, education, socioeconomic status, or residential data. So far it has been adopted by 38 subnational jurisdictions in the United States and the assessments have had encouraging results (LJAF, 2013).

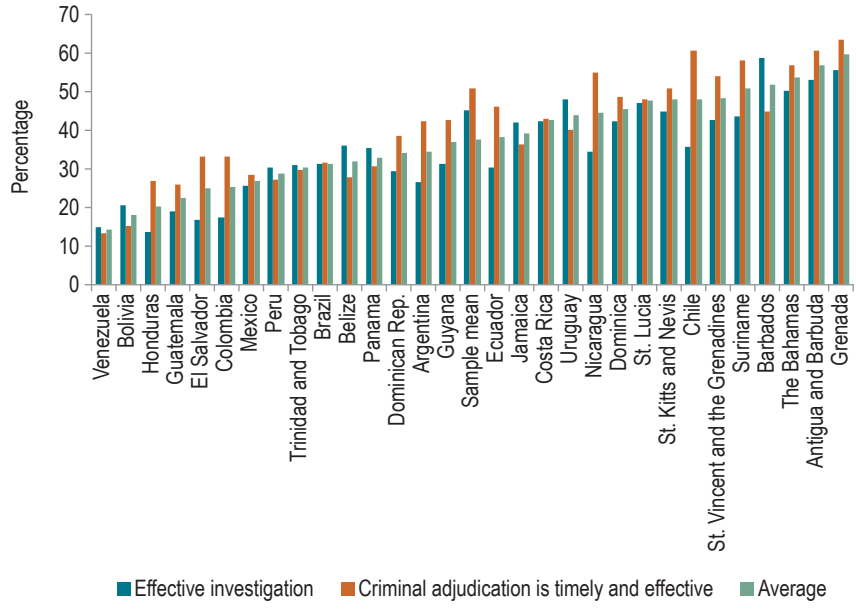
Similar tools, but used by the police, have been employed in Great Britain to defer or temporarily suspend criminal prosecution for low-risk detainees. Using risk assessment algorithms, the least risky are sent to treatment programs for the problem that led to their arrest. The legal process is not withdrawn but is deferred based on behavior (Neyroud and Slothower, 2015).

Reducing unjustified preventive detention is an obvious way to improve the quality of public spending on citizen security. The main benefit would be for people who are unjustifiably imprisoned, both the guilty who need not be preventatively detained, and (even more) the innocent. However, public spending would also benefit by saving the cost of maintaining people in prison. How can preventive detention be used more judiciously? Preventive detention exists to mitigate three potential risks: harm to the community (level of risk), interference with an investigation, or flight. Unfortunately, most judges in Latin America interpret these three risks subjectively. In developed countries, objective instruments are increasingly being used to assess pre-trial risk, along with use of deferment schemes for criminal prosecution (Box 7.3).

High levels of impunity and preventive detention are related to the low capacity to apprehend and prosecute offenders (effective investigation), as well as to judge and sanction the accused (effective adjudication). The Rule of Law Index[13] prepared by the World Justice Project measures these two indicators (see Figure 7.29). The average of both for the region is a

[13] Based on an annual survey with a representative sample of 1,000 respondents in the three largest cities of each country and a set of legal and academic professionals in the country.

Figure 7.29 Capacity to Apprehend, Process, and Sanction Successfully and without Undue Delay, 2017



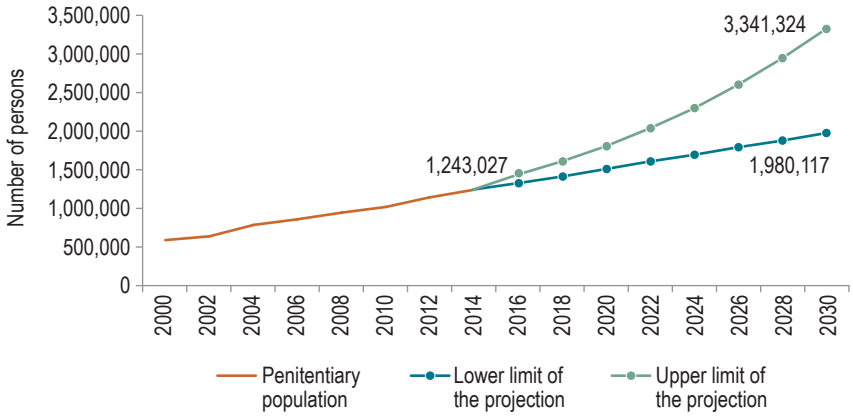
Source: Authors' elaboration based on The World Justice Project.

startlingly low 38 percent, compared to the United States (74 percent) or Spain (70 percent). Again, this measure varies widely in the region.

Alternatives to Prison

The threat of imprisonment acts as a deterrent to crime not so much because of the severity of the punishment but because of its *certainty* and *speed* (Nagin, 2013). Imprisonment, under certain circumstances, can prevent crimes through deterrence and incapacitation. However, its indiscriminate use can lead to situations, as in the United States, where the marginal impact of imprisonment on crime prevention is not significant (Roodman, 2017). To achieve smarter spending on criminal justice services in the region, imprisonment and harsh sentences need to be reserved for the most dangerous offenders, while alternative sanctions apply to nonviolent offenders and low-impact offenses (e.g., for nonviolent crimes committed by people with drug addictions and low-risk profiles). Unfortunately, the region is moving in the opposite direction. Between 2002 and 2014, the penitentiary population of the region (17 countries) doubled from almost 600,000 to 1.2 million, an annual growth rate of 8 percent

Figure 7.30 Projected Growth of the Prison Population in Latin America and the Caribbean



	Imprisoned	Spending millions of dollars PPP
Value 2014	1,243,027	10,219
Lower limit 2030 (lineal growth)	1,980,117	15,723
Upper limit 2030 (exponential growth)	3,341,324	23,839

Source: Authors' elaboration based on official statistics and the World Prison Brief.
Notes: This series is based on data from 17 selected countries. Calculations consider spending per prisoner in 2014, not including increases over the base year.

and almost six times the population growth rate (1.3 percent). If the prison population continues to grow, by 2030 the region would have in the worst scenario almost 3.4 million people in prison, requiring additional public spending of more than $13 billion over 2014 prison spending (Figure 7.30).

This significant growth of the prison population arises from two simultaneous tendencies: more people entering prisons than exiting them, and judges handing down longer sentences (Bergman and Fondevila, 2018). Prisoners for drug-related offenses have been the fastest-growing subset in recent years, representing 15 percent to 25 percent of the prison population. This type of prisoner has generally committed relatively minor drug offenses—mostly nonviolent—and represents a significant portion of the female prison population. In Argentina, for example, this group grew from 36 percent in 2003 to 59 percent in 2011, and in Brazil from 25 percent in 2005 to 66 percent in 2012 (Bergman and Fondevila, 2018).

Cost-effective alternatives to imprisonment are needed. Almost a quarter of the population in prison for drug offenses worldwide is charged with consumption—not production, trafficking, or sale of illicit drugs

BOX 7.4 DRUG TREATMENT COURTS IN CHILE

Since 2004, on a pilot basis, and since 2011 as national public policy, the Chilean Ministry of Justice has been coordinating Drug Treatment Courts (DTCs) with the support of the National Service for Prevention and Rehabilitation of Drug and Alcohol Consumption, Public Prosecutor's Office, Criminal Defense Office, and the judiciary. This program is operating for adults in 29 courts of guarantee in 10 regions of the country and for adolescents in 12 courts of guarantee in eight regions. Between 2008 and 2014, some 1,750 accused people entered the adult DTC program. About 80 percent were men aged 18 to 35. Almost one-third had committed crimes against the drug law, 20 percent battery, 10 percent theft, and 25 percent crimes of domestic violence. The Paz Ciudadana Foundation, with the IDB's support, carried out the first impact assessment and cost-benefit study in the Latin American context. The assessment is retrospective, quasi-experimental, and measures the criminal recidivism of participants. Impact results show that during the first 12 months after admission, the program reduced criminal recidivism by 8.7 percentage points.

Sources: Droppelmann Roepke, 2010; Morales Paillard and Cárcamo Cáceres, 2013; Paz Ciudadana Foundation, Chilean Ministry of Justice, and the Chilean Public Prosecutor's Office, 2014.

(UNODC, 2016: 102). Addiction can make people act irrationally and illegally or commit a crime to finance their addiction. Passing through jail significantly increases (rather than decreases) the possibility of reoffending, is a very expensive option for the state budget, and can aggravate instead of reduce problematic drug use. Therefore, it is imperative to explore alternative penalties that are less costly for the state and better address problematic drug use.

One alternative is Drug Treatment Courts (DTCs). These specialized courts link subjects that have broken criminal law to an alternative mechanism to the traditional criminal process. They not only send offenders for treatment, but also include intensive judicial supervision that increases user adherence and facilitates the process of change. DTCs can reduce criminal recidivism from traditional prosecution of drug-related crimes by 8 to 12 percentage points. Cost-benefit studies show a social return of $2.84 for each dollar invested.[14] DTCs are popular in the United States, where there are more than 2,000 DTCs serving more than 70,000 people (Kleiman, Caulkins, and Hawken, 2011). In Latin America, Chile is the country with most experience in the area, although other countries in the region also have experiences of varying scope (CICAD, 2015) (see Box 7.4).

[14] Gutierrez and Bourgon, 2012; Mitchell et al., 2012; Shaffer, 2011; and WSIPP, 2017c.

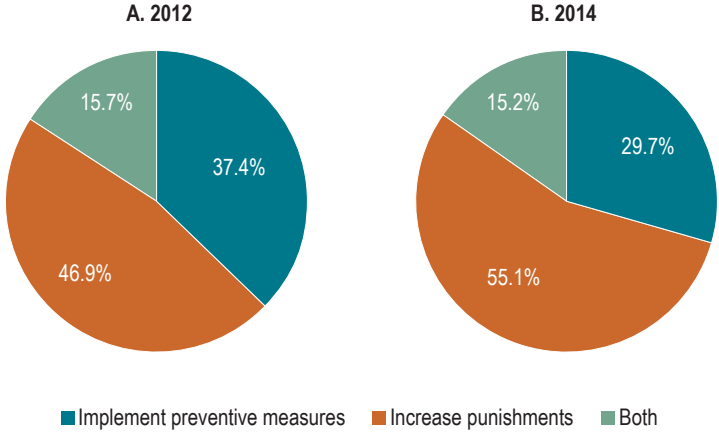
Implementation: Triggering Reform

To spend better, priority must be given to a more preventive, targeted, and evidence-based portfolio of interventions. At the same time, the efficiency of the police and other agencies in the sector must be improved. Implementing these changes involves many reforms, big and small, easy and difficult. Each country will set the pace and ambition of its reforms. Two systemic and interrelated challenges—one, political, and the other, institutional—need to be addressed for reforms to move forward.

A New Message for Security

The political challenge is to make smart spending on citizen security politically attractive. Many of the reforms proposed in this chapter will not stir up massive support from the public. The pain and fear caused by violence and crime means that the loudest voices in the public space generally speak of repression rather than prevention, revenge rather than justice, punishment rather than remedial penalties. Between 2012 and 2014, the proportion of Latin Americans who prioritized punitive measures increased from 47 percent to 55 percent, while those that prioritized prevention fell from 37 percent to 30 percent (Figure 7.31). Although attitudes vary from country to country, the punitive bent has gained ground in all countries.

Figure 7.31 Citizen Perceptions of How to Deal with Crime



Source: Authors' elaboration based on Latin America Public Opinion Project 2014.

This chapter opened with a plea to promote a third way between the "iron fist" and "structural causes of crime" approaches. This third, more pragmatic and scientific way, combines punitive and preventive elements that have been scientifically proven to impact crime. This alternative approach must be communicated in a manner that mobilizes decision-makers, researchers, and civil society into a coalition in favor of smart spending on citizen security. The "smart on crime" movement in the United States is an example of this. It used evidence on the high fiscal cost and ineffectiveness of punitive measures to propose and implement reforms to reduce the excessive punitiveness of the U.S. criminal justice system (Box 7.5).

Getting this message across requires institutional advocates who can effectively communicate what smarter spending on security means. Identifying and enabling these advocates is the institutional challenge. They can come from government, academia, civil society, and/or the private sector. References, inside and outside the region, can serve as examples and inspiration:

BOX 7.5 MONEY MATTERS: FISCAL PRUDENCE AND NONPUNITIVE REFORMS IN THE UNITED STATES

According to a recent study, the Great Recession of 2008 in the United States contributed to increase political and public support for nonpunitive reforms in its criminal justice system. In 2009, for the first time in 37 years, the total number of people in prison declined in that country. Since then, the trend has deepened and many states, some with a strong punitive tradition, have begun to abolish or place a moratorium on the death penalty, close prisons and open smaller detention centers, reduce use of solitary confinement, and legalize recreational use of marijuana, among other nonpunitive measures.

The financial crisis inspired a new policy discourse that emphasized costs, frugality, and fiscal prudence, becoming a powerful force in political campaigns and negotiations on public policies. Punitive preferences of the public did not change, but a new message focused on the cost of the reforms emerged, leading to agreements on criminal policy issues that were previously very difficult to obtain, particularly on prison policy. The most frequently used arguments related to the need for improving the quality of criminal justice public spending, replacing punitive correctional policies with low returns for reducing recidivism, with measures to protect citizens, such as imprisoning high-risk offenders and strengthening police investigation to solve violent crimes. These are neutral arguments which neither demonize nor humanize offenders; instead, they show the unproductive cost of poorly designed prosecution and imprisonment policies.

Source: Aviram, 2015.

- *Civil society*: The Brazilian Public Security Forum is a wide and loose network of academics, leaders of nongovernmental organizations, police officers, prosecutors, judges, and security officials from all over Brazil who—through research, information and advocacy campaigns, and discussion forums—influence smarter security policy and spending. Professional associations, such as the College of Policing of Great Britain and the International Association of Police Chiefs, also play a useful role in actively promoting greater coordination between practitioners and academics.
- *Government*: The WSIPP, created by the Washington State Congress, produces cost-effective analyses that regularly inform the state's security budget; and has been used to justify reallocating resources from building new prisons into programs to reduce criminal recidivism.
- *Academia*: The University of Chicago Crime Lab partners with the city government, nongovernmental organizations, and the private sector to carefully craft innovative crime and violence reduction initiatives, which are rigorously evaluated, and scaled up if found effective through highly visible programs.
- *Private sector*: Through instruments such as social impact bonds, the private sector finances innovative results-based initiatives which can improve the quality of public spending. The United Kingdom's Peterborough social impact bond, the first in the world, succeeded in reducing reoffending by 9 percent, against a Ministry of Justice target of 7.5 percent, allowing private investors who had funded the service provider to be fully repaid with a 3 percent per annum return (Ainsworth, 2017).

Enabling smart-on-crime advocates to emerge can be done in multiple ways. Improving the infrastructure and quality of data should be at the top of the list—data for targeting high-risk places, people, and behaviors; for measuring the cost-benefit ratio of interventions; for comparing the relative efficiency of police, justice, or prison services; among others.

The advocates for better spending may vary in each country. What should not vary is the effort to spend better. For many Latin Americans, it can be the difference between living or dying, between living with or without fear, between escaping crime or being trapped in it. Much of what needs to be done to spend better is already known. What is missing is a powerful institutional framework to put that knowledge into action.

8 Efficient Spending for Healthier Lives

Health systems have been a crucial driver of progress in health and well-being in Latin America and the Caribbean. Since 2000, large improvements in the coverage of skilled birth attendance and immunizations testify to citizens' expanded access to vital health services. These achievements have paid off in terms of better health outcomes, as measured by the increase in life expectancy or the decline in mortality rates of children under five years of age. Nevertheless, much is left to be done to address unmet needs and health inequities as well as to shift the focus of care toward chronic illness, which currently accounts for nearly three-fourths of deaths and years of life lost due to premature death and disability.

The case for continued investment in health is strong. Spurred by the Sustainable Development Goals (SDG) agenda, Latin American and Caribbean countries are implementing policies and programs aimed at achieving universal health coverage (UHC)—that is, ensuring that all people can obtain the services they need without suffering financial hardship (WHO, 2010b). The commitment to ensure affordable access to high-quality health services for all requires that governments examine whether progress toward UHC can be met with current levels of health system investment and, if macroeconomic conditions allow, to mobilize additional resources and increase the fiscal space for health.

Yet, as presented in Chapter 1, many countries in the region anticipate further budgetary restrictions. Consequently, policy must focus on improving the efficiency of health care by investing in interventions that achieve the best health results and implementing these interventions the right way. Attaining universal health care will require not just more money for health, but more health per dollar invested.

What Is Efficiency and Why Does It Matter?

Production of health services involves using inputs—funding, human resources, physical infrastructure, drugs, medical equipment, and information—to improve health outcomes. Two dimensions of efficiency are commonly used to examine this production function: allocative and technical. The former pertains to "doing the right things." This is achieved by allocating resources to the combination of health-care services which delivers the largest gain in health outcomes for a given total expenditure or requires the smallest expenditure for a given improvement in health. This is what is usually meant by "getting value for money" in health care. Allocative inefficiency may arise from inadequate priority-setting, lack of clinical guidelines, incomplete performance reporting or, simply, inadequate governance of the system (Smith, 2016).

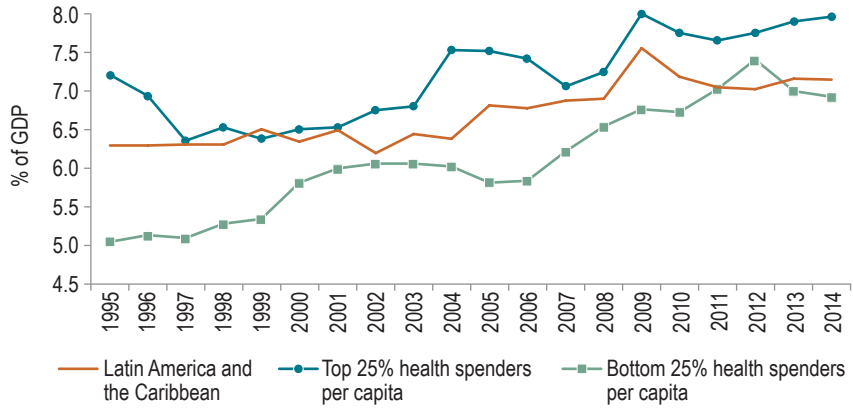
Technical efficiency refers to achieving the maximum level of output(s) for a given amount of input(s) under the prevailing technological process. It is "doing things the right way," which is achieved when outputs are produced with the least possible use of inputs. Technical inefficiency arises from misusing inputs in the process of producing valued outputs. Wasting inputs at any stage of the production process means that output will fall short of what is possible for a given level of resources. This is the case when tests are duplicated, avoidable readmissions take place, hospital stays are prolonged beyond need, or when unit costs could be lower. Technical inefficiency arises most notably at the provider and practitioner level—but is also present at the institutional level—and may result from inappropriate incentives, weak or constrained management, and inadequate information.

In the health sector, either type of inefficiency is a concern for several reasons. First, patients may not receive the best possible care for a given level of resources. Second, consuming excess resources robs treatment possibilities and health gains from other patients. Third, inefficient use of resources for health may sacrifice consumption opportunities elsewhere in the economy, such as in education. And finally, waste resulting from inefficient care may reduce society's willingness to contribute to the funding of health services, thereby harming social solidarity, health system performance, and social welfare (Smith, 2012).

Health Care Spending in the Region: Taking the Vital Signs

Between 1995 and 2014, Latin America and the Caribbean's total health expenditure as a percentage of GDP increased from 6.3 percent to 7.2 percent such that the average level of total health expenditure per

Figure 8.1 Evolution of Total Health Expenditure, 1995–2014



Source: Authors' calculation based on the World Health Organization Global Health Expenditure Database and the World Bank World Development Indicators Database.
Note: Top and bottom 25 percent are obtained using a sample of countries.

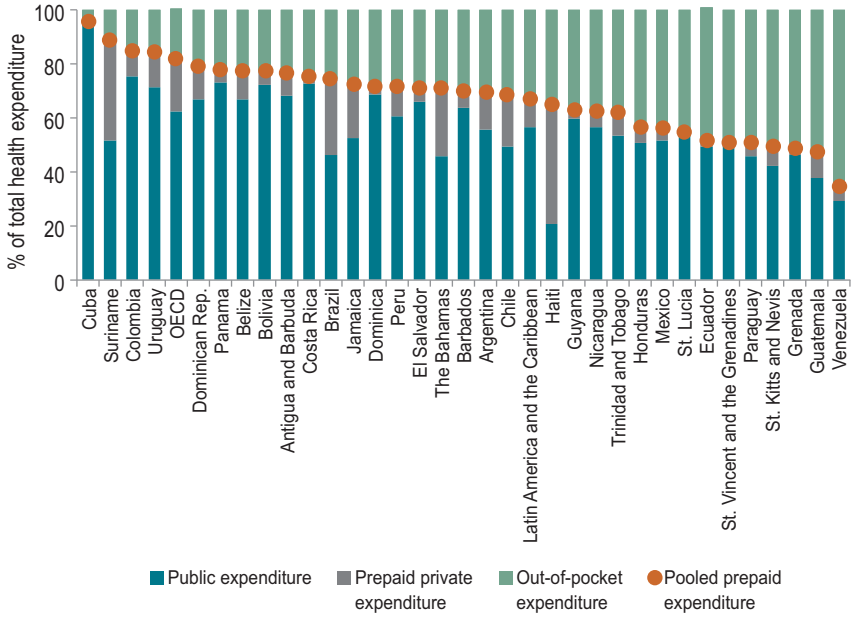
capita[1] at the end of the period was $1,109 (see Figure 8.1).[2] These levels are lower than the average $4,701 per capita, or 12.3 percent of GDP, spent in the OECD in 2014 (GHED, 2017), and variation is wide, from 4.8 percent in Argentina to 11.1 percent in Cuba.

Average public health spending as a percent of total health expenditure in the region increased from 47.4 percent to 57 percent, and in 2014 was the largest financing source for health. In 2014 the value of public spending was on average 3.7 percent of GDP, which falls below a recommended threshold of 5 percent to support minimum standards of service (Meheus and McIntyre, 2017; Ooms and Hammonds, 2014). However, there is much heterogeneity in the region: public health spending ranged from 1.5 percent of GDP in Venezuela, to 6.7 percent and 10.5 percent in Costa Rica and Cuba, respectively, in 2014.

Although the level of spending is important for health outcomes, so too are the sources of funding, particularly when it comes to analyzing the financial protection of individuals using the health system (Moreno-Serra, Millet, and Smith, 2011). Total health expenditure can be decomposed by its financing agents into public (general government, including social security), prepaid private (i.e., voluntary health insurance), and out of pocket (i.e., the amount paid by individuals out of their own pocket on top of

1 All per capita values in this section are in constant 2011 international $PPP.
2 However, variations in per capita spending across countries are wide, ranging from $131 in Haiti to $2,475 in Cuba.

Figure 8.2 Total Health Expenditure by Financing Agent, 2014



Source: Authors' calculations based on the WHO Global Health Expenditure Database, 2017 data.

any amounts paid for insurance). The sum of public and prepaid private spending is known as prepaid pooled spending.[3] In the broader context of the push for universal health care and progress toward the SDGs, pooled prepaid health expenditure is particularly relevant, as it indicates the prepaid resources that a nation directly devotes to financial risk protection and effective access to health services. Pooled funds have been shown to be causally linked to improvements in access and public health at the cross-country level (Moreno-Serra and Smith, 2012a). Latin America and the Caribbean's total health expenditure composition in 2014 is shown in Figure 8.2, ordering countries from highest to lowest in terms of pooled prepaid expenditure.

Out-of-pocket expenditure is a key indicator of financial protection. Levels above 20 percent of total health expenditure are strongly associated with catastrophic and impoverishing spending (Xu et al., 2010) and

[3] The data from Global Health Expenditure Database (GHED) presents internationally comparable health expenditures for all WHO Member States from 1995 to the present. For details on expenditure definitions and calculations see http://apps.who.int/nha/database/DocumentationCentre/Index/en.

indicate the stress households face in accessing health care. Although the share of out-of-pocket spending in the region has decreased from 37 percent to 33 percent, it still almost doubles that of OECD countries (18 percent) and is higher than the recommended limit of 20 percent for most countries. Out-of-pocket spending was as high as 64 percent and 52 percent in Venezuela and Guatemala, respectively, and only four countries are at or below the recommended limit (Colombia, Suriname, Uruguay, and Cuba).

Total private expenditure (prepaid private and out of pocket) accounts for a higher share in countries where the fiscal capacity to pool public funds is low. On average, it reached 43 percent of total health expenditure in 2014 for Latin American and Caribbean countries, which is above the 38 percent average in the OECD. Overall, prepaid private spending comprises the smallest source of health spending in the region ($122 per capita or 11 percent of total health expenditure in 2014 compared to $57 per capita and 13 percent in 1995) although in countries like Haiti and Suriname it was as high as 45 percent and 37 percent of total health expenditure, respectively, in 2014.

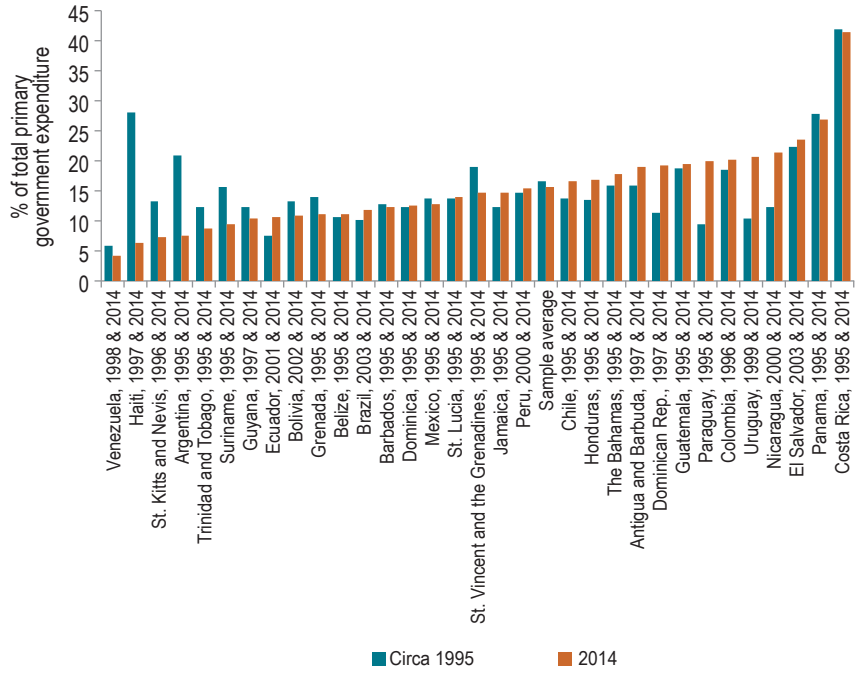
The weight of public health expenditure in primary government spending may indicate the priority placed on health in the public budget. While the ratio in several countries has remained the same since the 1990s (e.g., Guatemala, Panama, El Salvador), in others it has either increased (as in Paraguay) or decreased (as in Argentina). At the regional level, public health expenditure has remained around 16 percent of primary government spending (Figure 8.3).

For the foreseeable future, health expenditures are expected to continue to climb, driven by factors such as population aging, the rising incidence of chronic diseases, socioeconomic improvements and an associated greater demand for health services, as well as the adoption of technological developments (de la Maisonneuve and Oliveira Martins, 2013). These trends strengthen the case for seeking greater efficiency in public health-care spending.

Efficiency of Latin American and Caribbean Health Systems: Limping Along

Efficiency metrics to assess health system reform and policy interventions are critical to support sound decision-making. Unfortunately, there is little evidence of the sources and magnitude of inefficiency in health spending in Latin America and the Caribbean, leaving policymakers in the dark when deciding where to direct efforts for improvement. To begin filling

Figure 8.3 Evolution of Public Health Expenditure, 1995–2014



Source: Authors' calculations based on November 2017 data from the WHO Global Health Expenditure Database, the World Bank World Development Indicators Database (http://data.worldbank.org/data-catalog/world-development-indicators); and IDB government expenditure data.
Note: Initial data correspond to 1995 or the closest available data for years following 1995.

this information void, this section provides evidence on how Latin American and Caribbean countries are doing in terms of the efficiency of public health spending from a comparative, regional system perspective, as well as at the microeconomic level.

An Aggregate Perspective

This chapter measures the efficiency levels of Latin American and Caribbean health systems and their possible determinants using Data Envelopment Analysis (DEA). DEA is useful for identifying which countries do better than others in transforming health resources into better outputs. DEA also pinpoints specific areas for policy action in each health system by highlighting areas in which a country is doing worse than its peers.

This is the first cross-country analysis of health system efficiency available for the entire region, partially due to the limited availability and comparability of health data. Although in Latin America and the Caribbean

DEA has been used mostly at the single country level,[4] the World Health Organization (WHO) and the OECD increasingly use DEA models to compare health system efficiency across countries.

This chapter uses DEA models to benchmark the efficiency of Latin American and Caribbean health systems using middle-income countries (MICs) and OECD countries for comparison. Efficiency performance was measured for eight health system outputs, grouped in three categories (health: life expectancy at birth and at age 60, under-five mortality, and Disability Adjusted Life Years [DALYs];[5] access to services: DPT immunization, and skilled birth attendance [SBA] rates; equity of access to services: rural-vs-urban and poorest-vs-richest ratios of SBA). The main input to the models was pooled prepaid health expenditure per capita.[6]

A country's ability to maximize the impact of inputs on outputs may be affected by factors external to the health system, such as a country's economic and social development or demographic structure. Therefore, GDP per capita and the share of the population aged 65 and above were included as control variables. Unfortunately, lifestyle indicators (e.g., smoking prevalence,[7] alcohol consumption, diet patterns), environmental factors (e.g., air pollution),[8] quality of services, and other factors that might affect the impact of inputs on outputs were not considered due to limited cross-country data.[9]

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4 For DEA analysis across the region see Hernández et al. (2014) for rural Guatemala; Ligarda and Ñaccha (2006) for Lima, Peru; Ramírez-Valdivia, Maturana, and Salvo-Garrido (2011) for Chilean municipalities; Ruiz-Rodríguez, Rodríguez-Villamizar, and Heredia-Pi (2016) for Bucaramanga, Colombia; and Varela, Martins, and Fávero (2010) for small Brazilian municipalities.

5 A DALY is one lost year of "healthy" life. The sum of DALYs across the population measures the gap between current health status and an ideal health situation in which the entire population lives to an advanced age, free of disease and disability.

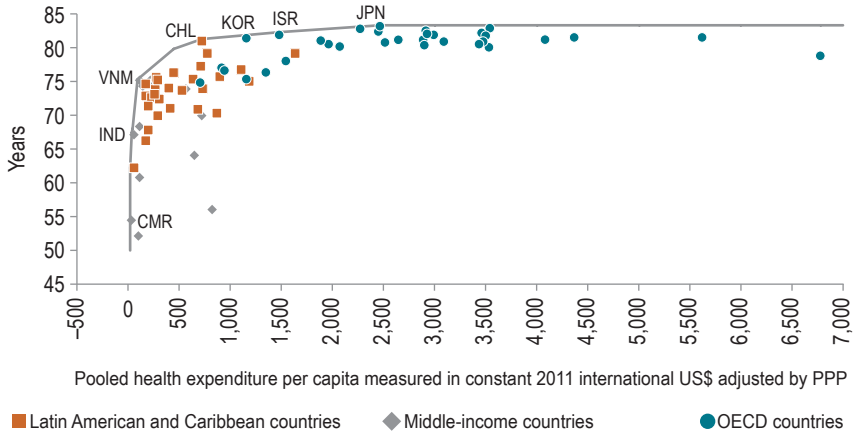
6 Pooled prepaid health expenditure per capita was preferred to total health expenditure per capita as the main input. Looking at pooled expenditures frames the discussion within the wider context of pushing for universal health care and progress toward SDGs, as pooled financing indicates resources devoted to financial risk protection and effective access in the health sector.

7 Smoking prevalence was not included because 10 countries would have been excluded due to lack of data, rendering results of limited relevance and comparability. Nevertheless, smoking prevalence was included among the inputs in a sensitivity check, resulting in no relevant changes in the efficiency scores (e.g., Chile, Costa Rica, Uruguay were still among the most efficient countries).

8 Evidence suggests that a main determinant of air pollution is GDP per capita (Buehn and Farzanegan, 2013). Therefore, including GDP per capita as a control should capture most of the influence of air pollution on outputs.

9 See Moreno-Serra, Anaya Montes, and Smith, 2018, for details on the sample of countries, indicators, and methods).

Figure 8.4 Estimated Efficiency Frontier for Life Expectancy at Birth



Source: Authors' calculation based on the World Bank World Development Indicators Database.
Note: Life expectancy was calculated averaging data between 2011 and 2015, while health expenditure was calculated averaging data between 2006 and 2010.

Efficiency is measured, for any given level of inputs, as a country's output relative to an efficiency frontier that sets the upper limit of countries' output. Countries on the efficiency frontier are, therefore, considered the most efficient for their level of health spending. For example, Figure 8.4 shows the DEA efficiency frontier for a key output indicator: life expectancy at birth. The curve linking the most efficient countries (Cameroon, India, Vietnam, Chile, the Republic of Korea, Israel, and Japan) for different levels of pooled health expenditure constitutes the frontier against which all other countries are compared. As expected, OECD countries are the efficiency peers of Latin American and Caribbean countries in only very few instances (e.g., Korea and Israel), given their typically higher input levels (especially health expenditures and national income). Most peers are within the Latin American and Caribbean region itself or are good-performing MICs at different levels of inputs (e.g., Vietnam).

A first message of the DEA analyses is that Latin American and Caribbean countries vary widely in terms of spending efficiency (see Table 8.1). Chile is the only Latin American country among the top 25 percent of performers (8th); OECD countries occupy most of the top 25 percent. Chile's high health system efficiency is explained by its consistently positive health outcomes (life expectancy at birth, under-five mortality, and DALYs lost) from its inputs. Other relatively good regional performers are Barbados (29th), Costa Rica (31st), Cuba (32nd), and Uruguay (35th), all of whom are in the top half of the average efficiency scores. Barbados and Cuba exhibit

Table 8.1 Average Efficiency Scores by Output Indicator

Country	Life expectancy at birth	Life expectancy at the age of 60	Under-five mortality	Disability-adjusted life years lost	Skilled birth attendance	DPT immunization	Skilled birth attendance, ratio poorest/richest	Skilled birth attendance, ratio rural/urban	Average efficiency	Ranking	
Japan	1.000	1.000	1.000	1.000	1.000	0.982	1.000	0.989	0.996	2	
Korea	1.000	0.961	1.000	1.000	1.000	0.998	1.000	0.983	0.993	3	
Spain	0.998	0.967	0.998	0.989	1.000	0.978	1.000	0.986	0.989	5	
Israel	0.999	0.971	0.999	0.999	1.000	0.949	1.000	0.983	0.987	6	
Italy	0.992	0.962	0.999	0.985	1.000	0.967	1.000	0.988	0.987	7	
Chile	1.000	0.982	0.997	0.998	0.999	0.941	—	—	0.986	8	
France	0.988	0.962	0.998	0.960	1.000	0.996	1.000	0.986	0.986	9	Top 25 %
Greece	0.986	0.946	0.998	0.973	1.000	1.000	1.000	0.987	0.986	10	
Luxembourg	0.981	0.962	1.000	0.965	1.000	1.000	1.000	0.984	0.986	11	
Switzerland	0.995	0.962	0.998	0.977	1.000	0.972	1.000	0.985	0.986	12	
Portugal	0.982	0.944	0.999	0.973	1.000	0.990	1.000	0.987	0.984	13	
Sweden	0.984	0.923	0.999	0.969	1.000	0.990	1.000	0.986	0.981	15	
Australia	0.987	0.962	0.998	0.976	1.000	0.929	1.000	0.984	0.979	16	
New Zealand	0.979	0.964	0.997	0.969	1.000	0.939	1.000	0.983	0.979	17	
Finland	0.972	0.923	1.000	0.951	1.000	0.944	1.000	0.986	0.978	18	

(continued on next page)

Table 8.1 Average Efficiency Scores by Output Indicator *(continued)*

Country	Life expectancy at birth	Life expectancy at the age of 60	Under-five mortality	Disability-adjusted life years lost	Skilled birth attendance	DPT immunization	Skilled birth attendance, ratio poorest/richest	Skilled birth attendance, ratio rural/urban	Average efficiency	Ranking
Iceland	0.990	0.942	1.000	0.982	1.000	0.923	1.000	0.983	0.978	19
Germany	0.972	0.923	0.998	0.958	1.000	0.973	1.000	0.988	0.977	20
Netherlands	0.977	0.923	0.998	0.964	1.000	0.974	1.000	0.985	0.977	21
Belgium	0.969	0.904	0.998	0.950	1.000	0.998	1.000	1.000	0.976	22
Canada	0.982	0.962	0.997	0.963	0.999	0.919	1.000	0.984	0.976	23
Ireland	0.974	0.923	0.998	0.957	1.000	0.964	1.000	0.925	0.975	25
Norway	0.981	0.923	0.999	0.954	1.000	0.952	1.000	0.984	0.974	26
Austria	0.975	0.923	0.998	0.952	1.000	0.954	1.000	0.986	0.973	27
United Kingdom	0.974	0.923	0.998	0.945	1.000	0.962	1.000	0.985	0.973	28
Barbados	0.952	0.957	0.993	0.948	0.991	0.932	1.000	1.000	0.971	29
Slovenia	0.972	0.896	1.000	0.950	1.000	0.964	1.000	0.985	0.971	30
Costa Rica	0.992	0.935	0.997	0.990	0.985	0.917	0.975	0.967	0.970	31
Cuba	0.981	0.885	0.999	0.935	0.998	0.996	.	0.990	0.969	32
Estonia	0.962	0.894	1.000	0.944	1.000	0.962	1.000	0.989	0.969	33
Poland	0.957	0.862	0.999	0.945	1.000	0.996	1.000	0.984	0.968	34
Uruguay	0.967	0.907	0.996	0.961	0.993	0.963	.	0.988	0.968	35
Czech Rep.	0.952	0.852	0.999	0.944	1.000	1.000	1.000	0.984	0.967	36

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Table 8.1 **Average Efficiency Scores by Output Indicator** *(continued)*

Country	Life expectancy at birth	Life expectancy at the age of 60	Under-five mortality	Disability-adjusted life years lost	Skilled birth attendance	DPT immunization	Skilled birth attendance, ratio poorest/richest	Skilled birth attendance, ratio rural/urban	Average efficiency	Ranking
Denmark	0.964	0.885	0.999	0.944	1.000	0.941	1.000	0.985	0.965	37
United States	0.948	0.885	0.995	0.916	1.000	0.958	1.000	0.983	0.961	39
Jamaica	0.983	0.918	0.993	0.891	0.993	0.937	0.979	0.983	0.960	40
Slovakia	0.934	0.835	0.996	0.911	1.000	0.988	1.000	0.983	0.956	41
Dominican Rep.	0.953	0.955	0.977	0.932	0.981	0.865	1.000	0.978	0.955	42
Hungary	0.938	0.817	0.998	0.895	1.000	1.000	1.000	0.987	0.954	43
El Salvador	0.940	0.952	0.992	0.852	0.994	0.926	0.954	0.969	0.947	44
Argentina	0.940	0.873	0.992	0.924	0.975	0.937	0.971	—	0.945	45
Paraguay	0.951	0.923	0.990	0.930	0.973	0.895	—	—	0.944	46
Belize	0.909	0.907	0.992	0.910	0.964	0.964	0.925	0.964	0.942	47
Colombia	0.939	1.000	0.991	0.950	0.994	0.905	0.861	0.876	0.939	48
Brazil	0.925	0.872	0.991	0.878	0.982	0.970	—	0.949	0.938	49
Mexico	0.974	0.894	0.993	0.952	0.961	0.915	—	0.876	0.938	50
Venezuela	0.948	0.968	0.992	0.922	0.961	0.820	—	—	0.935	51
Turkey	0.929	0.852	0.991	0.906	0.975	0.978	0.912	—	0.933	52

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Table 8.1 **Average Efficiency Scores by Output Indicator** *(continued)*

Country	Life expectancy at birth	Life expectancy at the age of 60	Under-five mortality	Disability-adjusted life years lost	Skilled birth attendance	DPT immunization	Skilled birth attendance, ratio poorest/richest	Skilled birth attendance, ratio rural/urban	Average efficiency	Ranking	
The Bahamas	0.919	0.840	0.991	0.856	0.985	0.978	—	—	0.928	53	
Ecuador	0.984	0.956	0.986	0.936	0.923	0.855	0.831	0.854	0.916	54	
Nicaragua	0.988	0.954	0.995	0.943	0.942	0.997	0.541	0.869	0.904	56	
Honduras	0.963	0.991	0.996	0.932	0.874	0.886	0.755	0.827	0.903	57	
Suriname	0.888	0.934	0.984	0.902	—	0.869	0.862	0.869	0.901	58	
Trinidad and Tobago	0.865	0.727	0.983	0.771	1.000	0.933	0.977	—	0.894	60	Bottom 25 %
Peru	0.967	1.000	0.991	0.968	0.874	0.913	0.657	0.727	0.887	61	
Panama	0.965	0.954	0.989	0.930	0.925	0.818	0.720	0.774	0.884	62	
Haiti	0.973	0.976	0.992	0.909	0.835	0.900	0.416	0.876	0.860	65	
Guyana	0.873	0.670	0.974	0.613	0.961	0.976	0.849	0.949	0.858	66	
Bolivia	0.891	0.846	0.974	0.768	0.877	0.973	0.675	0.752	0.845	67	
Guatemala	0.937	0.931	0.981	0.851	0.641	0.842	0.420	0.674	0.785	69	

Source: Authors' calculation based on World Bank World Development Indicators Database, WHO Global Health Observatory data repository, and UNICEF data.
Note: Based on 2006–2015 data. Best-performing countries for each output indicator, given their level of spending, receive an efficiency score of 1. Countries that receive a score below 1 are considered less efficient. For example, if country A has an efficiency score of 0.87, it is performing at a level of 87 percent compared to a country with the highest efficiency score. Average efficiency scores for each output indicator have been computed by averaging the results of three alternative DEA models using an "output orientation" specification: model 1 includes pooled health expenditure per capita as the sole input; model 2 includes pooled health spending per capita and GDP per capita as inputs; model 3 includes pooled health spending per capita, GDP per capita, and population aged 65 and above as inputs. Missing values are marked as "—". The table does not display the scores of middle-income countries. However, the ranking positions take these into account.

good efficiency performance by producing wider and equitable access to health services.

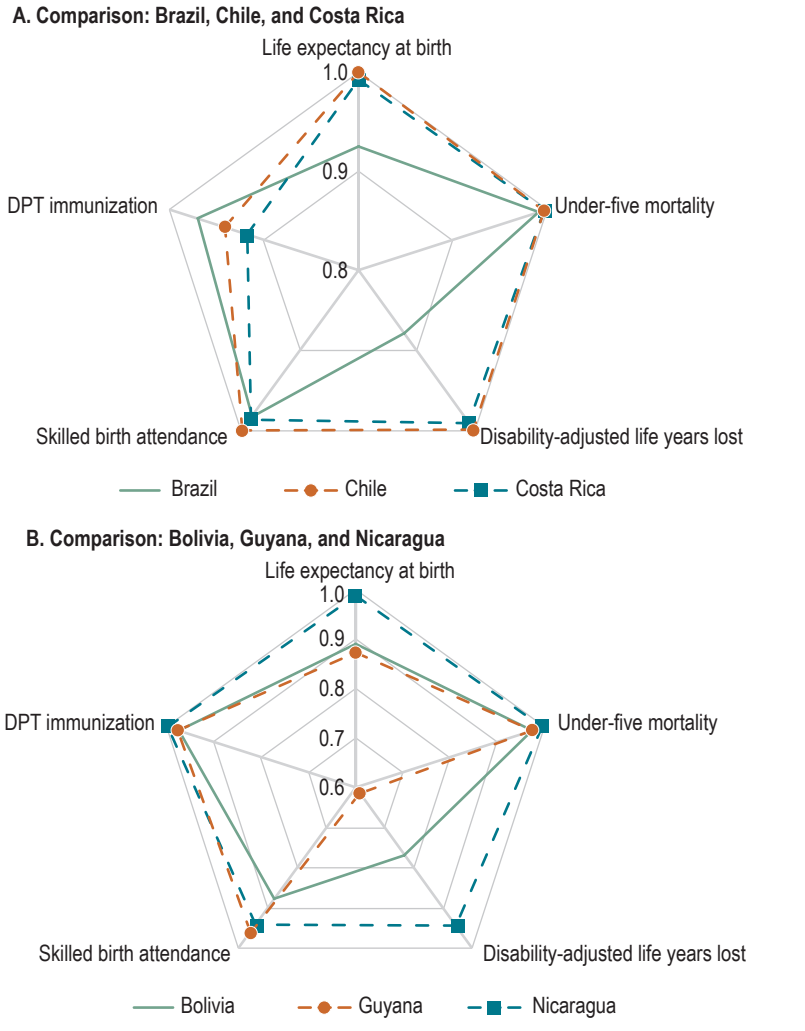
However, 22 of 27 Latin American and Caribbean countries are in the bottom half of the average efficiency rankings, and 12 are in the bottom 25 percent. Underperformers across each of the eight outputs are Bolivia, Ecuador, Guatemala, Guyana, Panama, and Suriname. In general, Latin American and Caribbean countries perform particularly less efficiently in the provision of equitable access to services.

Head-to-head comparisons between Latin American and Caribbean countries with similar levels of pooled health expenditure (peers) can help identify specific areas for efficiency improvements. Figure 8.5A compares relatively high-spending countries: Brazil, Chile, and Costa Rica. Conversely, Figure 8.5B compares low-spending countries: Bolivia, Guyana, and Nicaragua. Among high spenders, Brazil approximates Chile's efficiency levels for service access indicators more than for health outcomes, while Costa Rica has better health outcomes than access to care. Among low spenders, efficiency bottlenecks in health outcomes achieved are clearly the main issue in Guyana, whereas Bolivia needs to improve both service coverage and health outcomes.

A key message is that there is room for efficiency improvements in the region. Latin American and Caribbean countries are on average less efficient than the OECD group for every DEA output considered (see Figure 8.6). Moreover, Latin American and Caribbean countries are as inefficient as the MIC group in providing equitable access to services. On the positive side, Latin America and the Caribbean outperforms MICs for most health outcomes, and efficiency performance is relatively close to that of the OECD for life expectancy at age 60 and under-five mortality rate. This does not mean that they have the same outcomes as OECD countries, but rather, that they are as efficient as OECD countries given their level of development and amount of resources spent.

This analysis suggests that several Latin American and Caribbean countries could substantially improve health output indicators while keeping their current health budget stable, if they could boost efficiency to the frontier (Table 8.2). For example, average life expectancy could be extended by four years, or 5.4 percent. Potential gains in life expectancy reach at least seven additional years in Bolivia, Guyana, Suriname, and Trinidad and Tobago. Under-five mortality could be reduced by 10 deaths per 1,000 or 46.5 percent, with potential cuts of more than 24 deaths per 1,000 live births in Guyana and Bolivia. DALYs lost for all causes could be reduced on average by 6,143 per 100,000 people or 19.1 percent. Regarding access to services, skilled birth attendance could be improved by 4.4

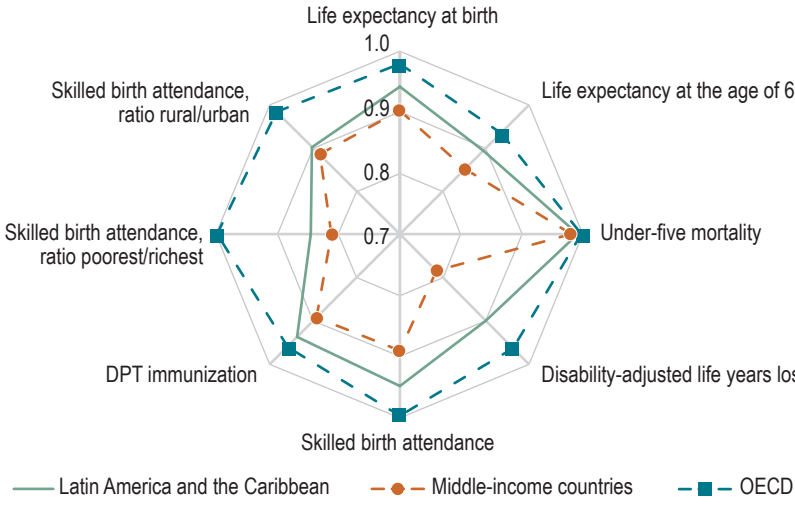
Figure 8.5 Comparison of Average Efficiency Scores



Source: Authors' calculation based on the World Bank World Development Indicators Database.
Note: Based on 2006–2015 data.

percentage points (from 91.9 percent to 96.3 percent), and reach as much as 22 percentage points in low-performing countries like Guatemala. DPT immunization rates could improve by 7 percentage points (from 89.9 percent to 96.9 percent) and about 14 percentage points in low performers like Panama and Venezuela. The message to policymakers in Latin America and the Caribbean is clear: improving spending efficiency can contribute to healthier lives without compromising additional resources.

Figure 8.6 Comparison of Average Efficiency Scores by Group of Countries Using DEA Outputs



Source: Authors' calculation based on the World Bank World Development Indicators Database.
Note: Based on 2006–2015 data.

The DNA of Health System Efficiency

What characteristics of a health system determine its efficiency? What accounts for the differences in efficiency among countries? Characteristics of health systems resulting from policy choices are of particular interest to policymakers because they are within their control. For example, studies in higher-income countries show that higher efficiency scores are associated with fewer insurers (Hadad, Hadad, and Simon-Tuval, 2013), health service delivery models in which primary care physicians act as gatekeepers (Bhat, 2005), and decentralized health systems (de la Maisonneuve et al., 2016).[10]

This chapter represents the first attempt to provide evidence on the determinants of health system efficiency related to policy choices in Latin America and the Caribbean. Simar-Wilson cross-sectional regressions were used to estimate the association between countries' DEA efficiency scores in health outcomes, access to services, and equity, and three sets of potential determinants related to policy choices for which data were available: 1) organization of health-care financing and delivery, measured by out-of-pocket

[10] See Puig-Junoy (1998), Tajnikar and Došenović Bonča (2007), Moreno-Serra et al. (2012b), and Joumard, André, and Nicq (2010) for more on the institutional determinants of health system efficiency.

Table 8.2 Potential Gains by Output Indicator

	Life expectancy at birth (years)	Life expectancy at age 60 (years)	Under-five mortality (per 1,000 live births)	DALYs (per 100,000 population)	Skilled birth attendance (percentage points)	DPT immunization (percentage points)
Argentina	4.6	2.7	8.0	5,530	2.5	5.8
The Bahamas	6.1	3.4	9.3	10,017	1.5	2.2
Barbados	3.6	1.0	7.0	3,786	0.9	6.3
Belize	6.4	2.0	7.7	6,189	3.5	3.5
Bolivia	7.4	2.9	24.9	12,952	10.4	2.6
Brazil	5.5	2.8	9.2	8,328	1.8	2.9
Chile	0.0	0.4	2.8	153	0.1	5.5
Colombia	4.5	0.0	8.5	3,638	0.6	8.5
Costa Rica	0.6	1.5	2.9	763	1.5	7.5
Cuba	1.5	2.5	0.9	4,848	0.2	0.4
Dominican Rep.	3.4	1.0	22.4	4,804	1.8	11.6
Ecuador	1.2	1.0	13.4	4,555	7.1	12.3
El Salvador	4.3	1.1	7.6	9,453	0.6	6.8
Guatemala	4.5	1.4	18.2	9,345	22.5	13.1
Guyana	8.4	5.0	24.6	17,246	3.6	2.3
Haiti	1.7	0.4	7.1	3,501	6.1	6.2
Honduras	2.7	0.2	3.9	4,570	10.4	9.9
Jamaica	1.3	1.7	6.7	7,318	0.7	5.8
Mexico	2.0	2.3	6.9	3,485	3.7	7.7
Nicaragua	0.9	1.0	4.5	3,788	5.1	0.3
Panama	2.7	1.1	11.3	5,058	6.9	14.7
Paraguay	3.5	1.6	9.5	4,810	2.6	9.3
Peru	2.5	0.0	8.8	2,331	11.0	7.9
Suriname	7.9	1.5	15.4	6,880	11.3	11.9
Trinidad and Tobago	9.5	4.9	17.1	14,139	0.0	6.2
Uruguay	2.5	2.0	3.9	2,914	0.7	3.5
Venezuela	3.8	0.7	7.6	5,473	3.7	14.6

Source: Authors' calculation based on World Bank World Development Indicators Database.
Note: Potential gains for each output indicator have been computed by averaging the results of three alternative DEA models using an "output orientation" specification: model 1 includes pooled health expenditure per capita as the sole input; model 2 includes pooled health spending per capita and GDP per capita as inputs; model 3 includes pooled health spending per capita, GDP per capita, and population aged 65 and above as inputs. Based on 2006–2015 data.

health expenditure as a share of total health expenditure, and hospital beds per 1,000 people; 2) quality of health system institutions, measured by the existence of a medium-term sectoral vision, as well as the ability to set and monitor plans and objectives; and 3) quality of governance, proxied by six governance indicators and their average, including government effectiveness, voice and accountability, rule of law, regulatory quality, political stability and absence of violence/terrorism, and control of corruption.[11]

Health outcomes. In three models—life expectancy at birth, life expectancy at age 60 and, most strongly, under-five mortality—better governance is linked to better health outcomes. Higher-quality health system institutions—measured by the medium-term sectoral vision indicator—are also linked to greater efficiency in lowering under-five mortality rates. Health-care financing and delivery does not seem to affect efficiency scores.

Access to services. Efficiency in providing access to services (DPT immunization) is positively associated with the quality of governance. Service coverage (both skilled birth attendance and DPT immunization) is also positively associated with the quality of health system institutions, specifically the existence of a medium-term sectoral plan.

Equity in access to services. Better governance also improves efficiency in providing equitable access to health services (measured by poorest/richest and rural/urban ratios of skilled birth attendance). On the other hand, health system institutional quality is not associated with equity.

Overall, better governance and health system institutional quality likely affect the efficiency with which countries translate a given health budget into better population health outcomes, access to services, and equity in access to services. However, more analysis is needed to determine causation.

The Micro Perspective: Pharmaceutical Policy and Health Service Delivery

In 2010, the *World Health Report* estimated that 20–40 percent of all resources spent on health are wasted (WHO, 2010b). Among the major sources of technical inefficiency it identified were an inadequate or costly mix of health workers, high prices, substandard quality and misuse of medicines, suboptimal quality and scale of health-care services, over-use

[11] Refer to http://info.worldbank.org/governance/wgi.

of health-care products, and leakages due to corruption and fraud (see Table 8.3). The report also pointed out that the primary source of allocative inefficiency relates to investments in services and interventions that do not maximize health improvements, such as spending more on curative care for chronic diseases rather than on preventive measures.

Evidence of inefficiency is presented in two key areas: pharmaceutical policy and health-care service delivery (rows 2 and 4 of Table 8.3) Improved efficiency in these areas would likely produce large gains because 1) seven of the ten top sources of inefficiency in health care worldwide originate from them, 2) they are key areas for attaining universal health coverage, and 3) growing international experience provides reliable evidence of strategies that work to address efficiency concerns in these areas.

Pharmaceutical Spending and Medication Use: A Dose of Common Sense

Pharmaceutical spending represents a significant share of health-care budgets. In OECD countries, one of every five health dollars is spent on medicines (Belloni, Morgan, and Paris, 2016). Trends in pharmaceutical spending influence overall health spending patterns. This is particularly relevant for Latin America and the Caribbean, where pharmaceutical spending has grown around 12 percent annually from 2013 to 2017, four times faster than in North America and six times faster than in Europe (Global Health Intelligence, 2014). Sound pharmaceutical policies are crucial not only to curb this trend, but also to improve value for money, as four of the ten leading sources of inefficiency in health spending are related to medicines (Table 8.3).

Table 8.3 Major Sources of Inefficiency by Type of Health System Input

Health system input	Source of technical inefficiency (not using the least inputs for a level of output)
Health-care workers	Inappropriate or costly staff mix
Medicines	Higher than necessary prices for drugs Under-use of generic drugs Irrational use of drugs Sub standard or counterfeit drugs
Health-care products	Over-use of procedures, investigations, and equipment
Health-care services	Sub optimal quality of care and medical error Inappropriate hospital size Inappropriate hospital admissions or length of stay
Financial resources	Health system leakages: corruption and fraud

Source: Authors' elaboration adapted from Chisholm and Evans (2010).

A unique repository of comparative information shared by Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Mexico, and Peru, denominated "Decisiones Informadas Sobre Medicamentos de Alto Impacto Financiero" (DIME), is used as the source to explore pharmaceutical policies to promote efficiency as well as to consider the use of two medicines—ertapenem and insulin glargine—to explore inefficiencies in the procurement and use of medicines in these countries.[12] Of key international recommended policies (Belloni, Morgan, and Paris 2016; Vogler and Schmickl, 2010), Table 8.4 shows those adopted by DIME countries.[13]

Policies to control prices include price regulation and mechanisms for centralized negotiation and purchase of medicines (see Table 8.4). Regarding price regulation, Colombia, Ecuador, and El Salvador have adopted International Reference Pricing (IRP) systems. For example, Colombia benchmarks prices with 17 countries and adopts the price of the lowest 25th percentile. An initial evaluation of the Colombian IRP concluded that the average price of medicines adopting IRP decreased by 40 percent (Andia et al., 2014; Prada et al., 2018). El Salvador's IRP uses as reference the average price of Latin American countries (excluding Central America and Panama).[14] Chile, Costa Rica, Mexico, Peru, and the Dominican Republic did not adopt IRP systems, limiting potential efficiency gains. In Mexico, however, the Secretariat of Economy establishes a maximum price for medicines for the general population. All DIME countries implement mechanisms for centralized negotiation and purchase of medicines, which help reduce prices by giving governments greater bargaining power and strengthening logistical processes while minimizing low-value repetitive purchases.

Under-use of generic drugs is another major source of inefficiency. Generic drugs have the same effect (bioequivalence) as brand products but generally cost less (Belloni, Morgan, and Paris, 2016). For example, among five commonly used medicines, the price difference between brand products and generics was as high as 41 percent (Singal, Nanda,

[12] DIME is a platform developed by the IDB to support decision-making. Countries share data about prices, coverage (inclusion or exclusion of drugs in public formularies), competitors (number of companies offering a drug), usage, and effectiveness for a group of medicines with high financial impact.

[13] Comparative information on policies to reduce substandard and counterfeit medicine, one of the sources of inefficiency in medicines, was not available from the DIME platform.

[14] Refer to http://www.medicamentos.gob.sv/index.php/es/normativa-m/reglamentos dnm-m/reglamento-de-precio-de-venta-maximo-al-publico-dnm.

Table 8.4 Policies to Promote Efficiency in Pharmaceutical Spending in DIME Countries, 2017

Cause of inefficiency	Policy	Countries							
		Chile	Colombia	Costa Rica	Dominican Republic	Ecuador	El Salvador	Mexico	Peru
Higher than necessary prices	Price regulation	No	Yes	No	No	Yes	Yes	Yes	No
	Mechanisms for centralized negotiation/ purchase	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Governmental database for price consultation	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Under-use of generics	Incentives for production or registration of generics	No	Yes	No	No	Yes	Yes	Yes	No
Irrational use	Incentives for rational prescription	No	No	No	No	No	No	No	No
	Mechanisms for detection and notification of off-label use of medicines	No	Yes	No	No	No	No	No	No
	Use of international non proprietary names (INN) for prescription, labeling, and commercialization	Yes	Yes	Yes	Yes*	Yes	Yes**	Yes	Yes

Source: Authors' elaboration based on DIME data.
* Dominican Republic does not use INN for prescriptions.
** El Salvador does not use INN for commercialization.

and Kotwani, 2011). Non-use of generics is thus inefficient since the same clinical benefits can be achieved with fewer resources. Colombia, Ecuador, El Salvador, and Mexico provide incentives to produce or register generics (Table 8.4). Colombia applies lower tariffs, Mexico offers tax exemptions, Ecuador simplifies paperwork, and El Salvador financially supports technological upgrades in small and medium pharmaceutical companies that produce generics, and favors the adoption of international quality standards. Colombia, Ecuador, and El Salvador also offer abbreviated registration processes for generics. According to DIME data, despite the potential gains, countries like Chile, Costa Rica, Peru, and the Dominican Republic have not yet enacted policies promoting generics.

In terms of rational use of medicines, this concept stands on the premise that "patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost to them and their community" (Holloway and van Dijk, 2011). Irrational use includes prescribing multiple medicines per patient ("poly-pharmacy"), failure to prescribe according to clinical guidelines, inappropriate self-medication, and non-adherence to dosing protocols (Holloway and van Dijk, 2011). Regarding policies to favor rational prescription, none of the DIME countries provide doctors or pharmacies with financial incentives. Colombia has made isolated efforts to detect and notify off-label use of medicines[15] using an e-prescription platform that identifies this practice. Off-label prescriptions are reimbursed only if evidence of benefits is provided.[16] On a positive note, all DIME countries adopt international non-proprietary names (INNs). An INN identifies a pharmaceutical active ingredient by a unique name that is public property and globally recognized (WHO, 2017a). INN prescription, labeling, and marketing promote more rational use of medicines by establishing international standards in pharmaceutical products and encouraging the use of generics (Vogler, 2012).

Inappropriate use of drugs is common, as illustrated by the use of insulin glargine and ertapenem in a sample of Latin American countries. Insulin glargine is used to treat diabetes mellitus type 2. In Latin America and the Caribbean, 9 out of 100 persons suffer from diabetes, and by 2040 this number is expected to reach almost 12 in 100, placing diabetes among the top causes of disease and premature death in the region (IDF, 2017). Thus, public budgets should allocate resources to medications that maximize health outcomes at low cost. However, the cost of treatment per patient per year with insulin glargine may be 120 percent higher than that of human insulin, which has the same clinical benefit (Hua et al., 2016; Sánchez Choez et al., 2015; Machado-Alba, Medina-Morales, and Echeverri-Cataño, 2016).

A similar efficiency issue arises with ertapenem, an antibiotic indicated to treat in-hospital bacterial infections. Ertapenem is not recommended as the first line of treatment since there are much cheaper drugs with the same clinical effect.[17] Therefore, its use should be restricted to ensure availability

[15] Off-label uses may include giving a drug for an indication or age group other than what it is approved for.

[16] In Ecuador, off-label use of medicines may be reported to the Ministry of Public Health. However, the information collected is not used to promote appropriate use of medicines.

[17] These drugs are meropenem and Iripenem/cilastatin.

Table 8.5 Spending, Prices, and Policy Options for Ertapenem, 2017

	Ertapenem expenditure	Ertapenem expenditure per capita	Price of defined daily dose	Coverage	Local technology assessment	Clinical practice guidelines
Chile	$3,674,522	$205.17	$63.81	Exceptional mechanisms	No	No
Colombia	$12,965,331	$266.48	$53.95	Exceptional mechanisms	No	No
Costa Rica	$80,520	$16.58	$53.01	Yes	Yes	Yes
Dominican Republic	$225,566	$21.18	$64.48	Exceptional mechanisms	No	Yes
Ecuador	—	—	—	No	Yes	No
El Salvador	—	—	—	No	No	No
Mexico	—	—	$21.38	Yes	Yes	No
Peru	$724,749	$22.81	$123.08	Yes	Yes	No

Source: Authors' calculation based on DIME data and World Bank World Development Indicator Database for data on population, and the WHO Global Health Observatory data repository.
Note: All variables are measured in 2018 US$.

of effective second-line therapy if first-line antibiotics fail. Neither insulin glargine nor ertapenem are on the WHO list of essential medicines (WHO, 2017b). Consequently, their use is potentially inefficient, as it is not the lowest cost treatment for the patient.

Table 8.5 summarizes information on expenditure per capita on ertapenem in DIME countries, as well as the presence—or absence—of three policy options to control its use: inclusion in a public formulary (coverage), use of a local health technology assessment (HTA), and development of clinical practice guidelines (CPGs).[18] It shows that expenditure per capita on ertapenem in Colombia is about 16 times higher than in Costa Rica and 12 times higher than in Peru. Countries that spend the most on ertapenem (Chile and Colombia) cover the drug through exceptional mechanisms, meaning that prescriptions are allowed for exceptional situations, such as legal claims and case-by-case approval of use by medical committees. Yet, what differentiates Chile and Colombia from low spenders like Costa Rica and Peru is that they have not carried out local technology assessments, or developed CPGs

[18] A public formulary is a list of prescription drugs to be covered by public funding. HTA is defined as "the systematic evaluation of properties, effects, and/or impacts of health technologies and interventions". See http://www.who.int/health-technology-assessment/en/. CPGs are "systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific circumstances" (Field and Lohr, 1992).

Table 8.6 Spending, Prices, and Policy Options for Insulin Glargine, 2017

	Insulin glargine expenditure*	Insulin glargine expenditure per capita*	Price of defined daily dose*	Coverage	Local technology assessment	Clinical practice guidelines
Chile	$3,658,060	$204.25	$2.82	Yes	No	Yes
Colombia	$35,716,784	$734.11	$0.90	Yes	Yes	Yes
Costa Rica	$63,121	$13.00	$2.39	Exceptional mechanisms	Yes	Yes
Dominican Republic	$157,271	$14.77	$0.99	Exceptional mechanisms	No	No
Ecuador	$813	$0.05	$1.35	No	No	No
El Salvador	$0	$0.00	$0	No	No	No
Mexico	$7,755,813	$60.81	$0.26	Yes	Yes	Yes
Peru	$1,209,042	$38.05	$2.05	Yes*	No	No

Source: Authors' calculation based on DIME data and World Bank World Development Indicator Database for data on population , and the WHO Global Health Observatory data repository.
Note: All the variables are measured in 2018 US$.
* Insulin glargine is provided by the Peruvian contributory public social health insurance system, Essalud.

for ertapenem, while the low spenders have HTAs, and Costa Rica also has CPGs in place.

Table 8.6 shows similar information for insulin glargine. Here, a key beneficial policy is followed by El Salvador and Ecuador, two countries with a zero-insulin glargine policy, where human insulin is used instead. In the case of Ecuador, expenditure on insulin glargine is $0.05 per capita, in contrast to $734.11 spent in Colombia or $204.25 spent in Chile. Given that the cost of treatment per patient per year with insulin glargine may be 120 percent higher than that of human insulin, countries like Colombia and Chile could be saving considerably by switching to human insulin in their drug protocols.

Four countries that provide public coverage for glargine insulin (Colombia, Mexico, Chile, and Peru) experience the highest levels of spending. In Colombia, an analysis of insulin glargine expenditure over time confirmed that its take-off occurred right after its inclusion in the Colombian benefits plan. Interestingly, among high spenders, Colombia and Mexico implemented complementary measures to control insulin expenditure (technology assessment and CPGs), yet expenditure levels per capita are still high, implying that the existence of control tools is not enough; the quality of their implementation matters, too.

Both cases suggest that switching from ertapenem and glargine insulin to their lower-priced substitutes is likely to release additional public resources to serve a larger number of patients. From a policy perspective,

better articulation of policy action on medicines is needed, as coverage decisions that are not backed up and reinforced by rigorous technology assessments and CPGs may compromise efficiency.

Quality of Preventive Services: Cuts Are Costly

Delivery of timely, high-quality diagnostic and treatment services in primary care has been shown to prevent acute deterioration, progression, or complications in people with disease (Manns et al., 2012). In addition, proactive disease management in primary care may help contain health-care spending by reducing, or even avoiding, the need for more expensive emergency visits, hospitalizations, or complex procedures (Rosano et al., 2013; Guanais and Macinko, 2009).[19] Under-use of primary care interventions results in both suboptimal quality of care and inefficiency; not only is people's health compromised, but opportunities for savings are missed. The Colombian primary care system's provision of preventive exams for diabetes is a case in point.

Diabetes constitutes a major burden of disease in Colombia. Health services to manage the condition are covered by publicly funded health insurance coverage, which relies on health insurers known as Empresas Promotoras de Salud (EPS) to organize delivery at the primary care level. To promote effective diabetes care, the Colombian Ministry of Health developed national CPGs based on best international recommendations (Aschner et al., 2016; American Diabetes Association, 2016). Compliance with these CPGs is key for improving patient outcomes and avoiding unnecessary costs, since major complications of diabetes (coronary and vascular diseases, renal failure, neuropathies, amputations), as well as mortality, can be prevented or reduced by monitoring blood pressure, blood glucose (HbA1c), cholesterol, and kidney function, through outpatient visits and diagnostic testing.[20]

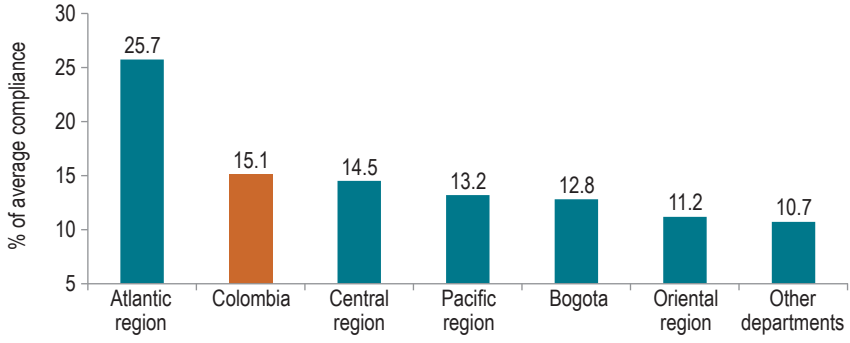
An analysis of compliance with CPGs for 324,000 diabetic patients affiliated with EPSs of the health insurance contributory regime[21] reveals that striking under-provision of appropriate preventive services leads to poor outcomes and costlier care (Buitrago, Ruiz, and Rincón 2018). Only 15 percent of the diabetic population was provided all recommended tests, including

[19] Emergency visits and hospitalizations for ambulatory care sensitive conditions (ACSCs), such as hypertension and diabetes, which can be effectively managed in ambulatory settings, are used as indicators of the quality of primary care.

[20] All these interventions are available through the insurance benefits plan.

[21] The contributory regime covers formal workers and their families and is financed through payroll taxes. The sample includes all beneficiaries of 10 EPSs covering 88% of this regime's population in 2014.

Figure 8.7 Average Regional Compliance with All Recommended Tests in Colombia, 2014

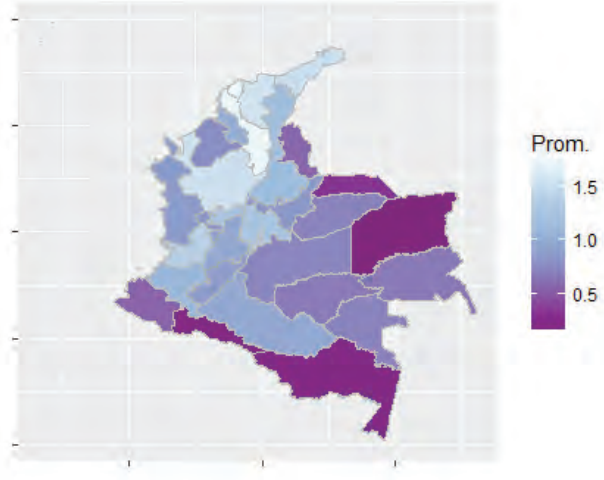


Source: Authors' calculation based on UPC, BDUA, and DANE databases.

yearly blood glucose, cholesterol, and kidney function tests. Even more striking is the variation in compliance across regions (see Figures 8.7 and 8.8).

Compliance also varies by EPS provider. Table 8.7 shows large breaches in compliance for all tests—cholesterol being the most notable—as well as substantial variation across providers. For example, complete testing compliance varies from 27 percent for the best EPS provider to nearly zero for the worst. Thus, efficiency is not only about the average level of prevention, but also about homogeneous provision across regions and providers.

Figure 8.8 Yearly Number of HbA1c Tests, by Individual Patient in Colombia, 2014



Source: Authors' calculation based on UPC, BDUA, and DANE databases.
Note: Recommended number = 2.

Table 8.7 Compliance with Testing among EPS Providers in Colombia, 2017

	Percentage of Compliance			
Insurer	Complete	HbA1c	Kidney function	Cholesterol level
A	11.60	63.99	51.28	18.67
B	0.01	0.07	31.24	9.09
C	10.58	60.56	51.99	17.33
D	22.02	62.53	51.29	41.69
E	7.48	56.60	39.02	12.99
F	0.01	0.06	23.75	12.40
G	20.24	62.74	61.35	26.09
H	17.01	49.88	46.68	40.84
I	0.01	0.01	44.89	6.85
J	26.98	54.68	69.30	35.21
Observations	324,046	324,046	324,046	324,046

Source: Authors' calculation based on UPC, BDUA, and DANE databases.

Proper prevention policies for individuals with diabetes may help them avoid costly intensive care episodes as well as dialysis, revascularization, amputations, and even death. Results of detailed econometric analyses indicate how HbA1c, kidney function, and cholesterol tests can reduce these undesirable patient outcomes (see Buitrago, Ruiz, and Rincón 2018, for details). Results also indicate that the larger the number of different providers a patient visits (which is a proxy for fragmentation of care, another source of inefficiency), the worse are the outcomes.

Compliance with required tests could generate substantial efficiency gains by lowering the probability of all complications, thereby cutting the costs of treatment through prevention. Take the case of HbA1c tests, the most important intervention for diabetes control.

Table 8.8 splits costs between those who followed complete HbA1c monitoring and those who did not. Data on the role of HbA1c tests in avoiding bad outcomes, together with information on costs, allows for an estimation of the marginal effect of compliance with Hb1Ac on costs. Complete HbA1c monitoring lowers the yearly total cost per patient by $430 on average. In this sample, if the 187,585 patients who did not undergo complete HbA1c testing did so, net savings of at least $80.7 million could be achieved (15 percent of total costs). Considering that the total value of premiums paid to EPS in 2015 was about US$5.968 billion, these savings alone, based on full testing for HbA1c levels could have reduced about 1.3 percent of total expenditures. Even though administering more HbA1c tests raises outpatient costs, it prevents much costlier expenditures for

Table 8.8 Costs of Diabetes Care by Compliance with HbA1c Monitoring in Colombia, 2017

Type of care for diabetic patients	Total cost	Complete HbA1c monitoring	
		Yes	No
Outpatient care	$ 68,900,000	$ 35,200,000	$ 33,700,000
Diabetes complications care	$ 511,000,000	$ 198,000,000	$ 314,000,000
Total cost	$ 561,000,000	$ 223,000,000	$ 338,000,000

Source: Authors' calculation based on UPC, BDUA, and DANE databases.
Note: All the variables are measured in 2015 US$.

patients who do not receive complete Hb1Ac tests and therefore may face further complications.

Thus, shortcuts in quality of care, in the form of unsatisfactory adherence to preventive testing, can negatively impact the efficient use of resources in Colombia. Databases like the one used in this study can be further exploited to guide improvement efforts, such as the use of CPGs to improve results for diabetic patients (Box 8.1).

Policy Prescriptions

At the international level, policy options to improve efficiency address the supply side, demand side, public management, coordination, and financing of health systems (de la Maisonneuve et al., 2016; Moreno-Serra, 2014). This chapter focuses on governance and quality of institutions, pharmaceutical policies, priority setting, and reconfiguration of health services.

BOX 8.1 BIG DATA TO INFORM ALLOCATION DECISIONS

Large administrative and clinical databases can help evaluate health program performance in LAC. Advanced statistical tools (targeted learning) were applied to diabetic patient "big data" from the DIABETIMMS program in Mexico City and Mexico state to examine differences in the control of patient blood glucose. Clinics following the practice guidelines of the DIABETIMMS program were compared against clinics with "business as usual" practices (Hubbard, 2018). DIABETIMMS clinics achieve far better results. Had this program been applied to all clinics in the studied sample, about 5,000 additional patients would have achieved lower blood glucose levels. Furthermore, using a precision public health methodology, predictions can determine which subset of the diabetic population would benefit most from DIABETIMMS, thus facilitating targeting resources for a more efficient allocation.

Governance and Quality of Institutions

Government effectiveness, transparency, citizen participation in policy-making, and regulatory quality likely impact favorably on the functioning and efficiency of the public sector (Wagstaff and Claeson, 2004), which plays a pivotal role in the organization and operation of most health systems in Latin America and the Caribbean. The relatively efficient performance of health systems in Costa Rica, Chile, and Uruguay may be related to improvements in public sector regulation, transparency, and accountability to citizens. These countries have developed e-government systems and are advancing on e-procurement mechanisms, which have likely aided efficiency improvements (OECD, 2014b; Scrollini and Durand Ochoa, 2015).

Health systems could be made more efficient by improving the quality of health institutions. In particular, a medium-term sectoral vision should be aligned with the overall government strategy. Medium-term expenditure frameworks improve the link between government expenditures and policy planning by using medium-term spending forecasts as the basis of annual spending plans. They are, thus, powerful tools that can impact efficiency through their positive effect on the supply of health-care services for a given level of expenditure.[22] In some cases, however, implementing these spending forecasts has not achieved the desired results. Adopting medium-term expenditure forecast terms is not enough; they must be carefully designed and adhered to. Successful experiences with these spending forecasts share a number of characteristics: spending priorities are easily identified from accounting frameworks; domestic resource requirements for the coming period are identified and feed into the budget preparation cycle; sector level progress is reviewed annually; and costing and resource needs for the sector are laid out realistically (Gottret and Schieber, 2006). Korea is an efficient OECD peer for higher-spending Latin American and Caribbean countries and is a good example of applying medium-term expenditure forecasts to improve fiscal responsibility, planning capacity, and spending efficiency across all areas of government (World Bank, 2013).

Yet improving the quality of governance and institutions often requires organizational reforms beyond those mentioned above to tackle inefficiencies across both government structures and processes (Savedoff and Smith,

[22] Medium-term expenditure forecasts that have been successfully implemented have been associated with improvements in budget discipline and reliability, as well as a greater ability to face fiscal challenges in the sector (Vlaicu et al., 2014).

2016). Areas of reform for Latin American and Caribbean countries include reducing fragmentation through greater coordination between different levels of the health system; supporting human resource training, distribution, and productivity; and investing in stronger information systems that support monitoring and management. Last but not least, access to detailed data is a key deficit in most health systems in the region. The fact that most countries have almost no available information on how resources are allocated to the salaries of doctors and nurses, medical equipment, medicine procurement, and other spending categories, speaks to the discretion and lack of analysis with which allocation decisions are made.

Pharmaceutical Policies and Priority Setting

Turning to pharmaceutical policies, price regulation strategies must go beyond international reference pricing.[23] Comparative evidence from European countries suggests that reference pricing alone is not the best option to improve value for money and should be complemented with other pharmaceutical policies (Drummond et al., 2011). Latin America and the Caribbean makes scarce use of regulatory and financial incentives to favor generic substitution (and more broadly, appropriate prescription practices) whereas generic substitution is in place in most European countries (Vogler, 2012). As to incentives, Hungary provides a good example, as it financially rewards doctors or pharmacies if they prescribe or dispense the cheapest from among therapeutically equivalent medicines (Belloni, Morgan, and Paris, 2016).

Countries may also want to consider the results of regional strategies for medication purchasing and information sharing. Mercosur and Unasur in 2016 jointly negotiated with pharmaceutical companies to purchase high-cost medications for cancer. Regional information platforms such as DIME can support better allocative decisions. For example, Ecuador decided not to include insulin glargine in its public formulary, based on a DIME assessment comparing glargine insulin and human insulin (Sánchez Choez et al., 2015). Also, the Consejo de Ministros de Salud de Centroamérica (COMISCA) negotiated regionally the purchase of medicines with some DIME countries (Costa Rica, El Salvador, Dominican Republic). This regional policy lowered the price of selected medicines by 28 percent, saving almost US$13 million in 2015 (COMISCA, 2015).

[23] For further details on other price regulation strategies, such as regulation by total rate of return (RTR) or utility, pricing based on incremental costs, and pricing based on HTA, refer to Kanavos (2017).

Finally, pharmaceutical policies must be part of a systemic approach to improve allocative efficiency through the development of prioritization systems based on Health Technology Assessments. In many OECD countries, decisions about financing health technologies (drugs, equipment, clinical processes, etc.) with public resources are made transparently, supported by a legal and institutional framework and reliable evidence (Sorenson, Drummond, and Kanavos, 2008; Giedion, Muñoz, and Ávila, 2015). The establishment of health technology assessments in Latin America and the Caribbean is growing and these investments are paying off.[24] For example, in Brazil, a 2010 health technology assessment supported the switch from high- to low-cost statins (drugs used to prevent and treat cardiovascular disease) in national primary care protocols, saving an estimated $2 billion in the public health system's budget (Teich and Araujo, 2011).

Common challenges that still need to be faced include weak institutional and regulatory frameworks, technical limitations in designing priority-setting tools and evaluating technologies, and fragmentation of actors and processes to evaluate, regulate, purchase, and prescribe technologies (Bañuelos, 2016; Cañón et al., 2016). Lessons from the priority setting experiences of three Latin American countries are highlighted in Box 8.2.

Reconfiguring Health Service Delivery

Providing high-quality, efficient health care requires reconfiguring the delivery of health services such that primary care is moved to the forefront and integrated with other levels of the health system. The primary care approach aims to keep people well with patient-centered, first-contact, continued, comprehensive, and coordinated care (Starfield, 1994), which improves health, reduces growth in costs, and lowers inequality (Stigler et al., 2016; Kringos et al., 2013).

Prioritizing cost-effective primary care in the public health network has become a more common feature in the region that should improve health spending efficiency. Some of the more efficient health systems in the region, including Costa Rica and Uruguay, offered comprehensive primary care coverage to citizens from the onset of implementation of reform,

[24] In 2012, Latin America and the Caribbean was the first region in the world to adopt a resolution on the importance of HTA in health systems. According to PAHO, the region has 76 institutions that carry out some form of HTA, 49 percent of them within the public domain. Twelve countries have units, commissions, or institutes for HTA and in 7 countries legislation inserts HTA in the public decision space (IDB, 2016).

BOX 8.2 KEY ELEMENTS OF PRIORITY SETTING SYSTEMS

Case studies from Brazil, Colombia, and Mexico highlight lessons for setting priorities: 1) Establish sound and technically rigorous national health technology regulatory and surveillance agencies; 2) Assure independence and technical rigor of health technology assessments (i.e., in Mexico, an interinstitutional committee evaluates the evidence developed by the technology industry and, in some cases, develops its own evaluations); 3) Build evaluation capacity and retain qualified personnel (e.g., in Colombia, health technology officials receive training and competitive salaries, in line with those of industry peers and well above the public sector range; 4) Begin with priority setting of pharmaceuticals for which there is a consensus regarding impact on spending; 5) Develop a national technology management policy to support the creation of an integrated prioritization system (simple incremental changes in single institutions can result in improvements in silos). In this case, the best example is Brazil, which paved the way for an integrated prioritization system by encouraging discussions involving all actors.

Source: Giedion et al. (2018).

whereas less efficient ones (e.g., Argentina and Peru) started with limited coverage and gradually expanded the primary care package (Dmytraczenko and Almeida, 2015). Chile introduced reforms in 2005 (Plan AUGE) to reinforce primary care as the center of health-care networks, which covered the entire country by 2012.

Yet, investments in primary care need to move more quickly to curb wasteful spending. In 2009, in Latin America and the Caribbean an average of 9.6 million hospitalizations (19 percent of total discharges) per year could have been prevented through accessible, timely, and adequate primary care. The annual cost to the region of avoidable hospitalizations was estimated at 2.4 percent of total public health expenditure and 1.5 percent of total health expenditure overall (Guanais, Gómez-Suárez, and Pinzón, 2012.). Yet, generally, health systems in the region still rely heavily on specialist, hospital-based, and more expensive curative care rather than on preventive care (Atun et al., 2015). Considerable gaps remain in how primary care is organized, financed, and delivered. For example, surveys of primary care in six countries report numerous difficulties scheduling appointments; more than half of respondents didn't have a regular primary care provider who knows their medical history or coordinates their care, and nearly half used the emergency department for a condition treatable in a primary care setting (Guanais et al., forthcoming; Macinko et al., 2016). Some 39 percent of the Latin American and Caribbean population considered the quality of their primary care as good, compared to 69 percent in the OECD.

The core principles of primary care could be accelerated by implementing eHealth-based systems and services (D'Agostino et al., 2014). Examples of cost-reducing and efficiency-enhancing digital solutions include: telehealth and mobile health to support home management of patients; tools to enhance clinical decision-making and monitor treatment protocols; electronic medical records systems to reduce variability and improve monitoring and adherence to treatment protocols; data-analytics-based applications to help patients manage their medical conditions and improve lifestyle choices; and automation of ancillary processes such as appointments and admissions, as well as patient care, such as remote monitoring of intensive care units (Biesdorf and Niedermann, 2014). For the region to realize the full potential of efficiency gains from digital transformation, faster progress in developing national e-health policies is needed (PAHO, 2016).

Furthermore, reconfiguring service delivery can be more effective when coupled with incentives and other strategies that reduce unwarranted variations and prioritize cost-effective interventions. OECD countries use numerous efficiency enhancements inspired by reforms, among others, to provider payment mechanisms, such as pay for performance (P4P).[25] Applying well-designed case-based payment systems for providers in hospitals has helped curtail the overprovision of services and reduced expenditures compared to retrospective reimbursement schemes, generally with no negative impact on care quality (see Moreno-Serra, 2014, for a review). These experiences in setting output-based incentive and payment structures could benefit health systems in the region that still rely largely on retrospective reimbursement mechanisms like historic budgets. Chile and Uruguay, two of the most efficient health systems in Latin America and the Caribbean, have both adopted some degree of case-based financing for hospitals, alongside pay-for-performance elements for reimbursing public providers, particularly in primary care.[26] Despite the absence of hard evidence on measurable efficiency gains, these reimbursement schemes in Chile and Uruguay represent welcome—and promising—departures from historic budgets and uncapped fee-for-service arrangements frequently used to pay providers in Latin America and the Caribbean (Dmytraczenko and Almeida, 2015).

[25] Pay for performance is a provider payment mechanism that establishes a direct linkage between purchasing and benefits, with payment to health-care providers driven by verified data on the delivery of defined goods and services (Soucat et al., 2017).

[26] A well-known and rigorously evaluated experience in Latin America is the Plan Sumar (see Celhay et al., forthcoming; Gertler, Giovagnoli, and Martínez, 2014).

Worldwide experience suggests P4P may play a key role in improving the efficiency of domestic health financing and delivery systems by serving as a stepping stone toward building capacity for strategic purchasing (Soucat et al., 2017). The P4P approach shifts the mentality of passive budget execution to one of active data-driven output, improving the match between resource allocation, provider activities, and the health needs of the population. P4P strengthens health systems by stimulating investments in health information systems, re-engineering public financial management systems, and encouraging reforms to increase provider managerial autonomy. Countries are moving away from implementing P4P as a "scheme" or "project," but as a step within a system-wide approach to health financing reform. In designing P4P schemes, more attention is being paid to the interactions with existing provider payment systems, the local labor market, quality and access improvement strategies, public budgeting and financial management processes, and the readiness of the general environment to influence change at the provider level (Kutzin, 2016). For example, Korea, the "efficient peer" of relatively high-spending countries in Latin America and the Caribbean, piloted a replacement of the prevailing fee-for-service arrangement for a diagnosis-related group reimbursement, and was able to assess intended and unintended system-level consequences of this scheme before its national launch (Kwon, 2003).

The Diagnosis While much more is needed to evaluate Latin American and Caribbean health systems further, this chapter provides a glimpse at inefficiency issues and their key determinants. A first contribution is the production of much needed regional efficiency health metrics. But the need is still great to improve the scope, comparability, timeliness, quality, and usefulness of health sector data in the region. This information is required to better understand allocative efficiency at the aggregate level: by function (e.g., curative vs. rehabilitative), by health-care level (primary, secondary, tertiary), and by economic classification (e.g., salaries, equipment, infrastructure). More evidence is also needed on efficiency determinants, including lifestyle factors (e.g., smoking prevalence), environment factors, as well as comparable institutional health system assessments. Using the work of the OECD on health system characteristics as an example, efforts should be made to increase the collection and availability of comparable information on health-care financing, health-care delivery, governance, and resource allocation.

The pursuit of health system efficiency is a central concern in all countries that has become more urgent due to lower economic growth and rising fiscal pressures, and longer-living populations that will push

health-care costs up. In Latin America and the Caribbean, more and better efficiency measures are essential for developing focused, effective policies. Evaluating policies aimed at efficiency improvements is also a must. Building the region's capacity to improve health outcomes in an efficient manner will help promote healthier lives for the region's current and future population without straining government budgets.

9 Better Institutions: The Key to Better Public Spending

Much of this book has focused on diagnosing the inefficiencies of public spending in Latin America and the Caribbean, both at the macro level and in the myriad of sectors from education and health to infrastructure and public safety that together contribute to the well-being of the region's citizens. Individual chapters have also proposed specific policies and approaches to improve the efficiency of expenditures. This chapter looks at the final piece to this puzzle: the institutions needed to safeguard efficient public spending and execute productive, growth-oriented public policy.

From a macroeconomic point of view, Latin America and the Caribbean has historically struggled to achieve fiscal sustainability and stabilizing (i.e., countercyclical) fiscal policies. Moreover, the region has also continuously biased its spending against public investment, not only in relative terms vis-à-vis current spending, but also in per capita terms. This bias, in turn, may have hurt economic growth (especially given the region's low infrastructure levels). This is, naturally, of particular importance in a region like Latin America and the Caribbean where an important part of economic growth is driven by external factors such as commodity prices and global financial cycles. If the region aims to graduate from this dependency trap and integrate into the global economy in a more strategic manner with higher value added, better and more productive jobs, and sustained, more domestic-driven growth, the region must reverse this bias against public investment. The first part of this chapter focuses on the role that institutions, in particular fiscal institutions like fiscal rules, have had in helping Latin America and the Caribbean (as well as other regions) to cope with fiscal sustainability and stabilizing fiscal policies. The conclusion is that while fiscal rules have, indeed, helped reduce the likelihood of debt crises and procyclicality, they are not without their flaws. In fact, they have tended to exacerbate the bias against public investment. To lessen this bias, the region should turn to so-called second condition fiscal rules, which build upon aggregate fiscal rules to directly or indirectly

"protect" public investment. While de jure (or legal) second condition fiscal rules are relatively new, countries that de facto (or in practice) applied such rules grew more and reduced their economic fluctuations.

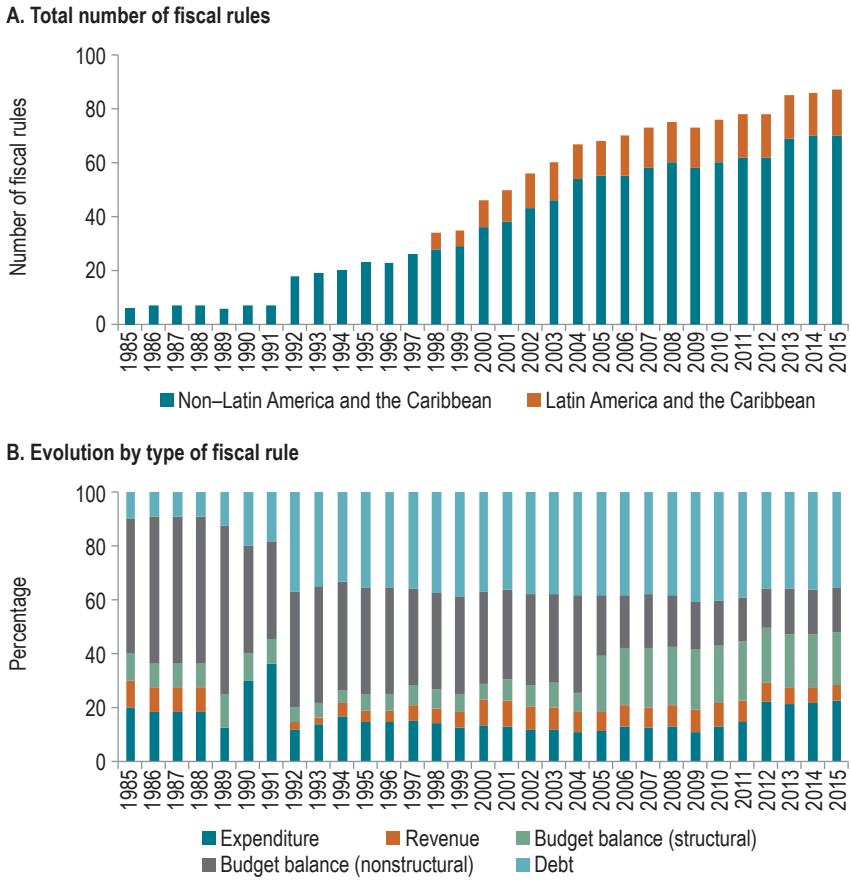
Aggregate Fiscal Rules

In order to avoid well-known fiscal sustainability problems which, in turn, increase the chances of having to rely on procyclical policies (especially in bad times), many countries in the world have increasingly adopted different types of aggregate fiscal rules. These rules impose a long-lasting constraint on fiscal policy through numerical limits on budgetary aggregates. Their aggregate nature aims at correcting distorted incentives and containing pressures to overspend, particularly in good times, so as to ensure fiscal responsibility and debt sustainability. Reducing fiscal sustainability problems is, naturally, a necessary condition to avoid systematic fiscal adjustments in bad times (i.e., procyclicality).

Adopting aggregate fiscal rules has become a usual practice both globally and in Latin America and the Caribbean. The most common fiscal rules impose limits on debt, spending, revenue, and/or the budget balance. The latter comes in two subtypes, depending on whether the limit is imposed on the actual (typically primary) budget balance (as in most U.S. states) or on its structural or cyclically adjusted budget balance (as in European Union countries). The structural fiscal balance is typically calculated as the nominal fiscal balance adjusted by its cyclical component, and net of one-off and temporary measures. The cyclical component of the budget is subtracted from the actual budget balance. The cyclical component is calculated as the product of the output gap (the difference between actual and potential gross domestic product [GDP], as a percentage of potential GDP) and a parameter reflecting the automatic reaction of the government balance to an output gap change. In other words, this cyclically adjusted budget balance corresponds to the budget balance that would prevail if the economy were running at trend levels.

Budget balance rules were at some point the most adopted ones, but since the early 1990s debt rules have also become very popular. Fiscal rules associated with revenue limits have been the least popular and since 2012, spending rules seem to have gained consideration. Figure 9.1 shows the evolution of fiscal rules adoption since the mid-1980s. Panel A shows that the total number of fiscal rules adopted increased substantially between 1985 and 2015. Latin American and Caribbean countries began to adopt them toward the end of the 1990s. Panel B focuses on the evolution of different types of fiscal rules. Those that have gained the greatest

Figure 9.1 Evolution of Fiscal Rules Adoption, 1985–2015



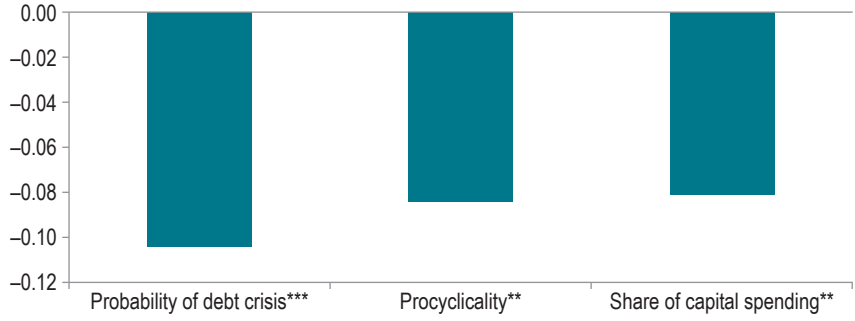
Source: Authors' calculation based on Izquierdo, Puig, et al. (2018b).
Note: Debt rules set an explicit limit or target for public debt as a percent of GDP. Budget balance rules (structural and nonstructural) constrain the variable that primarily influences the debt ratio and are largely under the control of policymakers. Revenue rules set ceilings or floors on revenues and are aimed at boosting revenue collection and/or preventing an excessive tax burden. Expenditure rules set limits on total, primary, or current spending. Fiscal rules, data come from the "IMF Fiscal Rules Dataset, 2016" and Schaechter et al. (2012).

traction are debt rules (which typically impose a debt-to-GDP ceiling) and structural budget rules (which limit measures of the budget balance after excluding the influence of the business cycle).

The Truth about Aggregate Fiscal Rules

While aggregate fiscal rules are not a panacea, as they are sometimes not enforced (or sometimes they are even designed to have a certain degree

Figure 9.2 Fiscal Rules Adoption and the Probability of Debt Crisis, Fiscal Procyclicality, and Public Spending Composition



Source: Authors' elaboration based on Izquierdo, Puig, et al. (2018b).
Note: a) Data for probability of debt crisis come from Reinhart and Rogoff (2011); b) Fiscal rules data come from the "IMF Fiscal Rules Dataset, 2016" and Schaechter et al. (2012); c) Cyclicality is measured by the correlation coefficient between the cyclical component of GDP and cyclical component of total expenditure (both in terms of their trend), calculated with a rolling window of 10 years (WEO-IMF) and d) Bias composition is measured through the ratio between capital spending and primary current spending (WEO-IMF).
Bars represent the associated coefficient between each dependent variable and the fact of having a fiscal rule. All regressions are estimated using panel data with fixed effects and control for heteroscedasticity. Number of countries included in each estimation is 67, 192, and 172 respectively. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

of "flexibility" which, in turn, may violate the spirit of the rule itself), they have been useful on average. Rather than dwelling on comparisons among the different types of fiscal rules (see Schaechter et al., 2012; Budina et al., 2012; and Berganza, 2012, for useful reviews), this chapter focuses on their effects on key issues tackled in Chapters 1 and 2. Figure 9.2 shows the effects of fiscal rules adoption (of any kind) on the probability of a debt crisis, fiscal procyclicality, and public spending composition.[1] In particular, as noted by the first and second bars, the adoption of a fiscal rule reduces the likelihood of a debt crisis as well as the degree of procyclicality. Thus far, the news could not be better on the sustainability and procyclicality fronts. Interestingly (and novel in terms of discussions about the implications of fiscal rules), yet not surprisingly, the adoption of fiscal rules increases the bias against public investment. Why? Because as discussed in Ardanaz and Izquierdo (2017) and in Chapter 1, this is the easiest spending component to adjust, especially in bad times. In other words, while aggregate fiscal rules actually work to reduce sustainability and stabilizing concerns, they do so at the expense of increasing the bias against public

[1] All regressions are estimated using a panel of 192 countries and include fixed effects and robust standard errors that control by heteroscedasticity. WEO-IMF is the main data source.

investment. This collateral damage could have harmful consequences for economic growth, especially for a region like Latin America and the Caribbean, which has an important infrastructure gap.

Second Condition (or Composition) Fiscal Rules

Second condition fiscal rules build upon aggregate fiscal rules to directly or indirectly "protect" public investment. For example, in 2018, Peru passed a law limiting not only the growth of overall public spending (which cannot grow by more than 1 percent over the economy's long-run growth rate), but also limiting the growth of current spending (which cannot grow by more than 1 percent below the economy's long-run growth rate). This rule has not only the benefit of limiting the growth of more rigid (especially downward rigid) current spending—such as wages and transfers—but by doing so it also serves as protection for public investment.

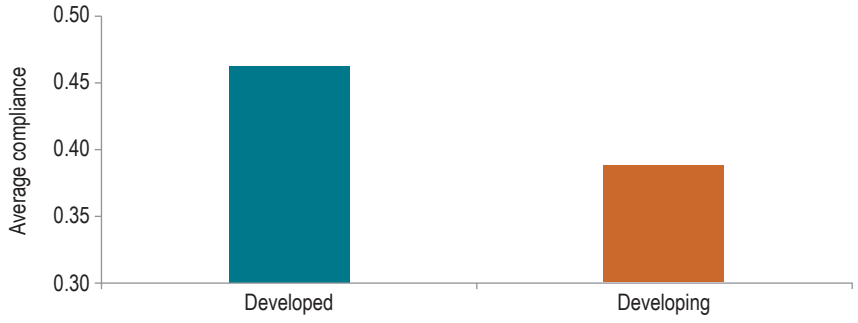
Since de jure (or legal) second condition fiscal rules are relatively new, and in order to assess their implications, the first step is to identify countries that de facto (or in practice) applied such second condition (or composition) fiscal rules and then contrast them with those that did not, in order to evaluate their relative performance in terms of average growth and output volatility. To do so, and following the Peruvian second condition fiscal rule, it is necessary to assess whether a country de facto controls the growth rate of current expenditure (thus protecting capital expenditure). This is done by checking for every country-year observation in the sample whether the growth rate of current expenditures is at least 1 percentage point below the economy's historical long-run growth rate.[2] Figure 9.3 shows average compliance with this implicit rule for both industrial and developing countries. Not surprisingly, such prevalence is larger (and statistically different) in the industrial world than in developing economies.

Moreover, countries with a higher prevalence of these second condition fiscal rules grow more, and tend (weakly) to experience less volatility than those with lesser prevalence (Figure 9.4A and B).[3] These results are consistent with theoretical models like that of Izquierdo and Kawamura (2018), in which, in the context of either political economy frictions (policymakers who run for election and face voters with different preferences

[2] Results strongly hold for variations of the threshold and the identification strategy of the methodology. See Izquierdo et al. (2018) for details.

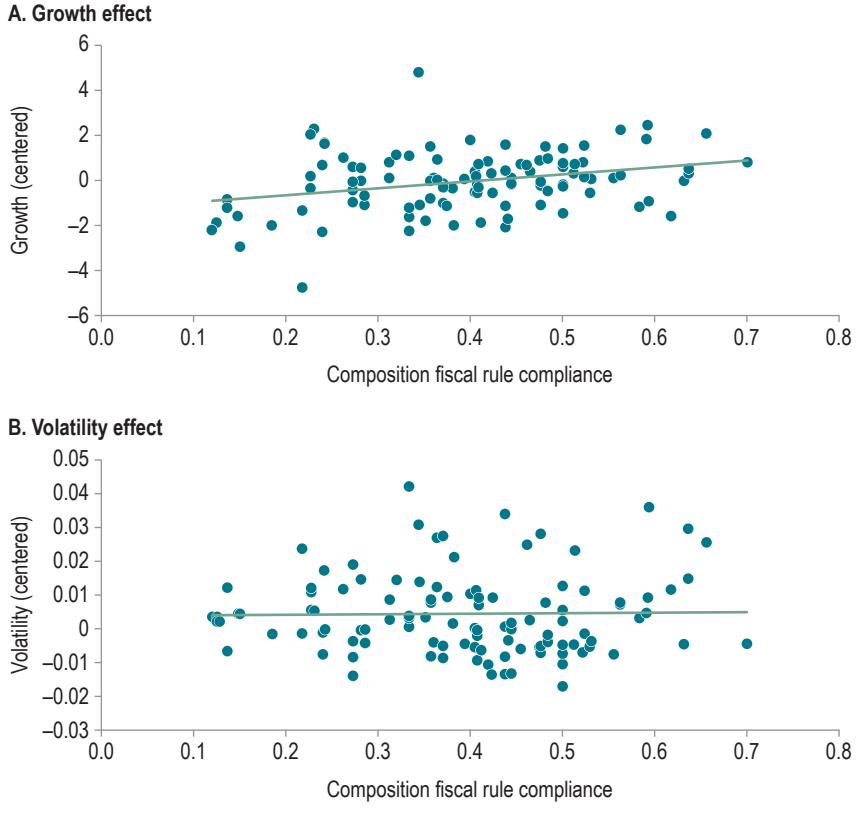
[3] Regressions in Figure 9.4A and B, control for the level of development (industrial countries or developing countries). Figure 9.4A is centered on the sample average growth rate, and Figure 9.4B on average volatility.

Figure 9.3 Incidence of De Facto Second Condition Fiscal Rules



Source: Authors' elaboration based on Izquierdo et al. (2018).

Figure 9.4 Macroeconomic Effects of Second Condition Fiscal Rules



Source: Authors' elaboration based on Izquierdo et al. (2018).

on spending composition), or specific capture technologies (that government bureaucrats may use for current and capital spending), introducing second condition (or composition) fiscal rules indeed generates higher economic growth without significant effects on output volatility.

These results suggest that second condition fiscal rules that protect public investment may be useful in fostering growth. Thus, it could be relevant to couple aggregate fiscal rules—which are good for sustainability and have stabilizing effects—with second condition (or composition) fiscal rules that protect public investment against the natural bias against it, be it because of the negative effects of aggregate fiscal rules themselves, or the political economy effects that lack of trust in government may have on citizens' choices against long-term investments (see Chapter 10).

Institutions for Smart Spending at the Micro Level

Public expenditure accounts for almost 38 percent of the annual wealth created in Latin America and the Caribbean. Managing from 15 to 47 percent of GDP—the range of public spending in the region—in an efficient manner leading to inclusive growth is not a task for an aimless body of public institutions. It demands purpose, planning, and prioritization of best policies, evidence-based decisions on the use of money, and a professional civil service to carry the plan out. The rest of this chapter will show that planning, prioritization, evaluation, and professionalization are common critical factors that Latin America and the Caribbean needs to improve in public spending management.

Latin America and the Caribbean suffers from two interrelated problems: public spending is inefficient and ineffective, both technically and allocatively, and it is inefficient in promoting equity. This problem is reinforced by a weak public expenditure management system—the institutions through which public resources are channeled from taxpayers to prioritized spending programs in the budget and how they are implemented, monitored, and evaluated. Poor management institutions waste resources, erode public trust, hamper growth opportunities, and limit possibilities to reduce poverty and inequality. While institutions are almost universally weak in Latin American and Caribbean countries, they vary widely across the region.

Expenditure institutions and the possibility of reform are severely limited from within and outside government, unless strategies are implemented to deal with them. To begin with, spending entities within government want to see their budget allocation increase, but finance ministries are tasked with keeping overall spending ceilings under control. These tensions increase competition and contention in the spending allocation process and demand effective coordination—one of the critical factors to achieve better results

in spending reforms. Expenditure reforms are also difficult to implement because of the many private special interests that can be affected: unions, firms, and aid beneficiaries, to name a few.

Since the late 1980s, Latin American and Caribbean countries have made great strides putting into operation important expenditure management institutions. Most reforms aimed at fiscal sustainability: quantitative fiscal rules, stabilization funds, medium-term fiscal frameworks, and restrictions to national and subnational debt (Filc and Scartascini, 2007).[4] Several countries lacked budget discipline, but progress was made. The first Integrated Financial Management Information System (IFMIS) to control budget disbursements by automating and streamlining government's financial management processes was implemented after decades of missed, duplicated, and delayed payments. Centralized digital public procurement systems replaced institution-by-institution procurements, which lacked rules, mandatory competitive bidding, or lists of buyers. The civil service system was not organized, and important advances ensued. Reforms emphasized processes instead of an overall restructuring of functions. Despite the advances, however, these reforms lacked an analysis of how and how much to spend across programs and functions, and an appraisal of their effect on growth and equity.

The reforms fell short of achieving long-lasting growth and equity. They were not based on a long-term vision, and when they were, priorities were not clear or too broad. In the mid-1990s, most of the conditional cash transfer (CCT) programs were implemented to alleviate poverty and improve human capital; however, they lacked a clear vision of how to decrease long-term poverty and inequality. Noncontributory pensions and health care also expanded, but without a proper analysis of the effects on informality or their sustainability, particularly in the context of an aging region. Hence, despite the advances in the machinery of budget, procurement, civil service, public financial management (PFM), and even digital institutions, the efficiency, equity, and transparency of public spending continued to be weak and the link with outcomes almost nonexistent.

Some countries that implemented second generation-budgeting and PFM reforms expected to solve most inefficiencies in public spending. But first, a deep, multidisciplinary economic analysis of government spending is needed that sets priorities and a pathway for how to better achieve them. Budget formulation should be aligned and constructed from these

[4] While the first-generation reforms in Latin American and the Caribbean of the early 1990s essentially addressed monetary and fiscal imbalances related to the direct role of government in the economy and aimed at resolving issues in the short term, the second-generation reforms of the 2000s involved institutional changes designed to enhance the efficiency of government regulation and public policy more broadly (Panizza and Philip, 2005).

priorities such that PFM manages the flows of allocated spending more efficiently. But how to change the rigid budget? Anyone who has worked in budgeting knows that old claims on the budget have an advantage over new ones (Schick, 2004). This is what is called incrementalism: budgeting decisions are anchored in the past, usually varying only in small increments from one year to the next. But spending decisions can be inserted in the budget in an incremental yet smart way, making it politically viable to achieve allocative efficiency gradually.

Despite the wave of reforms, the increased spending of the 2000s in most Latin American and Caribbean countries propell an unprecedented growth in the tasks of the public sector. That is why it is most urgent to embark on a new, smart generation of reforms that improve efficiency and equity of spending by reinforcing both first- and second-generation institutions and creating new institutions when necessary. There is a small window of opportunity to enact smart spending reforms—not simple austerity measures—that take a long-term view and acknowledge that public spending is a large proportion of GDP that should be programmed with technical and above all allocative efficiency in order to ensure sustained, inclusive growth.

Smart spending requires operational efficiency, which refers to the provision of public services at a reasonable quality and cost; the relevant question is whether the country is getting the best buy for its money. Allocative efficiency on the other hand refers to the consonance of budgetary allocations with strategic priorities: are budgetary resources being allocated to programs and activities that promote the strategic priorities of the country? Put simply, is the government spending money on the "right allocations," with the highest net present value generated by a social cost-benefit analysis (CBA)? The purpose of doing a CBA is to allow competing policy priorities to be compared in a consistent way[5] and to help policymakers identify the best way to deliver the strategic objectives of government. CBAs should be the every day practice in appraising government spending in all countries in

[5] In a series of studies, the behavioral economist Sunstein (2018) argues that government policy should not be based on public opinion, intuitions, or pressure from interest groups, but on numbers, meaning careful consideration of costs and benefits, even if it seems extremely difficult or impossible to monetize all costs and benefits. The emphasis on CBA for analyzing government spending, taxation, and any regulation was proposed by Dupuit, a French engineer, in 1847 but has become popular since the 1960s. Over the decades, it has been applied in government programs that can be analyzed using data, but mostly in developed countries. In Latin America and the Caribbean, Chile, partly inspired by Harberger (1972), has perhaps the oldest and best-developed system of appraisal operating at all government levels. Critics of CBA argue that reducing all benefits to monetary terms is impossible, and that a quantitative measurement is difficult—and inappropriate—for political decision-making.

the region. However difficult it might seem, the process of doing so is much more informative and can save billions of taxpayers' dollars. From CBAs and rates of return grounded in data, it is possible to understand, for example, more clearly whether and which human capital projects or physical capital projects should be favored, and in what proportions.

In Latin America and the Caribbean, the challenge is to improve the technical and allocative efficiency of public spending. This chapter offers key policy recommendations based on best practices, theory, and empirical evidence provided by more developed countries, which have already implemented several of the reforms, and also from lessons learned from the experience of the IDB and other stakeholders in Latin America and the Caribbean. Most key recommendations are applicable to national, regional, and local governments.[6] Admittedly, there is no one-size-fits-all solution when it comes to better institutions to manage spending. Moreover, no single or new institution is a panacea, especially if implemented without political commitment or with minimum capacities. Most recommendations are set within a unified framework starting from planning, coordination, and coverage challenges, followed by operational and human resource considerations, and considerations related to ex-post evaluation and monitoring and control.

Smart Shopping: Public Procurement Management

Public procurement expenditure amounts to about a third of total public spending in Latin America and the Caribbean (Chapter 3) and its management is recognized as a strategic instrument for public service delivery as well as an activity vulnerable to corruption and inefficiency at the expense of "value-for-money" considerations. In fact, estimated waste in procurement ranges from 10 to 30 percent of total spending. Achieving the best value-for-money involves three principles: economy (acquiring resources in the right quantity and quality), efficiency (minimum cost for the same service), and effectiveness (achievement of intended outcomes) (McKevitt, 2015).

Public procurement reform in the region has come a long way since the early 2000s, when it was a minor part of the second generation of public sector reforms. The region has made more progress than other developed regions, especially in advancing their e-procurement tools (Harper, Calderón Ramírez, and Munóz-Ayala, 2016). But several countries in the region, are still transitioning to procurement systems with better institutions, more agile processes, and

[6] The list of key policy recommendations is not exhaustive and does not pretend to be a full menu of sequencing of reforms or best practices for Latin America.

a heightened capacity to prevent corruption.[7] Clearly, reforms have not been enough to dismantle inefficiencies or eliminate corruption (see Chapter 3).

Implementing an effective public procurement system based on transparency, competition, and integrity, as called for by the United Nations Convention against Corruption (UNCAC), is not simple. A procurement system that lacks transparency and competition is the ideal breeding ground for corrupt behavior. According to the UNODC (2013), reform initiatives need to integrate these goals.[8] A comprehensive and outcome-based procurement index is still needed. A widely used procurement indicator is the Organisation for Economic Co-operation and Development (OECD) Methodology for Assessing Procurement Systems (MAPS), which mostly measures the process against international best practice models, not procurement outputs, outcomes, or systemic performance. Still, it portrays the current state of processes in Latin America and the Caribbean: 14 governments in the region conducted a MAPS self-assessment of their procurement systems between 2008 and 2016[9] ranging from 0 to 3 with 3 meaning full achievement of the standards. For each country, MAPS presents the year implemented and the score. The results, from best to worst, were: Chile (2008, 2.7), Brazil (2011, 2.2); Ecuador (2011, 2.0); Paraguay (2013, 2.0); Peru (2016, 2.0); Colombia (2009, 1.9); Nicaragua (2010, 1.8); the Dominican Republic (2012, 1.5); Costa Rica (2015, 1.5); Honduras (2010, 1.2); El Salvador (2010, 1.2); Barbados (2008, 0.5); Belize (2010, 0.5); and Guyana (2010; 0.5). According to the results, most countries still need to improve procurement processes and evidence points to poor outcomes in several countries.

Table 9.1 provides a list of key recommendations to be adapted to each Latin American and Caribbean country. While professionalization and ex-post evaluation, monitoring, and control of the system are necessary to develop a comprehensive and effective system, there are key critical factors—planning, coverage and coordination, competition, and effective digitalization—that the region's countries need to improve to make the system more efficient and less prone to corruption.

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7 See, for example, Capello and Garcia Oro (2015).

8 In practice, however, too often competition and transparency have been dealt with as issues of procurement reform, while integrity has been addressed separately, as part of anti-corruption initiatives, and this seems the case in the latest reforms in Latin America and the Caribbean.

9 The Methodology for Assessing Procurement Systems (OECD, 2009) assesses countries across four pillars: the existing legal framework that regulates procurement in the country; the institutional architecture of the system; the operation of the system and the competitiveness of the national market; and the integrity of the procurement system. Several countries, such as Colombia, Honduras, and El Salvador, have reformed their system since the last index was published.

Table 9.1 Policy Recommendations to Improve Efficiency in Public Procurement Management

	Key recommendations	Details
Planning/ Prioritization	Develop a comprehensive procurement plan setting a vision, goals, and prioritized methods and tools.	Publishing annual procurement plans increases accountability of contracting authorities, as they need to justify diverging from the plan (European Commission, 2018b).
Coverage/ Coordination	Cover all buying of goods and services by the obligation to comply with procurement laws and regulations and provide for a central regulatory agency.	Include all procurement stages and actors, all levels of government, under a centralized procurement agency that oversees, promotes training, and accountability.
Competition	Use competitive and efficient tendering and limit the use of exceptions and single-source procurement (OECD, 2016c).	Use open tendering as the default method, and modern tools (framework agreements, electronic catalogs, and reverse auctions for standardized products).
Digital technology and efficient tools	Implement electronic procurement via dedicated e-procurement platforms, not only informational but fundamentally transactional, and promote other digital innovations to secure transparency and competition.	Include interoperability of the e-procurement platform with Integrated Financial Management Information System, electronic payroll, and other public electronic platforms and databases. Blockchain can serve for more secure transactions.
Transparency/ Participation	Promote transparency in all the stages of the procurement cycle to guarantee accountability and prevent corruption. Aim for open data in procurement of goods and services and public works.	Allow free access, through an online portal, for all stakeholders, including potential domestic and foreign suppliers, civil society, and the general public, to public procurement information (OECD, 2017e).
Professionalization	Increase the professionalization of the procurement workforce with the capacity to deliver value for money efficiently and effectively.	Promote open and competitive hiring of technical experts and training of procurement officials.
Ex-post evaluation	Evaluate the performance of the procurement system, including evaluating different methods and processes to feed new priorities and planning.	Assess periodically the results of the procurement process. Develop indicators to measure performance of the procurement system (OECD Procurement Toolbox).
Monitoring and control	Provide for a system that operates with integrity, has controls on its implementation in accordance with the legal framework, and can address the potential for corruption.	Central procurement office has responsibility for oversight of procurement management. An independent monitoring entity is essential to avoid conflict of interest.

Source: Authors' elaboration based on Harper, Calderón Ramírez, and Muñoz-Ayala (2016), OECD (2017e), Volosin (2015), and World Bank (2017).

First, the coverage of the system is far from complete. Procurement rules should apply to the whole "public" procurement system, defined widely to encompass all purchases from the entire public sector. The MAPS sub-index that includes "Scope of application of the legislative and regulatory framework" (from a maximum of 3 to 0) averages 2.3 for 14 Latin American countries, implying full coverage for 5 countries, and almost full for 4 of them.

However, a complete analysis of the scope of application of the law reveals that central governments are covered by the regulations in most countries, but coverage decreases when considering public bodies (about 80 percent covered), subnational governments (SNGs) (about 50 percent fully covered), special funds, public private partnerships (PPPs), and public trusts (only from 10 percent to 40 percent).[10] Hence, while the legal and institutional framework for procurement may conform to best practice, it does so for only a part of the public sector, allowing a portion of procurement expenditure to occur in a "liberated" zone where corruption or inefficiency can creep in. Actually, this is an inherent problem in public procurement in several areas of expenditure that starts with the coverage of public sector institutions.

Second, in public procurement, the digital revolution has been particularly productive. Over the last 10 years, the majority of countries in Latin America and the Caribbean have made progress introducing information and communications technology into their procurement systems; 19 out of 22 surveyed countries have a procurement portal and all of them publicize procurement opportunities through their e-procurement systems.[11] However, by 2016, only seven countries (Brazil, Chile, Ecuador, Jamaica, Mexico, Panama, and Paraguay) had transactional portals, which allow suppliers and procuring entities to interact virtually in order to trade goods and services. Moreover, only a handful of portals incorporate public works (construction, infrastructure) in the procurement system, where the opportunities for overpricing and corruption are higher. Chile did so in 2017. On the positive side, about half of all countries regulate a modern digital procurement procedure and the rest are rapidly introducing them: 1) framework agreements: an overarching agreement for the future supply of goods and services described in broad terms to achieve cost savings by generating economies of scale and reducing the administrative burden of issuing multiple tenders; 2) e-catalogs: a digital version of a supplier's catalogs that functions as an electronic purchasing tool to help increase competition and streamline public purchasing; and 3) electronic reverse auctions, which are useful when price is the key award criterion and where there is a single buyer and many suppliers who progressively bid downward.[12]

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[10] Volosin (2012) and updates of legislation until 2016.

[11] At its simplest, e-procurement is the replacement, throughout the procurement process, of paper-based procedures with communications and processing that are based on information technology (OECD, 2017d).

[12] Brazil is one of the first to use the Electronic Reverse Auction (Pregão Eletrônico) as the procedure for simpler procurements. This accounts for about 16 percent of total procurement.

Third, while the increased use of digital technologies and efficient tools to process procurement contracts has increased savings and reduced corruption,[13] there are still severe problems in using competitive tendering including the excessive use of exceptions and single-source procurement. The type of procurement procedure may have a direct impact on the corruption risk involved in public procurement. For this reason, open tendering is often considered the preferred method (i.e., the default procurement method) and single-source tendering—which poses perhaps the highest risk of corruption and favoritism—is typically allowed only under exceptional circumstances. In fact, only about 60 percent of 26 Latin American and Caribbean countries establish explicit competitive tendering[14] by default, but most establish a long list of exceptions to avoid competition and select direct contracting or single-source procurement.[15] Brazil, Bolivia, and Uruguay allow about 30 exceptions to competitive procurement, compared to an average of about 10.[16] Digital technology alone will not solve the corruption problem in public procurement.[17] Addressing these critical issues by promoting full coverage of procurement methods, ruling out competition exceptions, and using transactional e-procurement is a major step toward greater transparency. By automating services and putting them online, the use of open data by governments

[13] See Pessino, Pinto, et al. (2018) on key findings on the impact of public procurement reforms on efficiency and corruption.

[14] Competitive bidding is used to provide the public with low-priced, high-quality contracts, to fight corruption, and to provide equal opportunities to all firms to enjoy the benefits of a contractual relationship with the government.

[15] Also referred to in some countries as direct contracting or direct award purchasing, purchasing from an economic operator without a requirement for an advertisement or competitive process is often permitted for low-value contracts.

[16] National legislation usually considers special regulations for strategic sectors, such as hydrocarbons (Bolivia, Brazil, Ecuador, Mexico, and Bolivia), mining and energy (Bolivia), environment (Bolivia, Peru), telecommunications (Brazil), health services (Chile, Jamaica), pension funds (Jamaica), essential public services (Honduras), public monopolies (Honduras), or more specific cases, such as the management of the Panama Canal (Panama) (Benavides et al., 2016). These are huge sectors, and not surprisingly some of them were involved in the recent Lavajato-Odebrecht scandal.

[17] While Volosin (2012) studied the amount of exceptions that can trigger corruption in procurement in Latin American and Caribbean countries, some authors are beginning to find a causal mechanism between exceptions and corruption. For example, Auriol, Straub, and Flochel (2016) established that in Paraguay the main channel for corruption in procurement before 2007 was the systematic use of an "exceptional" purchase mechanism, which bypasses legally required minimum standards of transparency and competition and is used much more frequently than what should be expected from international best practice.

leaves corrupt officials less room to make arbitrary decisions (Moreno, 2017). By opening access to their data, governments are enabling citizens to track more closely how their taxes are spent.[18] Uruguay, for example, is close to its goal of enabling citizens to initiate 100 percent of their government transactions online. In Brazil, the Public Expenditure Observatory uses big data analytic tools to detect potential fraud in procurement. In 2015, it scrutinized more than 120,000 contracts, raising red flags in more than 7,500 cases involving $104 million in business. One of its filters, for example, identifies when big contracts are split into smaller deals to avoid more competitive bidding processes (Moreno, 2017).

Better planning, good ex-ante and ex-post evaluation, and enhanced accountability closes most of the remaining gap in procurement systems. The need for integrity and anti-corruption measures to ensure the transparency, good management, accountability, and control of procurement systems is also highly important. Last but not least, professionalization of the procurement workforce—and personnel in all areas of public expenditure management, for that matter—is best practice; capacity is a key pillar to plan and carry out procurement processes.[19]

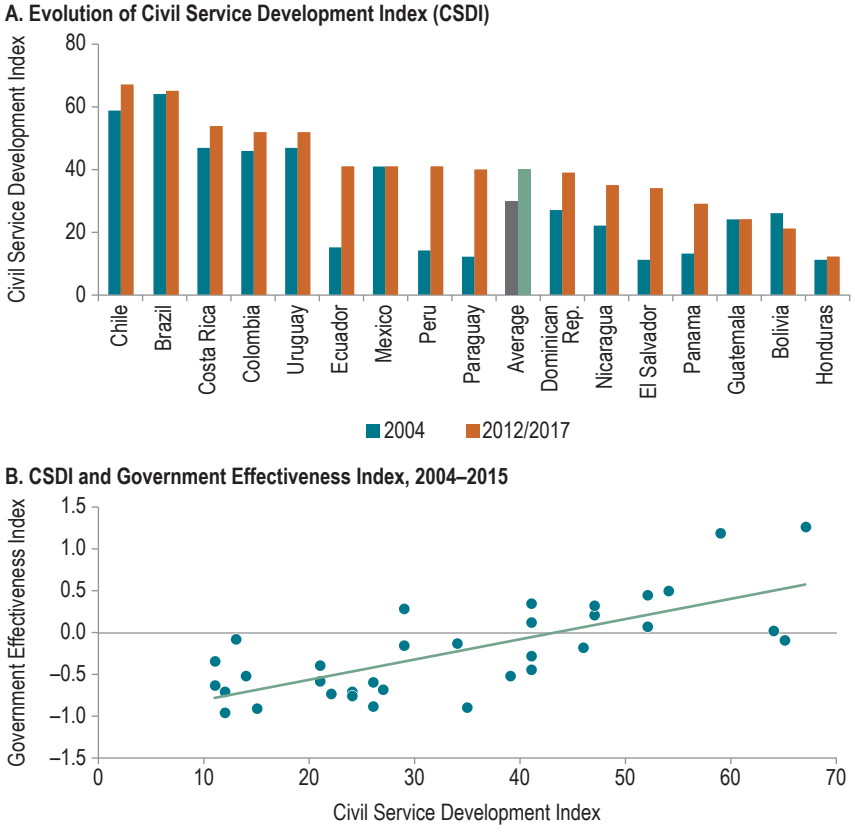
Civil Service Management: The Importance of People

Reforms to government employment and compensation are important elements of public spending reforms. While first- and second-generation reforms have concentrated mostly on controlling rising employment and wages with policies such as wage and payroll freezing, massive layoffs with voluntary retirement processes, and the like, recent reforms have also emphasized the importance of specialized skills needed in the public sector and the professionalization of the civil service. The management of public sector employee compensation is important to attract qualified workers into the public sector and, hence, establish a professional civil service. It is, therefore, one of the key milestones for improving the quality of public expenditures. Several empirical studies draw a link between

[18] The G20/OECD Compendium of Good Practices on the Use of Open Data for Anti-Corruption is a useful resource for countries to assess and improve their open data frameworks (OECD, 2017c). Argentina, Colombia, and Mexico have all announced that they are committing to implementing the Open Contracting Data Standard, a global open data standard for publishing public procurement information. Chile in 2018 with MIT LAB collaboration has set up one of the first Latin American platforms that integrates and visualizes public procurement data: http://datosabiertos.chilecompra.cl/.

[19] See, for example, OECD (2018b) and EBRD (2012).

Figure 9.5 Civil Service Development Efficiency Index and Government Effectiveness



Source: Authors' calculation based on Cortázar , Lafuente and Sanginés (2014) and Lafuente (2015); https://publications.iadb.org/handle/11319/8416#sthash.5GYwKgma.dpuf; Civil Service Development Index (CSDI), IDB; and the Index of Government Effectiveness (World Bank).
Note: The methodology is based in the identification of critical points that feed eight subsystems: a) human resources planning, b) work organization, c) employment management, d) performance management, e) compensation management, f) development management, g) human and social relations management, h) HR function organization; and five indexes: a) efficiency, b) merit, c) structural consistency, d) functional capacity, and e) integrating capacity.

professionalization of the civil service[20] and benefits such as economic growth, less corruption, more trust in government, improved service delivery, and efficient execution of investment. Unfortunately, according to

[20] See Acemoglu, Johnson, and Robinson (2001); Cai et al. (2009); Dahlström, Lapuente, and Teorell (2012); Cortázar, Fuenzalida, and Lafuente (2016); Dollar and Kraay (2003); Evans and Rauch (1999); Henderson et al. (2007); Knack and Keefer (1995); Lira (2012); Mauro (1995); Maxfield and Schneider (1997); Rodrik, Subramanian, and Trebbi (2004); Sacks (2010); and Van de Walle, van Roosbroek, and Bouckaert (2005).

the IDB's Civil Service Development Index,[21] Latin American and Caribbean governments are doing a mediocre job of managing their human resources. Average scores inched up from 30 points (of a possible total of 100) in 2004 to 40 points in 2017, with the best performer achieving 67 points and the worst 12 points (Figure 9.5A). Greater civil service development may have a significant impact on the capacity of the state measured by the Government Effectiveness Index (Figure 9.5B).[22]

Most Latin American countries suffer from a combination of excessive public wages—with a public-private wage gap over 20 percent—and, in some cases, excessive employment—especially at the local level—inflating the wage bill to 30 percent of public spending, which is higher than in developed countries (Chapter 3). Latin America's labor force also lacks professionalism in tasks such as procurement, performance evaluations, and investment management. Hence, following lessons learned, some key policy recommendations based on evidence from the IDB and other theoretical and empirical literature are provided. As with most policy recommendations, there is no one-size-fits-all. The challenge is to improve workforce productivity while balancing costs and the quality of service. Moreover, labor market institutions may be an impediment to comprehensive civil service reform in the region unless they are included as an integral part of the reform. Table 9.2 presents key recommendations to reform civil service.

Whether short-run reforms should focus on wage levels and their dispersion or on employment depends on a country's starting point. Short-term wage measures provide only temporary relief, and thus, it is advisable to concomitantly adopt structural reforms to avoid the recurrence of medium-term wage pressures and avoid demoralizing employees. Short-term measures usually take the form of a temporary wage freeze, an attrition-based employment reduction, or an inflation adjustment to slowly decrease wages as a share of GDP. This process should begin with workers whose wage gap with the private sector is highest, usually less-skilled and middle-level staff who are highly politicized or union protected. While those actions might be effective in the short term, prolonged usage distorts the compensation structure if the public wage falls below the private wage. Eventually, these actions could be reversed retroactively by political forces, again putting

[21] The index follows a methodology that measures the quality of human resource management in the public sector following good practices from the Ibero-American Charter for the Public Service. In 2004, the IDB helped implement a methodology for measuring how the government civil service operates in 18 countries from 2004 to 2017.

[22] Correlation is not causation and the relationship might very well run both ways simultaneously.

Table 9.2 Policy Recommendations to Improve Efficiency in Civil Service Management

	Key recommendations	Details
Short- to medium-term reform	a) Wages: Temporary freezing of nominal wages; b) Employment: recruitment freezes, natural attrition, elimination of job positions in overcrowded areas.	Based on functional review of public sector, including mergers of government units/ministries, process reengineering, subcontracting noncore functions.
Planning/ Prioritization	Develop a comprehensive civil service plan setting a vision and goals while prioritizing methods and tools. Include interactions with labor market institutions.	Develop a strategic long-term vision through forward-looking management (OECD, 2012). Devise possible social dialogue and pacts.
Coverage/ Coordination	Centralize civil service management to track all public-sector workers and control their payroll. Coordination between Civil Service Office and minister of finance is key for short-term sustainability reform.	Include all civil services from low to high skilled in all agencies at all levels of government. Coordinate under a centralized civil service agency that oversees and promotes training and HRM development and accountability.
Competition	Use competitive processes for hiring civil servants. Competitive compensation can be promoted through public and private sector wage comparisons.	Develop a meritocratic service by depoliticizing the civil service. Use oral and written exams and competitive examinations and background checks to recruit civil servants.
Digital technology and efficient tools	Implement a centralized electronic payroll system, as an effective management tool. Make it interoperable with IFMIS and with the overall electronic payroll.	Identify ghost workers, double-dippers, overstaffing, and overpayment through census and payroll analysis in critical sectors.
Transparency and participation	Promote transparent pay systems with equal pay for equal work based on responsibility and performance. Aim for Open Data Contracting.	Develop consistent advertisements for positions. Publish the identification of ghost workers and overstaffing. Curb nepotism.
Professionalization	Strengthen professionalization of the senior workforce to deliver value for money efficiently due to the increasing complexity of spending, and digital technological change.	Promote open and competitive hiring and technical training for senior officials.
Ex-post evaluation	Ensure that performance matters in civil service management. Pay for performance enough to retain more motivated civil servants and improve performance.	Formal performance management systems need to be designed and implemented. If not, they achieve the opposite, and result in more dissatisfied civil servants.
Monitoring and control	Develop payroll audits and institutional assessment of payroll expenditures and management. Hire an external audit firm.	Headcount, transactional audits were applied in Brazil, Honduras, El Salvador, and several African countries, usually with support from multilateral organizations.

Source: Author's elaboration from Lafuente (2018), Meyer-Sahling, Schuster, and Mikkelsen (2018); IMF (2016); OECD (2012, 2017b); Cortázar, Lafuente and Sanginés (2014).

pressure on public spending. The potential adverse effects of this plan can be partially mitigated by targeting overcrowded areas, reengineering government by merging units/ministries, and allowing flexible reassignment of employees across sectors by removing legal barriers to mobility. As in several European countries, "social pacts"—national deals negotiated between governments, trade unions, and/or employer organizations—could be implemented. However, social dialogue to build reform consensus takes time and might be possible only if fiscal space and the menu of reforms allows.[23]

While short-run reforms are necessary for fiscal sustainability, they cannot substitute for structural civil service reforms. Planning serves to match short- and long-term civil service goals. While the region has slowly been improving its workforce planning (this subsystem of the index increased from 31 to 42 points between 2004 and 2015), performance is still weak; most countries do not have a long-term vision of human resources. Centralized personnel databases—important for short-run adjustments and long-term career follow-up—exist in very few countries. The lack of political will to fix this issue has led to huge pockets of inefficiencies.[24] Centralized human resource offices that coordinate with the Ministry of Finance and reliance on an electronic civil service payroll are necessary first steps to improve wage bill spending efficiency. Strengthening these systems is key to track all public-sector workers and control their payroll through information systems.

Another critical factor to improve civil service efficiency is to increase competition in hiring, promotion, and wage setting to establish a truly meritocratic system comparable to the private sector. However, the competitiveness of government compensation can be undermined by politicized hiring, nepotism, and powerful unions, through collective bargaining and strikes that set a wage premium over the private sector where the coverage and strength of unions is usually less.[25] Competitiveness should encourage equal pay for low- and high-skilled workers in the public sector relative to the private sector. However, unions may lead to wage compression,[26] putting senior managers in

[23] For example, the conditions that led to success in Spain in the Moncloa Pacts of the 1970s are not the same as the austerity measures needed after the Great Recession.

[24] A recent study in Central American countries (Dumas and Lafuente, 2016) shows that administrative staff per teacher and per health sector professional have increased in most countries between 2007 and 2013 in an irrational way, raising questions about the efficiency with which the public sector expanded to enhance the delivery of much-needed public services.

[25] A third of the countries conduct wage comparisons on an ad hoc basis, while less than 10 percent conduct a systematic annual or biannual comparison (IMF, 2014).

[26] Wage compression in the public sector in the United States started in the 1970s, and Borjas (2003) claimed that as a result, the public sector found it increasingly more difficult to attract and retain high-skilled workers.

the public sector at a disadvantage in terms of compensation when compared to their private sector peers. Even in countries without powerful unions, 17 out of 18 Latin American and Caribbean countries surveyed include minimum wage provisions in their constitutions, with a minimum wage higher than the median wage in Panama, Costa Rica, Paraguay, Jamaica, Guatemala, Peru, and Honduras (Alaimo et al., 2017). In Brazil, while the minimum wage is lower than the median, it increased 119 percent from 1996 to 2012. This increase put strain on the fiscal situation since raising the minimum wage affects not only the wage bill but pension spending as well. These provisions make civil service reforms and overall public spending reforms more difficult to achieve. Studies document how short-run adjustments in the wage bill were long-lasting when accompanied by payroll audits and structural reforms that improved fiscal consolidation and efficiency. Evidence from performance-related pay in the public sector is generally positive (Meyer-Sahling, Schuster, and Mikkelsen, 2018).

Smart, Integrated Data Systems for Better Targeting

Integrating personal, tax, and property data pertaining to individuals and firms is a difficult task that requires a government to have enough political and legal power to be able to request and integrate data from multiple offices and levels of government that usually refuse to share data. It also requires compliance with secrecy laws protecting privacy of information and digitalizing all databases using common protocols and a unique identifier. Once these hurdles are overcome, digital technologies and "big data" allow the smart automatic crosscheck of data so that government bodies (i.e., tax administration, social security administration, health ministry, etc.) can accurately identify who should pay taxes or fees and the potential beneficiaries of spending transfers. It also allows governments to uncover informality and poverty. All public institutions that feed the system with their data benefit from cross-checks in the system which in turn are set by law. Every office maintains its independence, and continues with its protocols, yet a central system automatically produces economies of scale since datasets useful for several agencies are exchanged with the central unit, which shares with third parties the information, avoiding costly individual exchanges. A system that targets subsidies and social programs based on a static snapshot will likely face serious challenges in providing support to those most in need. Best practices are observed in countries that have achieved a level of online integration between databases such that updates in one immediately result in updates to the integrated system. The foremost example is Argentina's SINTyS, but Chile's SIIS and Brazil's Cadastro

Unico are also breaking ground in this direction.[27] Internationally, Estonia and the Republic of Korea are at the forefront, using and innovating with these smart data exchange systems, or so-called e-service databases. In Estonia, all information is stored in a distributed data system and can be exchanged instantly upon request (X-Roads).[28]

Figure 9.6 shows how most of these systems are set up, which data they integrate, and what are some of the by-products. The integration of administrative public and private data could eventually encompass the employment status of individuals in the labor force and data on income and poverty, assets and properties, finances, consumption of public services, schooling, health services, and so on. Hence, the range of products and savings in government spending could be potentially multiplied. Data sharing can save in leakages (about 1.7 percent of GDP in Latin America), improve coverage of social programs and effectiveness in diminishing inequality and poverty, detect fraud in pensions and other social security payments, detect informality, improve health efficiency by providing comprehensive e-health records, and even facilitate most common services such as obtaining a driver's license or opening up a business. Argentina, a pioneer in creating this type of system in 1997,[29] struggled with the common identifier and set up an algorithm to uncover a unique identity from the civil service, electoral, tax, and health system registries. Subsequent systems with a solid national identity introduced the electronic identity.[30] On the basis of evidence from the region and international experience, Table 9.3 provides a

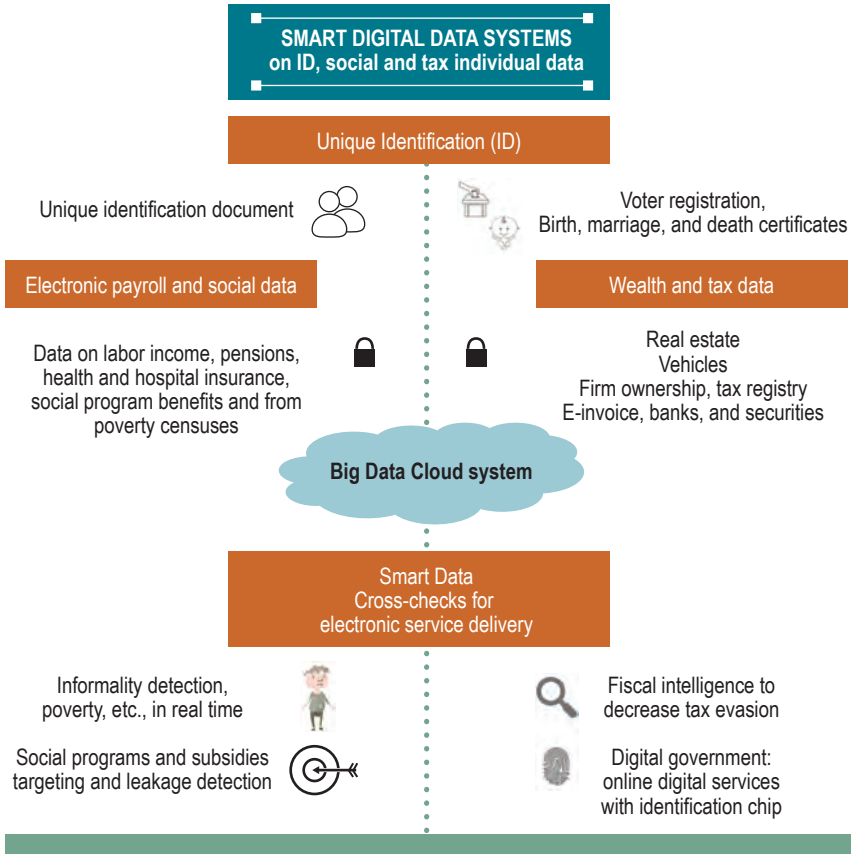
[27] A single registry for all social protection schemes is needed to target programs and achieve efficiency (see Chapter 3). Sharing information between these programs and other databases helps in determining the well-being of individuals, in real time.

[28] Integrated individual data systems evolved from different starting points, ranging from control of leakages and coverage of transfers to detecting fraud in social security payments (Argentina, Belgium, Brazil, and Chile, for example) and reducing tax evasion in Argentina, and providing online digital government services to citizens as in Estonia, or Korea.

[29] SINTyS (Sistema Nacional de Identificación Tributaria y Social) was created in Argentina by decree in 1998. It is unique in the world for integrating data from the expenditure and the tax sides (Barca and Chirchir, 2014). The system involves more than 1,800 databases virtually and performs more than 4,500 data exchanges, 17,000 digital judicial investigations, and about 5 million individual consultations through the Web Service.

[30] In Estonia, the electronic ID is a mandatory national card with a chip that carries embedded files. Using public key encryption, it can function as definitive proof of ID in an electronic environment. Functionally, the ID card provides digital access to all of Estonia's secure e-services, releasing a person from tedious red tape and speeding up daily tasks including banking or business operations, signing documents, or obtaining a digital medical prescription (https://e-estonia.com/). A similar electronic ID is used in the Crossroads for Social Security system (CBSS) in Belgium (https://www.ksz-bcss.fgov.be/en).

Figure 9.6 How Smart Integrated Data Systems Work



Source: Pessino, 2017.

list of key recommendations to be adapted to the data exchange and information technology conditions of each Latin American country.

Political will at the highest level is of utmost importance for information systems since they involve extensive cooperation among government at different levels and offices, some of them very powerful and without clear and direct gains from sharing information. Picking winners at first, by selecting data exchange with the highest expected outcomes, can help overcome the resistance to sharing information by demonstrating the effects of doing so. To avoid breaking the needed trust that this system needs to operate, legal provisions to protect privacy and security of the data together with the most novel technology to prevent information leakages and cyberattacks are indispensable. Ex-post evaluation of products—particularly estimates of impact and outcomes (not inputs) from the working of the system—should

Table 9.3 Policy Recommendations to Improve Efficiency in Digital Integrated Data Systems

	Key recommendations	Details
Pilot (Short to medium term)	a) Set up a pilot within a high-level office with a mandate to coordinate administrative data; b) Set up security and privacy of information; c) Improve, digitalize, and standardize databases beginning with ID data.	Choose two or three databases whose exchange of information could demonstrate the highest benefits of the system (quick wins). Publicize results obtained from the pilot and invite other institutions to join.
Planning/ Prioritization	Develop a vision of electronic service delivery, information management, and privacy security among all stakeholders. Implement a cost-benefit analysis to determine if each data analysis tool has larger expected benefits than costs.	Design the system to coordinate a homogenous framework for databases with administrative data allowing the interchange of information among agencies.
Coverage/ Coordination	Centralize the Coordination unit of the integrated data system at a high level of government for the management of administrative data of multiple offices. Aim to cover all centralized and decentralized databases.	Aim for an autonomous body or independent advisory group to direct the long-term vision. Include social, property, labor, and tax information on citizens and firms.
Regulation	Issue legal norms to include a unique ID number in all databases/transactions; set rules for digitalization with common protocols and algorithms allowed by regulations to cross data-producing outputs for different services.	Only designated agencies can receive outputs of the algorithm and/or data. Protect the right to privacy and habeas data. Provide information security; protect data from privacy invasion and cyberattacks.
Digital technology and efficient tools	Implement a technological model to interconnect databases with a common ID to form not only a master base, but access to algorithm outputs that permit sharing data for specific objectives for and fulfilling the legal mandate of stakeholders.	Encrypt information, protect data security and integrity, and prevent cyberattacks. Evolve continuously to meet new digital, information, and legal challenges.
Transparency and participation	Promote transparency by publishing through different media the information about transfer beneficiaries whose publication is not forbidden by privacy rules.	Allow citizens to review their own data within the system and know which institution accessed the information.
Professionalization	Create a lean, skilled, and motivated interdisciplinary group including information and communication technology specialists who share the vision of obtaining the best services and results for citizens.	Promote motivated and skilled staff for each stakeholder in the system: ministries, registries, state-owned enterprise, social security, tax administration, and subnational government.
Ex-post evaluation	Ensure ex-post evaluation of output and outcomes, not ex-ante control of every input. Measure the performance of the system based on objectives.	Use monitoring indices of the objectives, the percentage of people covered, information and its use for obtaining savings, and better targeting.
Monitoring and control	Develop audits for the detection of consultation patterns correlated with abuse of information. Monitor data integrity and violations of security and privacy.	Use auditing indices of the objectives of the system as the percent of all individuals incorporated in the system and the use of such information.

Source: Authors' elaboration on the basis of Fenochietto and Pessino (2007, 2011); Pessino (2017); Barca and Chirchir (2014); http://www.sintys.gob.ar; https://www.ksz-bcss.fgov.be/en; https://e-estonia.com/.

be constantly updated and publicized. Finally, the explosion of digital technologies and constant challenges require these systems to innovate constantly: Estonia, for example, uses blockchain to protect the integrity of data.[31] Hence, political support and the legal and institutional setting of the system are the pillars that allow its development while smart data mining improves targeting of transfers, increases transparency, and fights corruption. The impact of data mining on savings of money, time and paper, and on lowering corruption is enormous: for example, targeting social transfers and tariffs produced savings of at least $100 million a year in Argentina (computed from only 30 percent of digital exchanges), for a high rate of return to a total investment of $50 million since 1997.

Public Financial Management: Improving Processes

Public financial management (PFM) relates to the way governments manage public resources (both revenue and expenditure). Ideally, PFM deals with both processes and results (short- medium- and long-term implications of financial flows). PFM has a broad and a limited definition.[32] This book focuses on the limited definition: the processes used to manage a treasury, automate public-sector flows of money and resources, and account for these financial movements.[33] Better processes will achieve savings, although rarely estimated.

[31] Blockchain, a novel technology that enables digital information to be distributed in a secure manner, is a way to streamline the sharing of valuable information in a secure way, protect sensitive data from hackers, and give every individual more control over information.

[32] For a broad treatment, see the excellent international handbooks on PFM by Allen, Hemming, and Potter (2013) or Cangiano, Curristine, and Lazzare (2013) and the Latin American and Caribbean compendium of PFM practices by Pimenta and Pessoa (2015).

[33] The backbone of PFM as defined here is a set of "resource management" processes that ensure that after budget formulation, resources are available to those implementing budget policies, making government work. These include treasury single accounts (TSAs), which provide a centralization of financial resources and flows that were previously decentralized. To adopt the TSAs, governments need to have in place an Integrated Financial Management Information System (IFMIS) that enables management, monitoring, control, reconciliation, accounting, and reporting on budget execution and accounting movements including bank account balances. It is a computerized system that tracks government expenditures and payment processing; but constitutes an organizational reform, affecting work processes and institutional arrangements. IFMISs and TSAs require integration, automation, and digitalization of government budgets and financial management. Governments commonly also have "accounting and reporting" processes in place. These allow government to keep records of financial flows, and to structure these records in ways that allow independent scrutiny. Much of this recording is still being done on a cash basis, although a growing number of countries have been moving to an accrual-based accounting system (Andrews et al., 2014; Kaufmann, Sanginés, and García Moreno, 2015).

The adoption of first-generation PFM reforms in the region took place in the 1990s as part of the overarching modernization of the state. Although good indicators of results are few, better organization of financial flows within the government and faster budget execution are noteworthy. Yet many challenges remain, including improving and updating organizational structures, legal frameworks, methods, strategies, and information systems. One key element is the absence of indicators to measure PFM efficiency (Pimenta and Pessoa, 2015). Results analysis is also missing in first-generation reforms. In fact, Andrews et al. (2014) state that whether a PFM system is good, bad, or indifferent should not rely only on whether the form of the system conforms with "good international practice," but rather on whether it delivers good results. They note that public officials who cannot rely on the PFM system to produce results must rely on other, informal and unofficial means to obtain what they want, opening the doors to inefficiency, waste, and corruption. Theses reforms focused mostly on mechanical and iterative processes from the strategic phase of budget formulation to the end of budget execution, in which governments deliver on the promises and proposals included in the budget. The reforms did not pinpoint the outcome to be delivered, the strategic vision, or the planning of end objectives, much less the outcomes of those objectives.

While PFM progress has been encouraging, it has been uneven, and expectations have not been met in a number of Latin American countries.[34] PFM cannot remedy institutional or organizational weaknesses; that is, it cannot ensure efficient allocations by political decision-makers (Welham, Krause, and Hedger, 2013). Indeed, computerization has the potential to jeopardize genuine reform in PFM. A new generation of PFM reforms must learn from the past and include these key elements: 1) focus on the functioning, not simply the processes, of the PFM system and link it with strategic priorities on expenditure allocation; 2) centralize it under the Ministry of Finance to include all public sector transactions; 3) (re)implement an IFMIS tailored to institutional capacity. More integrated systems (including TSAs, payroll, procurement, budget formulation and execution, investment, etc.) require more capacity, and so it is important to 4) maintain both the IFMIS software and the hardware to keep the system functional and secure. A key risk is that

[34] The Public Expenditure and Financial Accountability (PEFA) framework shows that PFM processes (covering all phases of the budget cycle, comprehensiveness, transparency, and credibility) in Latin America and the Caribbean continue to exhibit weaknesses. Between 2007 and 2016, PEFA assessments were conducted for 15 countries in the region and, under a correlation of grades from D to A to a scale from 1 to 4, the region achieved an average score of 2.7 (67.5% of the highest possible score), showing that there is still ample room for improvement.

once the procurement decision is made in favor of a vendor, the government locks itself in (unless it is willing to reinvest substantially in a different system). Hence, perform a thorough analysis including CBA to decide whether to buy an off-the-shelf or in-house custom-built system. Either way, the decision has major implications for costs and resources (Chêne, 2009). This brings us to two final points: 5) keep, publish, and disseminate consolidated public accounts, including public accounting aligned with the International Public-Sector Accounting Standards (IPSAS); 6) monitor internally and externally the performance and/or compliance of all PFM systems. Finally, as a practical matter, the rollout of IFMIS typically takes at least twice as long and costs twice as much as originally envisaged—even when it ends up working well. That said, effective implementation of a well-designed and appropriate IFMIS can assist the budgetary process more than any other single improvement in the technical infrastructure. Now that the experience is available to all, repetitions of the fallacy of looking for "technical" solutions to political, governance, and institutional problems should no longer be tolerated.[35]

Institutions to Improve Allocative Efficiency

Allocative spending efficiency involves aligning budgetary allocations with strategic priorities. Are budgetary resources being allocated to programs and activities that promote the strategic priorities of the country? Are these priorities based on ex-ante and ex-post sound economic evidence and CBA? Is public expenditure allocated to improve long-term growth perspectives while considering equity?

Several institutions help achieve allocative efficiency. Other key elements include:

- A strategic vision based on evidence that sets out the framework and priorities to be achieved
- Results-based budgeting (RBB)
- Integral or partial spending reviews including CBA to allocate and prioritize public spending to the objectives of growth and equity[36]
- Medium-term Expenditure Frameworks (MTEFs) to gauge performance on a multiannual basis

[35] See also Fritz, Verhoeven, and Avenia (2017); Hashim and Piatti-Fünfkirchen (2018); Schiavo-Campo (2017).

[36] One of the key tools for evidence-based policymaking is CBA and this should be conducted to ensure transparency and objectivity. For a given expenditure proposal CBA compares the total forecast costs to the economy with the total forecast benefits, to see whether the benefits outweigh the costs and by how much.

- Evaluation and recommendations from independent institutions such as domestic fiscal and productivity councils and from international organizations (OECD, IDB, Corporación Andina de Fomento (CAF), the World Bank, and other local or regional banks)

Toward More and Better Results-Based Budgeting

The budget is a tangible manifestation of national priorities: on what will the government spend? How much will go for education, health care, highways, and so on? The objective of RBB is to replace the traditional decision-making process, which is based on expenditure and inputs, with a logic oriented toward results, in terms of the effective provision of goods and services. RBB is not a stand-alone institution; it should be linked with spending reviews, the MTEF, strategic priorities, and evaluation.

Most countries in Latin America and the Caribbean have or are still substituting the traditional line budget into RBB structured by programs that can involve one or more areas. According to the PRODEV index, Chile had advanced the furthest in RBB processes by 2013, followed by Mexico, Brazil, and Peru (Figure 9.7A).[37] The weaknesses associated with lack of allocative efficiency call for a shift from managing state services as a collection of agencies in pursuit of their own objectives toward managing as a system focused on priority outcomes. The performance budget shows what each dollar will accomplish, generally in the way of a measurable result achieved (such as a reduction in crime or improvement in nutrition).[38]

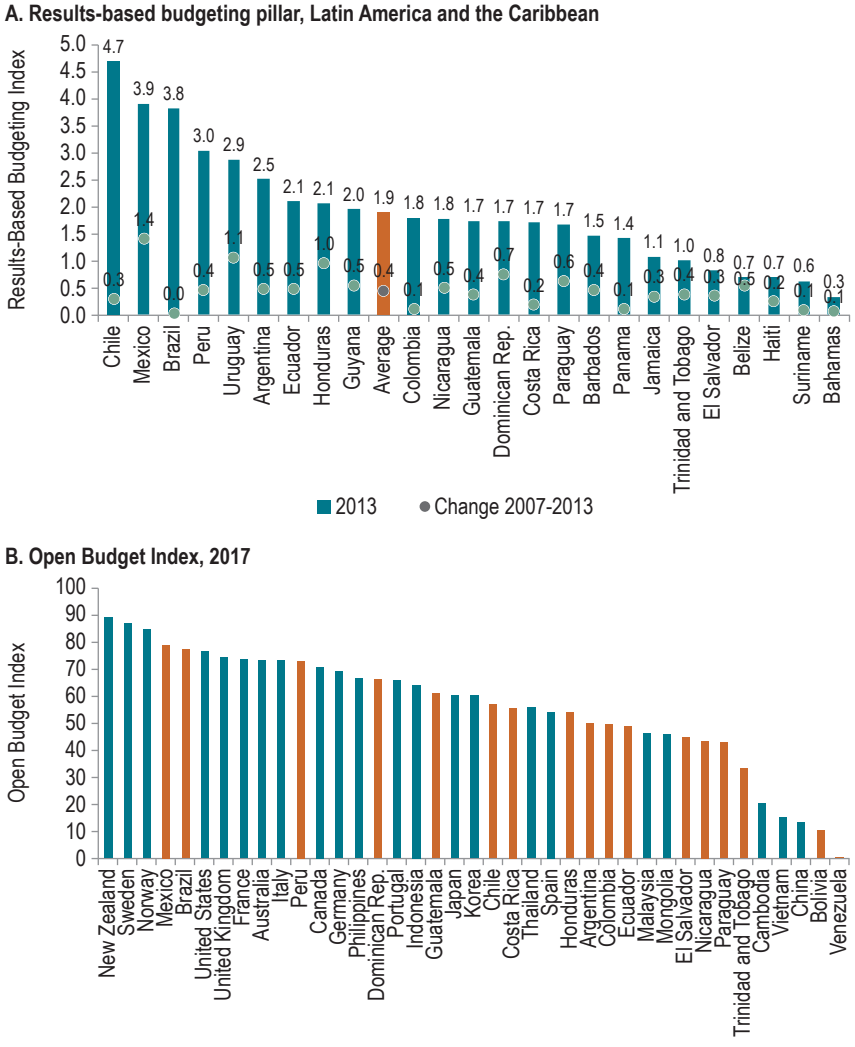
RBB emerged as a driver of budgetary innovation in the United States more than 60 years ago but has had an uneven sometimes disappointing international history (Schick, 2014). Why have RBB reforms been so fragile? The short answer is that RBB is hard work; one year's success doesn't assure the next year's and one year's costly investment in data collection and analysis does not obviate the need for additional investments the next year. The key question is whether RBB can become the process for allocating resources or if its principal aim should be to enrich the supply of information to budget makers. In most countries, performance reports and program evaluations were rarely used to increase or decrease spending, and almost never to eliminate

[37] The PRODEV evaluation system (SEP) points to a slight positive trend between 2007 and 2013 in the RBB pillar: from an average score of 1.5 in 2007 to 1.9 in 2013 on a scale from 0 to 5—38 percent of the highest possible score—suggesting that there is still ample room for improvement (IDB, 2015).

[38] However, every program could (and probably should) be able to show its budget in both formats.

programs.[39] However, performance information can help identify measures to improve the performance of the program. The fact that few governments have a true results-driven RBB speaks to the difficulty of implementing this type of

Figure 9.7 Results-Based Budgeting and Open Budget Index



Source: Authors' calculation based on A) the Results-Based Budgeting Pillar from the PRODEV evaluation tool, Kaufmann, Sanginés, and García Moreno (2015); and B) International Budget Partnership (2018).

[39] Experience shows that it is not appropriate to link strictly reallocations of resources to past results or programs, since in most cases the programs contribute to solving a need or problem in society and it is not appropriate to punish beneficiaries for the inefficient management of authorities responsible for the execution.

budget. The suggestion is to have an allocative RBB with rational incrementalism, that spurs governments to channel spending increases to programs that promise the greatest returns. It should be conceived as a method for allocating incremental resources to achieve incremental changes in results. One may challenge this method claiming it exempts the "base"—the ongoing activities that account for almost all public expenditures from the RBB's purview. To construct a change oriented with marginal increments RBB, prioritized programs must be subjected to performance measurement and be expressed in causal relationships. Then, governments have the capacity to apportion costs among the results produced by spending agencies and can attribute products and outcomes. RBB would become a form of gradual implementation of a zero-base budgeting.[40] Applying RBB to the entire budget would doom the effort to failure for most countries, both because of the conflict it would cause but mostly for the informational burdens it would place on budget makers. Table 9.4 provides broad recommendations, to be adapted to each country's reality, for making an operational RBB achieve outcomes and gradually improve efficiency in public spending.

Chile and more recently Peru provide lessons learned in RBB practices for the whole region. Chile excels in the evaluations of ex-post individual programs and integrates these within the budget, complemented by incentives for management personnel (Darville et al., 2017; Guzmán, 2017; Hawkesworth, Melchor, and Robinson, 2013). The RBB model in Chile, developed gradually but systematically since 1993, uses information to improve allocative efficiency. This is an "informed budget"; it is not a hard-and-fast rule to change resource allocation, but is utilized to inform and improve the budget process. The system requires ample evaluation capacity,[41] enough resources to implement the system; and the institutional commitment of the Directorate of Budget (DIPRES). Peru has excelled in setting key priorities at a high level, developed a causal model, and integrated planning with budgeting (Box 9.1). Peru's few and more manageable priority actions to improve early childhood nutrition and skills follow the more recent evolution of RBB in advanced countries. Finland developed its most recent planning in five key

[40] Recently, the Mexican government implemented a zero-based budgeting (ZBB) approach in the Federation Expenditure Budget (PEF), which included a thorough review of the federal budget. This was done with the aim of stabilizing the public deficit and achieving a sustainable path for public finances (Durán et al., 2018).

[41] During 2006–2017, 358 programs were evaluated, including 49 percent of the total 2017 Chilean budget. In terms of effect on budget, only 7 percent of evaluations conducted between 2000 and 2009 led to the termination or replacement of the program. In 2017, the budget for favorable programs was increased by 17 percent and for underperforming programs it was decreased by about 4 percent.

Table 9.4 Recommendations to Improve Results-Based Budgeting (RBB)

Planning/ Prioritization	Develop a strategic plan setting a long-term vision to prioritize key spending programs. Gradually introducing results-based government spending schemes is preferable to a wide reform. Spending reviews and independent evaluations of programs should provide feedback to guide decisions.	Ideally, set spending priorities whose attainment rests on sound theory and evidence. Select programs with an ex-ante higher return based on CBA to improve growth, equity, or specific objectives. The strategic plan and priorities should be aligned with the budget and the MTEF.
Coverage/ Coordination	Have the budget cover the entire government. Start with a pilot of a few priority programs. Coordinate program objectives and measurement of performance between the Ministry of Finance and the implementing office(s).	Line ministries set performance measures in agreement with the Ministry of Finance or the ministry establishes a coordination unit of each prioritized program to enhance cross-ministry coordination. Ensure adherence to priority policy goals.
Operational model	Choose prioritized programs with a model explaining how development objectives, including causal relationships and underlying assumptions, are to be achieved. These programs should be articulated in the RBB, and performance indicators should be selected based on the model. Link planning and budgeting with an MTEF.	Without a sound model, it is difficult to link inputs to outputs and/or outcomes and hence devise SMAART (specific, measurable, attainable, achievable, relevant, and time-bound) performance indicators. CBA analysis should be the method of choice for ex-ante evaluation.
Digital technology and efficient tools	Develop administrative digital data on individuals and firms (see Table 9.3) to better measure program performance and outcomes for individuals and households. Integrate RBB performance and indicators into existing IFMIS systems to better monitor indicators.	Include or improve interoperability of the IFMIS platforms with RBB indicators and compliance throughout all the line ministries, the Ministry of Finance, and other national and subnational offices.
Transparency/ Participation	Provide taxpayers with a transparent, results-oriented budget; promote assessment of performance indicators by an independent agency (i.e., Statistical Office, Fiscal or Productivity Council).	Provide for an inclusive, participative, and realistic debate on budgetary choices (IBP, 2018; OECD, 2015). Transparency in the budget varies widely among countries and there is room for improvement (Figure 9.7B).
Professionalization	Increase the capacity of the Ministry of Finance, line ministries, and offices to understand, adapt, and develop causal models relating outcomes with inputs and performance indicators. Train budget analysts in program logic, costing, etc. Improve incentives for professional staff.	Gradually develop capacity to implement effective performance information systems. Complement capacity with independent studies and reviews by expert bodies including auditing offices and productivity councils. Incentives should orient personnel to results.
Ex-post evaluation	Evaluate ex-post the results/outcomes of specific programs, choosing every two to three years a new set of programs. Ensure greater use of the strategic spending review to reprioritize programs (OECD, 2018b).	The evaluation of the priority programs should serve to modify the budget "incrementally" if the program has the higher return among alternatives. It can also serve to decrement the budget if it has low or negative returns.
Monitoring and control	Develop and exercise the oversight capability of Congress and independent auditory agencies in relation to RBB. This monitoring and control should be permanent.	Performance data that are not independent should be externally validated to ensure quality. Audit high-risk programs, and consider the reliability of performance data.

strategic areas, recognizing that its past plans (with 964 strategic priorities for action) were neither strategic nor actionable. The latest OECD Performance Budgeting Survey reveals that a more selective approach to priorities

BOX 9.1 A RESULTS-BASED BUDGET (RBB) PROGRAM FOR NUTRITION AND SKILLS FORMATION IN PERU

Since 2007, the government of Peru implemented policy measures to improve children's outcomes in nutrition, health, and skills. In 2008, the government moved to RBB as the vehicle for investing in children and followed a rigorous approach to allocating spending to achieve results in children's health and development. The implementation of priority programs through RBB in Peru is an example of good practice (Table 9.4):

- **Planning:** Beginning in 2006, consensus building put stunting high on the political agenda to reduce malnutrition in children under the age of 5 by 5 percentage points within five years. It was based on a sound, causal life-cycle model from in utero to five years of age that established the links between inputs (nutrition, vaccinations, etc.) and outcomes (weight, anemia, cognitive achievement, etc.). Priorities were formalized in 2011 in SINAPLAN, a bicentennial plan that set out a vision and strategic planning through 2021. The priorities were aligned to the Budget Law of 2008, creating four programs: the Articulated Nutritional Program (PAN), Neonatal Maternal Health (SMN), Learning Achievements (PELA), and Access to Identity.
- **Coordination:** Primarily led by the Ministry of Finance, which brought health experts on staff and maintained close coordination with the Ministry of Health. The difficulty in coordination was overcome by bringing line ministry officials inside the Ministry of Finance.
- **Operational model:** The government set clear targets in the areas with the highest rates of stunting and doubled spending. Positive outcomes were mostly linked to additional budget allocations.
- **Digital:** Monitoring involves large administrative databases and the cross-checking of data that include the identity of children and their families.
- **Ex-post evaluation:** Indicators were based on the causal model; the National Institute of Statistics, an independent government agency, regularly monitored output and outcome indicators.
- **Professionalization:** A specialized unit on RBB followed the process with highly motivated staff with expertise in areas such as capacity building for regional governments. The World Bank collaborated with the IDB on public expenditure management (including performance-based and participatory budgeting), and with a wide range of agencies, including the United Nations and the European Commission.

Source: For more information, see, among others: https://www.mef.gob.pe/?lang=en; Niño de Guzmán (2016); and Marini et al. (2017).

and performance objectives is being taken today in some countries including Canada, the Netherlands, New Zealand,[42] and the United Kingdom. The Netherlands is removing the use of performance information in areas where the causality between money and results is too weak (Shaw, 2016).

In Latin America and the Caribbean, Peru drew on the Chilean experience, but also incorporated evidence-based causal models, and its articulation with the RBB. At least in the nutrition programs, the RBB application in Peru provides a best practice example to the world. This experience shows that implementing even a handful of programs through RBB well is a lot of work, requires the dedication of specialized resources, but most of all, requires political commitment (the broader the consensus, the better) and solid budget institutions to build performance budget institutions on top. Between 2008 and 2014, expenditure associated with child health grew by 140 percent. The proportion of child malnutrition dropped by 50 percent. Peru reduced extreme malnutrition of children under five years (i.e., stunting rates) from the baseline of 28 percent (which was constant from 2000 to 2008 in spite of economic growth) to 14.5 percent in 2014. This occurred thanks to poverty reduction and sustained implementation of multisectoral interventions (Huicho et al., 2017).[43]

Smart Spending Reviews (SSRs)

In addition to RBB, the instruments available to improve allocative efficiency of expenditures include the periodic reviews of public spending commonly carried out in OECD countries. A previous version of the reviews has been carried out by the World Bank since the 1990s (Pradhan, 1996). Their use has become increasingly popular given the need to generate public savings in the wake of the Great Recession (Robinson, 2013; Marcel, 2014) and as governments search for a "smarter" expenditure allocation across national policy priorities (Vandierendonck, 2014). SSRs can be comprehensive, including most major expenditure programs, or focused on specific programs; rather than identifying what nonpriorities and waste spending to cut, they seek to reallocate resources from nonpriority to priority activities,

[42] The Better Public Services Results approach in New Zealand, introduced in 2012 but put on hold in 2018, chose to commit to achieving results in five areas: reducing long-term welfare dependence; supporting vulnerable children; boosting skills and employment; reducing crime; and increasing interaction with the government. These priorities remained unchanged until 2017, when results were assessed and priorities modified. http://www.ssc.govt.nz/sites/all/files/snapshot-mar17_0.pdf.

[43] It also contributed to improving second-grade literacy and decreasing in maternal and neonatal mortality.

mostly oriented to growth. The pace and depth of spending reviews has been increasing in advanced countries: of the 32 member countries of the OECD, only half used them in 2011 compared to 80 percent in 2018. Of those that implemented them, two-thirds reported the SSR helped them reallocate spending to match government policy priorities (OECD, 2018).

Medium-Term Expenditure Frameworks

An MTEF is a budget institution designed to strengthen the link between policy, planning, and budgeting over a multiyear horizon intended to progressively achieve: 1) fiscal discipline, 2) strategic allocation of resources (allocation efficiency), and 3) good operational management (technical efficiency) (World Bank, 2013). Consistent with the three potential outcomes, the literature distinguishes between three "types," "stages," or "levels of development" of MTEFs: 1) the Medium-Term Fiscal Framework, MTFF, which typically contains a statement of the macrofiscal strategy, a debt sustainability analysis, and medium-term macroeconomic and fiscal targets and forecasts; 2) the Medium-Term Budgetary Framework, MTBF, which broadens the scope of an MTFF to allocate resources based on strategic priorities constrained with the top-down resource envelope; and 3) the Medium-Term Performance Framework (MTPF), which focuses on program objectives, (output- rather than input-based) budgeting, and performance evaluation to enhance efficiency.[44] Latin America has undergone a wave of MTEF adoptions since 2000.[45] However, from the beginning, the intent was not to reform traditional budget institutions and allocative behavior but to promote macrofiscal discipline. There was no integration between the MTEFs and the existing budget process. These reforms were introduced and understood as part of a wider PFM component and as mechanical projection exercises that did not link policies and resource allocation and did

[44] Two studies using Generalized Method of Moments (GMM) on a panel of developed countries found that the more demanding MTPF has positive effects on technical and allocative efficiency (measured by the cost-effectiveness of health expenditure, and health efficiency scores from a stochastic frontier model of health delivery, respectively). Even achieving fiscal balance has stronger effects in countries with more advanced MTEFs (World Bank, 2012; and Vlaicu et al., 2014).

[45] While the World Bank (2013) accounts for 11, Kaufmann, Sanginés, and García Moreno (2015) accounts for 21, and in some cases, countries report that they are in the MTBF or even in the MTPF stage. However, these assessments look at processes (and promises) rather than function, and hence by reviewing official websites, only 10 countries published MTFF documents varying from three pages of fiscal projections to lengthy reports filled with details on various fiscal risks and Debt Sustainability Analysis (DSA) mostly from an initial macroeconomic MTFF stage (Suescún, 2018).

not promote changes in budget behavior toward improving allocative efficiency. Yet, the conclusion is not to ignore the need for an MTEF but to resize and reformulate the approach to the possibilities and capacity of the country, including prioritization of only a handful of programs aligned with the annual RBB through well-specified causal models. In this endeavor, the much-needed capacity to adopt a successful MTEF can be enhanced with professionalization and advice from independent fiscal institutions.

Fiscal Councils (FCs) and Productivity Commissions (PCs)

Fiscal councils are budget institutions designed to provide independent oversight of macrofiscal forecasting, policy, and performance (IMF, 2014). Its role is complementary to MTEFs and can enhance MTFFs by improving countries' understanding of their fiscal position and prospects.[46] However, the main purpose of FCs is to accompany fiscal rules and complement macroeconomic projections of the MTFF rather than evaluate efficiency in spending policy. But modern productivity commissions or councils might play an important role in enhancing capacity building to prioritize spending. Ideally, they are independent advisory or review bodies of capable researchers, some with proven public policy experience, that deal with productivity research in human and physical capital. They can be the first fiscal institutions that are directly concerned with productivity and growth. Internationally, the productivity commissions of Australia (created in 1998) and New Zealand (created in 2011), are examples of independent agencies concerned with productivity issues as well as social and environmental issues. The core function of these commissions is to conduct public inquiries at the request of the government on key policy or regulatory issues that affect their economic performance and community well-being. In addition, the commissions undertake a variety of independent research to support their annual reporting, performance monitoring, and other responsibilities. These institutions flourish more easily and effectively whenever countries develop a culture of evidence-based policy, coupled with arrangements aimed at boosting the transparency and accountability of government (Banks, 2015). These preexisting conditions are fundamental for most public spending enhancement institutions.

Context also matters: there is no one-size-fits-all solution when it comes to pro-productivity institutions (Renda and Dougherty, 2017). The case of

[46] While in the European Union 30 Fiscal Councils were created between 2001 and 2015 (and most after the crisis of 2009), in Latin America and the Caribbean only a few exist in Chile, Colombia, and most recently in Peru and Brazil.

the productivity commission in Chile[47] is an example. Decades of tradition in CBA and project evaluation, added to more recent ex-post evaluation of programs, culminated in 2015 with the creation of Chile's own Productivity Commission, comprised of high-level, well-trained economists who independently inquire and advise government on productivity concerns. These type of review and research commissions, quite appropriate for providing high-quality ex-ante and ex-post evaluation of alternative policies, could be important to make incremental changes in the budget.

In conclusion, it is possible to gradually adjust RBB practices to improve the allocative efficiency of public spending. The key recommendations for countries with less experience in RBB is to select a small number of medium-term priorities from strategic planning; analyze them in a causal model from where inputs, outputs, and outcomes can be identified; and then, integrate them into a narrowly defined RBB. This is not an easy task, and should be accomplished by increasing budgeting and line ministries' capacity. They can be helped in their task by advisory bodies, such as well-staffed and independent productivity commissions, and should be accompanied by periodic strategic or "smart" public spending reviews, and ex-post evaluations, including modern and ever-increasing impact evaluations of programs in the region, that can reengineer public spending gradually, but solidly. The intertemporal link should be provided by redesigned, microoriented MTEFs with priorities and performance evaluation policies.[48]

Institutions to Improve Allocation to Age-Related Spending

Age-related spending for public pensions and health care is the largest item in some Latin American and Caribbean government budgets. While average spending is 10.8 percent of GDP, in some countries, such as Argentina and Brazil, it is 17.8 percent and 16.3 percent, respectively, which is close to 40 percent of total public consolidated spending. The situation

[47] Mexico and Barbados also offer examples of Productivity Councils but with a tripartite representation comprising government, business, and unions. A principal strength of such tripartite bodies is their capacity to build awareness of current policy problems among key stakeholders and the potential gains from change. However, it can also be an obstacle to reaching agreement on robust policy solutions, such as in labor market regulation or industry assistance programs. Also, these tripartite commissions mostly compile existing information, without producing new knowledge through in-house research.

[48] This proposal is close to the much-better-designed and gradually implemented zero-based budgeting of the 1960s, adapted to the political economy reality of budget incrementalism.

will not improve in the following decades; Brazil's projected spending under current parameters on health and pensions will grow to more than 50 percent of GDP and Argentina's to more than 30 percent, shrinking the fiscal space to invest in growth-producing activities even more in the coming decades (see Chapter 3). For some countries (i.e., in Central America) public spending on pensions is much lower as a percentage of GDP or total spending, but pension coverage is low and limited to the well-off. Consequently, governments are increasing noncontributory pensions everywhere in the region. These policies are not only difficult to sustain but impose a tax on formality and a subsidy to informality, thereby increasing the need for further unfunded spending since formal coverage will not increase (nor will revenues from contributions to social security) and the incidence of social policy on poverty will diminish (Alaimo, Garganta, and Pessino, 2018). The problem is how to address old-age inequities in a fiscally sustainable manner without imposing more distortions (i.e., unintended effects on informality).

Current budget-making procedures fail to resolve one of the most important tensions in budgeting: how to protect the financial security of the elderly without unduly burdening younger generations to pay for these commitments.

The OECD suggests that the rationale for governments to prepare and publish long-term fiscal projections is to raise the profile of fiscal sustainability, provide a framework to discuss the fiscal sustainability of current policies and the possible fiscal impact of reforms, and centralize responsibility for long-term policy analysis. In fact, it is critical to complement debt sustainability analysis (DSA) with long-term projections of health and pension spending, factoring in these effects on fiscal sustainability over the long term. However, in many Latin American and Caribbean countries, even current social security spending is not considered part of consolidated public spending, although the IMF GFS manual explicitly considers it as part of total spending.[49] Much less consideration is given to liabilities, even when they arise from government employees. Most countries do not have actuarial projections of pensions, health spending, and deficits (Glassman and Zoloa, 2015) and when they do, they are not disseminated. For this reason, almost no country incorporates periodic projections of actuarial deficits into fiscal accounts, MTEFs, or DSAs. Chile, Peru, and Colombia have achieved some progress in this area. However, a full analysis

[49] According to the IMF, fiscal transparency demands working with a broad definition of public spending that covers at a minimum the central government, aggregate state and local governments, and social security expenditures within any separate fund.

of contingent and long-term liabilities from public employees and special pension regimes either in central government, state-owned enterprises (SOEs), or SNGs has yet to be done (see Box 9.2).

From a longer-term budgetary perspective, Latin America and the Caribbean needs to focus on two key areas. The first is to improve the forecasting of longer-term expenditure and revenue trends, including the fiscal impact of demographic trends. The second is to link fiscal policy to long-term sustainability considerations. Fiscal councils could take the lead in the second area. The current imbalance between taxes and spending, which has led to an unsustainable level of debt, did not occur overnight. In practice, however, the budget process is focused too much on short-term effects and not enough on longer-term impacts. It is necessary to analyze all the pension entitlements that the region's countries are implicitly or explicitly committed to pay that might or might not be in the short- or medium-term budget but are in the "real" budget that countries should consider when planning future expenditures and taxes. Moreover, it is necessary to project age-related spending on a regular basis and contemplate the effects of future higher spending on pensions, for instance, by lowering spending on other transfers and investment.

Publishing these projections regularly could help lead to a structural reform that increases incentives for formal work, reduces the budgetary cost of aging, and increases intergenerational equity. Basic parameters include the retirement age, the replacement rate, and the contribution rate. Gradually raising the retirement age in consonance with life expectancy while protecting the vulnerable is the preferred option (Bosch, Melguizo, and Pagés, 2013). For public health-care systems, evidence suggests that most countries have room to improve efficiency (see Chapter 8), which would help contain the growth of health spending while expanding coverage. When possible, structural reform should be gradually implemented to build a universal pension system paying entitlements from the same source of revenue. The aim is to provide all workers with protection against basic risks (and avoid old-age poverty), stop increasing fiscal vulnerability, and align the incentives of workers and firms to increase productivity and efficiency.[50] Consensus building, combined with the transparent release of

[50] The reform could be two-pronged: i) An anti-poverty, noncontributory pension for all citizens; and ii) mechanisms to promote formal employment (i.e., subsidies offered to reduce contributions for wage and nonwage earners and that require all workers to contribute, irrespective of their occupational category). See Levy (2008); Antón, Hernández, and Levy (2012); and Bosch, Melguizo, and Pagés (2017) for further details and options.

information on pension and health systems, might help in the difficult process of reform.

Latin American and Caribbean countries will need to make significant additional policy changes and investments to cope with rapidly aging populations. In particular, they must develop policies to help older, still-productive citizens find full-time employment or more flexible work arrangements so as to increase their labor supply, productivity, and ultimately, their well-being. Japan, Singapore, and Korea have already made major investments in automation and robotics to make up for lost productivity in their aging workforces (Scott, 2018).

Public Investment Management

Public investment is critical to current and future growth as it expands a country's productive capacity (Chapters 3 and 5). However, it is not only how much is invested that matters but how well investments are managed, that is, how decisions are made as to where, why, and how investments are funded and delivered to attain the best possible social outcomes.[51] Public investment efficiency levels, in turn, are a function of the quality of institutions, and the relative strength of public investment management institutions. The quality of procedures varies greatly across countries and determines how well investments are planned, whether allocations are made to priority activities for economic development, and whether the implementation avoids waste and delays (Rajaram et al., 2014; Dabla-Norris et al., 2012).

In Latin America and the Caribbean, public investment is low, averaging 4.5 percent of GDP in 2016, whereas Asian developing regions are investing an average of 6.3 percent of GDP. Furthermore, investment expenditures are highly volatile as they tend to decline sharply in periods of fiscal consolidation, economic downturns, or whenever public finances come under stress (Ardanaz and Izquierdo, 2017). In addition, while an important share of public investment is executed by SNGs (between 60 and 70 percent of consolidated spending in Argentina, Bolivia, Guatemala, Mexico,[52] Peru, and Brazil, followed by Colombia with about 41 percent), in-depth knowledge about their management capacities is limited.

At the regional level, an analysis of public investment management efficiency revealed that the areas showing the weakest performance were

[51] Delivery models include traditional public investment (TPI), PPPs, or investments through SOEs.

[52] Mexico's share of subnational investment is smaller when investment by SOEs is included in consolidated spending.

strategic alignment and project appraisal, ex-post evaluation and audit, scrutiny, and public access to information over the investment cycle. The lack of systematic ex-post appraisal and data collection on performance undermines evidence-based decision-making (Contreras et al., 2016). Investment projects that are larger than a small fixed amount should always be appraised through a CBA to ensure projects are prioritized according to the highest internal rate of return.[53,54] Additionally, digital tools are not being exploited to their fullest in the region to save time and provide more accurate, integrated, and timely information on investment procedures and outcomes.

There is an urgent need for more efficient public investment spending given the short window of opportunity that ends in 2040. International evidence and lessons learned pinpoint critical factors for the reform of public investment management systems (PIMSs), presented in Table 9.5. The IDB has supported institutional reforms aimed at strengthening PIMSs in several Latin American and Caribbean countries over the last 15 years, empowering national and subnational governments. A key lesson emerged—that of taking a comprehensive approach as follows.

Importantly, to avoid unrecorded expenditures in the budget or off-budget, PPP and SOE investments should be integrated into modern public investment management and general budget procedures (Box 9.2).

Subnational Expenditure Assignment and Management

Growing decentralization of spending can support efficiency in public spending if several preconditions are met (Chapter 3), among them: 1) a fairly matching level of tax decentralization; 2) a well-defined, nonconcurrent, and transparent distribution of spending responsibilities; and 3) institutions at the local levels with enough capacity and quality to manage higher spending effectively. For horizontal equity, it is also important to improve the design of intergovernmental transfers[55] so that they

[53] However, the coverage of ex-ante evaluations in most Latin American and Caribbean countries is small, receiving only 2 out a maximum of 5 in the PRODEV evaluation tool. Chile, Colombia, Mexico, and Peru were consistent leaders across different surveys (Kaufmann, Sanginés, and García Moreno, 2015).

[54] When a project has large positive but unmeasurable externalities, a cost-effectiveness analysis will have to suffice (Fontaine, 2006). Other less data-demanding methods such as multicriteria decisions should be considered only second best.

[55] Revenue sharing is the most commonly used instrument to fill vertical imbalances, whereas equalization transfers aim to reduce horizontal imbalances, and special purpose transfers seek to finance subnational spending in priority sectors and programs.

Table 9.5 Recommendations to Improve Public Investment Management

	Key recommendations	Details
Planning/ Prioritization	Develop a medium-term public investment strategic plan. Link to a multiyear budget and to national plans. Cost-benefit analysis (CBA) should be the first method of choice to prioritize projects.	A comprehensive long-term approach considers all sectors in a single plan, ensures coherency, and avoids overlapping spending.
Coverage/ Coordination	Establish unified coordination between planning entities, the Ministry of Finance, and subnational governments for the entire investment cycle. Cover all financing entities including public-private partnerships (PPPs), trusts, and state-owned enterprises (SOEs)	Coordination avoids duplications and ensures coherence in national, sectoral, and regional prioritization (IMF, 2015). It is advisable to have a high-level interinstitutional entity.
Operational	Align the ex-ante CBA to a national development strategy; consider maintenance costs; distributional effects; complementarities and transversal appraisals of projects affecting many sectors to avoid wide political discretion.	Prioritize investment projects with relevant economic trade-offs (Laursen and Myers, 2009). Use sector-specific methodologies for CBA and standardized social prices. Have clear criteria to choose delivery model: traditional public investment (TPI), PPPs, or SOEs (Box.9.2).
Digital technology and efficient tools	Design a digital platform for the entire investment lifecycle and integrate it with the Integrated Financial Management Information System (IFMIS) to interoperate with other modules such as budgeting, procurement, and treasury.	Big data analytics, algorithm, and machine learning will benefit efficiency and transparency of public investment management systems (PIMSs) such as Geographic Information Systems (GIS) and visualization techniques.
Transparency/ Participation	Make budgetary information pertaining to investment projects available to the public, disclosing costs and contingent liabilities for PPPs (OECD, 2018b).	Combat corruption by improving transparency and accountability mechanisms; provide detailed and accurate information to oversee competitive procurement process for projects.
Professionalization	Skills of civil service need to be attracted, enhanced, and retained across project planning, management and appraisal, procurement, and policy analysis.	Developing skills to manage investment is critical. Outsource training to national and local universities across the country with a rigorous curriculum (OECD, 2014c).
Ex-post evaluation	Mandate ex-post evaluations on all public investment projects and use ex-post evaluation findings to improve the ex-ante appraisal process.	The lack of feedback on the quality and performance of large projects impedes improvements to future investments such as infrastructure and entails a clear risk with high costs.
Monitoring and control	Develop a set of relevant and standardized indicators throughout the investment cycle that feeds into a monitoring system. They are an important check on cost and time overruns.	Monitor the implementation progress of projects through inputs, activities, and outputs; intermediate and final outcomes should be aligned with strategic goals. Monitoring indicators need to be tracked years after the investment is made.

Source: Based on assistance to various countries in the region as well as international evidence. See Contreras et al. (2017); Eguino et al. (forthcoming); IMF (2015); OECD (2014c); and Rajaram et al. (2014).

BOX 9.2 FISCAL RISKS FROM PUBLIC-PRIVATE PARTNERSHIPS (PPPs), STATE OWNED ENTERPRISES (SOEs), AND PUBLIC TRUSTS

PPPs are long-term contracts whereby the private sector supplies infrastructure assets and services traditionally provided by the government, which funds them directly or through user fees and tolls, in this case called concessions. In recent decades, an increasing proportion of infrastructure services has been delivered through PPPs in Latin America. When compared with traditional public investment (TPI), the benefits of PPPs mainly arise through bundling, which allows the costs of building and maintaining the assets to be internalized, since the same agent undertakes them, engaging in life-cycle costing and reducing operational and maintenance costs. Hence, from an economic standpoint, PPPs should be used when they provide more value for money (VfM) than TPI, that is, when the private provider is able to deliver the infrastructure at a lower cost and with greater efficiency than the public sector. However, in many cases, investment projects undertaken through PPPs have been used not for efficiency reasons but to circumvent spending controls, delay the recording of costs or not record the investment, the guarantees provided, or the debt incurred in the budget, thereby jeopardizing fiscal transparency (Engel, Fischer, and Galetovic, 2013). PPPs allow governments to increase investment without immediately adding to government borrowing. This is tempting, particularly for cash-strapped governments trying to meet fiscal targets; while they liberate fiscal space in the short run, they lose it in the long run. This lack of a budgetary record transforms committed payments into contingent liabilities, which, despite attempts to control them by, for example, estimating risks through sophisticated techniques, are highly correlated to the economic cycle. The materialization of concealed and contingent liabilities in some European countries, such as Spain, Portugal, and Iceland,[a] during the 2008–2010 financial crisis shows that these liabilities continue to be insufficiently dealt with in the public accounts of countries. Even when private partners bear the majority of explicit risks, the government continues to be the real residual claimant of the project, guaranteeing service provision. This problem largely explains the renegotiation of contracts with high cost overruns in some Latin American and Caribbean countries. The great majority of road concessions in Chile, Colombia, and Peru before 2010 were renegotiated, leading to cost increases of between 20 and 100 percent (Bitran, Nieto-Parra, and Robledo, 2013). This situation has led to low-quality and fiscally costly investments. Governments should limit overall fiscal risks from PPPs by i) choosing the right project through CBA first, then evaluating whether to procure with a PPP or TPI, and ensuring good governance along the project cycle to avoid corruption and inefficiencies; and (ii) implementing good budget reporting and registering in the budget and on balance sheets direct liabilities as the asset is constructed. Annually, all exposure, debt, and guarantees that generate contingent liabilities and fiscal risks should be disclosed.[b] Meanwhile, as reforms are implemented, limit the use of PPPs (Honduras limits the use of PPP projects up to 5 percent of GDP, Peru 12 percent of GDP and Mexico 10 percent of revenue).

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BOX 9.2 FISCAL RISKS FROM PUBLIC-PRIVATE PARTNERSHIPS (PPPs), STATE OWNED ENTERPRISES (SOEs), AND PUBLIC TRUSTS *(continued)*

State-owned enterprises (SOEs) are major but overlooked contributors to public investment in the region, accounting for a large share of total public-sector investment (Mussachio, Pineda Ayerbe, and García 2015). In Argentina, Mexico, and Uruguay, SOEs' account for more than 40 percent of total public-sector investment, particularly in key sectors such as electricity, water, and sanitation. SOEs face several challenges since most of them provide socially sensitive public goods and services that can undermine the soundness of their investment appraisal processes. For instance, SOEs are sometimes required to undertake very risky or suboptimal investments due to political meddling (Reyes-Tagle and Garbacik, 2016). In other cases, SOEs on their own might incur higher levels of risk as they expect central governments to bail them out in cases of crisis (Ter-Minassian, 2017). Given their public nature and the fiscal risks SOEs can entail, governments should i) require them to submit projects through a tailored procedure using CBA within the public investment-cycle; ii) strengthen control and monitoring systems of SOEs including investment decisions; iii) record their transactions in statistics and budgeting, considering them a part of the overall public sector; and iv) limit the scope for politically motivated intervention in the day-to-day operations of SOEs.

Transitory Public Firms—**Trust Funds** ("Fideicomisos")—are another vehicle to carefully manage investment in Latin America and the Caribbean. These extra-budgetary funds (EBFs) have been set up for a variety of reasons, including to avoid the constraints of the budget process and a detailed and transparent CBA, thereby protecting funds from political scrutiny. On the other hand, well-designed EBFs provide a mechanism for linking earmarked taxes and levies to the services delivered (e.g., social benefits and road maintenance). If left outside the budget, the funds must be subjected to a robust and transparent system of control, reporting, and external audit (IMF, 2018). Several PPPs in the region are financed through these EBFs, which allows them to remain off-budget during the entire cycle and avoid being subjected to the same provisions of the project cycle as other investments. This practice not only leads to fiscal risks but raises the probability of corruption unless well monitored or, even better, if registered in the budget.

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[a] A recent example of the effect of a failure to record actual or contingent liabilities is the Great Recession in Portugal. Portugal's debt rose from 76 percent of GDP in 2009 to 130 percent of GDP in 2014. One half of this increase was attributable to the reclassification of entities that were off the general government accounts—primarily public enterprises, as well as several PPPs—and to interventions aimed at shoring up financial institutions (Cangiano, Curristine, and Lazare, 2013). See additional case studies for the region in Reyes Tagle (2018).

[b] With regard to other contingent liabilities, the financial crisis revealed gaps in many governments' knowledge of their underlying fiscal position. To identify and mitigate all sources of fiscal risk, it is essential to improve fiscal transparency rules and practices along several dimensions, including: i) more complete coverage of public-sector institutions and transactions; ii) presentation of more comprehensive reports on public-sector assets and liabilities; and iii) presentation of more frequent and timely fiscal risks reports (Cottarelli, 2012). In Latin America and the Caribbean, there is little identification, quantification, and management of fiscal risks ranging from liabilities related to old-age expenditures, to explicit or implicit guarantees for the financial sector, to loan guarantees for enterprises, subnational governments, PPPs, and certain public trusts. Many of these liabilities are off-budget and should be quantified and recorded, particularly those that represent explicit public-sector commitments.

are equalizing,[56] that is, to allow SNGs to provide reasonably comparable levels of public services for citizens at reasonably comparable tax rates even if resources differ across areas.[57]

In Latin America and the Caribbean, these institutional and administrative constraints hinder achieving efficient, effective, and transparent spending at the subnational level. The reform of decentralized fiscal arrangements is one of the more complex areas of public finance, since it spans several policy and institution-building issues, and is strongly influenced by historical, political, social, and economic factors. Accordingly, there is no single right model; thus, advice must be tailored to each country's specific circumstances (IMF, 2009). A set of nonexhaustive recommendations to overcome the main problems SNGs face when engaging in fiscal decentralization is presented in Table 9.6. Lack of transparency and capacity at the local level are key constraints to improve spending efficiency in SNGs. Moreover, and in particular for large federations, many reforms such as increasing SNGs' tax base and improving intergovernmental transfers to make them more efficient and equalizing, require changes with a two-thirds majority in Congress, even changes in the Constitution in some cases, such as Brazil, or the approval of all provinces as in the case of Argentina. Hence, these reforms require ample consensus building and negotiations. Some countries, such as Mexico and Argentina, have benefited from fiscal agreements or pacts to achieve desired outcomes. In the past, many of those agreements were highly political, without much data or evidence to make the sharing of revenues or responsibilities more efficient or equitable. Once they are based on evidence, with good analysis and diagnostics of tax bases, expenditure needs, and costs, the political consensus is expected to be enhanced. As in most spending institutions, planning and prioritization with careful diagnostics and evidence are key to improve the institution of fiscal federalism. Other institutions, such as for intergovernmental fiscal coordination can also help in the diagnostic, evidence, and consensus-building processes. Building equalization transfers may also improve the construction of a federation with common ends.

[56] See Muñoz, Pineda, and Radics (2017) on the design of equalization transfers for Latin America and the Caribbean.

[57] Revenue equalization aims at reducing differences in a jurisdiction's per capita revenue-raising capacity. Since it focuses on tax capacity, it does not provide disincentives to raise revenues. On the other hand, cost-equalization aims at reducing differences in the per capita cost of providing a standard set of public services. Most OECD countries use a mixture of those, while Canada uses revenue equalization. Besides compensating for tax capacity, Australia also includes compensation for expenditure costs.

Table 9.6 Key Recommendations to Improve Fiscal Decentralization for Better Spending Efficiency

	Key recommendations	Details
Planning/ Prioritization	Strengthen strategic planning at subnational levels and integrate with central planning. Assess human, physical, and tax capacities, how potential decentralization of taxation could be developed, how different transfers affect equity and efficiency, and how to diagnose concurrencies of spending.	Planning should be based on evidence-building knowledge and consensus for future reforms. Improve planning, management for results, and transparency. Strong planning capacity at the local level is required to reduce waste and misuse of decentralized resources.
Coverage/ Coordination	Develop vertical intergovernmental fiscal coordination (IFC) for effective management of concurrent spending responsibilities[a] (Ter-Minassian and de Mello, 2016). Specify in high-level legislation which level of government can override decisions in concurrent responsibilities (Ter-Minassian, 2016). Develop horizontal IFC to improve cooperation with the central government on financial management in education, health, etc.	Horizontal cooperation can help minimize adverse spillovers, especially neighboring ones, and exploit potential economies of scale. Vertical cooperation can help avoid cost shifting when higher-level governments establish inappropriate standards and regulations for lower-level counterparts. For fiscal sustainability, limit current spending at the expense of capital and align fiscal rules with the federal level.
Own-source revenue mobilization and transfer schemes	Assign gradually sufficient tax autonomy to SNGs in line with spending responsibilities (allowing them to set rates on own taxes and impose surcharges on national taxes; IMF, 2009). Improve the design of intergovernmental transfers to increase equalization and efficiency. Special-purpose grants could be used for specific objectives.	Tax decentralization improves spending efficiency when it matches spending decentralization. Introduce equalization transfers, which can gradually accommodate further tax decentralization and smooth the transition (Fenochietto and Pessino, 2000). Capital transfers could be used to close infrastructure gaps and foster more equilibrated growth.
Digital technology and efficient tools	Use digital tools to i) manage a central cadaster and update market valuations; ii) integrate individual ID, tax, and social data to digital integrated systems; and iii) coordinate reform of integrated financial management information systems (IFMISs), e-procurement, and e-payroll with federal systems.	Digital tools are a core component of modern government and a strategic asset for improved service delivery. Such tools can also build administrative capacity and improve citizens' perception of public services (OECD/ CAF/ECLAC, 2018).
Transparency/ Participation	Improve the publication of timely and accurate fiscal accounts. Disclose all information, including financial interactions between levels of government, and formulas to distribute transfers to SNGs.	SNGs should disclose public accounts and fiscal risks, and consolidate all information with the central government to build better decision-making processes and trust.
Professionalization	Invest in local capacity building, including development of digital skills. Develop a lean professional civil service workforce to shield against political turnover and nepotism.	Human resource systems in SNGs should promote incentives, together with meritocratic competitive hiring to improve the technical capacity of civil servants. Integrate SNG civil servants in a centrally managed payroll system.

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Table 9.6 Key Recommendations to Improve Fiscal Decentralization for Better Spending Efficiency *(continued)*

	Key recommendations	Details
Ex-post evaluation	Develop reliable information on the cost-effectiveness of spending programs at the subnational level and integrate in national budgeting for a results framework.	A continuous appraisal of the results and outcomes of spending programs is required to permanently assess whether spending is achieving value for money.
Monitoring and control	Build SNG capacity in internal and external audit systems to provide assurance of the integrity of financial statements, thereby improving accounting standards and the regularity of financial management procedures (IDB/World Bank, 2011).	Improve monitoring and control tools at the subnational level to identify wasteful practices and prevent opportunities for corruption.

[a] Since 2012, Colombia has introduced the Contratos Plan in some of its departments to coordinate public investment policies, with a view to promoting more balanced regional development. The Chilean central government also uses Contratos-Region to agree on investment plans with its regions.

The evidence is scarce, but has been increasing in the past 20 years (Chapter 3; Pessino, Pinto et al., 2018).

The Future Is Now: Social Investment Management and Policy

Achieving equity in society is usually considered an objective within each institution that deals with public expenditure, but equity cannot be achieved in fragments even though most countries approach it this way through a myriad of line ministries (social development, social security, health, education, labor, public works, and finance). Each minister is empowered to deal with specific aspects of social policy and programs. To increase equity effectively and efficiently, an integrated vision and system is needed to develop social investments. Quality human capital investments are as important as physical capital in most countries in the region to increase growth; thus, social investments to achieve growth should be treated on a par with public investment management.

The building blocks of an ideally integrated social policy should include at least the following elements.

- **Planning and prioritization based on strong evidence, ex-ante CBA of all major social programs, and feedback from an ex-post evaluation of programs.** Social planning and prioritization should prevent governments from manipulating spending in democratic contests for political power. Often, governments lean toward higher spending on poorly targeted transfers in the interest of

faster growth, but at the expense of long-term fiscal sustainability (sometimes labeled populism).[58]

- **A long-term vision that takes an integrated approach to social investment.** Latin America and the Caribbean should take a comprehensive approach and formulate policies that clearly recognize what capabilities and skills matter, how they are produced, and how to prioritize public policy for producing skills. This method avoids a fragmented and often ineffective approach to public policy that misses the importance of each element in shaping life outcomes. Current policy discussions often focus on one social problem at a time with policies designed to address that one problem, often by some remediation strategy. Examples of fragmented solutions are spending more on police agents to solve crime, building more schools, hiring better teachers, and raising test scores to promote skills. None of these policies is necessarily wrong. However, they miss opportunities for policy synergies and effective targeting. Current research on skills formation suggests a unified approach based on a strategy of human development to reduce inequality by promoting capabilities at all stages of the life cycle. Effective policies supplement the family and its resources, engaging caregivers to enrich the early life of the child and support the child in school. Policies that enhance the skills of parents to be parents are similarly effective. For example, high-quality early interventions reduce inequality by promoting schooling, reducing crime, and reducing teenage pregnancy. They promote health and healthy behaviors; they also foster workforce productivity. These interventions have high benefit-cost ratios and rates of return, passing efficiency criteria that any social program should be asked to pass. Early interventions have much higher economic returns than later remediation and prevention programs, such as public job training, convict rehabilitation programs, adult literacy programs, tuition subsidies, or expenditures on police to reduce crime (Heckman, 2016).
- **An integrated vision of social investment should be reflected in an integrated social investment management strategy.** A central unit should coordinate public investments (PIMSs as analyzed earlier in this chapter) effectively and efficiently and one unit should be dedicated to following social investments (social investment management systems, SIMSs) through the full cycle from analysis, formulation,

[58] As Minister of the Interior of Argentina, Rogelio Frigerio mentioned in a TV program, referring to populist governments: "...they give as a gift well-being and in exchange they sacrifice the future...".

and implementation, to ex-post evaluation and monitoring. This process should in turn be integrated with the budget in a programmatic stance and gradually lead to results-based budgeting. Heckman, Lochner, and Pessino (1999) envisioned a system like that for Argentina, resembling a PIMS, with a broad, analytical, integrated vision with a life-cycle model of skills building from birth onward as the major building block and targeting disadvantaged families. Although schools and schooling are important, effective social policy targets and strengthens the family since inequality in families—far more than inequality in the resources applied to schools—produces inequality in schooling outcomes. It is important to examine integrated policies and break down barriers across cabinet agencies.[59]

- **The social investment system should incorporate the specific characteristics, institutions, culture, and legal framework of Latin American and Caribbean countries.** To improve the efficiency of fiscal policy in reducing poverty and inequality, it is necessary to follow household and public financial data and analyze how equity can be improved by different social programs and policy. Benefit incidence analysis (Chapter 4), following the modern Commitment to Equity (CEQ), allows for a transparent and independent assessment of which programs perform best to reduce poverty and inequality. Informality should also be addressed particularly in the context of escalating payroll taxation and noncontributory social programs that incentivize informality, lower productivity, hinder growth (Levy and Schady, 2013), and decrease the effectiveness of social programs on equity (Alaimo, Garganta, and Pessino, 2018). A comprehensive social investment program should gradually eliminate the tax on formality and the subsidy to informality and provide all workers with the same social insurance programs. After ensuring that CCTs reach their entire target population and operate effectively, additional efforts to help the poor need to focus on raising their productivity by helping them land a higher-productivity formal job. Tackling this challenge requires revising regulations in the region's labor markets, and the methods of financing social insurance programs. Put more bluntly, it demands tax and labor market reform. These issues, long unaddressed, are as difficult as they are urgent (Levy, 2015).

[59] New Zealand provides recent lessons in building social investment, including the launch of a cost-benefit evaluation tool, CBAx, and a new Social Investment Unit, charged with setting evaluation standards, developing methods for estimating return on social investment, and building an information exchange to enable the safe sharing of data to support better decision-making (English, 2016).

The Challenges Ahead

This chapter offers a novel, integrated approach to expenditure policy and management from a comprehensive institutional perspective. It provides key recommendations to improve the governance of most spending institutions and national and international evidence of the impact of those policies. First, a common framework of analysis includes recommendations and evidence for those institutions most capable of improving technical efficiency: public procurement, civil service, smart integrated data, and core PFM processes. Second, a similar framework is used for institutions that foster allocative efficiency: RBB, smart spending reviews, MTEF, productivity councils, institutions to deal with aging and other fiscal risks, public investment management, decentralization institutions, and finally a new proposed institution to deal with both equity and growth— that is, one dedicated to social investment policy and management.

Although most institutions require major improvements, those dealing with allocative efficiency are less developed than those dealing with technical efficiency. This uneven development reflects two facts: 1) the emphasis of first- and second-generation reforms was to achieve fiscal sustainability either by increasing taxes or improving tax administration, and 2) the belief was that spending size and composition did not affect productivity and growth, and that inequality and poverty could be effectively and easily reduced through transfers (without affecting productivity). The assumption was that PFM reforms, including approving the budget on time, setting fiscal rules, and a mechanical MTFF would "automatically" deliver efficiency to public spending. Those beliefs are challenged in this book, which advocates rethinking and reengineering allocative spending institutions to deliver better outcomes in productivity, growth, and overall efficiency. In fact, government today is a large and sometimes selfish partner of the private sector that gives privileges to a few in contracts, hiring, etc., rather than choosing the best growth options based on CBA, growth analysis, transparency, and fair competition practices.

Considering all institutions within a unified framework, six systematic challenges for the governance of public spending hinder the achievement of the best possible outcomes:

- **Challenges in strategic vision and planning.** Most countries lack a strategic vision with priorities based on theory and evidence in overall public spending. There is no national planning and when there is, it is mostly a wish list, without specifying a plan based on a causal model on how to best achieve the intended outcomes.

The lack of planning and prioritization is echoed in each spending institution: procurement, civil service, public or social investment, etc. Key priorities should be kept simple and should not start covering all programs and much less the entire budget to keep them within manageable and measurable SMAART indicators.

- **Coordination and coverage challenges.** Overall spending lacks coordination, in part because the constellation of actors involved in public spending is large and their interests are not aligned and are difficult to reconcile. This lack of coordination permeates most individual spending institutions. Cross-sector, cross-jurisdictional, and intergovernmental coordination are necessary, but difficult in practice. Specific organizations, units, or even periodic fiscal or social pacts to coordinate overall spending and each specific institution should be created or strengthened. Coverage of overall spending in budget, procurement, and civil service systems; public investment systems; medium- and long-term frameworks; and budgeting is consistently limited and low in most countries. This insufficient coverage hinders transparency and jeopardizes most institutions, allowing many to slip through the cracks of the system and leaving many without governance. This opens up each institution to all sorts of inefficiencies, including waste and, more importantly, corruption.
- **Competition and transparency challenges.** While the claim is that competition is the default in procurement, the civil service, and public investment, the exception is the rule in many countries, opening the door to direct contracts, nepotism, and again increasing waste and corruption. While digital systems help improve processes they are no guarantee that coverage and competition will be complete; this must come from enforced regulations. Open data in contracts, procurement, social transfers, and budget, while sometimes problematic with sensitive information, can help expose the loopholes if monitored adequately.
- **Performance measurement and evaluation challenges.** Performance measurement indicates what a program is accomplishing and whether results are being achieved. It helps by providing information on how resources and efforts should be allocated to ensure effectiveness. It keeps programs focused on key goals. This should be coupled with evaluation and analysis to increase understanding of why results occur and what value a specific spending item adds or wastes. Finally, based on performance data and evaluations, reprioritization should gradually occur to keep spending at the most efficient levels.

- **Capacity challenges.** Where the capacity to design and implement spending strategies is weak, policies may fail to achieve their objectives. Evidence suggests that public spending management and growth outcomes are correlated with the quality of government, and this depends critically on the quality of civil service. Most spending institutions require a highly professional staff that can plan, analyze, be willing to change, and is motivated. Current civil service and other labor market institutions prevent this adequate professionalization.
- **Monitoring and control challenges.** Independent auditing should follow procurement, wage setting, data mining, and performance indicators.

Finally, improving spending efficiency requires hard work to build capacity within government and consensus and coordination outside. Most Latin American and Caribbean countries allowed public spending to grow faster than taxes, governance, and capacity. Cash transfers were increased without adequate targeting or without analyzing the trade-off between efficiency and growth. Inequality declined little and countries failed to achieve high rates of growth even as they risked fiscal sustainability. Nonpoor beneficiaries of transfers and subsidies do not want to lose them. Hence, expenditure reforms are more likely to be successful and long-lasting if supported by high-level political compromise coupled with extensive political consensus building and a broad communications strategy, particularly during times of political uncertainty and rising social pressure. Social dialogue and public support for reform allow policymakers to introduce more fundamental reforms; reforms with little social dialogue may well unravel after a few years. For some reforms, switching spending causes some people to lose benefits; it is best to compensate losers if they are poor (as in the case of energy subsidies transformed into social tariffs) or execute the reform gradually so that potential losers are not yet beneficiaries (as in the case of tying increases in the retirement age to life expectancy increases). As usual, most successful reforms build on better basic institutions, such as the presence of property rights, enforcement mechanisms, and basic budget institutions. And of course, no size fits all, and the challenges and recommendations must adapt to the circumstances of each country.

It is time that Latin America and the Caribbean achieves sustained growth without relying on external windfalls of any type. Technical change coming from the digital revolution is both an opportunity to use advanced digital innovations such as big and smart data and a challenge

for governments to develop the capacity to administer digitalization. For that, the region must begin to implement deep, comprehensive reforms in public spending policy and management as soon as possible. Again, paraphrasing Heckman, these reforms are not for indicating where to cut, but where to invest and how much. Reallocating public monies toward the most socially beneficial or cost-effective interventions would improve lives, equity, and overall growth.

10 Shortchanging the Future: The Short-Term Bias of Politics

This volume documents a pattern of spending policies in Latin America and the Caribbean in which governments leave money on the table: spending inefficiencies that, if removed, would allow governments to provide more and better services to more citizens. These inefficiencies pose a difficult puzzle: since citizens in these countries elect their governments, these governments might be expected to pursue policies that improve citizen welfare, and citizens to choose politicians who promise and deliver efficient policies. Unfortunately, this is not what happens. The pressures of competition in the political and electoral marketplaces of Latin America and the Caribbean—as in democracies the world over—do not necessarily drive public policy toward the social optimum. Governments neglect public investments in physical and human capital that would yield economic growth rewards far exceeding their cost, and tolerate gross spending inefficiencies that reduce the value of services that citizens receive. Across the region, there is a systematic bias against policies that would bring substantial benefits in the future or whose fruits are more difficult to observe. Why do democracies, and specifically those of Latin America, exhibit such biases?

This chapter tries to answer this question. One explanation is that the institutions that structure political and electoral marketplaces distort the incentives of politicians to respond to citizen demands—to "supply" efficient, development-promoting policies. Every form of government has rules that establish who elects which politicians and how those politicians make decisions about public policy. No rules are perfect; none give politicians perfect incentives to translate citizen preferences into public policy. However, some are less perfect than others. In Latin America, the formal rules of elections and legislative decision-making favor lower capital

spending; they do not encourage the long-term agreements necessary to implement policies with long-run benefits.

Another class of explanations is that citizens do not "demand" policies that would make them better off. New evidence from surveys across Latin America and the Caribbean reveals that citizens are reluctant to embrace policies that deliver future benefits, even in areas of significant concern to them, such as education and crime. Despite high inequality in the region, support for taxes to pay for redistribution is also low.

There are three possible reasons for these policy preferences: mistrust, lack of information, and impatience. Citizens may not trust one another, the government, or public officials. Lack of trust reduces their interest in any policy that expands the scope of government; they do not believe governments will follow stated policy, or that their fellow citizens will join them in voting against governments that default on their promises. Lack of trust also suppresses citizen demand for policies that require up-front costs to reap large future benefits; they are simply skeptical that those benefits will ever materialize. Citizen mistrust that governments will convert tax revenues into growth-promoting infrastructure is one potential explanation for the declining share of capital expenditure in total government spending in the region (see Chapter 1). New evidence on trust and public policy in the region confirms the role of mistrust in citizens' policy preferences.

Why is mistrust so embedded in the region? At a broad, aggregate level, citizens do not feel represented by political parties; lacking large organizations to solve the collective action problems they face in holding governments accountable, citizens have little trust in government. At a more local level, citizens doubt whether their neighbors would work together to demand that local government improve neighborhood infrastructure. The greater their doubts, the less trust they express in government.

Citizens might also express little demand for "good" policies because they are *uninformed* about what governments can do for them, what governments are doing for them, or what political candidates promise to do for them. If people do not know what governments are capable of, they will not ask the right questions. Lacking information about what governments have done in the past, citizens have no way to hold officials accountable. And if they do not know the policy promises that candidates make, they can neither support the candidate whose promises best align with their preferences nor hold politicians accountable. Ignorance can, therefore, introduce a significant wedge between citizens and politicians, discouraging the emergence of beneficial policies. Capital spending is particularly vulnerable to this problem since its benefits are often indirect and informationally-demanding. Infrastructure—ports and highways, for

example—delivers large indirect benefits in the form of faster economic growth, but it is difficult even for analysts, much less citizens, to quantify those benefits.

Information and trust are related. Citizens who cannot verify government claims of policy achievement have less reason to trust government assurances that stated policies will be pursued. However, even fully informed citizens may have reason to worry that governments will renege on their future commitments. Infrastructure is vulnerable to lack of information: citizens cannot easily verify the efficiency with which their tax dollars are turned into infrastructure projects, nor the technical merits of the infrastructure projects that governments choose to build. At the same time, informed citizens may question whether future administrations will continue construction of the infrastructure projects begun by their predecessors.

Finally, some people are simply more patient than others, and attach a higher value to future benefits. If countries differ in the patience of their citizens, they might also differ in the degree to which they adopt policies with high future payoffs paid for by current expenditures. While patience is an intrinsic quality of individuals, societies can be exposed to external circumstances that try the patience of all their citizens. The poor confront significant challenges in the present that might outweigh their concerns about the future. In countries where the economic environment is volatile, and the chances of bad outcomes are high, citizens are less likely to prefer future benefits to current payoffs. High volatility exacerbates the problem of incomplete information, making it more difficult for citizens to understand the connections between investments today and long-term benefits tomorrow.

The Politics of (Bad) Policy: Institutions

Elected governments might be expected to pursue policies that most improve citizen welfare, and citizens to prefer politicians who promise to pursue these policies. Such policies should be stable in the face of political transitions, and policies that do not work should be quickly replaced by those that do. Elected governments that pursue beneficial policies should also coordinate and enforce them. Unfortunately, reality often fails to conform to these expectations. Across Latin America and the Caribbean, policies tend to be unstable, to favor narrow interests, and to be inefficient (Franco Chuaire and Scartascini, 2014). The region exhibits a systematic bias against investments (e.g., in infrastructure and education) with benefits that only become apparent in the future and are less direct and more difficult for citizens to appreciate.

The political institutions of Latin America—the supply of public policies—contribute to this bias. On the one hand, electoral institutions in the region tend to shy away from geographically targeted investments. This particularly affects infrastructure, which generally yields greater benefits to some geographic areas than to others. On the other hand, policymaking institutions, particularly legislatures, are characterized by low levels of intertemporal cooperation. Political actors have difficulty agreeing on public policies that have short-term costs and long-term benefits. This problem is particularly acute in contexts in which benefits will accrue to future administrations, as with most infrastructure and investment projects.

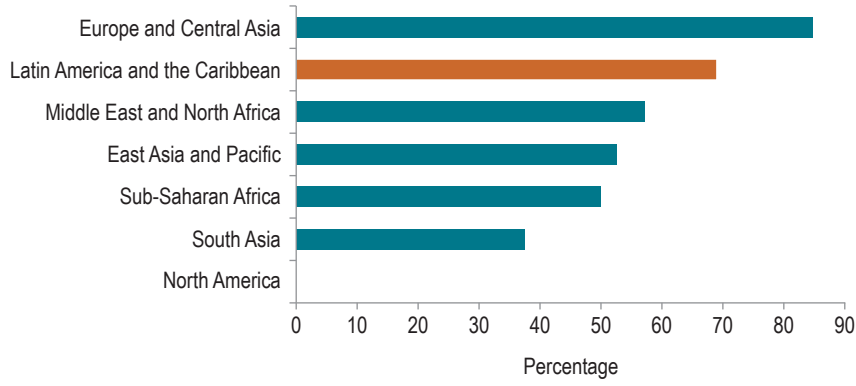
Compared to countries with plurality electoral systems (i.e., winner-take-all, single-member districts), proportional representation countries tend to favor coalitions that share demographic rather than geographic characteristics. Legislators elected in narrow districts have incentives to provide geographically targeted benefits to their constituencies. Infrastructure is particularly easy to target geographically. Transfers, in contrast, are easier to target to demographic groups. Hence, in large proportional districts where parties tend to align with broad interests (unions, exporters, etc.), legislators shift spending toward subsidies and transfers and away from public goods expenditure in the economy (Lizzeri and Persico, 2001; Scartascini and Crain, 2002).

Milesi-Ferretti, Perotti, and Rostagno (2002) look at a sample of 20 OECD countries and find that expenditures on transfers and total spending are higher in more proportional electoral systems.[1] In Italy, when the electoral system became less proportional, transfers to families declined (Santolini, 2017). In a sample of Brazilian states, the more disproportional the electoral system and the smaller the fragmentation of state assemblies, the greater was the allocation to public goods and the smaller the allocation to transfers (Lledo, 2003).

Latin America and the Caribbean stands out with respect to the fraction of countries that exhibit proportional electoral systems (see Figure 10.1). The region is also an outlier when it comes to the institutionalization of congress (see Figure 10.2), with significant implications for legislators' ability to make intertemporal agreements. The measures of congressional institutionalization consider members' degree of technical expertise, the average experience, the relevance of committees, the effectiveness of legislative bodies, and the confidence of people in congress, among other measures (Saiegh, 2010; Palanza, Scartascini, and Tommasi, 2016). One important characteristic of institutionalized congresses is that legislators tend to

[1] Ardanaz and Scartascini (2014) show that fiscal institutions can change this equilibrium by changing the incentives of policymakers.

Figure 10.1 Countries with Proportional Representation, by Region, 2017

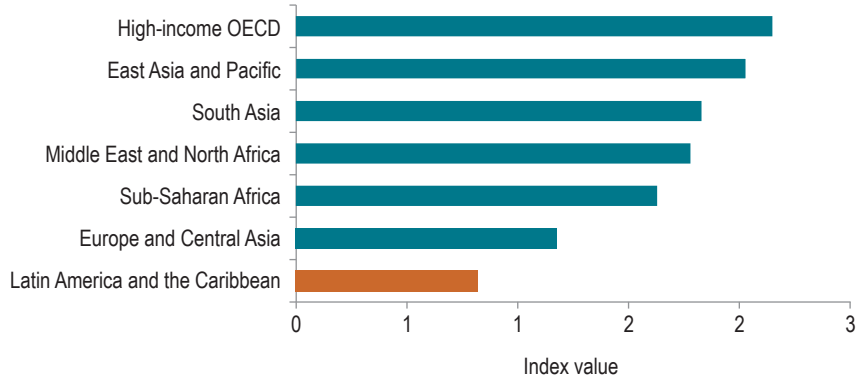


Source: Authors' elaboration based on the Database of Political Institutions 2017.

view them as places to build a career. Becoming a professional politician depends on becoming a professional legislator. Professional legislators invest in their careers in congress, participate in relevant committees, and cultivate seniority and experience. These features of institutionalized congresses tend to facilitate intertemporal cooperation (Stein et al., 2005; Stein and Tommasi, 2008; Scartascini, Stein, and Tommasi, 2013; Franco Chuaire and Scartascini, 2014; Palanza, Scartascini, and Tommasi, 2016).

Professional legislators with long-term horizons are more willing to enter into long-term agreements because they can reap the political rewards of spending projects that yield large benefits only in the future. The institutionalization of the legislature affects those horizons. For example, some legislatures

Figure 10.2 Degree of Congressional Institutionalization across Regions



Source: Authors' elaboration based on Chuaire and Scartascini (2014).

have unpredictable rules for assigning individuals to key committee and leadership roles. Hence, current legislators are more uncertain about the incentives of future legislators to preserve intertemporal agreements. Large investments in infrastructure, for example, yield high future payoffs only to the extent that future legislators approve funding for maintenance. If they do not, infrastructure decays and promised benefits do not materialize.

Long-run policies are also complex. Infrastructure spending entails decisions about where to place it, what type of infrastructure to prioritize, whether it should be built by private or public agencies, and whether it should be partially funded with user fees. However, legislatures frequently do not allocate internal decision-making power to legislators with expertise, leaving legislators with weak incentives to acquire expertise. Since identifying welfare-optimizing public policies requires expertise, systems that do not reward it yield lower-quality policies, including policies that substitute lower current for higher future payoffs.

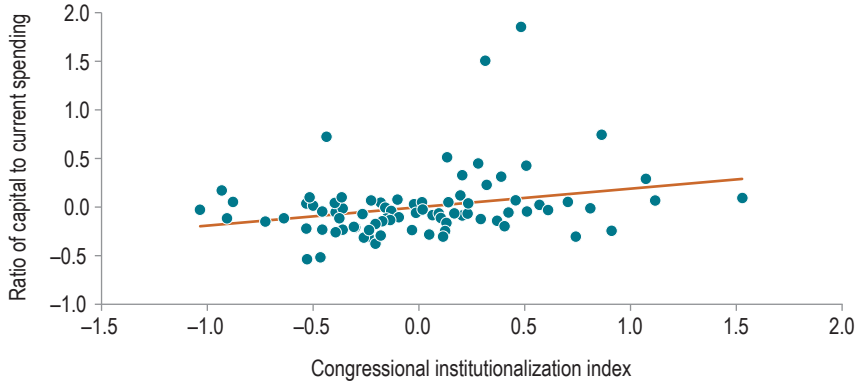
Countries with more institutionalized legislatures, in fact, tend to also produce better public policies. Legislative institutionalization yields better infrastructure and less distortionary subsidies (Scartascini and Tommasi, 2010). It is also positively correlated with less waste in public spending and greater efficiency in education spending (Scartascini and Tommasi, 2010; Palanza, Scartascini, and Tommasi, 2016).

Other institutions also matter significantly for intertemporal cooperation among political actors. Among these, political parties are particularly important. Political parties that provide career paths for members, set the criteria for and influence candidate selection, mobilize electorates independent of the candidates running, and maintain a consistent policy program over time and across candidates, can enforce agreements among legislators; future legislators from a strong, institutionalized, and programmatic party cannot easily renege on agreements made by earlier legislators from the party (see Keefer, 2018). Congressional institutionalization is strongly related to party organization: to the extent that legislators have no partisan reasons to sustain legislative institutions, those institutions are likely to be fragile (Diermeier, Prato, and Vlaicu, 2018).

Latin America and the Caribbean tends to present a bias toward current over capital spending (see Chapter 2). Countries in Latin America and the Caribbean are also particularly weak in terms of institutionalization, particularly of congress, and tend to elect their representatives using proportional representation systems. Are these patterns correlated?

Broadly speaking, institutionalized legislatures and parties underlie the findings in Keefer (2007) that younger democracies are less likely to provide public goods—such as public investment—than older democracies.

Figure 10.3 Ratio of Capital to Current Spending and Congressional Institutionalization



Source: Authors' elaboration based on Scartascini, Cruz, and Keefer (2018); the IMF's World Economic Outlook Database 2017; and World Bank World Development Indicators.
Note: Graph depicts the relationship between the ratio of capital to current spending and congressional institutionalization, controlling for the log of median house district size, judicial independence, party institutionalization, bureaucratic quality, the log of GDP, the log of the land area, and whether the political system is presidential or parliamentary.

More direct evidence for the region emerges from observing a simple correlation. One measure of proportionality in legislative elections is the number of legislators in a legislative district. When there are more, the electoral rules are almost always proportional (seats are assigned according to the fraction of votes that a party receives in the district), and districts tend to be geographically larger. A one standard deviation increase in the degree of proportionality in legislative elections is associated with a decrease in the ratio of capital to current spending of about 5 percentage points—a substantial amount, since the average ratio of capital to current spending in the region is about 22 percent.

Capital spending also goes hand in hand with congressional institutionalization: an increase of about one standard deviation is associated with an increase in the ratio of about 12 percentage points (see Figure 10.3).[2]

Institutions are not the only "supply-side" determinants of policy choice. Interest groups also play a significant role. Strong unions, organized groups of the middle class, or the unemployed may help tilt the balance of spending composition toward higher current spending. On the

[2] Importantly, Palanza, Scartascini, and Tommasi (2016) find that proportional representation is negatively correlated with institutionalization. As such, the institutional choice seems to be having a double effect on spending decisions, through incentives for reelection and incentives for building a strong congress.

other hand, strong business actors, particularly on the construction side, may tilt decisions more toward infrastructure spending. However, there are no data to examine whether the relative power of these interest groups is systematically different in Latin American and Caribbean countries that exhibit an outsized preference for current over capital spending.

Similarly, citizens may find it more difficult to identify lines of responsibility for some public policies (e.g., infrastructure and capital spending) than for others. This may especially be the case when they are confronted with coalition governments or federal systems. Again, however, systematic evidence on these issues is scarce and it is difficult to show that Latin American and Caribbean countries are outliers with respect to blurry lines of accountability.

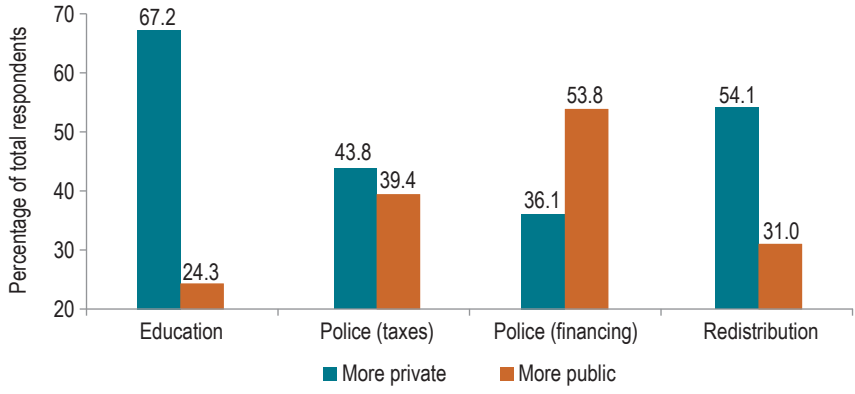
The Demand Side: Citizens' Policy Preferences

While persuasive, the institutional "supply-side" explanation is incomplete. Countries in other regions with similar institutions do not exhibit the same policy dysfunction as countries in Latin America. At the same time, institutions convert citizen preferences into public policy, but voter preferences and the relationship between voters and politicians can differ across countries with identical institutions. If voters do not demand public goods and investments in future benefits, then those policies will be under-provided regardless of the country's institutional arrangements. If the relationship between voters and politicians is fragile—if voters do not trust politicians or do not have any information about what politicians do—then again, regardless of the institutional arrangements, voters will prefer policies that do not require them to have faith in politicians' assurances. Politicians, therefore, may prefer less welfare-improving policies not only because of institutions, but also because citizens tolerate, or even prefer, such policies.

In fact, regional surveys suggest that underinvestment may be entirely consistent with citizen preferences. One, undertaken in 2017 by the Inter-American Development Bank with LAPOP (the IDB-LAPOP survey), elicited the policy preferences of 5,800 respondents from seven countries: Chile, Colombia, Honduras, Mexico, Panama, Peru, and Uruguay. The questions evaluated respondent preferences with respect to funding for education, policing, and redistribution to the poor.[3] The results demonstrate the

[3] A key issue in assessing policy preferences accurately is whether respondents understand that policy choices require trade-offs. The survey made these trade-offs clear by presenting respondents with vignettes that gave them a choice between two mutually exclusive policy options. For example, one question was: "The government has two options to combat insecurity. Option A is to allocate more resources to the police so that they can do a better job of fighting crime throughout the city. Option B is to give

Figure 10.4 Preferences for (against) Public Goods in Latin America, 2017



Source: Authors' elaboration based on IDB-LAPOP Database.
Note: Respondents who were indifferent about policy options are not shown. Option "More private" means lower taxes for greater private spending (education and police) or for faster economic growth (redistribution), while option "More public" means higher taxes to finance greater public provision (education and police) or greater redistribution.

absence of support for more funding of education, the police, or redistribution (see Figure 10.4).

Three important messages emerge from Figure 10.4. First, Latin Americans oppose higher taxes to finance greater spending on education and redistribution, although the region does less of both compared to other countries with similar or higher incomes per capita. They are essentially indifferent—neither for nor against—raising taxes for policing.

Second, among these policy options, the benefits of education take the most time to be realized. Resistance to higher taxes to finance education spending is significantly greater than resistance to taxes for policing and redistribution. This is relevant for the broader issue of current versus capital expenditure in the region, where the latter delivers benefits with the greatest delay. Notice that education is akin to capital spending in that the benefits of this type of expenditure only materialize in the future. Could this indicate an issue of trust for delivering long-term policies?

Third, whether the resources come from taxes or somewhere else makes a difference. Respondents were asked about two scenarios: in one, police funding was explicitly financed by higher taxes, while in the other the funding source was ambiguous. Support for the second option (more policing, ambiguously funded) was significantly greater than support for the first (more policing, financed through higher taxes). Like people

subsidies to citizens and neighbors so that they can fight crime by contracting private security and installing security cameras on their streets. Which option do you prefer?"

everywhere, Latin Americans are attracted by the promise of greater benefits at little or no cost.

These results also cast doubt on survey results that claim to capture citizens' policy preferences without ever having asked citizens to weigh the trade-offs embedded in their preferences. For example, many surveys conducted in Latin America have asked respondents to describe their preferences regarding state involvement in the economy and state provision of services. When asked about these issues in a general way, they express significantly more support for an expanded public role. However, these questions are not only broad, they also do not ask respondents to make trade-offs. Once respondents are obliged to account for the need to make trade-offs (e.g., higher taxes to finance more government), enthusiasm for larger government appears to dim significantly.

Ideally, direct information on citizen preferences for infrastructure spending would also be available. This turns out to be challenging to collect, however. First, infrastructure encompasses a variety of services, with differing distributions of citizen preferences across them. For example, most households have regular access to treated water, but some do not. Some households rely on public transportation or commute long distances. Others do not. Second, infrastructure services differ in whether they provide direct or indirect benefits to households. For example, ports, highways, railroads, and Internet backbones benefit households indirectly with cheaper goods and faster economic growth. Third, many infrastructure services are inherently geographically targeted. Citizens may, therefore, express little preference for infrastructure spending simply because they are unsure of where it will go. Education, crime, and redistributive policies are less subject to these methodological difficulties but vary along intertemporal and other relevant dimensions, a fact that highlights other distortions in public policy that make it difficult to plan long term.

Trust in Latin America and the Caribbean: A Rare Commodity

One factor that may contribute to the bias against capital spending, and against raising taxes for police, education, and redistribution, is citizens' lack of trust in government and political actors. Substantial research has looked at electoral competition between candidates when voters believe there is a good chance that politicians will break their promises, concluding that it reduces incentives to provide services that benefit everyone (i.e., public goods), and increases rent seeking (Persson and Tabellini, 2000; Keefer and Vlaicu, 2008); it even increases vote buying by politicians (Keefer and Vlaicu, 2017). Since politicians in younger democracies may

face greater challenges building trust among voters, their policies may differ notably from those of more established democracies. Most often, they will be characterized by less public investment and larger swings in government spending during election years (Keefer, 2007).

Mistrust of government and of other citizens can also reduce support for redistribution to the poor. The central challenge of redistribution is the adequate targeting of benefits. Even in the face of great inequality, though, citizens may not support redistributive policies if they do not trust government to target accurately. This may be one of the reasons why the relatively better-off tend to dislike transfers to the poor, while favoring other kinds of redistribution (Machado, 2012).

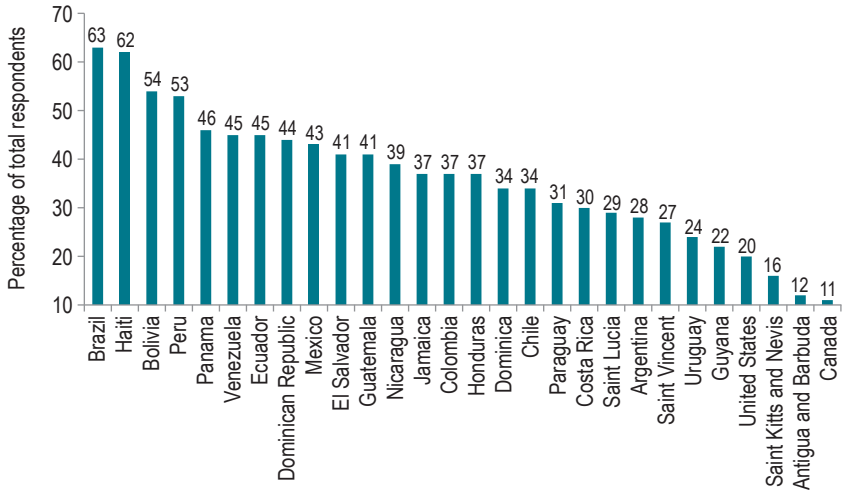
Lack of trust in fellow citizens also affects policy preferences. The benefits of many government policies, such as education or redistribution, depend on the behavior of the households that receive them. Education policies, for example, aim to increase student learning. However, it is well known that the effectiveness of schooling for learning also depends on family inputs into the education process. Lower trust may translate into a lack of confidence that households receiving education benefits will exert the complementary effort that is key to student learning. Low trust in others then translates into lower support for education spending. Similarly, if people are convinced that ineligible citizens will apply for and receive redistributive benefits, they are less likely to support redistributive programs.

Evidence from the Barómetro of the Américas 2017 survey covering all Latin American and Caribbean countries, and of the IDB-LAPOP 2017 survey of seven countries discussed previously, point to a trust deficit in the region. The Barómetro survey, undertaken by Vanderbilt University's Latin American Public Opinion Project (LAPOP), is one of the most comprehensive public opinion surveys in the region. It collects responses from a nationally representative sample of every country in Latin America and the Caribbean.

In 2017, as in prior years, respondents were asked whether they thought the people in their communities were very, somewhat, little, or not at all trustworthy (*confiable*). Thirty-eight percent of respondents said the people in their community were little or not at all trustworthy, ranging from 63 percent in Brazil and 62 percent in Haiti to 24 percent in Uruguay (Figure 10.5).

Respondents also answered questions about the trustworthiness of the president, legislature, and political parties. Figures 10.6–10.8 demonstrate the levels of trust in political actors across the region. In most countries, one-third or more of respondents reported mistrust of these actors.

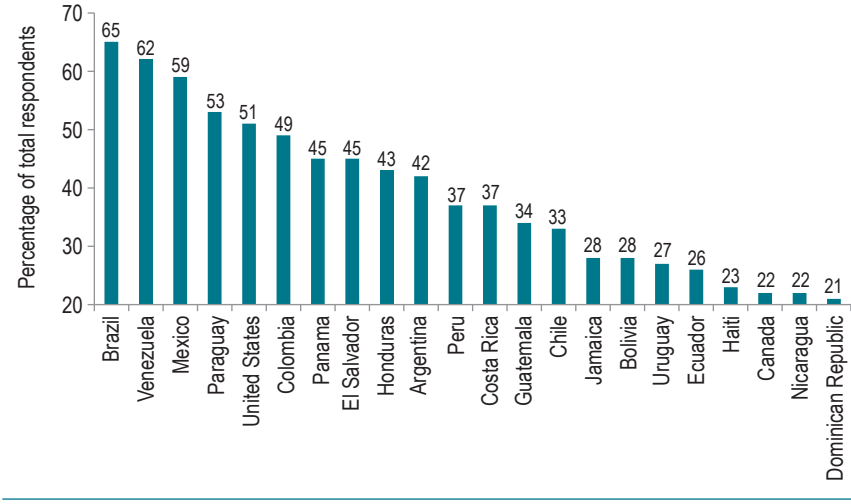
Figure 10.5 Trust in People in Their Community, 2016 and 2017



Source: Authors' elaboration based on IDB-LAPOP Database, 2016–2017.
Note: The survey question for Figure 10.5 has values ranging from 1 to 4, where 1 is not at all trustworthy and 4 is very trustworthy. Low trust is defined as options 1 or 2.

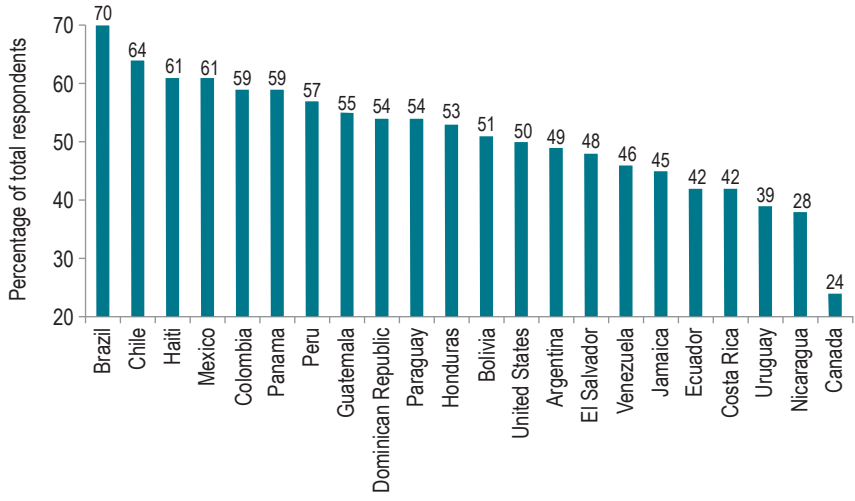
The foregoing indicators of trust come from a survey targeted only at the region and do not permit comparisons with the rest of the world. The World Values Survey of 2005–07, on the other hand, suggests that Latin

Figure 10.6 Low Trust in the President, 2016 and 2017



Source: Authors' elaboration based on IDB-LAPOP Database, 2016–2017.
Note: Values range from 1 to 7, where 1 is no trust and 7 is trusts a lot. Low trust is defined as options 1 or 2.

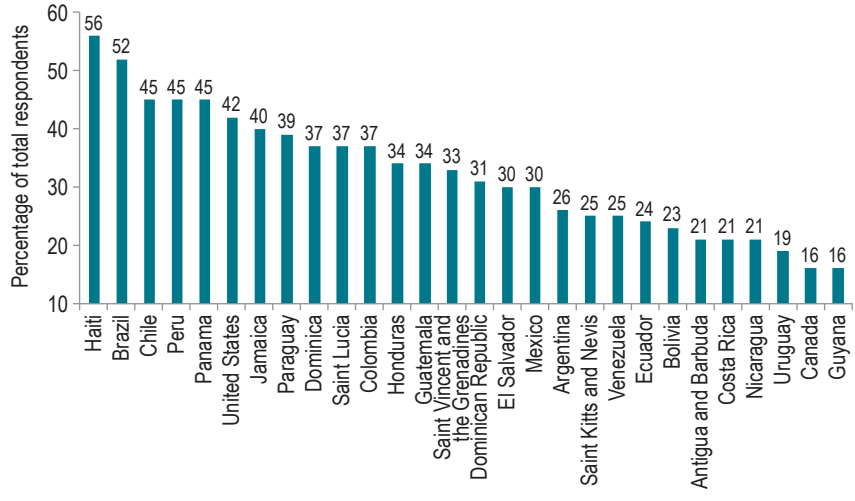
Figure 10.7 Low Trust in Political Parties, 2016 and 2017



Source: Authors' elaboration based on IDB-LAPOP Database, 2016–2017.
Note: Values range from 1 to 7, where 1 is no trust and 7 is trusts a lot. Low trust is defined as options 1 or 2.

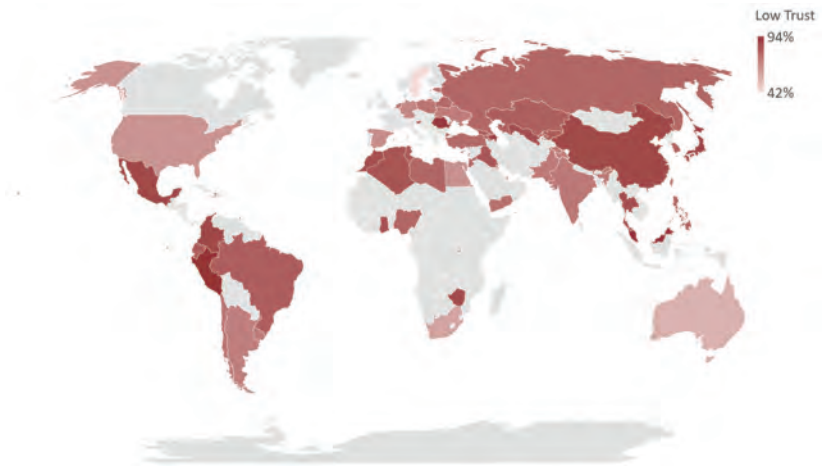
American respondents are significantly less trusting than those in the rest of the world, and more likely to say that they cannot trust people they meet for the first time. More specifically, Figure 10.9 shows that compared to most OECD countries, Latin Americans trust others less.

Figure 10.8 Low Trust in Congress, 2016 and 2017



Source: Authors' elaboration based on IDB-LAPOP Database, 2016–2017.
Note: The survey question for Figure 10.8 has values ranging from 1 to 7, where 1 is no trust and 7 is trusts a lot. Low trust is defined as options 1 or 2.

Figure 10.9 How Much Do You Trust People You Meet the First Time?



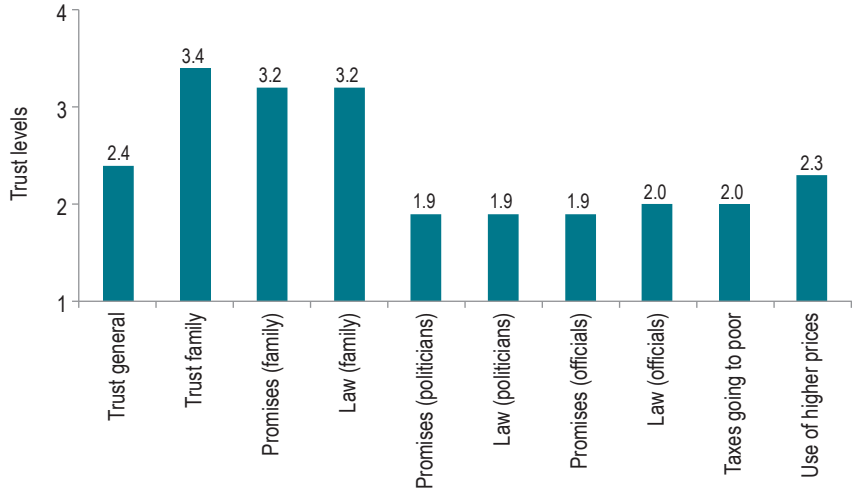
Source: Authors' elaboration based on World Values Survey 2010–2014 Database.

The 2017 IDB-LAPOP survey of seven countries also asked about general trust (are people in general very, somewhat, little, or not at all trustworthy), along with a parallel question about family members. Moreover, it also introduced an expanded battery of questions designed to elicit more precise evaluations of trust issues. It probed respondents' expectations of the behavior of politicians and public officials, people in general, and family members. Did respondents think members of these different groups keep their promises? Obey the law? The survey also elicited respondents' expectations regarding policy goals. For example, if governments raised taxes with the stated intention of redistributing revenues to the poor, did respondents think the revenues really would reach the poor? And if governments raised water prices to maintain water pipes, did respondents think the pipes would really be maintained?

The results point to low expectations on all dimensions (see Figure 10.10). The seven-country survey yields similar results on trust as those from the all-region Barómetro survey. Not surprisingly, respondents believe their family members are significantly more trustworthy than people in general. Respondents expressed more trust in family than in others, but not much more trust in other citizens than in politicians and government officials.

Respondents tend to believe, unsurprisingly, that family members will fulfill their promises and obey the law—to a degree. For example, 30 percent of respondents regard their family members as very trustworthy, but

Figure 10.10 Keeping Promises, Obeying the Law: Responses from Seven Countries in Latin America and the Caribbean, 2017



Source: Authors' elaboration based on IDB-LAPOP Database, 2016–2017.
Note: Values range from 1 to 4, where 1 is no trust and 4 is high trust. "Trust general" means trust in people in general (from not at all trustworthy to very trustworthy). "Trust family" means trust in family members (from not at all trustworthy to very trustworthy). "Promises (family)" means promise fullfilment by family members (from not common at all to very common). "Law (family)" means law compliance by family members (from not common at all to very common). "Promises (politicians)" means promise fullfilment by politicians (from not common at all to very common). "Law (politicians)" means law compliance by politicians (from not common at all to very common). "Promises (officials)" means promise fullfilment by government officials (from not common at all to very common). "Law (officials)" means law compliance by government officials (from not common at all to very common). "Taxes going to poor" means trust that revenues earned from additional taxes to the rich actually are distributed to the poor. "Use of higher prices" means trust that government will use revenue from higher water prices to fix pipe infrastructure.

think that, at most, it is only somewhat common that they fulfill their promises or obey the law.

For state actors, these measures are all low (about 2 out of a total possible trust measure of 4). Respondents across the seven countries believe it is not very common for politicians or public officials to fulfill their promises, nor for politicians to obey the law. They have little confidence that public officials will obey the law. This pessimism extends to specific public policy commitments. *Seventy-five* percent of respondents believe there is little or no chance that tax revenues raised specifically to redistribute to the poor will, in fact, reach the poor. They are also not confident that if water prices are increased to finance infrastructure maintenance, infrastructure will be maintained.

As the following sections demonstrate, lack of trust has everything to do with the policy preferences of respondents: respondents who do

not believe government representatives (politicians or public officials) fulfill their promises or, depending on the policy context, obey the law, are significantly less likely to prefer policies that entail expanding the role of government in education, policing, or income redistribution.

Trust and Financing Education

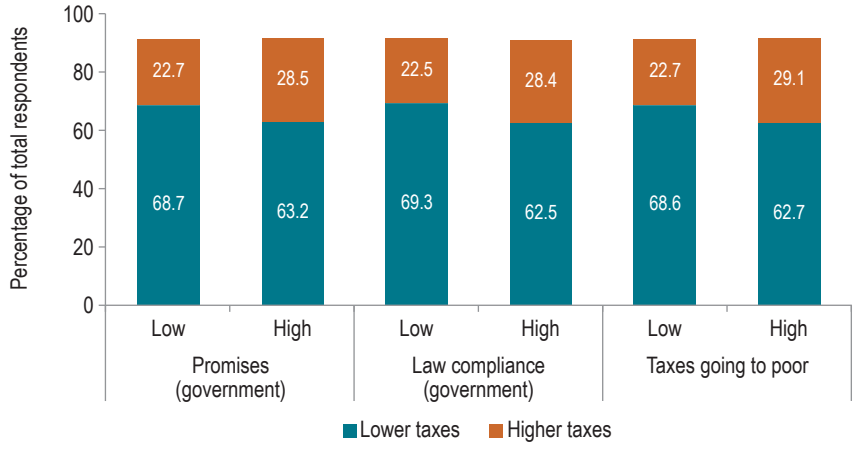
Education spending is a perennial issue in Latin America. Although it has risen significantly, it is still low in comparison to countries outside the region. Respondents to the seven-country IDB-LAPOP survey were asked whether they preferred increasing taxes to boost education spending, or lowering taxes to allow households to spend more on private education. In none of the surveyed countries did respondents express significant support for higher taxes to support education. Support was particularly low in Mexico (where significant and sometimes violent political conflict surrounds the education issue) and Uruguay (where taxes are already high). Wealthier households expressed greater support for education taxes; women and older respondents reported less.

Trust should also play a significant role in people's preferences regarding education spending policy. If they do not believe that the actors involved in the public education of children will use additional resources to improve child learning, their support for more spending should be lower. Support for higher government spending might also fall if people believe that families will take advantage of higher spending to reduce their own investments of time and money in their children's education. Education is a long-term process, such that if people believe that government commitment to education is weak, and that state actors might reduce education inputs in the future, they are again more likely to resist increases in education spending.

In fact, across all measures of trust, less trusting respondents preferred lower taxes and less public education spending (Figure 10.11).[4] For example, respondents who most strongly believed that politicians and government officials fulfill their promises or obey the law were significantly

[4] These associations are highly significant and emerge after controlling for many other factors that might simultaneously account for lower trust and preferences for smaller government: country effects; gender and age of the respondents; respondents' employment status and sources of income, including whether the household receives assistance from the government; household income and assets; infrastructure quality around the residence; number of children living in the house; health insurance and pension coverage; respondents' patience (as revealed by their valuation of more- versus less-distant benefits); and the interviewer's assessment of respondents' political knowledge.

Figure 10.11 Education Financing Preferences and Trust, 2017



Source: Authors' elaboration based on IDB-LAPOP Database.
Note: Respondents chose between a preference for increased taxes to boost education spending, or lower taxes to allow households to spend more on private education. Percentage missing corresponds to respondents who were indifferent about both options. "Promises (government)" means promise fulfillment by the politicians and government officials (from not common at all to very common). "Law compliance (government)" means law compliance by the politicians and government officials (from not common at all to very common). "Taxes going to poor" means likelihood of revenues earned from additional taxes to the rich actually being distributed to the poor.

more likely to support higher taxes for education. Among those who expressed less trust, according to these two measures, support for higher education taxes was approximately 6 percentage points less than among those who expressed greater trust. Again, the bias is against policies that promise benefits in the future when trust is low.

When respondents were asked whether they believe that governments will accomplish what they say they will do, the results were even starker. For example, if governments raise taxes to finance transfers to the poor, do respondents believe that the proceeds will reach the poor? Among those who thought this was very likely, 32 percent preferred higher taxes for education, compared to only 19 percent of those who thought this was very unlikely.

Could the effects of trust be driven only by respondents who think education is a significant problem? The IDB-LAPOP survey asked respondents for what they viewed as the most pressing problems confronting the government. Thirteen percent responded that education was one of the three most important problems. However, controlling for whether respondents thought education, or corruption, bad government in general, crime, infrastructure, poverty and inequality, or housing were the

most pressing problems confronting government, the trust results persist, or even strengthen. The IDB-LAPOP survey also asked respondents which political party they preferred. Even controlling for respondents' partisan tendencies, trust in government continues to be a significant determinant of preferences for education spending.

These findings raise two questions. First, do they really reflect the effects of trust in government or other people, or is it rather that people who are against education taxes are also inclined to respond negatively to all trust questions? One way to account for this possibility is to see if the results survive after controlling for respondents' evaluations of family trustworthiness. In fact, however, results strengthen: controlling for whether respondents think family members fulfill their promises, obey the law, or are trustworthy *strengthens* the association of the corresponding government measures with education tax preferences. Still, the possibility remains that those who oppose government provision of services allow that opposition to influence their answer to the trust questions; because they oppose government expanding its role, they answer that government officials do not fulfill their promises.

The second important question is, which of these types of trust really matters? Where should policymakers first seek to build trust? A horse race that simultaneously evaluates the association of education tax preferences with the four trust variables (whether government officials fulfill promises or obey the law, whether revenues raised for the poor reach the poor, and whether people are in general trustworthy) can help sort out this issue.

Two measures of trust stand out: whether revenues raised for the poor reach the poor, and whether other people are, in general, trustworthy. Increasing the trust of people in one another is not a goal for which well-established policy prescriptions exist. However, it is the other measure of trust, whether people believe that revenues raised for the poor go to the poor, that impacts policy preferences most and is most susceptible to policymaker intervention. If people are skeptical that government policies have their intended effects, and in Latin America and the Caribbean such skepticism is high, governments can respond by ensuring that the opposite is true, and forcefully communicating to citizens objective evidence that proves this point.

Trust and Police Financing

Similar patterns exist in the relationship between trust and funding for policing as between trust and funding for education. The Barómetro survey

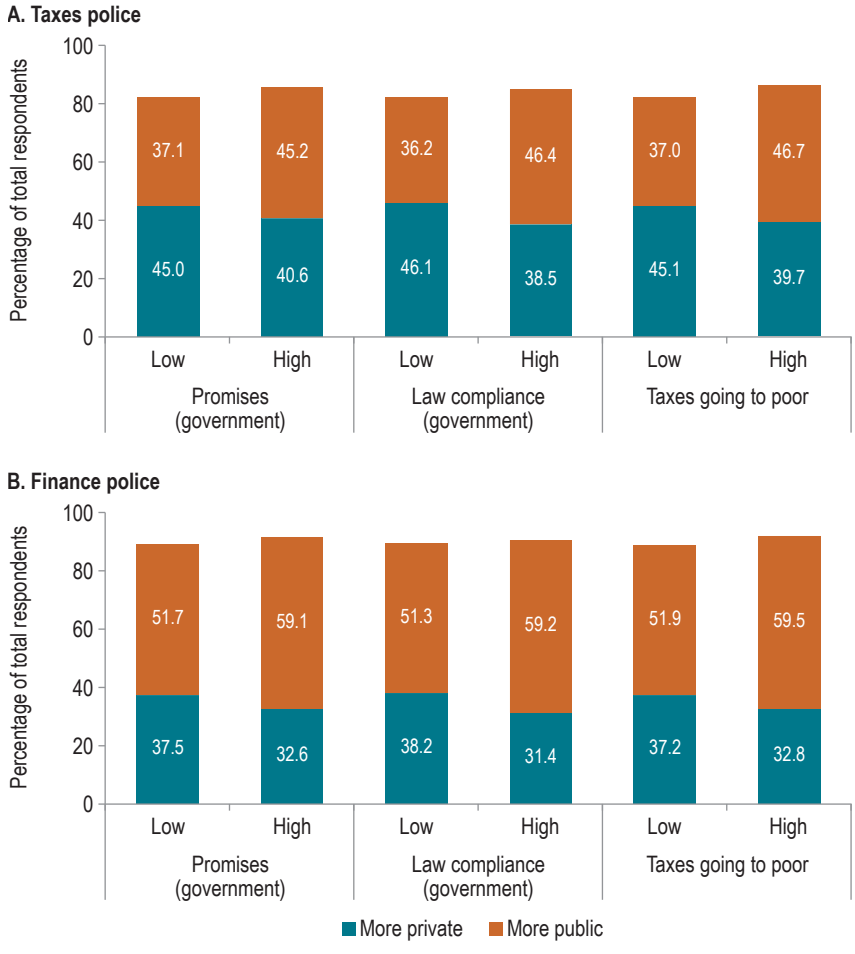
of 2017 asked respondents about their level of trust in congress and in the government. It also asked them to consider two mutually exclusive policy options: to transfer more resources to the police or, instead, to transfer more resources to households so that they could make private investments in their own security. Those who reported high levels of trust also expressed significantly greater support for more police rather than more transfers to households to finance their own security. This finding is key; when there is little trust in government, people prefer the transfer rather than having the government invest for them. The survey results from the annual round of the Latinobarometer database (2017 data) showed the same results. Once again, those who trusted congress, parties, and the government were more likely to support public financing of the police over using the money for private security.

The IDB-LAPOP survey also asked respondents to choose between transferring resources to households or to the police. However, it added a twist to this question, as respondents were asked to choose between two policies: higher taxes to provide more resources for the police, or lower taxes to allow households to provide their own security. In all seven countries, if respondents were told that a given budget must be distributed between policing and security subsidies to households, they preferred it to go to the police, a sentiment that was significantly stronger in Panama and Uruguay and significantly weaker in Colombia. However, when told that larger police budgets would be financed with higher taxes, support for police financing dropped, with the largest declines in Uruguay, Mexico, and Panama (Figure 10.12).

For both policing questions in the IDB-LAPOP survey, but especially for the policing question that stipulated an increase in taxes, the results mirror those for education. Respondents who believe governments fulfill their promises and obey the law, and who believe that revenues raised to finance transfers to the poor will reach the poor, were significantly more likely to prefer greater funding for the police, whether explicitly tax-financed or not. In contrast to education, the effect of generalized trust is weaker: it is significantly associated with support for higher police funding, but not when this is paid for with higher taxes.

The basic characteristics of policing and education policies suggest that subtle distinctions among trust questions should matter. Public education in Latin America is disproportionately directed at improving the learning of children from poor and lower-middle-class households. It is reasonable, therefore, that trust in people in general, and the belief that revenues raised for the poor will go to the poor, are the most significant trust determinants of preferences for education spending.

Figure 10.12 Police Financing Preferences and Trust, 2017



Source: Authors' elaboration based on IDB-LAPOP Database.
Note: Options available are more taxes for public spending or less taxes and increased private spending to improve the outcomes in security (through police). Percentage missing corresponds to respondents who were indifferent to both options. "Promises (government)" means promise fullfilment by politicians and government officials (from not common at all to very common). "Law compliance (government)" means law compliance by politicians and government officials (from not at all common to very common). "Taxes to poor" means likelihood that revenues gained from additional taxes on the rich would actually be distributed to the poor.

On the other hand, the goal of greater expenditures on policing is to improve law enforcement. In contrast to education, therefore, citizens' beliefs about whether government officials themselves obey the law are likely to be critical to their confidence in the value of greater police spending. The data reveal precisely this sensitivity. When greater funding for policing is financed through higher taxes, as in the education policy

question, those who believe funds raised for the poor go to the poor, and who trust people in general, are again more likely to support higher taxes to finance larger police budgets. In addition, though, and in contrast to education spending, those who believe that government officials obey the law are also more likely to support higher taxes for the police.[5]

The IDB-LAPOP survey also speaks to the issues of transparency, corruption, and preferences for government programs. Those who had experienced police corruption—12 percent of respondents across the seven nationally representative samples—were significantly less likely to support either transferring resources to the police or increasing taxes to finance larger police budgets.

Once again, the key policy implication that emerges from the analysis of citizen trust and preferences for public funding is that governments must communicate more clearly and convincingly that the spending they undertake achieves the promised objectives. In the case of policing, however, a significant caveat applies: where citizens believe that politicians and public officials themselves are above the law, they are disinclined to support public spending for police, even if they believe that this spending might be desirable.

Trust and Redistribution

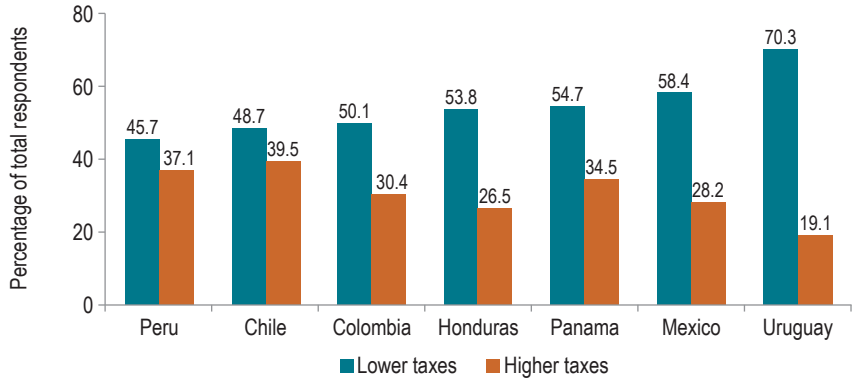
One central function of government is to provide public services, particularly those that private markets are likely to underprovide, such as policing. Another function is to enact policies that reflect social demands for equity. Those demands vary from country to country (see Alesina and Angeletos, 2005; Alesina and Giuliano, 2011). The survey evidence indicates low support for redistribution in Latin America. Why? Lack of trust provides one explanation; citizens in the region who distrust government are significantly less likely to support higher taxes for redistribution.

The IDB-LAPOP survey asks respondents to choose between higher taxes to redistribute to the poor and lower taxes to stimulate job creation.[6] Across the seven countries, 54 percent prefer lower taxes and 31 percent prefer higher. Respondents in Uruguay, where redistributive taxes

[5] When taxes are taken out of the equation, neither generalized trust nor the belief that the poor receive the proceeds of revenues collected for them are significantly associated with support for greater police financing. Instead, again, whether respondents believe government officials obey the law, and to a lesser extent whether they believe that government officials fulfill their promises, matter most.

[6] Using survey data from Japan, Yamamura (2014) finds that people are more likely to support income redistribution when trust in government in their neighborhood is high. The survey question did not clarify that redistribution would require higher taxes.

Figure 10.13 Preferences for Redistributive Taxes, 2017

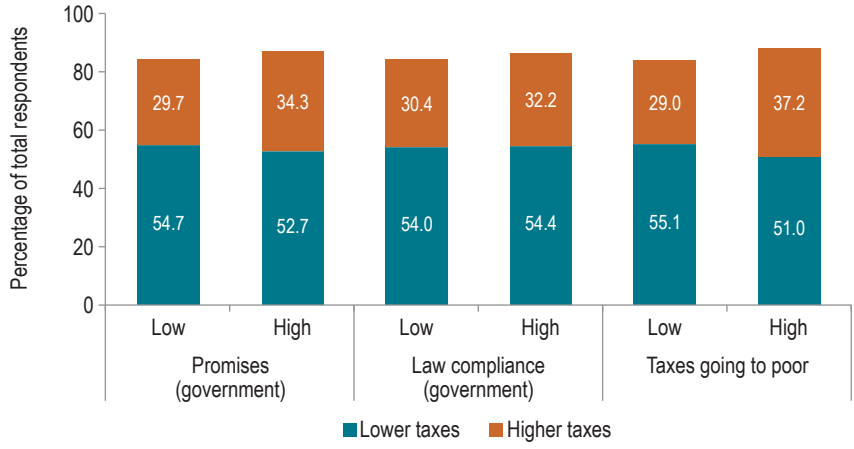


Source: Authors' elaboration based on IDB-LAPOP Database.
Note: Options available are preference for higher taxes to finance redistribution and lower taxes to stimulate job creation. The missing portions of percentages correspond to respondents who were indifferent to both options.

are higher, were significantly less supportive of the more redistributive option than those in other countries; respondents in Panama, Colombia, Peru, and Chile were significantly more supportive. Still, even in these four countries, the average respondent was indifferent between more taxes to finance more redistribution and lower taxes. While richer households or households with greater incomes tended to support higher taxes for education or police, they oppose taxes to pay for redistribution. Older respondents were also significantly less likely to support taxes for redistribution (Figure 10.13).

Individually, all dimensions of trust—in government, and in other citizens—are positively related to respondents' support for redistributive taxation. This makes sense. As with education, the benefits of redistribution depend on the behavior of beneficiaries; those who trust citizens generally may also be more confident that beneficiaries will not respond to greater redistribution by working less. As with both education and policing, support for higher taxes for a particular purpose, such as redistribution, depends on citizen confidence that government officials will fulfill their promises to pursue those purposes. Concerns about obeying the law also matter, since redistribution to the poor requires government officials to follow the legally established targeting criteria through which the poor are selected. Finally, of course respondents who explicitly state that they do not believe that funds raised for redistribution will actually reach the poor are unlikely to support higher taxes to support redistribution.

Figure 10.14 Taxes for Redistribution and Trust, 2017



Source: Authors' elaboration based on IDB-LAPOP Database.
Note: Options available are preference for more taxes for redistribution or lower taxes to stimulate job creation. Percentages missing correspond to respondents who were indifferent to both options. "Promises (government)" means promise fullfilment by politicians and government officials (from not at all common to very common). "Law compliance (government)" means law compliance by politicians and government officials (from not at all common to very common). "Taxes going to poor" means likelihood that revenues gained from additional taxes on the rich would actually be distributed to the poor.

Of all these dimensions of trust, however, the two most clearly associated with support for redistribution are whether governments fulfill their promises and, of course, whether funds raised for redistribution in fact reach the poor. Of those who believe governments fulfill their promises some or all of the time, 34 percent favor higher taxes for redistribution. Among those who state that government officials rarely or never fulfill their promises, 30 percent support redistribution. The differences are naturally greater when contrasting those who believe, or not, that redistributive tax revenues will flow to the poor. Of those who agree that it is somewhat or very likely that revenues from higher taxes on the rich will go to the poor, 37 percent support redistribution; the number falls to 29 percent among those who believe that is unlikely (Figure 10.14).[7]

[7] The robust association between skepticism that tax revenues will flow to the poor and lack of support for redistribution may arise for a spurious reason: those who oppose redistribution are more likely to say that funds raised for redistribution will go astray. However, these same views would affect partisan preferences. The lack of confidence that revenues will reach the poor continues to be significantly associated with weak preferences for redistribution even after controlling for partisan preferences. In addition, the belief that government officials do not fulfill their promises remains significantly associated with redistributive policy preferences even controlling for beliefs about the targeting of revenues raised for redistribution.

Trust matters, then, not only for popular support for public services, but also for redistribution. Once again, the lesson is that governments that convince their constituents that their words will translate into action, and that their actions will have the effects they say they will, are more likely to be able to persuade citizens that they can rely on government to provide the services they need and the social goals they value.

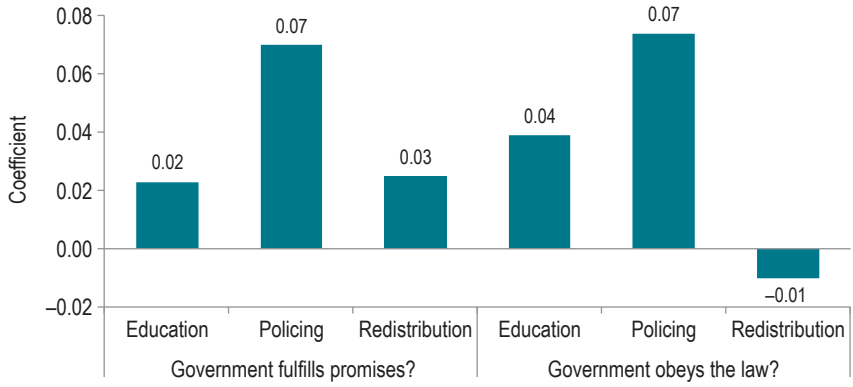
Lessons for Capital Spending

Clearly, mistrust undermines support for all types of public policies, including those in which benefits appear further in the future (education) and those with more immediate results (redistribution). They do not, however, specifically demonstrate larger effects of mistrust on policies that deliver benefits in the future—the fiscal phenomenon at the center of this volume. This is because mistrust affects not only beliefs about whether future governments will continue policies with future benefits, but also about whether even current governments will carry them out. Moreover, the foregoing analysis combines individuals who, for education, policing, *and* redistribution, prefer higher taxes and larger government (402 respondents) and those who, again for *all* policies, prefer lower taxes and smaller government (1,255 respondents). To identify the effects of trust on relative support for different policies, it is more informative to exclude those respondents who *always* prefer either more or less government.

The two trust variables that are most relevant for the cross-policy comparison are respondent beliefs about whether politicians and government officials fulfill their promises and obey the law. The objective is to discover whether these two variables disproportionately affect policies that, like infrastructure spending, exhibit a longer time horizon and greater complexity (education and policing), compared to redistribution, with both a shorter horizon and less complexity. Figure 10.15 demonstrates that among respondents who are not always for or against larger government (the large majority of all respondents) neither measure of trust affects preferences for redistribution. However, both measures of trust are significantly associated with support for higher taxes for policing. Whether respondents believe that government officials obey the law is also significantly associated with support for higher taxes for education, another long-term policy.[8]

[8] However, the confidence intervals associated with the estimates are large. The hypothesis that trust has no effect on support for higher taxes for police can be rejected while the same hypothesis for redistribution cannot. However, the hypothesis that the effect on redistribution is lower than the effect on police also cannot be rejected.

Figure 10.15 Trust in Government and Preferences for Higher Taxes for Education, Police, and Redistribution, 2017



Source: Authors' elaboration based on IDB-LAPOP Database.
Note: Each bar indicates the amount by which a one unit increase in trust is associated with higher preferences for taxes to finance education, police, or redistribution, rather than lower taxes to support private provision of education or security, or to accelerate economic growth. The association controls for country fixed effects and a large number of respondent charasteristics, ranging from political to demographic. The two trust measures are: Do you think politicians/government officials fulfill their promises? Do you think they obey the law?

Thus, particularly for the vast majority who do not have a strong view on government size, low levels of trust may be particularly biasing expenditure demand against long-term policies, which includes capital expenditures. Trust may be particularly important for processes that take time, such as education or capital expenditures, which cannot be verified as soon as transfers, for instance. This factor may lie behind the issue of biases against capital expenditure raised in Chapter 2.

Collective Action and the Determinants of Trust in Government

Research on the origins of trust in government, and strategies to revive it, is vast and its conclusions are murky. Mishler and Rose (2001) look at former communist societies and argue that adverse experiences with government—with institutions that actively undermine trust—are responsible for the low levels of trust in government in that region. Others point to dissatisfaction with political parties: when parties are more centrist, voters at the extremes are more likely to express distrust in political institutions (Miller, 1974); when they are polarized, those in the center express lower trust (King, 1997). Nearly all research agrees that distrust in political institutions is associated with respondents' political lives, not their personalities or even their social characteristics (Levi and Stoker, 2000). Grimes (2006),

for example, provides evidence that people's perceptions that government is procedurally fair affect political trust.

The implication is that governments can increase trust, for example by acting impartially (as in Grimes, 2006). In Latin America, trust in government might increase if governments more clearly and frequently communicated that they pursued the policies they promised to pursue, and that the policies had the effects they said they would. In general, information campaigns have positively impacted government performance. Programs to systematically inform the public of government malfeasance reduced levels of malfeasance in Uganda and Brazil, for example (Reinikka and Svensson, 2004; Ferraz and Finan, 2011). Even providing citizens with basic information about what government can do can lead to broad changes in both voter and politician behavior (Cruz, Keefer, and Labonne, 2016). Information about what governments do with the money they collect can also affect citizens' behavior and their willingness to provide for the public good. For example, when governments provide information about the use of public funds and/or provide new public goods, taxpayers tend to increase their voluntary tax compliance (Castro and Scartascini, 2015; Carrillo, Castro, and Scartascini, 2017).

However, information is only one piece of the trust puzzle. Another is the ability of citizens to act collectively. Trust in government is a function of whether citizens believe they can influence government decision-making—whether they can reward governments that keep their promises or punish those that do not. Individually, though, citizens are powerless, unless they can use judicial recourse to act on their grievances. However, citizens have no legal recourse when politicians break their electoral promises. Collective action by citizens is, therefore, essential to government accountability. It should also be essential to trust in government.

In democracies, citizens seeking to mobilize collectively to influence public policy do so most commonly through political parties. However, if political parties do not bring together citizens with similar public policy goals, or choose candidates who support those goals and discipline candidates who deviate from them, they do not solve the collective action dilemma that citizens confront. A weak party does not attract candidates and voters based on policy stances, is a vehicle for party leaders to advance their personal careers, and provides members little power to remove leaders who reverse their policy stances. Hence, citizens' low trust in politicians could be due to their inability to rely on political parties to solve the collective action problems they confront in curbing opportunistic behavior by political leaders.

This is, for example, the lesson of early research by Miller and King. Why should individuals trust political institutions when they feel that political parties do not represent their interests? One reason is that they lack an organization that can solve the collective action challenges they face in trying to influence government themselves.

Political parties in Latin America are weak particularly in their ability to represent the policy or programmatic interests of citizens (Kitschelt et al., 2010). The Database of Political Institutions characterizes parties according to whether they favor right- or left-leaning economic policies, are centrist, or convey no economic policy messages at all. From 2001 to 2015, 46 percent of the largest opposition parties, 22 percent of the largest parties in governing coalitions, and 41 percent of the second largest parties in the governing coalitions in Latin America conveyed no economic policy commitments. Parties in Caribbean countries are more structured with 70 to 80 percent of parties associated with right- or left-leaning economic policies.

Survey evidence confirms the importance of parties for trust. Respondents to the IDB-LAPOP survey were asked if they felt represented by a political party. Since parties in Latin America are not well organized to solve the collective action problems of citizens, it is not surprising that most respondents (73 percent) did not feel at all represented, responding zero on a 0–5 scale. Importantly, these judgments differ from those found in earlier research on the United States, where parties align on the left-right dimension. Parties in Latin America trigger feelings of lack of representation for the opposite reason, because they lack a clear policy orientation.

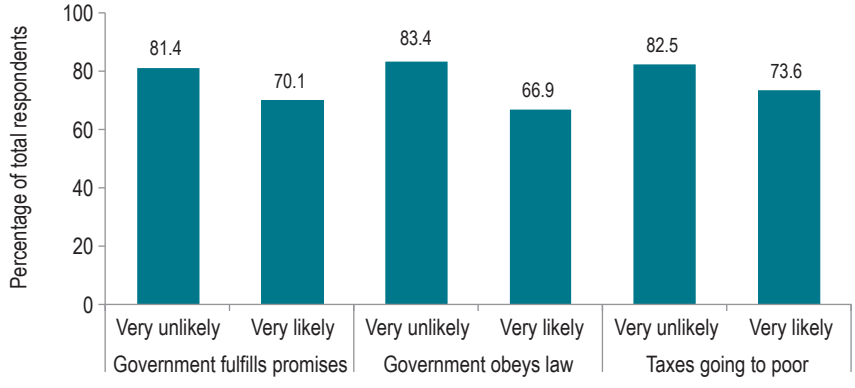
Prior research indicates that those who do not feel represented by parties do not trust political leaders and institutions. Moreover, those who do not feel represented by political parties tend to behave quite differently from those who do (Machado, Scartascini, and Tommasi, 2011). The IDB-LAPOP survey allows for an examination of the effects on more precise assessments of trust and credibility. Those who feel more represented by a party are significantly more likely to say that government officials fulfill their promises and obey the law, as well as to believe that revenues raised for redistribution will in fact benefit the poor.[9]

[9] An increase in party representation from zero to five increases responses stating the belief that government officials fulfill their promises by 0.19, more than one-quarter of a standard deviation, controlling for measures of trust in family members, along with numerous other variables, including country fixed effects.

Of course, individuals who feel generally excluded by the political process could become negative about all things political. However, other indicators of collective action, unrelated to formal political institutions, also affect trust in government. For example, collective action can also be a local phenomenon: neighbors who band together or organizers who mobilize individuals to express their positions on issues. The IDB-LAPOP survey asked respondents how likely it was that a petition asking the government to fix the streets and sidewalks of the neighborhood would gather 500 signatures. Forty percent of respondents said it was very likely; 34 percent said it was somewhat to very unlikely.

Confidence in the success of a petition has a large correlation to trust in government across all three measures. Figure 10.16 compares the fraction of those who do not trust government among those who thought it was very unlikely—or very likely—that 500 signatures could be collected in their neighborhood. For example, the first set of bars indicates the fraction of respondents who answered that politicians and government officials tend not to keep their promises. Among those who thought it was very unlikely that they could collect 500 signatures in their neighborhood, 81.4 percent did not think public officials keep their promises. However, among those who thought it was very likely that 500 signatures could be

Figure 10.16 Survey Respondents' Perceived Likelihood of Collecting 500 Signatures on a Petition and Degree of Trust



Source: Authors' elaboration based on IDB-LAPOP Database.
Note: Answers range from 1 to 4, where 1 is not at all trustworthy and 4 is very trustworthy. A small degree of trust is indicated by 1 or 2. Differences between respondents who answered either "Very unlikely" or "Very likely" to the question of whether their neighborhood could gather 500 signatures to fix the streets. "Government fulfills promises" means promise fullfilment by politicians and government officials (from not at all common to very common). "Government obeys law" means law compliance by politicians and government officials (from not at all common to very common). "Taxes going to poor" means likelihood that revenues gained from additional taxes on the rich would actually be distributed to the poor.

collected, more than 10 percentage points fewer agreed that public officials do not keep their promises. Thus, trust in public officials is higher among those who thought it was very likely to get the petition going. The difference among the two groups was even starker when looking at opinions about whether government officials and politicians obey the law; 16.5 percent more individuals agreed that they generally do not obey the law among those who thought that 500 signatures were very unlikely to be collected.

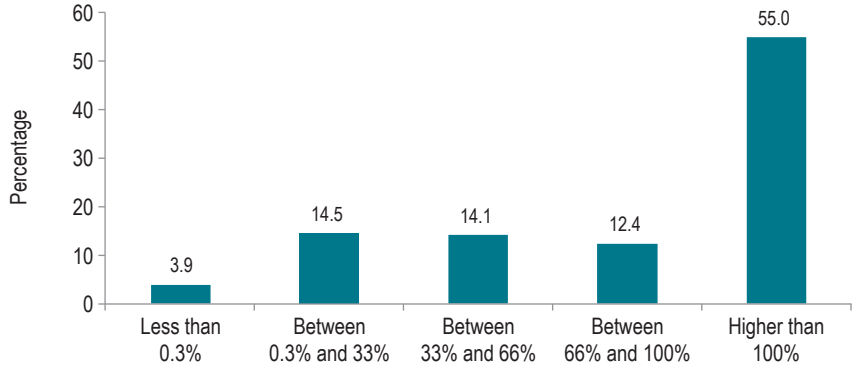
Patience and Policy Preferences

Individuals differ in their willingness to exchange effort or expenditure today for rewards in the future. This can significantly affect life choices: children's effort in school offers payoffs years in the future, for example, and one goal of efforts to improve non cognitive skills in children is precisely to change their calculation of the costs and benefits of current effort and future reward (see Busso et al., 2017). Previous chapters demonstrate spending inefficiencies across numerous sectors that may be traced to an unwillingness to invest in quality improvements that yield benefits only in the future. The pension and retirement crises confronting many countries are linked in part to the degree to which citizens recognize that a more comfortable retirement in the future requires sacrificing consumption today (see Parker, 2017, for evidence that impatience is associated with a high propensity to spend rather than save). Many desirable public services, which genuinely make citizens better off, also demand that they incur costs today for sizeable benefits tomorrow. They range from education and public pensions to infrastructure and environmental protection.

There are many reasons, therefore, to believe that the well-being of individuals, and of societies, depends on their willingness to sacrifice today for rewards tomorrow. The IDB-LAPOP survey explored differences in this regard among individuals in seven Latin American countries. To what extent were respondents willing to incur costs in the present in return for rewards in the future? To gauge this willingness, each survey respondent answered six questions, drawn from a pool of 31 possible questions, each posing a different trade-off between current and future benefits. For example, in the case of the survey for Chile, survey participants had to choose between 65,000 pesos today and 107,250 in 12 months, or 65,000 today and 112,450 in 12 months, etc., thus implicitly stating interest rates needed to delay consumption.

It turns out that for 52 percent of respondents, *none* of the future rewards proposed to them were sufficient to induce them to postpone

Figure 10.17 How Much Do Latin Americans Demand in Return for Delayed Benefits? (2017)



Source: Authors' elaboration based on IDB-LAPOP Database.
Note: Respondents were asked what interest rate would persuade them to wait 12 months to receive a payment. "Less than 0.3%" corresponds to a preference to wait in order to receive a little more money, and "Higher than 100%" corresponds to a general dislike for waiting.

consumption. Within this group, all preferred the equivalent of 65,000 pesos today rather than amounts exceeding the equivalent of 100,000 pesos in 12 months. For more than half the people in the survey, not even a 100 percent interest rate would persuade them to wait 12 months for benefits rather than receive them today (Figure 10.17). This result is particularly remarkable given that people in surveys where no actual money is involved could be more willing to accept trade-offs.

The willingness to make trade-offs between consumption today and tomorrow exhibited some predictable tendencies. In general, the more vulnerable valued future benefits less. Respondents who were unemployed, had fewer household assets, and had more children all preferred benefits today significantly more than larger benefits tomorrow.

The data also reveal substantial differences across countries in the value placed on future benefits. On a 32-point scale, where 1 signifies an unwillingness to ever sacrifice current for future benefits and 32 a willingness to always accept this sacrifice, an unemployed Mexican respondent was 1.16 points less willing to accept this sacrifice than the average respondent. In contrast, unemployed Panamanians were 5.57 points less willing and unemployed Chilean respondents 1.32 points less willing to sacrifice current for future benefits. The percentage of respondents who *always* preferred current over future benefits ranged from 45 percent in Chile to 57 percent in Honduras.

Why might large country-level differences exist? No research addresses this question. However, in countries where the future is more

uncertain, citizens would likely value future benefits less.[10] Either political or economic volatility might create these feelings of uncertainty. For example, one indicator of economic volatility is the extent to which inflation fluctuates from year to year. In the seven countries where inflation varies the most, the willingness to make current sacrifices for future benefits is low.[11] Political and economic volatility could similarly explain why Hondurans were significantly less likely to make this trade-off than Chileans. However, these factors cannot explain why Panamanians were even less likely to prefer these trade-offs than Hondurans, and Uruguayans' reluctance to embrace future benefits more closely resembled that of Hondurans than Chileans.

Can differences in the willingness to accept lower current over larger future benefits account for public policy preferences? The IDB-LAPOP survey presented respondents with several policy choices that forced them to make tradeoffs between current and future benefits. In general, the more willing they were to accept larger future benefits over current benefits, the more likely respondents were to prefer public policies with large future benefits for society. The fact that most respondents were almost always unwilling to make this trade-off helps explain why public policy in the region consistently favors lower current over larger future benefits.

The survey asked questions about trade-offs in two policy areas: education and policing. In the case of education, respondents were asked whether they preferred giving tablet computers to children or spending those resources on teacher training. Respondents were told that the benefits of training were significantly greater than those of tablet computers, but would emerge only with a delay of two years or four years (half of the respondents were told two years, the other half four years). This is consistent with research showing that the distribution of laptops had minimal effects on student learning (Beuermann et al., 2015; Yamada, Lavado, and Montenegro, 2016). Respondents were asked a similar question about policing, whether they preferred a policy that would increase the number of police, and that would reduce crime immediately by 10 percent, or a policy that would leave the number of police unchanged, but better use the

[10] Although the scenarios that respondents were asked to consider reflected no such uncertainty.

[11] One measure of this fluctuation, the standard deviation of inflation rates over the 10 years prior to the IDB-LAPOP survey, is highly negatively correlated with the average willingness of country respondents to prefer larger future over smaller current benefits.

resources to train police, reducing crime by 20 percent in two or four years (half the respondents were told two years, and half four years).

Most individuals preferred teacher training: 64 percent, versus only 28 percent who preferred tablets. However, individuals with a stronger preference for future benefits were significantly more likely to prefer teacher training even when their benefits would arrive only after four years. The effects are small in the case of tablets.

Respondent opinions were more mixed when choosing between more police and better-trained police. When the benefits of both were immediate, most respondents preferred higher-quality police (55 percent versus 35 percent). When the benefits of police training were delayed by two or four years, however, respondents switched: when told the benefits of training would arrive in two years, 40 percent supported training and 47 percent preferred more police of the same quality. When presented with a four-year delay, 52 percent preferred more police and only 34 percent preferred better-trained police. Considering the two policy options in which the benefits of police training were delayed, respondents who were more patient were also much more likely to prefer police training.

Respondents who expressed greater trust in congress (though not government overall) were also more likely to support investments in police training, which would yield a 20 or 30 percent drop in crime in two years, rather than hiring more police, which would yield an immediate drop in crime, albeit only one-half or one-third as large. Thus, comparisons across support for education, policing, and redistribution confirm the message that patience matters and can partially account for preferences for current over capital spending.[12]

Toward a Long-Term Vision

Latin America confronts difficult policy challenges, from the low quality of education to the weakness of infrastructure and the public demand for integrity and transparency. Across sectors and countries, governments choose policies that increase citizen welfare less than other policies they could have chosen. In particular, they under-provide public services that require long-term investments or that are more complex to deliver. This is perplexing; in all cases, these governments are popularly elected and, in

[12] Respondents to the IDB-LAPOP survey who supported either all three proposals to increase taxes to finance more government services, or opposed all three proposals, are excluded. Among most of the remaining sample, patience was significantly associated with support for higher taxes to support greater policing, but not for redistribution or education.

many, they are also popular. This chapter has proposed two answers to this question. First, although they elect their representatives, the electoral and legislative institutions of these countries create incentives for these representatives to pursue short-term over long-term, and simple over complex, policies. Second, citizens do not demand these policies, because they do not trust government to provide them, and because they excessively discount future benefits and prefer policies with lower, immediate benefits, over greater, long-term benefit investments.

Lack of trust and heavy discounting of future benefits go hand in hand with preferences for precisely the inefficient policies that politicians have provided. Why the low trust? Why the low value attached to future benefits? The characteristics of electoral competition in Latin America—the weakness, for example, of political parties and the historical and economic legacies of the region, marked by cycles of economic boom and collapse and by episodes of government predation on citizens—would seem to be sufficient to account for the low levels of trust and high discount rates in the region.

The analysis points to several avenues of reform to build support for critical welfare-enhancing policies in the region, including investments in public infrastructure. On the one hand, institutional changes are likely to have large payoffs. Changing institutions is cumbersome and may have unexpected consequences (Lora and Scartascini, 2010). Still, there are ways to strengthen institutions such as congress in ways that support incentives to pursue complex policies with future benefits. Scartascini and Tommasi (2014) summarize general principles: focus on the incentives of political actors, not detailed rules governing the behavior of civil servants; focus on reforms that are likely to be easier to pass and still have a large impact, such as information and transparency policies; focus on reforms that strengthen the credibility of intertemporal agreements among political actors, reforms that enhance consensus and enforcement and make substantial policies more difficult to reverse.

Smaller institutional reforms can also make a difference. Intra-legislative institutions, such as those regulating the assignment of legislators to committees and leadership positions, should favor the acquisition of expertise and reward seniority, the first to create incentives to adopt and support complex legislation and the second to create career incentives compatible with long-term benefits. Legal and constitutional norms that diminish the legislature's control over its own agenda and amplify the ability of presidents to reject legislative proposals work against the emergence of legislators' incentives to pursue welfare-enhancing policies for citizens.

Rules governing the creation of political parties should also favor the development of parties with well-defined programmatic positions and

internal governance procedures, and campaign financing laws that give parties the ability to select and support candidates who adhere to party positions. At the same time, because strong internal governance is no guarantee that parties will pursue policies that favor the interests of broad groups of citizens, laws governing party creation and electoral laws should not impose excessive barriers to entry on new parties.

Governments in the region must do more to build trust. Building institutions that facilitate collective action by citizens, such as strong political parties, but also neighborhood associations, is a key part of this. In addition, and more rapidly, governments can build trust by providing citizens with greater, more reliable, and more timely information about how policy outcomes correspond to policy promises. Citizens who know they can monitor government, and who can act collectively when monitoring reveals shortcomings, are more likely to trust government.

Information is not a panacea. In the short run, information about politicians' performance (non-performance) can even have pernicious effects: citizen disappointment and disengagement, on the one hand, and increased use of illicit electioneering tactics, such as vote buying, on the other (Chong et al., 2015; Cruz, Keefer, and Labonne, 2016). However, particularly when paired with effective modalities of collective action, transparency in the content and results of government policies and programs, and the responsibility of government and political officials for those results, ultimately builds confidence and increases political incentives for welfare-enhancing policies.

Above all, trust can perhaps be regained once citizens see that their governments are striving for efficiency in all areas of government, and that their tax dollars are being put to good use. That's why this book is so timely. Increasing technical and allocative efficiency, the basis for better spending, may restore people's trust in government, setting in motion a virtuous circle of trust leading to better policies that favor long-term investments and, in turn, growth. If both governments and citizens could overcome their myopia, policy could benefit from a longer-term vision that pays off in better spending for better lives.

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Index

accountability
  decentralization and, 89–91, 95
  corruption and, 193
  education and, 185, 187–89, 193–94
  fiscal policy and, 130, 308
  governance and, 200
  health systems and, 257
  maintenance and, 163
  public spending and, 287, 334
  security and, 221
  subnational spending and, 58
  taxes and, 95
  trust and, 327, 350
age-related spending, 65–74, 307–310
  See also pensions
Argentina
  education, 167n4, 172
  efficiency, 48, 51, 55, 57, 61, 63, 67, 76, 92, 93–96
  equity, 106, 108–19, 114, 117–21, 130, 133–36, 139
  health system, 243–44, 249
  infrastructure, 269
  pensions, 67–68, 74
  public spending cycles, 4, 29, 31–36
  security, 196, 201, 203–4, 210, 230
  SINTyS, 292
  subsidies, 61
AUH, 133–35
Belize, 172, 283
Benchmarking Public Procurement (BPP) database, 145, 147
  See also World Bank
births
  birth attendance, 239, 251, 255
  birth rates, 65
  life expectancy at, 247–39
  place of birth, 126
  See also health systems; immunizations
Bolivia
  age-related spending, 309–310
  capital spending, 10
  education, 172, 188
  equity, 114
  health system, 252
  inefficiency, 51, 55, 61, 68, 91
  infrastructure, 143–44
  procurement, 288
  public investment, 310
  SOEs, 314
Brazil
  age-related spending, 307–09
  corruption and, 53, 94
  education, 169, 172, 176, 180–81, 187, 190, 193
  efficiency, 93, 94
  electoral system, 335
  employment, 58
  equity, 106, 108–11, 135
  health systems, 252, 268–269
  infrastructure, 139, 143
  law enforcement, 196, 201, 203–4, 207–8, 212, 234
  noncontributory cash benefits, 114
  pension spending, 67, 70
  poverty, 117–19
  public investment management, 310
  public procurement, 285, 287
  Public Security Forum, 238
  public spending, 31, 46, 48

results-based budgeting, 299
social security, 32–36
subnational spending, 51, 315–317
transfers in growth, 76
trust in government, 337, 350
wages, 56, 292
Business Enterprise Survey, 162
See also World Bank
Bismarck, Otto von, 104n4
business cycles
capital vs. current expenditures, 37–39
data on, 29–34
government spending over, 22–25
inefficient spending, 43
management of, 43–44
overview, 21–22
public investment, 41–43
social transfers and, 28
solving puzzle of, 34–36
spending for stabilization, 26–28
spending policy and macroeconomy, 39–41
theory vs. practice, 28–29
CAF development bank, 299
capital stocks, 14, 18, 22, 44, 75, 78, 161–62
capital vs. current expenditures
business cycle and, 36–39
public spending and, 7–12
conditional cash transfers (CCTs), 114, 116–18, 121, 133, 135, 137, 280, 319
Chile
citizens' policy preferences, 332, 353–356
cyclical spending, 24, 29, 31
drug treatment courts, 235
education, 86, 89, 176, 179, 185, 188–90, 192–94
equity, 120
health system, 246, 251, 259–261, 266, 268–270
inefficiency, 55, 57, 63, 68, 76, 79n57, 97
infrastructure, 144, 147, 169, 172
poverty, 117
PPPs, 313
public procurement, 285, 287
results-based budgeting, 305, 307
security, 196, 213, 218, 224–25, 235
SNGs, 95
trust in government, 345–348
citizen security
alternatives to prison, 233–36
drug treatment courts, 235
efficiency
context, 212–13
police efficiency, 210–12
police organization and, 215–217
resources as reward for, 217
subnational level, 213–16
fighting regional crime, 196–97
institutional leadership, 222–233
justice system, 227–33
opportunities and challenges, 222–34
overview, 195–96
prevention, 217–19
proactive policing, 225–26
reforms, 236–39
regional spending profile, 197–206
scientific evidence, 221
spending, 206–9
targeting, 219–21
citizens' policy preferences, 334, 353–56
Civil Service Development Index (IDB), 289
civil services, 55–60
Colombia
citizens' policy preferences, 332
cyclical spending, 4
education, 169, 172, 176, 179–81, 178, 189–91, 193–94, 196
health system, 259–267
inefficiency, 57, 60, 88–93
infrastructure, 143–45, 147
pensions, 68
PPPs, 313
priority setting, 269

public procurement, 285n11
public spending, 310, 313
security, 345
skills training programs, 89n69
SNGs, 94
trust in government, 345
competition, 49–50, 165, 279–82, 285, 286–89, 291, 321–23, 325, 337
Consejo de Ministros de Salud de Centroamérica (COMISCA), 267
corruption
Brazil, 53, 94
competitive bidding and, 287n15
Corruption Perception Index (CPI), 54
education and, 184, 193–94
efficiency and, 95, 97, 287–88, 323
error, fraud, or corruption (EFC), 60
EU and, 53–55
healthcare and, 253–58
inefficiency and, 51–55
infrastructure and, 147, 149, 161, 163
monitoring and, 286, 321
passive waste, 54
PFM reforms and, 298
PPPs and, 314
public procurement and, 282–87
public spending and, 15–16, 46, 51
transparency and, 286, 314–15, 321
trust and, 341, 345
Costa Rica
civil service management, 292
cyclical spending, 31
education, 172, 176, 180
equity, 117, 120
health system, 241, 248, 251, 252, 257, 258, 260–61, 266, 267–68
inefficiency, 55, 58, 60, 68, 76
infrastructure, 144–45, 148
public procurement systems, 289
security, 203–4, 213
CPI
See corruption
cyclicality, 13–14
debt and, 21, 24
See also business cycles
Data Envelopment Analysis (DEA), 46, 161, 193, 210, 246–48, 253, 254
decentralization
allocative efficiency and, 89–96
education and, 130–31, 188, 191, 194
efficiency and, 99–100, 187, 315, 316–17
health systems and, 255, 299
SNG institutional capacities, 95–96
spending concurrency, 96
debt
cyclical spending and, 21, 24
debt crisis, 8, 276
Debt Sustainability Assessment (DSA), 3, 308
fiscal rules and, 275–77
infrastructure and, 143
Portugal and, 313
PPPs and, 314
spending adjustments, 5
subnational, 282
sustainability, 308
defined benefit (DB) systems, 68–70
defined contribution (DC) systems, 68–70
DIME countries, 259–62, 267
Disability Adjusted Life Years (DALYs), 245–46, 251
Diversion of Public Funds (DPF), 54
demographics
age-related spending, 65–66, 69–72, 98
equity and, 193
fiscal policy and, 310
health system and, 245
policy and, 18
political institutions and, 328
public spending, 16–17
security and, 212, 215
social transfers and, 28

targeting and, 119
Dominican Republic, 48, 76, 144, 147, 176, 180–82, 193, 201, 203, 259–60, 269, 283
Drug Treatment Courts (DTCs), 235
Economic Commission for Latin America and the Caribbean (ECLAC), 169
Ecuador
cyclical spending, 10
equity, 135
health system, 251, 259 , 267, 283
inefficiency, 48, 59
infrastructure, 147
public procurement, 285, 286n17
security, 216
education spending
Argentina, 172, 185
Bolivia, 172, 188
Brazil, 169, 172, 176, 180–81, 187, 190, 193
Chile, 86, 89, 176, 179, 185, 188–90, 192–194
Colombia, 169, 172, 176, 179–81, 189–91, 193–94, 196
Costa Rica, 172, 176, 180
educational equity, 177–80
efficiency vs. equity
country factors, 183–85
explained, 180–83
improving, 193–94
school finance systems, 185–93
El Salvador, 245
Guatemala, 172
Mexico, 169, 176, 180, 193, 343
overview, 167–69
Peru, 124, 169, 172, 176, 179–81, 188–89
resource allocation, 170–72
school efficiency and equity, 169–82
technical efficiency, 172–77
Uruguay, 246, 248, 268, 270
efficiency
allocative inefficiency
age-related spending, 65–74
development accounting, 77–81
overview, 64–65
physical and human capital, 74–81
centralized and decentralized spending, 89–96
SNG institutional capacities, 95–96
spending concurrency, 96
civil services and, 55–60
corruption and, 51–55
increasing, 97–100
overview, 45–47
procurement, wages, and subsidies, 63–64
skills formation over life cycle, 81–89
targeted transfers, 60–63
technical, 47–51
See also inefficiency
El Salvador
cyclical spending, 4
education, 243
equity, 110, 122, 124
health system, 259–260, 261, 267
inefficiency, 55, 59, 61, 69, 76
infrastructure, 140, 144, 148
public procurement, 283
security, 218
energy subsidies, 61–62
error, fraud, or corruption (EFC)
See corruption, error, fraud, or corruption (EFC)
European Union (EU)
aging spending, 72n41
corruption and, 53–55
equity and, 178
fiscal rules, 274
pensions and, 67
equity
closing the extreme poverty gap, 117–21
contributory pensions, 109–13
first-round fiscal incidence, 105–8
geography of spending equity, 129–31

inequality of opportunity, 126–29
in-kind transfers, 121–25
noncontributory cash benefits, 114–15
overview, 101–2
past, present, and future, 102–5
policy puzzle, 136–37
second-round fiscal incidence, 131–36
size and redistribution, 108–9
subsidies, 115–17
FIEL, 61, 116
fiscal councils (FCs), 308–9
fiscal rules
age-related spending, 309–12
aggregate, 276–79
building blocks, 317
civil service management, 287–92
fiscal councils and productivity commissions, 306
improving allocative efficiency, 303
micro-level spending, 281–84
MTEFs, 307–8
overview, 273–274
PPPs, 313
Public Financial Management, 296–298
public investment management, 312–13
public procurement management, 284–89
public trusts, 316
results-based budgeting, 301–5
second condition, 277–279
smart integrated data systems, 294–98
smart-spending reviews, 305–7
state-owned enterprises (SOEs), 314
subnational expenditure, 314–319
Fund for the Maintenance and Development of Basic Education and Teacher Appreciation (FUNDEB), 187, 194
G20, 287
Global Competitiveness Index, 145
Government Effectiveness Index (World Bank), 156, 291
Guatemala
civil service management, 293
cyclical spending, 9
education, 172
equity, 110, 182
health system, 124, 245, 253–54
inefficiency, 48, 55, 59, 76
infrastructure, 140, 145, 146–155
public investment management, 312
security, 216
health systems
analysis of, 273–74
Argentina, 243, 245, 271
Bolivia, 253
Chile, 248, 253, 259–60, 262–263, 268, 271–272
Colombia, 259–67
Ecuador, 253, 259, 263, 269
efficiency, 242, 245–57
access to services, 257
characteristics of, 255–57
DEA analysis of, 244–254
equity in access to services, 257
health outcomes, 257
Guatemala, 124, 245, 253–54
Mexico, 259–60, 263, 267, 271, 356
overview, 241
Peru, 259–60, 262–63, 271
pharmaceutical policy, 256–269
quality of preventive services, 262–269
spending and medication use, 256–267
recommendations for improvement
governance and quality of institutions, 268–69
pharmaceutical policies, 269–70
reconfiguring health service delivery, 270–72
spending in region, 242–45

Uruguay, 245, 248, 268, 270, 272
Venezuela, 243, 245, 254
See also births; immunizations
Heckman, James J., 64, 82, 85, 128, 171, 183, 219, 318–319, 323
Honduras, 61, 76, 92, 120, 144, 148, 172, 203, 216, 285, 334, 356–57
Human Opportunity Index (HOI), 131
immunizations, 241, 247, 254, 257
See also health systems
inefficiency
Argentina and, 48, 51, 55, 57, 61, 63, 67, 76, 91, 94–95, 97
educational spending and, 180–94
health systems efficiency, 242, 245–57
skills and, 55, 58–59, 65–66, 75, 98–100
subsidies and, 46–48, 50, 60–61, 97
wages and, 46–50, 55–60, 68–70, 80–82, 94, 97–98
See also efficiency
infant mortality, 127
infrastructure
See public infrastructure
intergovernmental fiscal coordination (IFCs), 315–316
Inter-American Development Bank (IDB)
Civil Service Development Index, 289
DIME, 259n12
IDP-LAPOP survey, 334, 342–43, 345, 347, 353–58
infrastructure projects, 152–60
Network National Public Investment Systems, 143, 145
Paz Ciudadana Foundation and, 235
Political Institutions 2015 database, 16
studies on
government spending, 48
pensions, 68
public expenditure, 76, 284
security, 221–22, 226
subsidies, 116
World Bank and, 304
International Monetary Fund (IMF), 18, 69, 143, 145
PIE-X indicator, 161
Public Investment Management Index, 147
Jamaica, 84, 129, 135, 172, 201, 212, 286, 294
LAC-7, 1–2, 76, 134, 267
life expectancy, 126, 239, 245–57, 311, 324
Logistic Performance Indicators (LPIs), 162
Methodology for Assessing Procurement Systems (MAPS), 283
See also Organisation for Economic Co-operation and Development (OECD) countries
McKinsey Global Institute, 143
McLoone index, 177–81
medium term expenditure frameworks (MTEFs), 305–8
Mexico
citizens' policy preferences, 334
education, 169, 176, 180, 193, 342
equity, 114, 122, 130, 135
health system, 259–60, 263, 267, 271, 356
inefficiency, 55, 57–58, 61, 68, 76, 91, 96
infrastructure, 145, 147
PPPs, 314
public investment management, 312
public procurement, 287, 298, 321
security, 204, 210, 216–17, 345
SOEs, 314
taxes, 345
zero-based budgeting (ZBB), 300
multilateral development banks (MDBs), 141, 150–52, 154, 156, 164

Multisystemic Therapy (MST), 223–25
Network of National Public Investment Systems (SNIP), 143, 165
New Zealand, 304, 306
noncontributory cash benefits, 114–15
noncontributory pensions (NCPs), 61, 68, 114, 117–18, 121
See also pensions
Odebrecht scandal, 53, 286n16
on-the-job training (OJT), 79–81, 99
See also education spending
openness, 14–15
Operation Car Wash, 53
See also corruption
Organisation for Economic Co-operation and Development (OECD) countries
age-related spending, 307
cyclical spending and, 31
decentralization and, 97
education and, 167, 169, 172, 176, 179–80
equity and, 103, 108–9, 112, 122, 127, 130
health systems, 243, 245, 247–248, 253, 268, 270–273
inefficiency and, 48, 50–53, 55–58, 60, 67, 76, 88, 91
infrastructure and, 157
institutions, 330
Methodology for Assessing Procurement Systems (MAPS), 283–284
Performance Budgeting Survey, 305
public procurement systems, 285–87
security and, 197, 199, 201, 203, 209
SSRs, 305
trust of governments, 339
Paz Ciudadana Foundation, 225, 236
pensions
age-related spending and, 65–74, 309–11
contributory, 109–13
deficits, 113
equity and, 103–4, 109, 133, 135
inefficiencies and, 50, 80, 98, 100
noncontributory, 114–16, 118–21, 282
poverty and, 74n47, 117
social policy and, 355
social programs and, 61
transfers and, 60
wages and, 294
Peru
citizens' policy preferences, 334
civil service management, 294
cyclical spending, 31
education, 124, 167n4, 169, 172, 176, 179–81, 188–89
equity, 114
fiscal rules, 279, 310
health system, 259–60, 262–63, 271
inefficiency, 51, 55, 63, 68, 76, 79, 86–87, 91, 97
infrastructure, 143–145, 147
PPPs, 314
public investment management, 312
public procurement, 285
results-based budgeting, 301–2, 304–5
security, 196, 203
SNGs, 96
trust in government, 347
pharmaceutical policies
quality of preventive services, 262–265
spending and medication use, 256–62
police financing, 342–45
politics
citizens' policy preferences, 334
patience and, 353–56
collective action, 350

institutions, 327–32
lessons for capital spending, 348–49
long-term vision, 356–58
overview, 327–29
trust in government
determinants of, 349–53
education financing, 340–42
overview, 334–40
police financing, 342–45
redistribution and, 345–48
Portugal, 180, 313–14
poverty
Brazil, 117–19
poverty gap, 117–21
Preferential School Subsidy Law (SEP), 189
procurement processes, 50–51
PRODEV index, 299
productivity commissions (PCs), 306–7
pro-productivity institutions, 306
protection programs, 36
Public Expenditure Observatory, 287
Public Financial Management (PFM), 280–81, 296–98, 305, 320
public infrastructure
existing assets, 160–63
future of, 163–65
IDB and, 152–60
making correct choices, 142–48
overview, 139–42
streamlining
avoiding construction delays, 154–60
cost overruns, 149–54
overview, 148–49
public investment
Public Investment Efficiency (PIE-X) indicator, 161–162
Public Investment Management Index (PIMI), 143, 145
public investment management systems (PIMSs), 311–313, 319
public-private partnerships (PPPs), 18, 285, 312–14
public procurement and, 284–90
public spending
composition of public expenditure, 6–12
costs of, 3–6
current vs. capital, 7–12
determinants of composition, 12–18
capital stocks, 14
cyclicality, 13
demographics, 16
fiscal rules, 16
inequality, 14
openness, 14–15
political and institutional factors, 15
trust, 17–18
overview, 1–3
policy implications, 18–19
purchasing power parity (PPP), 11, 120, 197, 199
redistribution, 111
Results Based Budgeting (RBB), 298–303, 306–7, 320
revenue equalization, 315
rule of law, 255
Rule of Law Index (World Bank), 156, 232
skilled birth attendance (SBA) rates, 245, 253, 255
See also births
skills
budget for, 81–89
civil service management, 287– 290
education and, 81
equity and, 121, 131, 137
formation, 47
inefficiency and, 55–60, 65–66, 75, 98–100
literacy, 183–84
opportunity and, 126, 128
politics and, 353
public spending on, 303, 306, 320–21

smart-spending reviews, 303–5
social security, 15–16, 21, 28–36, 43, 48, 69, 80, 104–6, 112, 121, 132–33, 135, 241, 292–95, 308, 317
social transfers
See transfers
Socio-Economic Index of Occupational Status (ISEI), 174n11
socioeconomic status (SES)
education and, 167, 173–74, 174n14, 178, 181, 183–84, 194
equity and, 125–28
health expenditures and, 245
law enforcement and, 212, 216, 233
skills gap and, 82
Spain, 31, 313
spending policy and macroeconomy, 39–41
state-owned enterprises (SOEs), 295, 309–14
fiscal risks from, 316
streamlining
avoiding construction delays, 154–60
cost overruns, 149–54
overview, 148–49
subnational governments (SNGs), 90–97, 99, 130, 285
institutional capacities, 95–96
subsidies
development accounting and, 81
education and, 87–89, 179, 189–90, 194, 320
energy, 61–62
equity and, 105, 114–17, 120, 133, 193
inefficiency and, 46–48, 50, 60–61, 97
informality, 135, 137, 308, 319
politics and, 330, 332, 345
poverty and, 117
Preferential School Subsidy Law (SEP), 189
reforms, 323
targeting, 115–117, 294
taxes and, 62–63, 105–6
technical inefficiencies in, 63–64
Sustainable Development Goals (SDG) agenda, 239, 242
targeting
education, 84–86, 178–79, 181
fiscal policy, 101–2
health systems, 267
inefficiency and, 5, 8, 97
infrastructure and, 141, 336
institutions, 293–98
MTERs and, 307
nutrition and skills formation, 303
poverty, 104, 117–21, 128, 178, 337
PPPs and, 313
redistribution and, 111
security, 196, 219, 221–22, 224–25, 236, 348
social policy and, 317–19
subsidies, 115–17
targeted transfers, 60–63, 133, 137
taxes
accountability and, 95
expenditures, 62–63
Mexico, 345
subsidies and, 62–63, 105–6
technical efficiency, 45–48
Third Regional Comparative and Explanatory Study (TERCE), 168
total factor productivity (TFP), 74, 78–81, 99
transfers
energy subsidies, 61
human and physical capital vs., 75–78
in growth, 75–77
in-kind, 121–25
overview, 60–61
social programs, 61–62
tax expenditures, 62–63
transparency
challenges of, 321
education and, 179, 189, 193
fiscal councils and, 306
future of, 356–58

government effectiveness and, 266
health systems and, 268, 270
inefficiency and, 91, 321–23
infrastructure and, 149, 165
micro-level spending and, 279
participation and, 297–98, 303
PPPs and, 310
public procurement management and, 285–86, 288–89
reforms, 308, 311
smart integrated data and, 297–98
subnational expenditures and, 313, 317–19
trust and, 347
trust funds and, 314
See also corruption; trust in government
treasury single accounts (TSA), 297
Trinidad and Tobago, 48, 57, 176, 210, 253
trust in government
determinants of, 349–53
education financing, 342–44
overview, 336–42
police financing, 344–47
redistribution and, 347–50
Uruguay, 337, 342, 345, 347
trusts funds, 316
United Nations, 69–70
Convention against Corruption (UNICAC), 285
professionalization and, 304
UNESCO, 171
universal health coverage (UHC), 239
See also health systems
Uruguay
citizens' policy preferences, 332
cyclical spending, 29, 31–36
education, 176, 180
equity, 106, 108–9, 120
health system, 245, 248, 268, 270, 272
inefficiency, 51, 54, 67–70, 85
infrastructure, 144–45, 148
pensions, 109, 114
poverty, 117
procurement, 288–289
security, 203, 226
SOEs, 314
trust in government, 337, 342, 345, 346
Venezuela
energy production, 61
health system, 243, 245, 254
infrastructure, 139
security, 196
vertical fiscal imbalances (VFI), 91, 94–95
wages
automatic spending and, 26
education and, 193
fiscal rules and, 279
inefficiency and, 46–50, 55–60, 68–70, 80–82, 94, 97–98
public spending and, 1, 32, 35–36
reforms and, 289, 291–94
social insurance and, 104
World Bank, 15, 131, 145, 152–54, 156, 301, 304–5
Benchmarking Public Procurement, 145
Business Enterprise Survey, 162
Logistic Performance Indicators (LPIs), 162
Government Effectiveness Index, 156
Rule of Law Index, 156
World Economic Forum (WEF), 43, 144–45, 162
World Health Organization (WHO), 245, 255
World Health Report, 255
World Justice Project, 233
World Social Protection Report, 36
World Values Survey, 183, 338

Public spending has climbed in Latin America and the Caribbean. Riding a commodity windfall and low interest rates, many governments in the region tried to spend their way into the future. Unfortunately, the party is over and policymakers must find a way to keep their economies growing and their citizens happy in a fiscally sustainable manner. The traditional answer to this moment of truth has been to simply cut spending across the board. This book suggests there is another way out. Even if governments need to spend less in aggregate, the same or even more services can be provided if ways are found to be smarter about spending, to be more efficient, in short, to make every penny count.

The first step is to achieve better outcomes with the same or fewer resources. The second is to allocate better, by analyzing the composition of spending and finding the right mix of transfers to meet today's needs and investments to prepare for tomorrow. For governments that are bigger, it's time to make them better. Still, efficiency is not only about spending less. Some countries in the region actually spend too little for their level of development, yet they find it difficult to raise expenditure because their citizens balk at paying higher taxes when governments are not efficient. Governments must regain the trust of their citizens; efficiency can help them do that.

Better Spending for Better Lives gives a comprehensive, in-depth analysis of the effectiveness of public spending in Latin America and the Caribbean. It covers the full range of fiscal activities of governments, evaluating both the marginal costs and benefits of expenditure programs in the region. It critically examines anti-investment bias in policy. It candidly discusses the need for transparency and reform across the region. This book will shape the discussion of expenditure policy in Latin American countries for years to come.

James J. Heckman
Nobel Laureate; Professor and Director, Center for the Economics of Human Development, University of Chicago

Public spending has been at the heart of Latin America and the Caribbean's policy debate for a long time. Given the frequent need to undertake costly adjustments in the level of public spending, however, little attention has been paid to the effects of public spending composition and efficiency on overall economic prosperity. This incisive volume is a must-read for anybody interested in fiscal policy, public finance, or development and, in particular, policymakers and practitioners eager to learn how to do more with less and how to develop the right institutions that will help safeguard public investment for inclusive growth.

Carlos Végh
Chief Economist, Latin America and the Caribbean, The World Bank

The Inter-American Development Bank (IDB) is an international institution created in 1959 to foster economic and social development in Latin America and the Caribbean.

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