Ecuador

Public Finance Review

Phase II

Bolivia, Chile, Ecuador, and Peru

Country Management Unit

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Contents

Acronyms ........................................................................................................................................... 6

Acknowledgements ............................................................................................................................. 7

Forward .................................................................................................................................................. 8

Executive Summary .............................................................................................................................. 9

Improving Strategic Public Procurement ......................................................................................... 16

Efficiency of Public Spending in Basic Education ........................................................................... 18

Chapter 1. Ecuador’s economic and fiscal trends and challenges ....................................................... 21

Chapter 2. Ecuador Tax Assessment .................................................................................................. 45

Trends and composition of government revenue in Ecuador ............................................................... 45

Tax instruments, Rates and Bases ....................................................................................................... 49

Indirect taxes ....................................................................................................................................... 49

Direct taxes ......................................................................................................................................... 51

Trade taxes .......................................................................................................................................... 57

Tax structure and oil revenue ............................................................................................................. 60

Tax expenditures ................................................................................................................................. 61

Tax administration ............................................................................................................................... 64

Distributional analysis of VAT reforms ............................................................................................. 66

Reform scenarios and results .............................................................................................................. 66

Policy implications ............................................................................................................................... 69

Recent reforms .................................................................................................................................. 69

Other reform options ......................................................................................................................... 72

Avenues for World Bank engagement ............................................................................................... 75
References .......................................................................................................................... 77

Methodological Appendix: ................................................................................................. 79

Chapter 3. Ecuador’s Public Sector Wage Bill ........................................................................ 82
  Institutional setting ............................................................................................................. 85
  Key characteristics of public-sector workforce ................................................................. 88
  Ecuador’s public-sector wage premium ............................................................................. 91
  Evolution of Ecuador’s Central Government Wage Bill and Workforce ......................... 95

Chapter 4. Improving Strategic Public Procurement ............................................................... 108
  Public procurement expenditure in Ecuador ....................................................................... 108
  Savings analysis ................................................................................................................ 109
  Strategic Sourcing Analysis .............................................................................................. 114
  Identification of three families of items with high potential for short-term savings .......... 114
  Analysis of a category for strategic sourcing: procurement of vehicles ......................... 115
  Methodology ................................................................................................................... 118
  Ongoing reforms ............................................................................................................. 120

Chapter 5. Efficiency of Public Spending in Basic Education in Ecuador .............................. 122
  Education Spending in Ecuador ......................................................................................... 123
  Relative Efficiency of Public Spending in Basic Education ............................................. 127
  Conclusions ..................................................................................................................... 136
Figures

Figure 1: Fiscal Balance ........................................................................................................... 24
Figure 2. Fiscal Revenues ....................................................................................................... 24
Figure 3. Fiscal Expenditure consolidation .............................................................................. 26
Figure 4: Security contributions and benefits ......................................................................... 27
Figure 5: Public debt ............................................................................................................... 30
Figure 6. Decomposition of debt accumulation ..................................................................... 30
Figure 7: Public debt, deficit, and country risk in 2018 ......................................................... 31
Figure 8. Public debt changes between 2016 and 2018 ......................................................... 31
Figure 9. Public debt under alternative scenarios ................................................................. 34
Figure 10. Expenditure rigidity ............................................................................................. 35
Figure 11. Budget rigidity ....................................................................................................... 35
Figure 12: International benchmark of selected fiscal variables ............................................. 36
Figure 13: Fiscal pro-cyclicality among LAC countries ............................................................ 41
Figure 14: Tax Revenue in Ecuador and Peer Countries .......................................................... 47
Figure 15: Tax Rates ............................................................................................................. 48
Figure 16: VAT collection efficiency ...................................................................................... 49
Figure 17: Distribution of Consumption per decile ................................................................. 50
Figure 18: Distributional impact of the current VAT scheme ................................................. 50
Figure 19: Excise Revenue by source, % of Tax Revenue (2016) ............................................ 51
Figure 20: Reduction in the Gini coefficient due to personal income tax 2004 - 2014 ............ 54
Figure 21: Import Tax Revenue as Percent of GDP ................................................................. 58
Figure 22: Ecuadorean Tariffs, all goods (weighted by import share) ....................................... 58
Figure 23: Applied Tariff Levels, 2011 (simple average) ....................................................... 59
Figure 24: Ecuador FDI Outflows (2010 USD) ...................................................................... 60
Figure 25: Tax rates and the price of crude oil ..................................................................... 61
Figure 26: Tax Expenditures (2013 – 2016) ......................................................................... 63
Figure 27: Labor informality .................................................................................................. 64
Figure 28: Firm informality .................................................................................................... 65
Figure 29: VAT rate increase from 12 to 14 percent – all items with current 12 percent rate .... 67
Figure 30: VAT rate increase from 0 to 12 percent – Reform 3 ............................................... 67
Figure 31: VAT rate increase from 0 to 12 percent – Reform 4 ............................................... 68
Figure 32: VAT rate increase from 12 to 14 percent – Reform 1 and Reform 4 Combination ....... 68
Figure 33: Public employment in Ecuador is below average for regional, structural, and HIC peers .. Error! Bookmark not defined.
Figure 34: Public employment grew faster than the private sector and international comparators .. Error! Bookmark not defined.
Figure 35: General government compensation of employees as a share of GDP (%) .. Error! Bookmark not defined.
Figure 36: General government wage of employees as a share of expenditure and revenue .......... Error! Bookmark not defined.
Figure 37: Gender composition and average age of employees in public sector ........ Error! Bookmark not defined.
Figure 38: Evolution of public sector workers education level

Figure 39: Public sector employment categories

Figure 40: Wage by occupation

Figure 41: Public sector wage level related to regional peers

Figure 42: Earning differentials between public and private sectors. National by educational levels.

Figure 43: Earning differentials between public and private sectors by experience and occupation.

Figure 44: Wage bill increases were driven by employment

Figure 45: Employment increases were concentrated in health, police, judiciary and social protection

Figure 46: The evolution of the central government workforce

Figure 47: Central government employment

Figure 48: Composition of public positions

Figure 49: Central government’s scale

Figure 50: Sobrevalorados

Figure 51: Switch Rate

Figure 52: Projections

Figure 53: Public procurement as a share of the government’s budget

Figure 54: Public budget execution 2013-2017 (in billion dollars)

Figure 55: Variables that impacted prices and quantification of the impact

Figure 56: Savings potential in Ecuador’s public procurement relative to 2013-2017 (in billion dollars)

Figure 57: Awarded value by level of competition in procurement methods

Figure 58: Unit prices (log) and procurement methods

Figure 59: Unit prices (log) and deciles of purchased quantities

Figure 60: Unit prices (log) and seasonality (months)

Figure 61: Unit prices (log) and deciles of market concentration

Figure 62: Unit prices (log) and number of bidders

Figure 63: Breakdown of savings estimate by product category

Figure 64: Potential savings on three strategic families of items, 2013-2017 (in million dollars)

Figure 65: Purchased quantity and unit prices, purchases of pickups

Figure 66: % of awarded value and unit price (median) per month

Figure 67: Total costs of the government’s vehicle fleet

Figure 68: Strategic Sourcing Model

Figure 69. Parameters for the definition of a savings strategy

Figure 70: Government expenditure on education, total (% of GDP), 2000-2015

Figure 71: Monthly salaries in the Education-Cultural Sector in 2018 [in US$1000]

Figure 72: Expenditure by educational level

Figure 73: Per-pupil current expenditure by education level ($ constant, PPP) (2014)

Figure 74: Efficiency Frontier – public expenditure in basic education

Figure 75: Distribution of efficiency estimates across school districts, using DEA

Figure 76: Technical efficiency frontier using DEA, 2016-17

Figure 77: Technical efficiency frontier using DEA, 2016-17

Figure 78: Changes in efficiency between academic years 2015-16 and 2016-17
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>BCE</td>
<td>Central Bank of Ecuador</td>
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<tr>
<td>BDH</td>
<td>Human Development Transfer - <em>Bono de Desarrollo Humano</em></td>
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<tr>
<td>BIESS</td>
<td>Bank of Ecuadorian Institute of Social Security</td>
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<tr>
<td>CCT</td>
<td>Conditional Cash Transfer</td>
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<tr>
<td>CEDLAS</td>
<td>Center for Distributive, Labor and Social Studies</td>
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<tr>
<td>GCI</td>
<td>Global Competitiveness Index</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<tr>
<td>IESS</td>
<td>Ecuadorian Institute of Social Security</td>
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<tr>
<td>IFC</td>
<td>International Finance Corporation</td>
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<td>ILO</td>
<td>International Labor Organization</td>
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<td>IMF</td>
<td>International Monetary Fund</td>
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<td>INEC</td>
<td>National Statistical and Census Institute</td>
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<td>LAC</td>
<td>Latin America and the Caribbean</td>
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<td>LAPOP</td>
<td>Latin America Public Opinion Project</td>
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<td>MAG</td>
<td>Ministry of Agriculture</td>
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<td>MEF</td>
<td>Ministry of Economy and Finance</td>
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<td>MIGA</td>
<td>Multilateral Investment Guarantee Agency</td>
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<td>OECD</td>
<td>Organization for Economic Co-Operation and Development</td>
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<td>PPP</td>
<td>Public Private Partnership</td>
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<td>PWT</td>
<td>Penn World Table</td>
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<td>SEDLAC</td>
<td>Socio-Economic Database for Latin America and the Caribbean</td>
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<td>SENPLADES</td>
<td>National Secretariat of Planning and Development</td>
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<td>SERCE</td>
<td>Second Comparative and Explanatory Study</td>
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<td>SIPA</td>
<td>Agriculture Public Information System</td>
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<td>UNESCO</td>
<td>United Nations Educational, Scientific and Cultural Organization</td>
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<td>US</td>
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<td>WB</td>
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<td>World Trade Organization</td>
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Forward

The Ecuador Public Finance Review (PFR) series responded to a request from the Ecuadorian Ministry of Economy and Finance (MEF) to assess the efficiency and effectiveness of public spending. In particular, the MEF expressed strong interest in the analysis of spending on wages, procurement, public investment management (PIM), education and health. It also requested to include a revenue analysis. The MEF emphasized that capacity building should be an integral part of this activity. In this context, the objective of this PFR is to support the efforts of the Ministry of Finance, SENPLADES, SERCOP and several line ministries to identify short-term and medium-term reform options to improve the efficiency, effectiveness and sustainability of public expenditures and revenues.

The PFR series offers a combination of analysis, capacity building, and options for reform in selected areas and sectors of the budget to achieve efficiency gains and fiscal savings, while improving (or at least preserving) equity. Once identified, these efficiency gains and savings could be used to support the ongoing gradual consolidation process, to generate space to face future spending pressures coming from the population needs for public services, and to be reallocated within the same sectors or across sectors in programs that show significant positive impact.

The PFR-Phase I of the activity, developed during FY18, provide an initial diagnostic of areas of the general government budget that have experienced high spending growth in the past years or which are characterized by a high level of spending compared to benchmark countries. In this context, the PFR-Phase I included an overview of key fiscal trends and an analysis of: i) fiscal policies, institutions and sustainability; ii) public revenues; iii) public wages; and iv) public procurement. This analysis was mainly based on aggregate data available to the Bank team during the time of preparation. Phase I also included technical assistances related to the areas covered by the study, including: macro forecasting model, debt sustainability, fiscal rule, budget preparation, tax expenditures, and public procurement analysis.

The PFR-Phase II, presented here, complements and deepens the analysis and capacity building initiated under Phase I. The report take advantage of disaggregated data to develop simulations and projections, considering the impact of alternative reforms options under each area. Phase II also includes an analysis of the efficiency of public spending in Education. As in Phase I, Phase II was accompanied by a number of technical assistances related to the areas covered by the study, including: an Ecuador specific forecasting model, BOOST database for Ecuador, public financial management, impacts of tax on capital outflows, public wage bill forecast and simulation, and efficiency of spending.
Executive Summary

Ecuador sustained high growth for more than a decade on the back of high oil prices but saw a marked slowdown in GDP growth since oil prices plummeted in mid-2014. GDP growth in the 2001-2014 period averaged 4.5 percent, well above the average growth for the Latin America and the Caribbean region. This remarkable episode of stable growth was facilitated by favorable external conditions. Ecuador, an oil exporting country, benefitted from the strong increase in oil prices observed between 2001 and 2014. The incidence of oil on Ecuador’s economic performance was also visibly manifested in the years following the sharp drop in oil prices – from a high of $106 per barrel in July 2014 to a low of $30 per barrel in January 2016. As a consequence, GDP stagnated in 2015 and then contracted 1.6 percent in 2016. Growth recovered to 3 percent in 2017, amid an electoral expansion of government spending and a mild recovery of oil prices, before moderating again to 1.4 percent in 2018 as external conditions tightened.

Fostered by higher fiscal resources, Ecuador’s public spending doubled during the boom years. Government spending, measured by spending of the non-financial public sector (NFPS), remained stable at around 20 percent of GDP during the first half of the 2000s, but expanded quickly after 2006. Total expenditure increased from about 21 percent of GDP in 2006 to 43 percent in 2014. It was enabled by an increase in fiscal revenues as a share of GDP of around 15 percentage points between 2006 and 2011, staying at 39 percent over the 2011-2014 period. Oil-associated revenues, including the balance of state-owned enterprises (SOEs) in the oil sector, accounted for two-thirds of the increase, while gains in the collection of non-oil revenues explained the other one third. Spending was also partially covered by reducing savings and accumulating new debt.

The expansion in public spending was widespread. Over the 2006-2011 period, current spending expanded by 10.5 percentage points of GDP, driven by wages and salaries, social security contributions, and, most notably, other expenditures including items such as oil imports, fuel subsidies, and service fees to private oil operators. Between 2012 and 2014, current expenditure increased by only one percentage point as a share of GDP, as an increase in the purchase of goods and services was offset by a contraction in subsidies and transfers. Capital expenditure expanded by about nine and half percentage points of GDP between 2006 and 2014, becoming the largest among regional peers. This was because the government used a sizable share of the oil windfall in investment projects in infrastructure and energy, as well as in social programs. From a functional point of view, general services experienced a large expansion (6 percent of GDP), followed by transport and energy (2.5 percent of GDP) – mostly capital spending, health and education (2.4 percent of GDP), and social protection (0.7 percent of GDP).

Ecuador’s fiscal deficit had already started to increase in 2013, but the economic slowdown and the fall in oil prices contributed to accelerate the deterioration of fiscal accounts. While the increase in expenditure of the 2006-2011 period was broadly in line with the increase in revenues, the 2012-2014 expansion surpassed revenues. As a result, the fiscal deficit widened from 0.2 percent in 2012 to 5.2 percent of GDP in 2014. When oil prices dropped in 2014, fiscal revenue as a share of GDP fell by seven

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1 In 2008, Ecuador dismantled it sovereign oil funds, and use the resources to finance the budget.
2 Spending on goods and services remained stable as a share of GDP. Interest payments decreased due to a selective default of international bonds worth $3.2 billion. In December 2008, the government stopped payments of Global 2012 and 2030 bonds even though they had the resources to meet their requirements. In 2009, it bought back $2.9 billion worth of defaulted bonds at $900 million, hence reducing interest payments by about $300 million per year.
percentage points and public spending continued to outpace revenues. This occurred in spite of cuts in capital spending, a lower subsidy bill, and attempts to contain current spending from 2015 onwards. The fiscal deficit widened continuously during this period, reaching 7.3 percent of GDP in 2016. It then declined to 4.5 percent in 2017 and further still in 2018 to 1.2 percent, due in large part to improvements in international oil prices. Ecuador’s public debt, which stood at around 15 percent of GDP in 2011, grew to 27 percent in 2014, and continued to quickly expand to 46 percent of GDP in 2018.

Growing financing needs since 2013 were initially met through non-conventional and risky sources of financing, but external bond issuance and lending from international financial institutions (IFIs) are currently playing an increasing role. The 2008 default reduced public debt levels but hampered access to international capital markets. This meant that growing financing needs had to be met through unconventional sources of financing, such as the pre-sale of oil, oil-backed loans, short-term bonds, and by tapping into resources from other parts of government.3 These financing methods, which are not recorded as part of the public debt, have reduced the transparency of fiscal accounts. The government also accumulated arrears, which eroded the liquidity in the financial sector and amplified the contraction of both deposits and loans during the economic slowdown. Similarly, confidence in the stability of the financial sector and in the country’s dollarization regime was undermined by the deterioration of the Central Bank’s balance sheet that resulted from direct lending to the public sector. While Ecuador recently re-entered international capital markets, it faced financing costs that are significantly higher than those incurred by other Latin American and Caribbean countries. This is reflected in the fast-increasing interest bill.

A recent agreement with the IMF has ratified the authority’s commitment to fiscal consolidation and has helped mobilize additional financing. The government plan, Plan Prosperidad, acknowledges that Ecuador needs to stabilize its fiscal accounts, while also protecting the most vulnerable population and igniting private sector development. In this context, the government has signed an Extended Fund Facility with the IMF to support its macroeconomic reform agenda. The IMF operation, for $4.2 billion in three years, is part of a $10.3-billion financing package. It helped secure financing from the CAF Development Bank of Latin America ($1.8 billion), the World Bank ($1.7 billion), the Inter-American Development Bank ($1.7 billion), the European Development Bank ($379 million), the Latin American Reserve Fund ($280 million), and the French Development Agency ($150 million). The authorities have stated that the government will receive $4.6 billion in 2019, $3.2 billion in 2020, and $2.5 billion in 2021. The authorities also confirmed that the maturities on these loans extend up to 30 years and the interest rates average is below 5 percent. These terms are much more favorable than the 10.75 percent offered in the $1.0 billion, 10-year bonds issued in January 2018.

Going forward, it is critical that Ecuador finds a well-paced and credible fiscal adjustment path that helps mitigate risks and safeguards the country dollarization regime. Finding the right pace of adjustment will be challenging. Adjusting too quickly could place the country in a recession as the government has been a primary engine of growth. Conversely, adjusting too slowly will not build the credibility that is needed with markets and could expose the economy to shocks that could threaten sustainability. On the external front, risks stem from changes in external financing conditions that limit Ecuador’s access to financing resources. Domestically, Ecuador is vulnerable to natural disasters, which

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3 Such as financing from the Central Bank, other public banks, and the social security system, as well as arrears in a number of SOEs.
imply potentially high contingent liabilities for the public sector. Finally, any fiscal stabilization plan must safeguard the country’s social gains.

The public debt is expected to fall below 40 percent of GDP by 2023, if the government successfully implements the consolidation path agreed in the IMF program, but external shocks could delay the consolidation. This path assumes that oil prices and production will remain almost flat over the projection period. It also anticipates that private investment will increase due the implementation of structural reforms to the business environment. The NFPS balance is expected to improve from a deficit of about 1.2 percent of GDP in 2018 to a surplus of about 2.7 percent by 2021. The NFPS debt is projected to fall from 46 percent of GDP in 2018 to 36 percent in 2023. The path of public debt is subject to risks such as higher interest rates, a weaker than expected fiscal consolidation path, and slower growth. If all these risks materialized together, the public debt would increase to a peak of 53 percent of GDP in 2020, before declining to 46 percent by 2023 – almost ten percentage points above the baseline scenario.

Strengthening public financial management framework is critical to ensure a successful fiscal consolidation. The Public Financial Management (PFM) framework in Ecuador has important gaps when compared to best international practices. Multi-year planning is weak, for example. In addition, investment projects rarely consider the operational and maintenance expenses associated with the new assets. The articulation between the government’s budget, its commitments, and its payments also faces challenges. In the absence of fiscally consistent ceilings for the budget prior to its preparation, the MEF has to impose ex-post payment limits in order to manage liquidity. Frequent and sometimes sizable budget changes undermine its usefulness as a planning tool. The MEF can increase or reduce the PGE within a discretionary limit of up to 15 percent without legislative approval. Such flexibility has originated an excessive number of in-year adjustments (up to 4,000 per year), reflecting a poor level of control.4 Finally, there is limited budget oversight, due to the narrow coverage of audits and lack of timeliness of its reports, weak independence, and the limited transparency of internal audit.5

Implementing a balanced fiscal adjustment should entail reforms to address rigidities and increase efficiency of spending and revenues collection. Having a public investment management strategy that carefully prioritizes new investments and ensures that recently built infrastructure obtains positive rates of return is a necessary precondition for a successful adjustment. But this is not sufficient and should be complemented by concrete measures to rationalize the increasingly rigid current spending. Ecuador’s sharp increase in public spending was associated with increased inefficiencies leading to underutilized infrastructure, costly staffing decisions, sub-optimal procurement standards and poorly targeted social spending, especially in education. Addressing these inefficiencies will be critical to achieving the desired fiscal savings, while also safeguarding social progress. Finally, room exists for raising non-oil revenues and increasing the efficiency of the tax system. Ecuador has improved revenue collection, but non-oil revenues are still relatively low and collected through relatively distortive taxes.

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4 Final budget (presupuesto codificación) exceeded the original budget by more than 20 percent in 2016 and 2017 because of the emergency budget allocated in response to the earthquake in 2016 and the presidential transition in 2017. In an electoral year, the Budget Law permits the use of the same amounts as approved in the prior year’s budget until a new budget is prepared by the incoming administration.

5 The CGE has full discretion to undertake different types of audits and reviews to public-sector institutions. However, financial audits of line ministries are limited in scope, depth, and frequency. Moreover, audit reports and observations are normally not issued on a timely basis and lack of adequate evidence. The quality control system and the follow-up function of audit findings are also weak. Altogether, these technical deficiencies compound the effects of political scandals by further undermining the institutional credibility of the CGE.
This report analyzes key areas where these efficiency gains could be made, including an analysis of Ecuador’s tax system, a review public employment and wage bill dynamics, and an assessment of the procurement process and its outcomes. Also included is an analysis of the efficiency of education spending.

**Ecuador’s Tax System**

Ecuador has made important improvements in revenue collection during the last decade, but revenues as a share of GDP are still low compared to peer countries. Tax revenues rose from 10.9 percent of GDP in 2008 to 15.7 percent in 2015. Since then, however, the trend has reversed, with tax revenues falling by almost one percentage point of GDP in 2016-2018. This was partly the result of the economic slowdown during this period and partly due to the phasing-out of temporary increases on import tariffs and in the VAT rate. An international comparison of tax revenue as a share of GDP shows that Ecuador ranks lowest among the group of regional and structural peer countries and far below the OECD average of 34 percent of GDP. At over 30 percent of GDP, relative tax revenue in Argentina and Brazil (regional peers), as well as in Poland, are twice as large as in Ecuador. Ecuador underperforms in terms of revenue collection in almost all tax modalities, with the exception of import tariffs.

Low revenue collection relates to low rates, especially for VAT, where collection is relatively efficient. VAT is levied at a low rate of 12 percent, representing a key constraint to tax revenue growth. Ecuador’s VAT rate is significantly lower than that of all peer countries. Ecuador’s VAT C-efficiency has increased and is now close to average for regional and structural peers but remains well below the high-income group. Excise taxes are levied on a relatively standard set of goods, except for fuels, yet the revenue remains below 1 percent of GDP. This places Ecuador below all peers except for Brazil. Ecuador’s corporate income tax design is similar to peer countries, although tax rates are on the low side and exemptions are on the high side of the spectrum of peer countries. The personal income tax (PIT) is well-designed and progressive on paper but not in practice. The minimum and maximum PIT rates in Ecuador, at 5 percent and 35 percent, respectively, are broadly on par with regional and structure peers. That said, deductions undermine the progressivity and collection capacity of the PIT. The reduction in Ecuador’s Gini coefficient attributable to the PIT is only 1.4 percent, well short of the result for countries in Europe and for those in Latin America and the Caribbean. PIT yields are also significantly lower than in peer countries.

Tax expenditures are high compared to regional peers, in particular for the corporate income tax. Tax expenditures reached about 4.6 percent of GDP in 2016, of which 2.1 percentage points were due to income tax exemptions and 2.1 percentage points were due to VAT exemptions. CIT expenditures arise mainly because of credits for the tax on capital outflows. This tax, which is partially creditable against the CIT, represents 24 percent of CIT expenditures. Incentive schemes under the CIT are numerous. However, uptake is low, which mitigates concerns about distortions and tax base erosion. The objective of most incentive schemes is to support sectors subject to competition from neighboring countries or encourage economic activity in specific rural areas. The VAT expenditures are due mostly to the large number of exempt goods. The list of zero-rated goods includes food products, agricultural inputs, medicine and health services, educational materials and services, utilities and transport, in addition to exports. The fact that hybrid and electrical vehicles (below a maximum value) as well as electric kitchens are also zero-rated can be justified on environmental grounds. However, zero-rating of airplanes, helicopters, and tourism packages likely benefits higher-income individuals that travel internationally.
The tax administration has a strong enforcement capacity. Enforcement activities are conducted systematically on the extensive (non-filing) and the intensive (misreporting) margin of compliance. The process relies heavily on data collected through VAT annexes, lists of deductions and costs provided by taxpayers, and third-party information from financial institutions and customs. An extensive withholding system, in which credit and debit card companies and selected large firms act as withholding agents, ensures that an important share of liabilities is remitted by third parties. The government has also rolled out electronic billing to all firms except small and medium-sized enterprises (SMEs) and independent professionals. The aim is to move towards a paperless economy. For wage-earners, tax returns are pre-filled and require only taxpayers’ approval, thus creating a default compliance mechanism.

Ecuador’s tax system has several unique features that point to areas for potential reform. These include:

- **Capital Outflows Tax**: Ecuador has used a tax on capital outflows (*impuesto a la salida de divisas, ISD*) with the objective of preserving liquidity in Ecuador’s dollarized economy by disincentivizing dollar outflows. In this sense, the tax operates as a form of pseudo-monetary policy. The tax also disincentivizes investment abroad by persons and entities in Ecuador, while incentivizing long-term “productive” investments within the Ecuadorian economy. This tax is likely distortive and affects the productivity of firms. However, it has become an important source of revenues, raising 10 percent of the total tax revenue.

- **Import Tariffs**: In addition to the ISD, Ecuador’s import tariffs are very high, significantly above those in regional and structural peers. They raise 12 percent of tax revenues but increase production costs and undermine competitiveness.

- **Minimum Advance Tax on Firms**: Many countries have introduced minimum income taxes to mitigate erosion of the tax base through evasion, but with simpler models. Ecuador’s tax advances have a sophisticated base, featuring a combination of assets, profits, and deductions. However, it is possible that the minimum tax advance does not correspond to a firms’ tax liability on profits, for instance. This could be the case if revenues or costs are highly seasonal or if wealth is high relative to profits. In addition, part of the tax must be paid in advance, which might reduce the liquidity of firms, particularly for small and growing firms. Room exists for exploring less distortive models of a minimum income tax.

- **VAT rates and exemptions**: Because of the low VAT rate, the multiplier effect of an adjustment is very low. In fact, the temporary increase (solidarity rate) led to an increase in revenue that is almost equivalent to the mechanically expected revenue increases, suggesting limited behavioral responses to the increase. This makes the VAT a good candidate for revenue-raising reforms. There is space for increasing rates and narrowing the list of zero-rate goods, focusing on those that are actually consumed by the poor. For example, a two percentage-point increase in the VAT rate combined to a targeted elimination of VAT exemptions could yield approximately one percent of GDP in revenues even after fully compensating the poor for the effect of this reform.

- **PIT, tax on pension income and extra salaries**: Ecuador PIT’s schedule could benefit from more progressivity. Deductions, which benefit mostly the upper-income tiers, could be further reduced. Eliminating all deductions could yield up to 0.7 percent of GDP in additional revenues, for example, with no impact on the poor. Ecuador is one of the few countries that does not tax the income of pensioners. The government has also proposed a high threshold for exempting the workers’ 13th and 14th monthly wages from personal income tax, which further undermine the tax
base. Reconsidering these features could yield additional revenues, while improving the progressivity of the system.

- **Profit-sharing with workers:** Ecuador’s Constitution mandates that firms share 15 percent of their profits with employees. This works similarly to an additional tax on profits from the firm’s point of view.

**Public sector Wage Bill**

Ecuador’s public-sector wage bill is high compared to regional and structural peers, but public-sector employment is low compared with peers, suggesting that wages are relatively high. In 2001, Ecuador’s public-sector wage bill of 5.5 percent of GDP was lower than its regional and structural peers. By 2016, the wage bill for the general government as a share of GDP had reached 10.2 percent. This put Ecuador above levels in comparator countries, but close to those observed in high-income countries. The public wage bill followed the government expansion associated with the oil boom but was also affected by labor reforms introduced during this period, which led to a compensation readjustment well-above inflation. Ecuador’s public employment as a share of total employment has increased from 8 percent to 9 percent in recent years. It still remains well below peer groups, however. Contrary to comparison groups, Ecuador saw a larger expansion in public-sector jobs than those in the private sector. Yet, the expansion in the number of public employees was small compared to the expansion of the wage bill. The average cost of a public employee increased on average more than 3 percent per year in real terms during this period.

The central government’s wage bill grew at an annual average rate of 1.5 percent in real terms from 2012 to 2016, despite effort to contain increases. Wages increased on average 0.1 percent in this period. This rise was influenced by two government actions: a wage freeze in 2012 and a nominal salary cut of high ranked officials in 2015. The latter brought annual fiscal savings of around $21 million. In this same period, some workers were reclassified to higher pay categories. Base salaries and mandatory social security contributions account for around 72 percent of total personnel spending by the central government. Over 8 percent is spent on additional remuneration – mainly 13th & 14th salaries – while 3 percent is spent on compensatory wages.

Central government hiring has contributed to the wage bill increase. Average annual growth in central government employment was around 2.7 percent between 2011-2015. During this period, the public-sector workforce increased by about 50,000 employees, with the majority of hiring concentrated in four sectors: health, police, judiciary, and social protection (bienestar social). According to government documents, employment increases in recent years were driven by strategic priorities aimed at improving service delivery. The increases are also reflected in the government’s decision to increase annual spending on health and education by 0.5 percent of GDP, until it reaches 6 percent of GDP as mandated by the Constitution. At the same time, even though the education sector has the most public employees, it experienced a 2.7 percent reduction in employment in 2016. This was due to widespread retirement of administrative staff, teachers and workers of the national education system, and employees of higher education system.

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6 Central government refers to state function (sector 111) and higher education entities (sector 112). The state function entities include judicial, electoral, transparency and control, executive, and legislative institutions.

7 Compensatory wages refer to additional expenditures that compensate employees for geographic and economic changes. Some compensatory changes include Gastos de Residencia, Bonificación Geográfica, Transporte.
Most of the central government’s wage bill (76.5 percent) represents salaries paid to permanent workers and only a fraction (23.5 percent) is for non-permanent employees’ salaries. Base salaries and mandatory social security contributions account for approximately 72 percent of total personnel spending by the government. Over 8 percent represents additional remuneration – mainly 13th and 14th monthly salaries – while 3 percent accounts for compensatory wages. From 2012–2017, basic remuneration had the highest growth (5 percentage points) in the permanent employee group, while temporary remuneration declined by four percentage points.

Public-sector workers in Ecuador receive higher salaries than comparable workers both in the private sector and in peer countries. Ecuador’s relatively high wage bill suggests that public-sector workers have high salaries, something that has been reinforced by previous evidence in the region (Gasparini, 2015). In addition, Ecuador’s wage gap between the public and private sector is among the highest in the region. In 2012, the wage of Ecuador’s public-sector employees was, on average, 42 percent higher than that of its private-sector workers. This is substantially higher than the average for Latin America and the Caribbean (22 percent). In fact, Ecuador’s public-private wage gap is the second highest in the region, just after Honduras. The average salary in public-sector jobs was around 57 percent higher than in the formal private sector in 2007. After reaching a maximum premium of 72 percent in 2011, it declined to 54 percent in 2017. This dynamic was common to all occupational groups and workers and it reflects the wage-freeze strategy established in 2012. Finally, for managers, professionals and scientists, and workers with a superior educational level, the wage premium in 2017 was higher compared to initial 2007 levels. Nevertheless, less-skilled workers in the public sector have a larger wage premium than high-skilled workers, when compared to their private-sector peers.

Narrowing the large public-private wage gaps that generate allocative inefficiencies of workers should continue to be a priority. This gap generates pressure on the private sector to match the public-sector salary offer. In addition, it may well reduce the pool of workers who are willing to seek employment in the private sector. Furthermore, it could possibly affect the growth of private-sector firms as a result of the reduced number of workers seeking private-sector employment. Also impinging company growth could be the need to either pay higher wages or limit employment. Higher wage premiums for unskilled workers, meanwhile, could reduce returns to education and possibly discourage human capital accumulation. Moreover, this large public-private wage premium can act as a barrier to expanding service delivery in a fiscally sustainable term. Thus, aligning public-sector wages to those in the formal private sector would not only increase governmental savings in the short term, but it would also attenuate these distortions. This would favor greater public services coverage and stimulate private-sector job creation in the medium term.

In the absence of reforms, Ecuador’s wage bill is expected to grow annually at around 1.2 percent in real terms on average. Efforts were made to control the wage bill in 2019, which included cutting 36,000 positions under contrato ocasional. The wage bill contracted 2.9 percent as a result. That said, if a baseline scenario of “business as usual” is followed, it is expected to increase again in 2020. This situation shows that structural reforms are required to stabilize the public wage bill in the both short and medium term.

Wage bill expenditure projections show that a combination of reforms over the next three to five years can reduce the wage bill and generate significant savings. The wage bill projections indicate that
modifying the replacement rate can generate significant savings, in the order of $558 million in three years and $1.4 billion in five years. However, measures aimed at increasing the productivity of the public sector should also be considered. In particular, attention is required in respect to how the social impacts of unemployment and informality might best be mitigated. In addition to fiscally motivated efforts, the government needs to invest in strategic workforce planning since evidence shows that hiring practices can substantially improve the age bill and help contain it. The government should revise the structure of the salary scales given the important distortions that exist and their impact on productivity. In addition, it should consider investing in revamping its human resource management systems with the aim of, among other things, improving its ability to take evidence-based decisions.

Improving Strategic Public Procurement

The government’s procurement of goods, works, and services totaled more than $35.5 billion between 2013 and 2017. Accounting for 33 percent of total government expenditure – one of the highest rates observed among Latin American countries - Ecuador’s public procurement expenditure also represents a significant amount in absolute terms. This provides an excellent opportunity to improve the efficiency of public spending through lower prices and better quality.

Public works account for the largest share of government procurement – almost 34 percent of the total in the period 2013-2017. The next largest share is the purchase of goods with more than 30 percent of the total. Procurement of services, meanwhile, represented 28 percent of all procurement. In 2017, however, data show a different profile of procurement. On the one hand, construction works decreased substantially, although they still measured over 30 percent of the total. On the other hand, services and goods grew in importance. These also accounted for more than 30 percent of the government’s procurement expenditure.

Government procurement is geographically concentrated in a few of Ecuador’s provinces, a characteristic that can facilitate the implementation and management of public procurement strategies. In fact, more than half of the government’s purchases are executed in the province of Pichincha alone. Home to the capital city of Quito, this is where most government agencies are located.

An estimation of the potential for savings in procurement was recently conducted based on data from 2013-2017. The results reveal several dimensions that can be leveraged directly by the government through the implementation of specific strategies or policies to impact contract prices. These variables include: quantities purchased, procurement method, bid evaluation and award time, seasonality of the purchases, rate of success of the processes, bid preparation time, and publication of tender announcement and award notification. Several variables that can only be indirectly triggered by the government can also have a significant impact of potential savings, namely: the number of bidders, the market concentration, the level of supplier specialization, the size of the suppliers, the level of concentration of the awards in procuring entities, the nationality of the supplier, and the supplier’s province of origin.
The analysis identified potential savings of between $7.3 billion and $7.9 billion (equivalent 1.8 to 2 percent of GDP per year), which could have been achieved over the five-year period between 2013 and 2017 through the development and implementation of procurement strategies and policies. To achieve these savings, no changes to the existing procurement laws or regulations would be required. All that is necessary is a reengineering of existing procurement strategies. The savings potentials presented are based on two scenarios, one conservative and the other aggressive. To achieve the savings potential of the conservative scenario, changes and improvements to the strategies and policies used to carry out procurement and bidding processes would be needed. An aggressive scenario anticipates these same strategies and policy changes, plus work on the demand side by the government in the form of managing procurement requests and replacing products and materials.

The strategic consolidation of procurement demand presents the best opportunity to generate savings (estimated at 7.3 percent of the purchased amount). The analysis confirms that purchases in large volumes result in lower unit prices. It also shows that the government has considerable room for improvement in this area given the current level of demand fragmentation. Adopting one main purchase to supply the government’s annual demand for low complexity items would result in material savings as

<table>
<thead>
<tr>
<th>Variable with impact on prices</th>
<th>Savings</th>
<th>Suggested policy or strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Directly Impacted by procurement policies or strategies</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quantity</td>
<td>7.3%</td>
<td>One main contract to supply 80% of the annual demand of goods of high volume and low complexity.</td>
</tr>
<tr>
<td>Procurement method</td>
<td>2.5%</td>
<td>(1) To expand the use of e-catalogues for goods of high volume and low complexity; (2) to deploy reverse auctions more selectively, for goods of low complexity and competitive markets; (3) to curb non-competitive procurement, especially for “menor cuantía” and “regimen especial” procedures.</td>
</tr>
<tr>
<td>Time to award a contract</td>
<td>1.3%</td>
<td>To implement electronic processes that are more dynamic and efficient to support award processing.</td>
</tr>
<tr>
<td>Seasonality</td>
<td>1%</td>
<td>To improve procurement planning and more predictable budget releases so as to avoid large concentrations of procurement in the last months of the year, and smooth distribution along the year.</td>
</tr>
<tr>
<td>Bidding success ratio</td>
<td>0.5%</td>
<td>To modernize procedures and information availability for contract management, with the goal of curbing cost and schedule overruns. To train officials in charge of contract management.</td>
</tr>
<tr>
<td>Time allowed to prepare and submit bids</td>
<td>0.3%</td>
<td>To allow more reasonable time for bidders to prepare responsive bids.</td>
</tr>
<tr>
<td>Publication of bidding opportunity</td>
<td>0.3%</td>
<td>(1) To publish an electronic request for bids for simple procedures; and (2) to notify electronically all registered bidders of any bidding opportunity on their area of business.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable with impact on price</th>
<th>Savings</th>
<th>Suggested policy or strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indirectly Impacted by Procurement policies or strategies</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of bidders</td>
<td>2.4%</td>
<td>(1) To approach bidders with a view to understand the barriers to sell to the government; (2) to curb required documentation to submit bids for low complexity items; (3) to process payments quicker; (4) to develop market strategies based on the supply positioning matrix.</td>
</tr>
<tr>
<td>Market concentration</td>
<td>1.8%</td>
<td>To develop customized procurement strategies for the markets that showed highest levels of concentration, based on market competitiveness and end-user needs.</td>
</tr>
<tr>
<td>Supplier specialization</td>
<td>0.7%</td>
<td>To use competitive methods for categories where there are manufacturers.</td>
</tr>
<tr>
<td>Supplier size</td>
<td>0.5%</td>
<td>The strategies suggested to quantities and procurement methods would already impact this variable. Moreover, a survey to understand the barriers and difficulties to prepare a responsive bid would help design effective strategies.</td>
</tr>
<tr>
<td>Buyer concentration</td>
<td>0.2%</td>
<td>To develop a capacity building program to agencies with highest levels of concentration.</td>
</tr>
<tr>
<td>Supplier origin</td>
<td>0.2%</td>
<td>To foster participation of foreign suppliers in markets with low competition, high levels of concentration or where innovation is an important element.</td>
</tr>
<tr>
<td>Supplier province</td>
<td>0.2%</td>
<td>To develop an outreach program to local suppliers, through electronic newsletters and training workshops on how to identify bidding opportunities and to prepare responsive bids.</td>
</tr>
</tbody>
</table>
shown in the data. Even small consolidations, such as a main purchase for 30 percent of the annual demand, would result in prices that are significantly more economical.

**Improvements in procurement methods can yield the second largest savings.** The use of appropriate procurement methods is estimated to carry a savings potential of 2.5 percent of the total purchase: framework agreements provide the best prices and should thus become the method of choice for the procurement of high volume and low complexity goods. By increasing the use of procurement methods that rely on competitive processes and that enable demand consolidation (such as e-catalogues), the government could generate efficiency gains. It could also improve the levels of competition and transparency of its procurement processes at the same time.

**Other direct variables with significant impact on purchasing prices include the efficiency of the bid evaluation and award processes and the seasonality of the purchases.** More efficient processes for bid evaluation and awards (those that result in quicker turnaround times to make a decision and sign a contract) are associated with lower prices. This indicates that the development of electronic and simplified procedures could generate additional savings. The data reveals that seasonality is another significant aspect, with substantial influence on purchasing prices. Most notably, the purchases carried out in the final two months of the calendar year present significantly higher prices. Considering that almost 30 percent of purchases are taking place in the last quarter of the year, the government could achieve substantial savings by improving its procurement planning, especially by smoothing out demand along the calendar year to benefit from lower prices.

**Several variables that can be indirectly triggered by government policies or strategies were also observed to have a significant impact on purchasing prices.** The analysis confirms that the levels of competition and participation in procurement processes are critical to achieve savings. In fact, even a modest increase in the level of participation, such as having three bidders instead of one or two, already results in much lower prices. The government could save 2.4 percent of the awarded value with the increase of one additional bidder in low competition processes with just one or two bidders. Between 2013 and 2017, however, only 16 percent of procurement processes were carried out with three or more bidders and only 27 percent of processes had more than one bidder. This indicates that the government’s procurement processes have significant room for improvement in this area. Market concentration is another indirect variable with significant impact on prices. In markets where one supplier concentrates most of the awards, for example, purchasing prices are significantly higher. Given the high levels of concentration observed in the data, this seems to be another area where specific strategies could yield major savings. An estimated 1.8 percent of the awarded value could be saved by implementing strategies aimed at diversifying the base of suppliers. Finally, the savings analysis also revealed that a moderate level of specialization of the suppliers was associated with better prices. It also showed that additional savings could be obtained from encouraging increased participation by large firms and foreign suppliers, as well as by local firms from the same province as the procuring entity.

**Efficiency of Public Spending in Basic Education**

The efficient use of public investments on education constitutes a major policy challenge in Ecuador. In the past decades, average expenditure on basic education has oscillated between 2.4 and 2.6 percent of GDP. Over this period, Ecuador made significant progress towards achieving universal access in primary and secondary education, while improving overall education quality. Indeed, Ecuador stands out as one of the countries in Latin America and the Caribbean that uses its limited resources most efficiently in support of basic education. Despite all these achievements, however, the country still has important
efficiency gaps across school districts, especially when it comes to its capacity to ensure that students learn. Ecuador will need to maintain and sustain the progress achieved by the education sector in the past decades within a context of limited fiscal resources. As such, its education system will need to do more with less resources. The analysis presented in this chapter indicates that there is still scope for school districts in Ecuador to achieve better education results without additional resources. Results indicate that school districts could improve by 10 to 15 percent their capacity to ensure student learning (as proxied by results in the Ser Bachiller learning assessment) with the resources at hand.

The government may consider achieving a better balance between investments in basic and higher education. Ecuador spends a very high share of its education budget on higher education (55 percent). This rate is much higher when compared to regional and structural peers (at 20-25 percent). Traditionally, countries spend a larger share of their budget on basic education because investments on primary and secondary education yield the highest social returns. As such, spending on basic education is usually the priority for public spending on education in countries that have yet to achieve near universal enrollment in basic education (such as Ecuador). Investments in higher education generally accrue in the richest segments of the population. This is largely true in Ecuador, where the majority of all individuals enrolled in public higher education belong to the highest income quintiles – making spending on the higher education sector highly regressive. At the same time, the levels of per-pupil expenditures in primary and secondary education in Ecuador are very low for international standards (two and five times smaller than that of regional peers, respectively). Achieving a better balance in public investments between basic and higher education seems of extreme urgency for Ecuador. This is confirmed by the fact that results from standardized tests (TERCE, 2013) reveal that only 36 percent of all sixth-grade students in Ecuador could infer, deduct, and analyze information in a written text (vs. 47 percent in Latin America and the Caribbean, on average). Regarding mathematics, results showed that half of all Ecuadorian students in sixth grade could only perform simple arithmetic operations but were not capable to resolve simple math problems that require analysis/interpretation of charts, solving equations, and/or involve geometry. These results are quite important, given the fact that seven out of every ten individuals in Ecuador will only attain basic education prior to entering the labor force.

**Summary of Policy Options**

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Supporting Fiscal Sustainability</strong></td>
<td></td>
</tr>
<tr>
<td>Introduce a fiscal framework (fiscal rule, sovereign fund) that pragmatically reflects the political commitment and capacity in the country</td>
<td>MT</td>
</tr>
<tr>
<td>Establish a fiscal strategy and medium-term fiscal framework (MTFF)</td>
<td>ST</td>
</tr>
<tr>
<td>Strengthen budget preparation with systematic top down budget controls Reduce the room for discretionary changes during budget execution</td>
<td>ST</td>
</tr>
<tr>
<td>Aligning fiscal accounting and reporting with international standards</td>
<td>ST to MT</td>
</tr>
<tr>
<td>Develop a sound regulatory and institutional framework for PPP align with international good practices</td>
<td>ST</td>
</tr>
<tr>
<td>Create an integrated PIM system, including central and subnational government, with strong planning (of PI and PPPs) and prioritization capacity.</td>
<td>ST to MT</td>
</tr>
</tbody>
</table>

9 ST- shot-term, MT medium-term
Reform the Ecuador’s social security system to reduce its fiscal burden.

**Increasing Tax Revenues and Efficiency – yield up to 2 percent of GDP in revenues**

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase VAT (2 to 3p.p.) to align with regional standards</td>
<td>ST</td>
</tr>
<tr>
<td>Revise VAT exemptions to improve target</td>
<td>ST to MT</td>
</tr>
<tr>
<td>Revise the PIT schedule</td>
<td>ST</td>
</tr>
<tr>
<td>Further cap PIT deductions</td>
<td>ST</td>
</tr>
<tr>
<td>Apply PIT schedule to 13th and 14th wages</td>
<td>MT</td>
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<tr>
<td>Rationalize CIT exemptions</td>
<td>ST to MT</td>
</tr>
<tr>
<td>Simplify the mechanism for calculating minimum IT advances</td>
<td>ST</td>
</tr>
<tr>
<td>Allow for accelerated depreciation in the CIT calculations</td>
<td>ST</td>
</tr>
<tr>
<td>Gradually phase out ISD and import tariffs</td>
<td>MT</td>
</tr>
</tbody>
</table>

**Rationalizing Public Wages and Employment – yield up to 1 percent of GDP in savings**

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Country</th>
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</thead>
<tbody>
<tr>
<td>Revise the salary scale for new employees</td>
<td>ST to MT</td>
</tr>
<tr>
<td>Encourage early retirement and voluntary dismissals</td>
<td>ST</td>
</tr>
<tr>
<td>Establish a strategic national workforce planning policy</td>
<td>ST</td>
</tr>
<tr>
<td>Reduce the number of temporary positions in a strategically planned manner</td>
<td>ST to MT</td>
</tr>
<tr>
<td>Revise pay for incentive and performance assessment criteria c</td>
<td>ST to MT</td>
</tr>
<tr>
<td>Revamp the human resource management systems</td>
<td>ST to MT</td>
</tr>
</tbody>
</table>

**Promoting Strategic Public Procurement - yield up to 1.5 percent of GDP in savings**

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consolidate contracts to purchase goods of high volume and low complexity</td>
<td>ST</td>
</tr>
<tr>
<td>Expand the use of e-catalogues, deploy reverse auctions more selectively</td>
<td>ST</td>
</tr>
<tr>
<td>Curb noncompetitive procurement, especially for “menor cuantia” and “regimen especial”</td>
<td>ST</td>
</tr>
<tr>
<td>Improve electronic processes to support award processing</td>
<td>ST to MT</td>
</tr>
<tr>
<td>Improve procurement planning and the predictability of budget release to avoid concentration of purchases in the last months of the year</td>
<td>ST</td>
</tr>
<tr>
<td>Modernize procedures and information for contract management</td>
<td>ST</td>
</tr>
<tr>
<td>Allow more time for bidders to prepared responsive bids</td>
<td>ST</td>
</tr>
<tr>
<td>Publish an electronic request for bid, and notify electrically registered bidders of any bidding opportunity on their areas of business</td>
<td>ST</td>
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</tbody>
</table>

**Increasing Efficiency of Spending in Basic Education – fiscally neutral**

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rebalance current spending between higher and basic education</td>
<td>ST to MT</td>
</tr>
<tr>
<td>Rebalance public investment between higher and basic education</td>
<td>ST</td>
</tr>
<tr>
<td>Focus those resources on strengthening the quality of basic education</td>
<td>ST to MT</td>
</tr>
</tbody>
</table>
Chapter 1. Ecuador’s economic and fiscal trends and challenges

Chapter 1. Fiscal Trends and Challenges

After sustaining more than a decade of high growth on the back of high oil prices, Ecuador has seen a marked slowdown since oil prices plummeted in mid-2014. The remarkable episode of stable growth experienced between 2001-2014 (where GDP growth averaged 4.5 percent) marked a break with two decades of booms and busts. It was initially driven by stabilization reforms and the decision to adopt the US dollar as the national currency in the early 2000s but was then fueled by high oil prices. However, oil prices plunged from $106 per barrel in July 2014 to $30 per barrel in January 2016. As a result, GDP stagnated in 2015 and then contracted 1.2 percent in 2016. Growth resumed in 2017, reaching 2.4 percent. This was on the back of external financing, recovering oil prices, and domestic credit. Yet, it lost momentum again in 2018, declining to 1.4 percent.

An integral part of the economic boom can be explained by the increasing role of the public sector. Public expenditure increased from 21 percent of GDP in 2006 to 44 percent in 2014 (Box 1: Fiscal policy during the oil boom). Current spending expanded by 11.5 percentage points of GDP between 2006 and 2014, driven by wages and salaries, social security contributions, and, most notably, other expenditures such as oil imports, fuel subsidies, and service fees to private oil operators. Government purchases of goods and services also increased in the latter part of this period. Capital spending rose by about 9.5 percentage points of GDP in the same period, as a sizable share of the oil windfall was directed to investment projects in infrastructure and energy, as well as to social programs. This expansion fueled domestic demand, intensifying the growth dividends from the commodity boom. This helped to improve service delivery and to reduce poverty (from 37 percent in 2007 to 22 percent in 2014). However, during this period, Ecuador did not accumulate a macroeconomic buffer. Instead, it dismantled its sovereign oil funds, incurred a selective debt default, and increased public debt despite benign external conditions. Other measures, including changes to oil contracts, further eroded Ecuador’s investment climate and stymied private investment. Meanwhile, regulatory changes, such as changes to the labor code, created rigidities in labor supply and eroded competitiveness.

Box 1: Fiscal policy during the oil boom

Government revenues increased sharply during the oil price boom. Fiscal revenue as a share of GDP increased by approximately 15 percentage points between 2006 and 2011 and stayed relatively high until 2014. Oil revenues and the operative balance of SOEs were favored by high oil prices and the changes in oil contracts introduced in 2010. These changes resulted in Petroamazonas take over many oil fields from private partners that rejected proposals to migrate their risk-sharing contracts to services contracts. Tax revenues increased from approximately 10 to 15 percent of GDP between 2006 and 2014 on the back of successive tax reforms, some of which were distortive. The most notable example was the creation of, and consecutive increases in, dollar outflows tax. Additionally, tax collection was bolstered by improving tax efficiency, coupled with high economic growth and declining informality.

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10 Many social programs are classified as investment spending in Ecuador.
11 Interest payments decreased due to a selective default of international bonds worth $3.2 billion. In December 2008, the government stopped payments of Global 2012 and 2030 bonds, even though they had the resources to honor these. In 2009, it bought back $2.9 billion worth of defaulted bonds at $900 million, thereby reducing interest payments by about $300 per year.
Public expenditure more than doubled between 2006 and 2014. Total expenditure increased on the back of increases in both current and capital expenditures. Most of increase in the current expenditure (10.6 percent of GDP) took place between 2006 and 2011. The increase was driven by wages and salaries, pensions, and other expenditures, which include items such as fuel imports, service fees to private oil operators, and social transfers. Between 2012 and 2014, current spending increased by one percentage point of GDP, as an increase in the purchase of goods and services was offset by a contraction in transfers. In contrast, capital expenditure rose from 4.2 percent in 2016 to 15.1 percent in 2014 as authorities used a sizable share of the oil windfall and external financing in investment projects in infrastructure, energy, and social programs. In tandem, Petroamazonas increased its capital expenditure to compensate for the decline in investment from private oil enterprises after oil contracts were changed.

Budgetary information shows that central government expenditure increased in all functions. Budget expenditure, cash basis, rose from 14.3 percent of GDP in 2006 to 25.8 percent in 2014. The spending on general services rose from 7 percent to 13 percent of GDP over the same period. This was due to the expansion of the public sector apparatus, an increase in fuel cost, and the approval of above-inflation wage increases for public sector workers. Although the selective default reduced the debt service from 8.1 percent of GDP in 2006 to a low of 2.9 percent in 2009, the figure increased to 4.9 percent by 2014 due to a sustained increase of public debt. The constitutional mandate to raise education and health expenditure more than doubled health expenditure, from 1.0 to 2.1 percent, and increased education expenditure from 2.3 percent to 3.6 percent. Similarly, the spending on welfare and employment increased from 0.7 to 1.3 percent of GDP owing to the expansion of social protection programs. Finally, the upsurge of capital expenditure propelled investment in transport and energy in the first and second stages of the expansionary period, respectively. Transport expenditure increased from 0.8 percent of GDP in 2006 to a peak of 1.8 percent in 2009. It has remained at around 1.6 percent since then. Expenditure on energy infrastructure, on the other hand, increased from almost zero in 2009 to about 1.7 percent by the end of the commodity boom. This surge was largely thanks to massive hydroelectric investment projects and the upgrade of the Esmeralda refinery.

While the increase in expenditure over the 2006–2011 period was broadly in line with the increase in revenue, the 2012–2014 expansion led to a sizable fiscal imbalance. With the exception of 2009, when the government ran a fiscal deficit of 3.6 percent of GDP, the 2006–2011 period was characterized by relative fiscal balance. During this period, the rapid expansion of government spending was financed by internal funds produced mainly by oil and tax revenues and by eating into sovereign oil funds. During the 2012–2014 period, the situation changed, with growing expenditure exceeding stable fiscal revenues. This caused deficits to widen to 4.5 percent of GDP in 2014.
Over this period, public debt increased from 19 percent in 2011 to 27 percent on the back of oil-backed loans, advanced oil sales, and domestic debt.

The country is now facing the difficult process of adapting its economy to volatile oil prices and tightening external financial conditions. Expansionary policies and regulatory changes during the boom period hampered the country’s ability to respond to the negative external shock that hit in 2014. With a dollarized economy and limited fiscal buffers, Ecuador could neither depreciate its currency nor undertake countercyclical fiscal policies when oil prices dropped in 2014. The selective default and the lack of macroeconomic buffers increased the country’s risk ratings. This, in turn, limited access to the external funding needed to smooth the fiscal and external adjustments facing Ecuador’s dollarized economy. With its competitiveness eroded by the real exchange rate appreciation, couple with labor market and price rigidities, Ecuador’s stagnant and under-invested private sector was unable to offset the decline in public sector demand. With limited options, the government resorted to large cuts in investment spending and to costly methods of financing, which had a strong negative effect on economic activity. Between 2014 and 2018, GDP growth averaged only 0.7 percent and poverty increased one percentage point from 22 to 23 percent. Although recovering oil prices and declining capital expenditure reduced the fiscal deficit from a peak of 7.3 percent in 2016 down to 1.3 percent in 2018, public debt increased by approximately 20 percentage points of GDP, reaching 46 percent in 2018.\(^\text{12}\)

Concluding the ongoing fiscal consolidation in an orderly manner will be critical for coping with a challenging external context. Ecuador still needs to address its macro-fiscal imbalances and shift from a state-led economic model to a productivity-driven economy. Reaching a sustainable path will be critical to reducing Ecuador exposure to a volatile external context and to setting the ground for development of the private sector. Ecuador faces high borrowing costs in the international market, in part due to high levels of risk perception. Recent increases in the U.S. policy rate have further constrained access to external financing. In addition, the small size of the country’s financial sector limits its ability to pursue domestic finance for the government without crowding out private investments. In this context, additional fiscal consolidation efforts are needed in order to reduce financing needs, bring the fiscal accounts to a sustainable position, and build credibility in international financial markets.

Ecuador has been embarked in a fiscal consolidation process led by recovering oil revenues and capital expenditure cuts

Although the non-financial public sector (NFPS) deficit was reduced to nearly one percent of GDP in 2018, the central government deficit remains high. The fiscal deficit widened from 5.2 percent of GDP in 2014 to a peak of 7.3 percent in 2016, as low oil revenues and the economic slowdown reduced fiscal revenues (Figure 1). However, the fiscal deficit declined to a low of 1.3 percent of GDP in 2018 as SOEs and other autonomous entities reached sizable surpluses as a result of recovering oil exports. The balance of other government entities passed from a deficit of 0.6 percent of GDP in 2015 to a surplus of 1.6 percent in 2018, while the SOEs’ balance moved from a deficit of 1.6 percent in 2016 to a surplus of 0.8 percent in

\(^{12}\) This chapter uses the Non-financial Public Sector (NFPS) debt, which include external debt, domestic debt with the private sector (domestic consolidated debt), Central Bank credit to the public sector, short-term Treasury notes (CETES) outside the NFPS, public papers held by other financial institutions, letter of credit linked with fuel imports, arrears with the private sector and oil service companies, and carry-forward under oil service contracts.
2018. The central government deficit has declined modestly, from 5.6 percent in 2016 to an estimated 3.8 percent in 2018. In part, this was due to the impact of higher oil prices on the cost of imported fuel, an important expenditure item for the central government.

**Most of the fiscal consolidation achieved between 2016 and 2018 was driven by the partial recovery in oil prices.** The sudden and pronounced fall in oil prices between 2014 and 2016 (from $85 to $35 dollar per barrel) led to a noticeable reduction in oil revenues, from 11 to about 5 percent of GDP. It also resulted in a drop in SOEs’ operative surplus, from 4.1 to 0.6 percent (Figure 2) (Box 2). However, in 2018, oil prices rebounded to $61 per barrel, resulting in six percentage point increase in fiscal revenues over two years (30 percent of GDP in 2016 to 36 percent in 2018). Over this period, the oil revenues increased from 5.4 to 8.0 percent since higher oil prices more than offset a decline in oil export volumes. In the same vein, the proportion of SOEs operating a surplus rose from a low of 0.6 percent in 2016 to a healthier 2.4 percent in 2018.

![Figure 1: Fiscal Balance](source: Central Bank of Ecuador)

![Figure 2. Fiscal Revenues](source: Central Bank of Ecuador)

**Box 2: Oil related flows in the fiscal accounts**

The NFPS balance sheet includes all earnings from the oil sector. These include Petroamazonas (PA) and Hydrocarbons Secretary (HS) crude exports, Petroecuador (PE) oil derivative exports, and domestic sales of oil derivatives and natural gas sales. Collectively, these finance the operating costs and investments of PE and PA, the fees paid by the HS to private enterprises operating under oil service contracts, the amortization of advanced oil sales, fuel imports, and fuel related taxes. Any remainder goes to the General State Budget (PGE).

However, the oil revenues item in the NFPS balance sheet only includes a fraction of oil earnings.

- **The PGE oil revenues:** These comprise: (i) the sovereignty margin of 25 percent of oil production value under service contracts; (ii) the provisions to repay advanced oil sales; (iii) the net revenue from PA crude exports after subtracting taxes and provisions to repay advanced oil sales and finance PE and PA operations and investments; (iv) the reminder oil exports carried out by the HS after paying the sovereignty margin,

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13 The 2008 Constitution and the 2010 Hydrocarbons Law set up the state ownership of all hydrocarbon deposits and oilfields, which led to the renegotiation of oil contracts in 2011. Fourteen production-sharing contracts were changed to fixed per-barrel fee services contracts, but eight contracts were ended in the absence of agreement on service fees. In this context, the authorities created the HS to manage oil service contracts and PA to develop the field managed under terminated contracts and to gradually take over PE upstream operations. Following the reform, PE now manages middle and downstream activities, including refinery, production, exports, import, and commercialization of oil derivatives and liquified natural gas. More recently, the authorities have introduced variable fee service contracts to cushion the effect of oil price volatility of fiscal accounts. They are also aiming to introduce revenue-sharing contracts and to merge PE and PA operations into a single SOE.
the pipeline transport tariff, commercialization cost incurred by PE, and the provisions to pay fees to
private enterprises; (v) the remaining fuel exports after discounting taxes and transfers to PE and PA to
finance their operations and investments, and the provisions to finance fuel imports; and (vi) the net of
local sales of oil derivatives and natural gas after subtracting taxes, the transfers to PE and PA to finance
their operations and investments, and the provisions to finance fuel imports.

• **A resource allocation to finance fuel imports**: These resources are managed through the *Cuenta de
Financiamiento de Derivados Deficitarios* (CFDD) and are made up of the sales of imported oil derivatives,
derivative oil exports, and sales of domestically produced derivatives, after subtracting taxes and transfers
to PE and PA to finance their operations. If these revenues exceed the cost of oil derivative imports, the
PGE receives the reminder. If not, the PGE must use other revenues to finance oil derivative imports.

• **A resource allocation to pay fees to private enterprises**. These fees are paid with the remaining
production value under services oil contracts, after subtracting the margin of sovereignty, transport, and
commercialization costs incurred by PE. If this amount does not allow the payment of fees, the fees are
only partially paid and a liability (carry-over) is accumulated; otherwise, the remainder is either used to
clear the carry-over or it is transferred to the PGE.

• **Subnational oil revenues**. According to Law 10, the subnational governments in the Amazon region receive
a dollar for every oil barrel produced in that region.

**Oil related flows in the NFPS revenues**

*Note: The shape sizes are only indicative as they are based on partial information from 2017.*

**The remaining oil earnings are recorded as tax revenues and operating revenues of SOEs**. These tax revenues
comprise: (i) the corporate income tax paid by private enterprises, which is equal to 5 percent of their gross
revenues; (ii) the value-added tax collection linked with local sales of oil derivatives and natural gas; (iii) the tariff
of $0.05 per barrel transported through the *Transecutoriano* pipeline stipulated by Law 40. Additionally, PE and
PA receive transfers from each segment of the oil industry to finance their operating cost and investments, which
are recorded as operating revenues in the SOEs’ operating balance, which, in turn, is recorded in the NFPS
revenues. These operating revenues are based on actual operating costs and investment plans, which can be
influenced by government priorities and financial constraints.

**The allocation of oil revenues affects expenditures and financing**. While SNFP oil revenues include the actual
payment to private enterprises, the amount that should have been paid is recorded as other current expenditure.
If oil prices do not allow for the payment of the fees, the HS accumulates carry-over, registered below the line;
otherwise, the remainder is used to clear the carry-over, if any, or transferred to PGE. The resources provisioned
in the CFDD are used to finance oil derivatives imports, which are registered as a current expenditure. The
counterpart of PA and PE operating revenues are their actual operating and capital expenditures, registered in
the SOEs’ operating balance and capital expenditures, respectively. When operating revenues do not cover these
expenditures, these enterprises can either reduce their expenses (mainly capital expenditures), obtain financing
from other sources, use their deposits in the financial sector, or accumulate arrears; the last three options are
recorded below the line. Finally, the accounting registry of advanced oil sales in the oil revenues reflects the effective amortization of this liability, which is part of the net NFPS financing.

Ecuador’s fiscal consolidation also benefited from temporary tax measures. Between 2014 and 2018, tax collection was restricted by the widespread economic slowdown. In this context, the government has relied on tax amnesties, temporary import surcharges, and other one-off tax measures to cushion the drop of revenues and to finance the 2016 earthquake reconstruction. For instance, the fiscal deficit would have been 1.2 percentage points of GDP higher in 2018, if the government had not passed a new tax amnesty in 2018. Although these measures have been short-lived and distortive in nature, to date, the authorities have been reluctant to introduce more permanent reforms to increase tax revenue collection.

Figure 3. Fiscal Expenditure consolidation

Source: Central Bank of Ecuador

Finally, the bulk of expenditure consolidation has come from a sizable reduction of capital expenditure. Total expenditure declined from 44 percent of GDP in 2014 to 37 percent in 2018 but remained well above the 21 percent attained in 2005. The decline was mainly driven by capital expenditure, which fell from 15 percent to 6.6 percent, approaching similar public investment levels as in other Latin American and Caribbean countries (Figure 3). Despite new investment projects triggered by earthquake reconstruction efforts, the Central Government’s capital expenditure decreased from 8.1 percent of GDP in 2014 to 3.0 percent in 2018 as new, non-priority investment projects were postponed. Additionally, some large strategic investments were concluded, including the upgrade of the Esmeralda refinery (December 2015) and four large hydroelectric facilities: Manduriacu (March 2015), La Sopladora (August 2016), Coca-Codo-Sinclair (November 2016), and Delsitanisagua (December 2018). The investment by SOEs decreased from 4.1 percent to 1.6 percent over the same period since lower operational revenues forced them to

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14 The authorities approved a tax amnesty in 2015 that collected $972 million. As part of its effort to restrict imports, the government introduced tariff surcharges that ranged between 5 percent and 45 percent on 2,900 products, mostly consumption goods. Although surcharges were initially set for 15 months, in line with World Trade Organization rules, they were extended until May 2017 due to the adverse impact of the earthquake on the country’s external balance. Import surcharges collected $1.7 billion between May 2015 and May 2017. The government also introduced temporary taxes to raise funds for earthquake reconstruction, including: (i) a 12-month increase in the VAT rate from 12 to 14 percent; (ii) a one-off corporate income tax increase from 22 to 25 percent; (iii) a one-time 0.9 percent levy for people with assets over $1 million, and (iv) a sliding-scale contribution, from one day’s salary for those earning from $1,000 a month to up to five days’ salary for those earning $5,000 a month or more. These measures collected about $1,160 million in 2016, $458 million in 2017, and $15 million in 2018. Finally, in 2018, the government approved a new tax amnesty that collected $1.270 million.
prioritize their projects. Capital expenditure carried out by subnational governments has remained relatively stable during the consolidation process as they were less affected by low oil revenues.

**Current expenditure proved challenging to reduce, in part due to increasing interest payment and fuel import cost.** After having declined from 28.5 percent in 2014 to 27.2 percent in 2017, current expenditure grew to 30.5 percent in 2018. Rising public debt and tightening external financial conditions increased interest payments from 1.0 percent to 2.5 percent of GDP between 2014 and 2018. In the same vein, after having fallen from 6.0 percent to 2.6 percent of GDP between 2014 and 2016, the cost of importing fuels rose to 3.7 percent in 2018 owing to recovering oil prices and growing demand.

**Public consumption increased despite administrative austerity measures.** The government has applied different measures to constrain the growth of the public wage bill and expenditure on goods and services.\(^\text{15}\) However, the wage bill continues to expand because of new personnel requirements and promotions. Similarly, the spending on goods and services increased by about 0.5 percentage points of GDP between 2014 and 2018. This resilience is partially explained by the fact that previous investments in infrastructure, education, and health have generated new recurrent expenditures. Additionally, some of the government’s measures did not affect current expenditures because they are recorded in other items, such as capital expenditure or SOEs’ operating expenditures.\(^\text{16}\)

**Social security benefits have also increased, adding pressure on the already stressed social security system.** The expenditure on social security benefit rose from 3.6 percent of GDP in 2014 to 5.0 percent in 2018 due to the lagged effect of previous policy decisions. Although the social benefits’ cost has remained below contributions, its expansion is reducing the capacity of the social security system to accumulate assets, thus undermining its long-term sustainability. Moreover, the temporal elimination of Central Government contribution and the temporal reduction of the contribution rate have forced the social security system to reduce its technical reserves in recent years. (Box 3). This on top of the fact that the social security portfolio is highly exposed to fiscal risks because it is the Central Government’s primary

\(^\text{15}\) The wages of public servants were frozen in 2015 and those of superior hierarchical civil servants (ministers, deputy-ministers, advisors, and managers) were reduced between 5 to 10 percent in the same year. Similarly, in 2016, of the around 120,000 public servants with occasional service contracts, the government declined to renew the contracts of about 5,500. It also introduced measures to moderate transfers. In early 2015, it ruled that pensions would be increased only according to inflation, as opposed to a rise of between 4.3 to 16.2 percent, as previously. Additionally, over the last couple of years, some public institutions and vice-ministries were eliminated or merged, while expenditures on goods and services such as travel and travel allowances were constrained. The administration of president Moreno passed additional austerity measures that, among other things, prohibit vacancies from being filled. In the same vein, in 2018, the government eliminated redundant public institutions and reduced the number of advisors, travel expenses, and rental of real estates.

\(^\text{16}\) For example, termination of occasional service contracts in investment projects reduced capital expenditures, rather than the wage bill, because they are registered as wages for investment within capital expenditure. Similarly, SOEs’ efforts to reduce their wage bill or their expenditure on goods and services increased their operative balance, which are recorded as fiscal revenues.
source of domestic funding. Moreover, this fiscal risk is exacerbated by the fact that the papers used to finance the Central Government are not very liquid.

**Box 3: Ecuador’s social security system**

Ecuador’s social security system remained almost fiscally balanced over the oil boom. The system was financed by relatively high payroll taxes and transfers from the Central Government. Within the contributory system, traditional contributions amount to 6.6 percent and 8.6 percent of gross earnings for employees in the private and public sectors, respectively. Voluntary contributions, meanwhile, amount to 9.7 percent of gross earnings. Ecuadorian employers contribute 3.1 percent and 1.1 percent of gross payroll for private and public sector employees, respectively. Regarding the financing of the public sector, the Mandatory Social Security Law (1942) requires that 40 percent of pensions be paid by the state. Between 2003 and 2015, both current income and public transfers maintained a growing trend, with a variation of 220 percent between these two years, while the level of expenditures increased 181 percent. Between 2010 and 2014, the financial result was significantly positive, reaching a peak of 1.3 percent of GDP in 2014. These results, however, exhibit a high dependency on public transfers. Without them, the Ecuadorian Institute of Social Security (IESS) would have maintained a sustained deficit (0.15 percent of GDP on average).

However, reforms introduced in 2015 depleted revenue sources while maintaining the level of benefits. In 2015, two critical changes were implemented with respect to the sources of financing for the mandatory social security system. On the one hand, the contribution of the government was eliminated. On the other hand, there was a temporary decrease (for five years) in the contribution rate, dropping to 5.8 percent and 7.8 percent for private and public employees, respectively, and to 0.1 percent for employers. The pension contribution rate will gradually increase, reaching 10.4 percent in 2021, and the government’s contribution will be reinstated in 2019.

As a result, the system has been running a deficit, financed by depleting technical reserves. The changes introduced in 2015 implied a significant reduction of revenues. To handle pension obligations, IESS had to use capital income as a new source of financing, which allowed a positive financial result to be maintained. However, this implies a significant decrease in the system’s technical reserves from $9 billion in 2015 to approximately $7 billion in 2017. While the funds’ position is expected to improve as the 2015 reforms are gradually reverted, the sharp reduction in technical reserves could put the system into stress.

**Income, expenditure, and financial result of the contributory pensions scheme**

Fiscal deficit increased public debt on the back of costly and distortive sources of funding

Sizeable fiscal deficits have led to a significant increase of public debt, initially by means of non-traditional funding sources and more recently by the issuance of sovereign bonds. While there is a long-
standing debate on how to measure Ecuador’s public debt, all metrics point to a significant accumulation of public sector liabilities (Box 4). This document focuses on the dynamics of the NFPS debt, which differs from the official definitions that are compared with the debt ceiling of 40 percent of GDP. The NFPS debt climbed from a low of 17 percent of GDP in 2012 to 46 percent in 2016 on the back of large Chinese oil-backed loans and massive and costly bond issuances (Figure 5). Moreover, tightening external financial conditions forced Ecuador to tap into unconventional sources of financing, such as advanced oil sales, arrears, and Central Bank financing. The debt dynamics shows that massive primary deficits increased the debt-to-GDP ratio by 19 percentage points between 2012 and 2018 (Figure 6). Owing to the high yields on bonds issuance since 2014 and increasing international interest rates, interest payments added almost seven percentage points to the debt-to-GDP ratio. On top of this, dampened economic growth contributed little to reduce this ratio.

### Box 4: Public debt definitions, debt ceiling, and alternative sources of financing

The 2002 Fiscal Responsibility, Stabilization, and Transparency Law introduced a set of fiscal rules, including the debt ceiling of 40 percent of GDP. When the debt ceiling was established, the definition of official public debt (i.e. the aggregate public debt) included all medium- and long-term external public debt and the medium- and long-term Central Government debt with the private sector, the social security system, the Central Bank, and other public financial institutions.

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<tr>
<th>Alternative definitions of public debt</th>
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<th>Consolidated public debt</th>
<th>NFPS debt</th>
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<tbody>
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<td>Advanced oil sales and Current liabilities (Schlumberger)</td>
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<td>Central Government domestic debt (Aggregated domestic debt)</td>
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<td>With the private sector (Consolidated domestic debt)</td>
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<td>Treasury certificates outside the NFPS</td>
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<td>Letter of credit linked with fuel imports</td>
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<td>Central Government arrear with the private sector</td>
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<td>Petroamazonas arrears with oil service companies</td>
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However, when financial needs increased, the government resorted to a variety of financing mechanisms, not included in the official definition of debt, to get additional funding without increasing public debt. Since 2008, the government tapped into advanced oil sales, which were not recorded in the official debt figures, arguing that these were commercial transactions. The government also issued treasury certificates (CETEs), which are short-term papers not included in the official debt figures generally held by the Central Bank. In 2015, the authorities dropped their contribution to the Social Security System fund (of 40 percent of pension expenditures), thereby generating a deficit. This was financed by depleting technical reserves. When oil prices fell, Petroamazonas accumulated sizable arrears with oil service suppliers operating its fields. In addition, the Hydrocarbon Secretary took on a liability in line with the oil service contracts — HS can reduce the payment to private firms when oil prices drop accumulating a liability (carry-forward) to be paid when oil prices improve. As part of a contract for the provision of specific services with Petroamazonas, which involved an investment commitment of about $4.9 billion, Schlumberger made an advance payment of USS$1,000 million to the government in late 2015. Finally,
because of tightening liquidity constraints, the Central Government accumulated substantial arrears with both subnational governments and private suppliers.

The authorities changed the official definition of public debt by consolidating intragovernmental debt in 2016 but it restored the original metric in 2018. As the aggregate public debt was approaching the debt ceiling, the government introduced a new definition in October 2016, the consolidated public debt, which netted out the Central Government’s obligations with the Social Security Institute and the financial public sector. However, after a nine-month investigation, the General Comptroller ordered the government to restore aggregate debt as the official definition and to publish detailed information on other liabilities, such as advanced oil sales, CETES, arrears, and contingent liabilities. In 2018, the MEF restored the aggregate debt as the official definition of debt; however, this metric was already above the debt ceiling.

All these definitions mix up liabilities of different government levels and are not aligned with the NFPS balance. Although the aggregate debt is binding for legal purposes in Ecuador, this document uses the NFPS debt, which includes: (i) external debt; (ii) domestic debt with the private sector (domestic consolidated debt); (iii) Central Bank credit to the public sector; (iv) CETES held by institutions outside the NFPS; (v) public papers held by other financial institutions; (vi) letters of credit linked with fuel imports; (vii) arrears with the private sector and oil service companies; and (vii) Hydrocarbon Secretary carry-forward under oil service contracts. It does not include the Central Government debt with the Social Security Institute because the latter is part of the NFPS. Nor does it include the Central Government’s arrears with subnational governments as they belong to the NFPS. Subnational arrears with the private sector are also exempted due to a lack of information and because of contingent liabilities.

Rapid accumulation of public liabilities has raised concerns about opaqueness, economic implications, and inherent risks. The use of alternative financing sources, which were initially not registered as public debt, like oil pre-sales, has eroded the transparency. Also, while many of these instruments are helping the government cope with its liquidity constraints, they have amplified the economic crisis and risk perception. Domestic arrears present a case in point. Used as one of the mechanisms in the onset of the economic slowdown of 2015, it had the effect of draining liquidity from the financial sector. This resulted in a contraction of both deposits and loans, which, in turn, worsened the 2016 economic recession. The
erosion of the Central Bank’s balance sheet resulting from direct lending to the public sector also undermined confidence in the financial sector’s stability and the dollarization. Additionally, the Central Government increasingly tapped into the social security system to meet its financing needs, thus eroding the system’s liquidity. Between 2014 and 2018, investment in public papers by the Banco del Instituto Ecuatoriano de Seguridad Social (BIESS), the social security’s mortgage bank, rose from $5.7 billion to $6.3 billion, exposing the social security system to higher fiscal risks and reducing liquidity in the system.

This opaque financing strategy has increased the country risk rating above what the fiscal deficit and the public debt suggest. Although the NFPS debt has remained below the reference of 70 percent of GDP for emerging economies, Ecuador is still perceived as a high-risk country. It has the third highest country risk among emerging countries, below only Venezuela and Belize (Figure 7). Given its record of debt default, its lack of macroeconomic buffers, and the use of unconventional sources of financing, Ecuador has a higher country risk than Lebanon, Egypt, Brazil, Tunisia, and Argentina, although these countries have larger public debt levels and fiscal deficits.

Since 2016, however, Ecuador’s declining fiscal deficit and access to external financing have allowed the government to reduce some unconventional liabilities and build up liquidity. Between 2016 and 2018, the NFPS debt increased by about four percentage points of GDP, although the external debt rose more than seven percentage points and public papers held by the Central Bank increased by about two and a half percentage points (Figure 8). Recovering oil prices and external financing helped to reduced unconventional liabilities, which mainly comprise advanced oil sales, treasury certificates, and Petroamazonas arrears with oil-field service firms. Although liquidity constraints increased Central Government arrears to 2.1 percent of GDP at the end of 2018, they were reduced to 1.6 percent in the first quarter of 2019. Moreover, increasing oil revenues and sizeable external financing allowed the government to increase its deposits in the financial sector from 3.0 percent to 5.5 percent of GDP between 2015 and 2018.

Figure 7: Public debt, deficit, and country risk in 2018

Figure 8: Public debt changes between 2016 and 2018

Note: The size of the bubble represented the fiscal deficit as percent of GDP. Venezuela was excluded due to its high country-risk, more than 4500 basis points.
Source: World Bank, Central Bank of Ecuador, and Ministry of Economy and Finance
However, external financing conditions became tighter in 2018, the central government relied once more on non-traditional sources of financing. The Central Government placed $3 billion in bonds in January 2018 but refrained from accessing markets during the rest of that year because of high costs and volatility. However, with a sizable deficit, it had to continue tapping into alternative sources of funding, including: (i) repurchase agreements with Goldman Sachs and Credit Suisse; (ii) disbursements under advanced oil sales agreements signed by the previous administration; (iii) the Latin American Reserve Fund (FLAR); and (iv) short-term borrowing from SOEs with excess liquidity.

Continuing the ongoing fiscal consolidation will be critical to calm down market fears and reach the government’s goal of reducing public debt

A recent agreement with the IMF has ratified the authority’s commitment to fiscal consolidation. The government plan acknowledges that Ecuador needs to stabilize its fiscal accounts while protecting the most vulnerable population and igniting private sector development (Box 5). In this context, the government has signed an Extended Fund Facility with the IMF to support its macroeconomic reform agenda. Among other goals, these reforms aim to reduce the non-oil primary balance by 5 percent of GDP over the next three years. Although it foresees a small cut in capital expenditure and higher social assistance spending, the plan envisages that the bulk of expenditure consolidation will come from the rationalization of fuel subsidies, the termination of temporary contracts, improved procurement processes, a reduction in the number of public institutions, and the optimization of SOEs. Reform efforts also include a comprehensive tax reform to increase tax revenues and phase out the distortive tax on transfers abroad.

The government expects the IMF agreement to calm down market fears and reduce the cost of financing. The financial support from the IMF and other multilateral financial institutions are expected to reduce the financing cost. The authorities said the maturities on these loans extended up to 30 years and the average interest rates are below 5 percent. These terms are much more favorable than the 10.75 percent offered in the $1.0 billion 10-year bonds issued in January 2019. Additionally, the authorities expect that the consolidation programs and fresh liquidity will reduce the country risk. Ecuador’s sovereign spreads increased from 600 basis points in mid-September 2018 to around 820 points in late December 2018, before returning back to 600 points in March 2019.

**Box 5. The government plan and the agreement with the IMF**

Ecuador’s government has two main instruments to guide the country’s development. The National Development Plan – *Toda una Vida 2017-2021* – focuses on the country’s development goals for the medium- and longer-term, aimed at reducing poverty and increasing shared prosperity. The other main instrument is the government’s *Plan de Prosperidad 2018-2021*. This acknowledges that Ecuador’s economy requires strong adjustment through the responsible, transparent, and disciplined use of public resources to promote sustainable growth. This plan is focused on short-term measures to enable economic growth and comprises four priorities to help stabilize and reanimate the economy in the short-term.

- **Priority 1: Stabilizing the Economy.** The government’s plan highlights the need for meaningful and orderly fiscal adjustment. Furthermore, it recognizes that the economic growth required for addressing poverty and offering opportunities for the next generations cannot rely solely on the public sector, but it must also provide the necessary conditions to attract private investment.
- **Priority 2: Protecting the Most Vulnerable.** The plan acknowledges that the required fiscal adjustment cannot affect the most vulnerable population. It guarantees that resources for social protection will be increased to reduce the levels of poverty and extreme poverty by improving the coverage of social protection programs.
• Priority 3: Ensuring More Opportunities and Fewer Burdens for Citizens. The plan includes a proposal to provide productive credit and regulatory reforms to foster entrepreneurship and reactivate production so as to create quality jobs without generating fiscal pressures.
• Priority 4: Promoting Transparency and Fighting Corruption. The plan prioritizes the establishment of a legal framework to combat corruption, including the preparation and submission to the National Assembly of legislation that protects whistleblowers and provides incentives to report corruption. This area also considers more transparency and accountability in the allocation of government resources throughout the annual budget cycle.

In this context, the IMF board approved a $4.2-billion Extended Fund Facility to support a critical macro-fiscal reform agenda. This arrangement provides support for the government’s reform agenda over the next three years. The loan has an interest rate of 3 percent and a maturity of 10 years, with a four-year grace period. The program aims to strengthen fiscal sustainability and the institutional foundations of dollarization, while also fostering the fight against corruption and safeguarding social spending. The authorities are seeking to improve the medium-term fiscal policy framework and reduce the debt-to-GDP through various measures. These include a comprehensive tax reform, a wage bill realignment, a gradual reduction of fuel subsidies, and a reprioritization of other expenditures. The dollarization will be strengthened by increasing the Central Bank’s operational autonomy, building up the foreign reserve, and enhancing the oversight of banks and cooperatives. The authorities also aim to improve the targeting of ongoing social programs while increasing their coverages and benefits.

The IMF operation is part of a $10.3-billion financing package. The deal with the IMF gave Ecuador the chance to secure $6 billion in financing from the CAF Development Bank of Latin American ($1.8 billion), the World Bank ($1.7 billion), the Inter-American Development Bank ($1.7 billion), the European Development Bank ($379 million), the Latin American Reserve Fund ($280 million), and the French Development Agency ($150 million). The authorities have stated that the government will receive $4.6 billion in 2019, $3.2 billion in 2020, and $2.5 billion in 2021. The authorities also confirmed that the maturities on these loans would extend up to 30 years and the interest rates would average are below 5 percent. These terms are much more favorable than the 10.75 percent offered in the $1.0 billion 10-year bonds issued in January 2018.

If the government implements its reform agenda, the public debt is forecast to fall below 40 percent of GDP by 2023. The base case scenario assumes that the government will be able to apply all consolidation measures agreed with the IMF (Box 5). It also assumes that oil prices and production will remain almost flat over the projection period. A further assumption is that private investment will increase due to the reductions in labor market rigidities, the increase in trade, and the implementation of Public-Private Partnerships (PPP) brought about by critical reform to the business environment. Although the fiscal consolidation will damp the economy in 2019, economic growth is expected to gradually approach 2 percent by 2023 as reforms spark private investment and non-oil exports. The NFPS balance is expected to improve from a deficit of about 1.2 percent of GDP in 2018 to a surplus of about 2.7 percent by 2021. The NFPS debt is projected to fall from 46 percent of GDP in 2018 to 36 percent in 2023. External debt is projected to increase from 34 percent of GDP in 2018 to a peak of 36 percent in 2019, helping to reduce other liabilities and build up liquidity.

Table 1. Base case scenario

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Real sector, annual percentage change, unless otherwise indicated</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal GDP ($ billion)</td>
<td>101.7</td>
<td>99.3</td>
<td>99.9</td>
<td>104.3</td>
<td>108.4</td>
<td>109.5</td>
<td>111.7</td>
<td>114.5</td>
<td>118.5</td>
<td>122.8</td>
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<tr>
<td>GDP growth</td>
<td>3.8</td>
<td>3.8</td>
<td>3.8</td>
<td>3.8</td>
<td>3.8</td>
<td>3.8</td>
<td>3.8</td>
<td>3.8</td>
<td>3.8</td>
<td>3.8</td>
</tr>
<tr>
<td>Private Consumption (Contribution)</td>
<td>1.7</td>
<td>-0.1</td>
<td>-1.5</td>
<td>2.3</td>
<td>1.6</td>
<td>0.2</td>
<td>0.4</td>
<td>0.8</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Government Consumption (Contribution)</td>
<td>1.0</td>
<td>0.3</td>
<td>0.0</td>
<td>0.5</td>
<td>0.4</td>
<td>-1.0</td>
<td>-0.3</td>
<td>-0.1</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Gross fixed capital formation (Contribution)</td>
<td>0.6</td>
<td>-1.7</td>
<td>-2.2</td>
<td>1.2</td>
<td>0.5</td>
<td>0.4</td>
<td>0.1</td>
<td>0.1</td>
<td>0.7</td>
<td>0.8</td>
</tr>
</tbody>
</table>
The path of public debt is subject to risks such as higher interest rates, a weaker than expected fiscal consolidation path, and slower growth. A permanent increase of the interest rate by 200 basis points from 2020 onward will increase the public debt by less than 1.0 percentage points of GDP in 2023, compared to the baseline scenario (Figure 9). Alternatively, a reduction in the primary balance by 1.2 percentage points of GDP in 2020 and 2021 (half of the 10-year historical standard deviation) will increase public debt to 39 percent of GDP in 2023. This is almost three percentage points higher relative to the baseline.\(^\text{17}\) The public debt-to-GDP ratio is most sensitive to low GDP growth. A reduction of 2.8 percentage points in growth in 2020 and 2021\(^\text{18}\) (the 10-year historical standard deviation) would lead to a sharp increase in public debt. In this scenario, public debt would jump from 46 percent of GDP in 2018 to a peak of 51 percent in 2021, before returning to 43 percent in 2023. If all these stress tests are

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\(^{17}\) This shock is combined with an increase of the interest rate by 25 basis points per one percent of GDP worsening of fiscal balance.

\(^{18}\) The scenario is combined with a deterioration of fiscal revenues, higher interest rates (25 basis points per one percent of GDP worsening of fiscal balance), and lower inflation rate (25 basis points per one percentage point decrease in GDP growth).
combined, public debt could increase to a peak of 53 percent of GDP in 2020, before declining to 46 percent by 2023, almost ten percentage points above the baseline scenario.

Despite increasing expenditure rigidity, there is policy space to increase non-oil revenues and cut current spending.

As the ongoing consolidation process has increased expenditure rigidity, deeper reforms might be required to enable further consolidation. A naïve metric of rigid expenditure is estimated by adding up the public wage bill, the interest payment, the social security benefits, and other current expenditures that have limited room for adjustment (Figure 10). According to this metric, rigid spending has increased from 53 percent in 2014 (one of the lower rates compared to Ecuador’s regional and structural peers) to 67 percent in 2018. This increase is due to declining capital expenditure and growing spending with social security benefits, interest payments, and fuel imports. As more refined measures show, rigidity increased for 71 percent of accrued budget in 2014 to 83 percent in 2018 (Figure 11). Although Ecuador’s expenditure rigidity remains relatively low with respect to its regional and structural peers, its recent rapid increase suggests that any further consolidation effort would require reforms to increase revenues or reduce rigid expenses, such as public wages or fuel imports.

Space exists for raising non-oil revenues by increasing tax revenues and rationalizing energy subsidies. Ecuador has improved revenue collection, but tax revenues (14.2 percent of GDP in 2018) remain low compared to the average for the country’s regional (18.4 percent) and structural peers (18.4 percent) (Figure 12). Moreover, tax collection could be even lower if the effect of the 2018 tax amnesty is subtracted from this number. In the same vein, the government may try to increase oil revenues by rationalizing fuel subsidies, which reached more than three percent of GDP in 2018. Higher domestic fuel prices would increase domestic sales of oil derivatives, which could improve the operating revenues of SOEs or the oil revenues of the government. This will allow for the financing of emerging expenditure priorities (i.e. transfers to vulnerable people) or the improvement of the overall fiscal balance.

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19 This metric is based on budgetary information and considers that rigid expenditure includes all expenditure items related to long-term labor contracts, debt services, import of fuel, and transfers to the private sector and subnational government. It also includes all expenditures in health and education, as well as public wages and expenditure in goods and services for defense and internal affairs.
On the expenditure side, efficiency gains could help achieve the desired fiscal savings. Ecuador’s sharp increase in public spending was associated with inefficiencies that led to underutilized infrastructure, costly staffing decisions, sub-optimal procurement standards, and poorly targeted social spending. In this context, finding the right pace of adjustment represents a delicate balancing act. Adjusting too quickly could place the country in a recession or could destabilize the current administration. On the other hand, tightening too slowly could undermine credibility, exposing the economy to shocks. In this context, measures to promote efficiency can deliver savings with limited impact in the delivery of public savings and the economic activity more broadly.

While there is little room to continue cutting public investment, better planning and higher private investment could be critical to cushioning the effects of the adjustment on the rest of the economy. Although capital expenditure declined by nine percentage points of GDP since 2014, reaching 6.6 percent in 2018, Ecuador’s public spending appears to be high compared to its regional and structural peers. However, after filtering out the effect of investments by SOEs and housing loans carried out by the social security system, capital expenditure reached only 4.6 percent, which is close to the average for the country’s regional and structural peers. This suggests that Ecuador’s government has limited room to continue cutting capital expenditure. In this context, the country would need to carefully assess ongoing projects and prioritize future projects. Having a public investment management strategy that carefully selects new investments and ensures that recently built infrastructure obtains positive rates of return is a necessary precondition for a successful adjustment. Additionally, the authorities would need to crowd in private investment through a comprehensive review of its business environment and PPPs (Box 6). Ecuador could also reduce SOEs’ capital expenditures by creating conditions for the private sector to take the lead in future investments through the privatization of some SOEs or new services contracts.

**Box 6: Building the foundations for successful Public-Private Partnerships**

Although PPPs could be beneficial, they are much more complicated to implement than often believed. PPPs have three main objectives: (i) to crowd in private investors into projects that they would otherwise not undertake; (ii) to transfer to the private sector a significant part of the risks and costs that the government would otherwise fully absorb; and (iii) to ensure that a project’s efficiency and/or quality is at least equal to that obtained if the government alone carried all costs and risks. Under a weak policy for PPPs, neither the regulatory and institutional framework nor the interests of taxpayers...
and users naturally coincide with the interests of either private investors or the government. The government has incentives to implement projects on the ground as soon as possible, even if this implies leaving liabilities for future governments. Incentives may also exist for the government to underestimate or hide contingent liabilities and to give unrealistic guarantees. This may provide a quick fix for a cash constrained government, but it could also create higher costs to beneficiaries and could reduce service quality. Private investors have incentives to earn as much profit as possible while transferring as many of the costs and risks as possible to the government. In the absence of a sound policy framework; therefore, the benefits to final beneficiaries are compromised as their interests are not well represented in the PPP design and selection process.

**Well-designed laws, regulations, and procedures for PPPs are critical.** Such a framework would adequately represent the interests of the final beneficiaries by promoting efficiency gains, reducing the incentives of the government to over-guarantee, and curbing the incentives of private investors to unduly shift costs and risks to the government. In this context, there are a few key issues to avoid when designing and implementing a policy for PPPs. These include: (i) the provision of excessive government guarantees; (ii) the awarding of concessions based on wrong parameters; (iii) the authorization of multiple agencies within government to initiate and award PPPs; and (iv) the failure to address conflicts of interest and disputes.

**Ecuador’s regulatory and institutional framework for PPPs need to be strengthened.** Line ministries, public enterprises, and subnational governments see PPPs as the means to expand service delivery under tight fiscal constraints. In 2015, Ecuador approved a fiscal incentives law for investments in infrastructure that included some features of a PPP law. It created a steering committee to oversee these incentives and to coordinate PPPs. However, this regulatory framework does not: (i) empower the Ministry of Finance to rule on all commitments or liabilities, contingent or actual, associated with PPP projects; (ii) develop a full-fledged institutional set up; (iii) clarify procedures and timings for awarding a PPP contract (including, among other requirements, the competitive awarding of rules and processes); (iv) differentiate processes and procedures for unsolicited proposals; and (v) address specific requirements for financiers or the congruency between dispute resolution mechanisms. While PPPs have been issued through laws and resolutions, the key parameters for risk allocations between the public and the private sector do not figure among these. Without an appropriate framework to design, evaluate, and select PPPs and to allocate risks, the financial costs for a PPP project in Ecuador might be too high when compared to the potential efficiency gains that private-sector participation would bring.

**Current spending could be rationalized through improved procurement and human resource management.** The government was not able to reduce the already high public wage bill, which has almost doubled as a share of GDP since the early 2000s. Compensation to employees was increased from 9.3 to 9.8 percent of GDP between 2014 and 2018, becoming one of the highest among Ecuador’s structural and regional peers. Similarly, although the current expenditure on goods and services is not considered rigid, it has proved difficult to cut in Ecuador’s case. Between 2014 and 2018, it increased from 5.2 to 5.7 percent of GDP, making it one of the highest among all Ecuador’s regional and structural peers. This increase occurred because a spike in 2018 more than offset the modest consolidation attained up to 2017.

**In the medium-term, it could be useful to evaluate policy options to strengthen Ecuador’s social security system.** Social security benefits are not generating major pressure on the overall fiscal balance as they are still below the social security contribution. However, their sustained expansion could constrain the capacity of the social security system to accumulate assets in order to deal with the prospect of an aging population.
Improvements in Public Financial Management may contribute to materializing the consolidation strategy

Ecuador’s weak public financial management framework could undermine the ongoing consolidation process. The Public Financial Management (PFM) framework in Ecuador has important gaps when compared to best international practices, which have been amplified due to the complex economic situation of the country. During the last decade Ecuador has gradually implemented a number of reforms aimed at the modernization of its PFM framework, which included among others the development of a comprehensive normative framework, the implementation of a single treasury account, and an integrated financial management information system. Nevertheless, the liquidity constraints and the abrupt decrease in fiscal revenue experienced from 2014 onwards, exposed a number of failures in the PFM system. Ecuador stands in the 49th place out of 100 countries with respect to budgetary openness, placing it behind the most Latin American and Caribbean countries (10th out of 15). These weaknesses could endanger the envisaged consolidation in various ways:

- **The budget process limits the possibility of assessing the fiscal risk on a consolidated basis.** The government’s annual budget (Presupuesto General del Estado-PGE), which requires approval by the National Assembly, includes resources allocated to the Central Government, universities, and decentralized government agencies. Yet, it excludes subnational entities, SOEs, social security, and the financial public sector. The budgets for these entities are approved according to their own legal framework.

- **No mechanisms exist to ensure consistency between the macro-fiscal programming exercise and the annual budget.** While the legal framework establishes policies aimed at reflecting the country’s priorities in the budget process, poor coordination between SENPLADES (Secretaria Nacional de Planificación y Desarrollo) and MEF has led to a weak planning process under which budget projections have failed to include reliable macroeconomic forecasts. Moreover, because multi-year planning is weak, investment projects rarely consider the operational and maintenance expenses associated with the new assets. Although the resources of the central government are managed through a Treasury Single Account, the articulation between the government’s budget, its

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20 The public finance management (PFM) system is grounded in several interconnected systems and procedures, supported by a comprehensive regulatory framework as well as by human resources and information technology tools. With the enactment in October 2010 of the Organic Code of Planning and Public Finances (Código Organico de Planeacion de las Finanzas Publicas-COPLAFYP), Ecuador intended to modernize the complete cycle of public finances. This covers inter alia implementation of a single treasury account and modernized government accounting, as well as streamlined budget preparation, fiscal transparency, and internal control. The most recent Public Expenditure and Accountability Assessment (PEFA), which covers the years 2015 to 2017, is currently in its final stages of completion. Preliminary findings point out that Ecuador is partially aligned with international best practices. Its main strengths are related to the existence of a strong regulatory framework and an integrated financial management system used at the Central Government level (e-SIGEF). Nevertheless, recent liquidity constraints unveiled some weaknesses. In particular, the PEFA highlights the need for implementing reforms aimed at: (i) strengthening transparency of public finances; (ii) improving asset and liability management, (iii) maintaining aggregate fiscal discipline; (iv) fostering fiscal strategy, including improvements to budget management and the control framework; and (v) enhancing internal control and external oversight of the public sector. Moreover, between 2014 and 2019, various indicators deteriorated. Chief among these are: stock and monitoring of expenditure payment arrears; oversight of aggregate fiscal risk from other public sector entities; predictability in the availability of funds for commitment of expenditures; recording and management of cash balances, debt and guarantee; quality and timeliness of in-year budget reports; and effectiveness of internal control and audit.

21 The COPLAFYP requires all public-sector entities to prepare their budget in accordance with the National Development Plan, based on multi-year projections for the next four years on a rolling annual basis.
commitments, and its payments is weak. In the absence of ceilings for the budget prior to its preparation, the MEF imposes payment limits and other controls to avoid liquidity constraints.

- **Frequent and sometimes sizable budget changes undermine its usefulness as a planning tool.** The budget is subject to numerous in-year adjustments, mainly due to fiscal constraints and weak planning capability at the ministerial level. Moreover, the MEF can increase or reduce the PGE within a discretionary limit up to 15 percent without legislative approval. Such flexibility has originated an excessive number of in-year adjustments (up to 4,000 per year), reflecting a poor level of control.22

- **There is limited oversight.** The legal framework defines the timetable for budget preparation and approval.23 In addition, e-SIGEF allows for proper PGE monitoring. The approved budget and monthly fiscal report are now made publicly available online, while budget implementation reports are presented to the legislature every six months. The checks and balances of the PFM system are under the scope of the Comptroller General (Contraloría General del Estado-CGE), who is appointed by the Council of Social Participation and Control and does not report directly to the Legislative Assembly.24 According to the PEFA, the most important deficiencies are related to the narrow coverage of CGE’s audits and lack of timeliness of its reports, plus CGE’s weak independence and the limited transparency of its work.25

**Improving the consistency of macro-fiscal programming and budget preparation with more systematic budget controls could help materialize the foreseen consolidation.** Ecuador lacks budget preparation procedures and milestones to ensure consistency between the macro-fiscal programming exercise and the annual budget programming. This is particularly the case in the definition of available fiscal space and of budget ceilings that ensure consistency between the programming process of the annual budget and deficit goals. Strengthening bottom down budget preparation procedures that take macroeconomic objective and strategic planning into consideration would be valuable tools to implement an orderly consolidation. Similarly, the authorities could be interested in improving coordination mechanisms to assure that PGE reflects the country’s priorities and reliable macroeconomic forecasts.

**Aligning fiscal accounting and reporting with international standards may also help to improve transparency.** Government accounting is prepared on an accrual basis covering the institutions included in the PGE, while financial statements are updated and published on the MEF’s internet every quarter. However, the quality of public sector accounting lags behind that of some countries in Latin America and the Caribbean as it follows national public accounting rules, which depart from the international accounting standards.26 The government continues to pursue convergence to International Public Sector

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22 Final budget (presupuesto codificación) exceeded the original budget by more than 20 percent in 2016 and 2017 because of the emergency budget allocated in response to the earthquake in 2016 and the presidential transition in 2017. In an electoral year, the Budget Law permits the use of the same amounts as approved in the prior year’s budget until a new budget is prepared by the incoming administration.

23 The MEF is required to submit the PGE for the approval of the Legislature 60 days before the end of the calendar year, and the Legislature has 30 days after receiving the PGE to approve it. For the most part, the government has adhered to these deadlines.

24 According to the Law, budget implementation reports should be prepared and presented to the legislature every six months, although there is no information in this respect on the Ministry of Economy and Finance website.

25 The CGE has full discretion to undertake different types of audits and reviews to public-sector institutions. However, financial audits of line ministries are limited in scope, depth, and frequency. Moreover, audit reports and observations are normally not issued on a timely basis and lack of adequate evidence. The quality control system and the follow-up function of audit findings are weak too. Altogether, these technical deficiencies compound the effects of political scandals by further undermining the institutional credibility of the CGE.

26 The Organic Code of Planning and Public Finance (Código Orgánico de Planeación y Finanzas Públicas) mandate the use of national public accounting rules for all public-sector entities.
Accounting Standards (IPSAS); however, its goal of producing financial statements in accordance with IPSAS by 2020 requires an upgrading of the e-SIGEF to a customized SAP. The implementation of the new software would require complementary activities such as interoperability with other public sector agencies, training, and the development of a module for financial reporting, control, and monitoring of project implementation.

**Standard accounting and more detailed fiscal reports may also help to dissipate uncertainty on macroeconomic management.** Ecuador’s recorded public investment is almost 50 percent higher than what would be considered public investment in other countries (Box 7). This has allowed the government to comply with the requirements of the Fiscal Responsibility Law that permanent expenditure (current expenditure) should be financed by permanent revenues (non-oil revenues). It could also be useful to align the official definition of public debt with international standards to make it compatible with NFPS balance and improve monitoring of SOEs to prevent the substantial revisions of fiscal figures observed in the past. For example, the 2017 overall fiscal balance decreased from 5.5 percent of GDP in the Central Bank monthly bulletin published in February 2018 to 4.6 percent in the same publication in July 2018, mostly due to the improvement of the SOEs operating balance. Additionally, fiscal transparency could be enhanced by publishing more detailed information on public debt and oil revenues, as well as time series of budget information.

**Box 7: The measurement of capital expenditure in Ecuador**

**Public gross capital formation is lower than official figures of capital expenditure would suppose.** A closer look at the portfolio of projects suggests a loose classification of capital expenditures, i.e., it includes projects and programs that would not be defined as such according to the IMF Government Finance Statistics Manual (GFSM 2014). If the portfolio of projects is re-classified using the GFSM definition, only 51 percent of projects (in terms of value) can be considered an accumulation of physical capital. Physical capital projects amounted to 17 percent of the total number of projects implemented between 2008 and 2017, indicating that the increase was driven mainly by non-physical capital projects. These mostly encompass “human capital” projects, which accounted for more than four-fifths of the total number. These projects were mainly related to social development, knowledge generation, and human talent. In contrast to the above data, using a stricter definition of capital expenditure based on Central Bank data, public investments represented only 18.1 percent of total expenditures between 2008 and 2016.

**The precise definition of public investment is critical when designing a public investment management (PIM) system.** A PIM system will be better served by a narrow definition of investment, which equates it with capital expenditure, which is defined as expenditure leading to the acquisition or significant improvement of a fixed capital asset. The value of the asset created or the increased value of an existing asset after improvement should then appear on the balance sheet of a public sector body upon completion. Too narrow a definition can lead to significant expenditures bypassing the PIM system rather than being captured, as is ideal. Conversely, too broad a definition may equate public investment with the general notion of ‘development’ expenditure and could result in current expenditure initiatives relating to, among other things, human capital formation, being captured within a PIM system (World Bank PIM guidelines, 2017).

**Breadth of definition seems to be the issue in Ecuador’s case.** Ecuador’s PIM system lacks clear guidelines for project appraisal, including the absence of thresholds after which detailed cost-benefit analyses are necessary. Also absent is an asset management system to track public infrastructure over time. Public investment projects,

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27 The implementation progress of such a plan is weak. According to the Estado de Adopcion NICS (IDB, 2017), Ecuador’s progress increased from 10 percent in 2014 to 21 percent in 2017, remaining well below Peru (82 percent), Chile (67 percent) and Brazil (59 percent), the top performers in the region.
whether implemented under a PPP or through more conventional means, should aim either to support the creation of viable infrastructures, such as roads, airports, and railways, or to provide social infrastructure and public services, such as hospitals and schools. It is critical to use a unified system of project identification, appraisal and, later, implementation in order to ensure consistency in the entire project life cycle.

In the medium-term, Ecuador would need to set mechanisms to reduced fiscal pro-cyclicality

The country’s recent experience highlighted the role of fiscal policy as an amplifier of economic cycle. As with many other emerging economies, Ecuador has a long-standing tradition of pro-cyclical fiscal policy. However, while some Latin American and Caribbean countries have been able to become counter-cyclical over time (Chile, Mexico, and Paraguay, among others), Ecuador has become more pro-cyclical in recent years (Figure 13). Part of the successful transition from pro-cyclical to counter-cyclical fiscal policy in many countries in the region hinged on the implementation of clearly defined fiscal rules and the establishment of stabilization funds, which allowed them to smooth economic cycles, especially those stemming from commodity price fluctuations.

Fiscal rules and stabilization funds need to be anchored by strong political commitment and an enhanced institutional framework. Ecuador introduced a series of fiscal rules and an oil fund as part of its Fiscal Responsibility, Stabilization, and Transparency Law of 2002 (Box 8). However, problems of design and compliance, plus a series of changes enacted since 2008, have limited the ability of these mechanisms to support a move to a counter-cyclical fiscal policy. Moreover, with a weak financial management system, the rule on permanent expenditure has distorted budget classification by registering some current spending as public investment. Similarly, as debt approached the ceiling of 40 percent of GDP, the government has tapped into alternative sources of financing that are not included in the official debt figures. It has also introduced a new definition of debt – the consolidated public debt.

**Figure 13: Fiscal pro-cyclicality among LAC countries**

<table>
<thead>
<tr>
<th>Country</th>
<th>Correlation between cyclical components of real government spending and real GDP 2007-2016</th>
</tr>
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<tbody>
<tr>
<td>Chile</td>
<td>0.9</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>0.8</td>
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<tr>
<td>Paraguay</td>
<td>0.7</td>
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<td>El Salvador</td>
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<td>Bolivia</td>
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<tr>
<td>Haiti</td>
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</table>


**Box 8: Fiscal rules and stabilization funds in Ecuador**

Ecuador set several fiscal rules and stabilization funds in the early 2000s to reach a sustainable path and create buffers. The 2002 Fiscal Responsibility, Stabilization, and Transparency Law restricted the real growth of the Central Government’s non-interest expenditure to 3.5 percent, the estimated potential GDP growth. It also ruled that the non-oil Central Government deficit should decrease by 0.2 percent of GDP each year until the balance was reached. It stipulated that public debt had to decline to 40 percent of GDP by 2006 and then stay below this level once the ceiling was reached. It prohibited Central Government guarantees on private debt and warranties
on subnational debt were limited to the financing of investment projects. In addition, the Law limited the debt of subnational entities to 100 percent of their revenues and their debt service to 40 percent of revenues. Finally, the legislation created an oil stabilization fund that complemented a previous fund established in 2000. Subsequently, additional funds were created to finance investment projects, social spending, and debt buy-back.

Despite its mixed compliance and some design problems, these fiscal rules and stabilization funds helped Ecuador to reach fiscal surpluses and reduce public debt. According to the IMF (2006), the expenditure and non-oil balance rules were adhered to only in 2003, the year in which it came into effect. This was partially due to usual budget amendments. The reduction of non-oil balance by 0.2 percent was violated because the goal of reaching non-oil balances turned too restrictive (World Bank, 2005) in a context of growing oil exports. Additionally, the 2005 reform to the Fiscal Responsibility, Stabilization, and Transparency Law weakened the expenditure rule by removing capital spending (IMF, 2006). However, the fiscal rules, together with the improvement of the external context and debt repurchase carried out by the oil-related funds, contributed to sizable surpluses between 2002 and 2008. They also led to a reduction in the public debt from 57 to 25 percent of GDP over the same period. However, the stabilization funds suffered from a cumbersome legal framework regarding the distribution and earmarking of oil and tax revenues, which created substantial rigidities in fiscal management (Cueva, 2008). Despite this, the funds provided the country with sufficient savings to help reduce debt and finance spending.

Fiscal rules were modified, and stabilization funds were dismantled in 2008. In the presence of growing revenues and declining political support to the fiscal rules, the Constitutional Assembly suspended the non-oil budget balance rule in 2008 and replaced the expenditure rule by a sort of non-oil ‘golden rule’. The latter required that permanent expenditure (current expenditure) be financed exclusively from permanent revenues (non-oil revenues). The reform kept the debt ceiling at 40 percent of GDP, but raised the limit on subnational entities’ debt to 200 percent of revenues. In addition, it lowered their debt service limitation to 25 percent of revenues. At the same time, the Organic Law for the Recovery of the State Oil Resources eliminated all stabilization funds and transferred their assets to the Central Government. The arguments for suppressing oil funds were that they channeled public revenues for debt payments instead of social investments (Cueva, 2013) and that public investment projects would yield higher social returns than liquidity accumulation.

The expenditure rules have had limited success in constraining current expenditures even as revenues plummeted. Permanent spending has been below permanent revenues since 2009, in line with the expenditure rule set in 2008. However, the definition of permanent spending is not precise enough to prevent biased reclassification. For instance, the government classifies the compensation of employees and expenditures on goods and services related to investment projects as capital expenditure. Additionally, as current spending includes fuel import costs, it decreases when oil prices fall. This reduces the relevance of this rule as a mechanism to control current spending when revenues decline. For instance, when permanent revenues collapsed in 2015, permanent expenditures decreased more than permanent revenues although the government did not apply any meaningful measures to control current spending.

Moreover, many mechanisms allowed the government to break the debt ceiling. The 2008 selective debt default reduced the debt-to-GDP ratio, thereby widening the possibility to mobilize more financing. Similarly, since the late 2000s, the government has tapped into liabilities not registered in the official debt figures such as advanced oil sales, short-term treasury certificates, public banks financing, and arrears. Finally, in 2015, the government changed the definition of official public debt to be compared with the debt ceiling. The new metric netted out intergovernmental debt, including debt held by the Central Bank, public financial institution, and Social Security. This change in definition reduced the official debt figure by about 11 percentage points of GDP, allowing the authorities to avoid a sharp fiscal consolidation.

Many of these problems arise from weak institutional arrangements, which undermine the spirit of the fiscal rules. There is no independent body to set the budget assumptions or monitor the compliance of fiscal rules.
Moreover, the expenditure rule is on a statutory basis (IMF, 2017). Further, none of the fiscal rules allow for escape rules and the government can change the terms of compliance with ease. For instance, in 2015, the government needed only a supreme decree to modify the definition of public debt to be compared against the debt ceiling. Similarly, the authorities could have circumvented the rule that permanent expenditure should be financed exclusively from permanent revenues by registering current expenditure as public investment.

The reform of fiscal rules and the introduction of stabilization funds have been considered in recent reforms, but it is critical to conclude the ongoing consolidation and strengthen financial management before implementing them. In 2018, the government restored aggregate debt as the official definition of public debt; however, as the aggregated debt lay well above 40 percent of GDP, the National Assembly temporarily lifted the debt ceiling to allow the government to carry out a gradual consolidation. In this context, the 2018 Productive Development Law already considers setting up fiscal rules and stabilization mechanisms after the debt-to-GDP ratio falls below the debt ceiling. In effect, the accumulation of assets in a stabilization fund could only take place after public debt is reduced. Yet, any stabilization fund would not be able to accumulate a sizable amount of resources in the current macroeconomic scenario. As a consequence, it would only assist with managing short-term oil price volatility, at best, rather than helping cope with fluctuations in the medium-term oil price. Additionally, any reform of current fiscal rules will require a strengthening of the financial management system in order to prevent the fiscal rules being bypassed by expenditure misclassification or unconventional definition of fiscal variables. International experience suggests that fiscal rules should be accompanied by sound institutional arrangements tailored to mitigate the effect of volatile commodity exports, such as well-designed sovereign funds (Box 9 Error! Reference source not found.).

**Box 9: International experiences with fiscal rules**

When fiscal rules are well-designed and tailored to a country’s context, they can be an important anchor for credible consolidation. Beyond the debt ceiling rule implemented in Ecuador, there is a wide range of fiscal rules to be considered. According to the IMF (2017), models that limit the budget outcome (primary and/or overall) and those that restrict public debt dominate. A minority of countries choose to limit the increase in the level of expenditures. Out of the 96 countries surveyed by the IMF, only 14 limit the real growth of public spending. About 79 percent of these countries also apply a ceiling on public debt, which is usually combined with fiscal targets. In fact, the practice of combining the two rules is common among emerging economies. Studies have already concluded that this improves the effectiveness of controls aimed at the sustainability of public accounts in the short and long term. In the few cases where efforts are made to limit the expansion of expenditure in real terms, it is possible to note different methodologies to define the control system.

Options for expenditure rules include considering the economic cycle, differentiating the nature of the expenditures, focusing on the fiscal balance, and allowing for escape clauses. In Australia, for example, real expenditure growth has been prevented from exceeding 2 percent since 2009, but the rule can be relaxed if economic growth rises above potential GDP and if the fiscal surplus climbs above 1 percent of GDP. Potential GDP is also a benchmark in Croatia, where real expenditure growth has been limited to the same rate as potential GDP since 2014 (unless the excess is financed by specific measures). The rules often have a relatively short life span. For instance, France, Finland, and the Netherlands revise the rule every four years. Incidentally, the Netherlands also illustrates how the scope of the rule changes over time: unemployment insurance benefits and social assistance were excluded from the ceiling in the 2009/2010 biennium. Denmark, Iceland, Kosovo, Peru, and Mexico opted to limit only the expansion of current spending. Studies also point out that such rules can undermine public investment. Escape clauses have been shown to reinforce the stability of the rules. The Peruvian case is interesting because the increase in current expenditures has been limited since 2000, but the rule can be suspended for three years if there
is low growth or if Congress decrees an emergency. Thus, in 2013-2014, Peru applied only the rule limiting the fiscal deficit.

**Fiscal rules adopted in 96 countries since 1985**

<table>
<thead>
<tr>
<th>By type of rule</th>
<th>By combinations of rules</th>
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</thead>
<tbody>
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<td><strong>Number of countries</strong></td>
<td><strong>Expenditure rule</strong></td>
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<td>Debt rule (BR)</td>
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<tr>
<td>Revenue rule (RR)</td>
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Chapter 2. Ecuador Tax Assessment

Trends and composition of government revenue in Ecuador

Government revenue collection as a share of GDP in Ecuador has been volatile and, after increasing in the early 2000s, has witnessed an overall decline over the last five years. Total government revenue increased from 21 percent in 2004 to 35.7 percent of GDP in 2008. It fell due to the spillover effects from the global financial crisis, recovered to reach a peak of 39.45 percent of GDP in 2012. It has since declined following a deceleration in economic activity and reached 35.85 percent in 2018 (Table 2).

Oil revenues account for one third of fiscal revenues, making public finances vulnerable to global oil price volatility. During the five years between 2011 and 2016, oil prices fell from $95 to $40 per barrel and oil revenues dropped from 16.32 percent to 7.95 percent. The fall in oil revenues is entirely due to the impact of lower prices as oil production increased by about 5 percent during the period considered. However, a reduction in investments by private oil companies and by Petroamazonas has resulted in a slowdown in output since 2015. Oil revenue is thus likely to further decline unless world market prices recover significantly. Beyond its direct impact, the poor performance of the oil sector resulted in lower tax revenue collection as it adversely affected economic activity.

After increasing steadily for eight years, tax revenue as a share of GDP declined in 2016 and 2017, following a slowdown in economic activity, and then grew slightly in 2018, but it still stands below regional and international peers. Tax revenue rose from 10.9 percent of GDP in 2008 to 15.7 percent in 2015. However, this trend has since reversed, with tax revenue falling by almost one percentage point in GDP in 2016 and 2017. This is linked to the recession in 2016 and a weak recovery in 2017, in addition to the phase-out of temporary increases in import tariffs and in the value-added tax (VAT) rate. The recovery picked up in 2018, hence strengthening revenue growth. An international comparison of tax revenue as a share of GDP shows that Ecuador ranks lowest among the group of regional and structural peer countries and far below the OECD average of 34 percent (Figure 14). At over 30 percent of GDP, relative tax revenue in regional peers Argentina and Brazil, as well as in Poland, are twice as large as in Ecuador.

VAT accounts for the largest share of tax revenue, followed by corporate income taxes. For each of these taxes, revenues were in growing trajectory until 2015, then fell in 2016-2017. Since then, they have slightly recovered. VAT revenues and CIT revenues accounted for 16.43 percent and 9.5 percent of total revenues in 2018, respectively. Even before the fall, Ecuador’s tax-to-GDP ratios were below its peers for most tax instruments. The country ranks lowest for personal incomes taxes, third lowest in terms of VAT, and fourth lowest in terms of CIT. At 0.8 percent of GDP, it also ranks below other peers except Brazil in terms of excise taxes. Import tariff revenues are higher than in all peers. In addition, Ecuador has a unique tax on capital outflows, which represents almost 10 percent of all tax revenues. Smaller taxes include taxes on plastic bottles, the airport departure tax, and various car and road taxes. Social security contributions add to total revenues. They account for 14.29 percent of total resources and are on par with peer countries.

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28 Regional and structural peers are selected based on the following criteria: GDP per capita, population, and dependence on commodity revenues. As a result, the countries identified as Ecuador’s peers are the following: Argentina, Brazil, Colombia, Chile, Mexico, and Peru (regional peers); Azerbaijan, Kazakhstan, Malaysia, Romania, South Africa, and Thailand (structural peers). Poland was selected as a new high-income country (combined with the structural peers in the color coding of the graphs).
Table 2: Tax Revenue in Ecuador

(As Percent of GDP)

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(As Percent of Total Revenue)

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<td>17.82</td>
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<td>2.04</td>
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Source: Ecuador Central Bank and SRI. (2) “Other” category refers to a large number of different non-oil revenue sources, such as transfers, voluntary contributions, penalties, fees, and investment returns. [http://www.forosecuador.ec/forum/ecuador/econom%C3%ADa-y-finanzas/145192-clasificador-presupuestario-2019-ecuador-ministerio-de-finanzas](http://www.forosecuador.ec/forum/ecuador/econom%C3%ADa-y-finanzas/145192-clasificador-presupuestario-2019-ecuador-ministerio-de-finanzas)
Figure 14: Tax Revenue in Ecuador and Peer Countries

Figure 15: Tax Rates

Source: DWC, Deloitte PKF tax guide.
**Tax instruments, Rates and Bases**

*Indirect taxes*

**VAT is levied at a low rate of 12 percent, representing a key constraint to tax revenue growth.** Ecuador’s VAT rate is significantly lower than in all peer countries (see Figure 15), except for Thailand and Malaysia. Following the earthquake of April 2016, the government took temporary emergency measures to fill the revenue gap, raising the VAT rate to 14 percent between June 2016 and May 2017. During this temporary increase, VAT revenues were approximately $90 million per month, or 1 percent of GDP higher than the previous period. This is very similar to what would be expected mechanically from an increase of two percentage points in VAT (which is calculated at $88 million, using 2015 VAT revenue). This is because consumer and firm responses to the increased rate were minimal due to the temporary nature of the rise. As Figure 16 shows, Ecuador’s VAT C-efficiency (i.e. VAT revenue as percent of GDP divided by the VAT rate) has been increasing in the last decade and is now higher than in most peer countries, though still well below performance in high-income countries. VAT is thus an under-utilized source of revenue.

![Figure 16: VAT collection efficiency](image)

*Source: Data for the OECD, government of Ecuador. Note: VAT collection efficiency is defined as the share of VAT revenue in GDP divided by the tax rate.*

**VAT revenues are financed mostly by the rich (progressive in absolute terms), but VAT payments account for large share of income for poor individuals (regressive in relative terms).** Given the consumption profile of households across the income distribution, more than half of VAT revenues are paid by the top three deciles of the income distribution. Panel A of Figure 17 shows that the lowest decile consumes almost seven times less than the wealthiest decile. Tax exemptions are also slightly pro-poor. Panel B shows that tax exempt (zero VAT) products account for slightly less than half of the consumption
of the lowest decile, with the rest covered by 12 percent VAT products. At the other end of the distribution, the richest households consume around seven out of ten products in goods and services taxed with 12 percent VAT rate. Finally, Panel A of Figure 5 shows that it is the richest deciles who contribute most to VAT collection. On the other hand, VAT is regressive in relative terms because VAT contributed as a share of the per capita income is approximately three times higher for the poorest deciles than that for the richest deciles.

**Figure 17: DISTRIBUTION OF CONSUMPTION PER DECILE**

Panel A: Average per capita consumption per decile

Panel B: Consumption by VAT rate

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Source: Own elaboration based on ENIGHUR 2012

**Figure 18: DISTRIBUTIONAL IMPACT OF THE CURRENT VAT SCHEME**

Panel A: Contribution to total VAT collection by per capita income deciles

Panel B: VAT paid as a share of the per capita household income

---

Source: Own elaboration based on ENIGHUR 2012

Excise taxes are levied on a relatively standard set of goods, except for fuels, but the revenue remains below 1 percent of GDP. This places Ecuador below all peers except for Brazil in excise revenue share in GDP. The most important excise is the tax on vehicles, which raises 1.8 percent of tax revenue in 2016. This is followed by alcohol and tobacco excises, which raise 1.6 and 1.1 percent of tax revenue,
respectively. Excises on soda and luxury goods raise about 0.05 percent of tax revenue. “Sin” taxes on sugar drinks have been touted as instrument against obesity – a claim seemingly backed up by evidence from the Berkeley soda tax, which shows that such taxes help reduce the consumption of soft drinks. Evidence on the impact on health outcomes is less clear, however, as a large change in diet is necessary to generate a measurable impact in weight or obesity rates. Excise tax rates widely vary across goods. For example, tobacco products and firearms are subject to 150 percent and 300 percent rates, respectively. Perfume and TV services, on the other hand, are only subject to 20 percent and 15 percent rates, respectively. This is common for the region as other countries also have wide dispersion in their excise rates. Examples include Costa Rica (10 percent to 50 percent), Mexico (3 percent to 160 percent), and Chile (10 percent to 60 percent).

Recent reforms increased the rates for certain “sin” goods. Starting January 2018, the rates for cigarettes, artisanal and mass-produced beer, and sugary soft drinks all increased. Cigarettes experienced an increase of 23 percent in their tax rate, while the rate on beer went up by 12 percent. For soft drinks, an innovative strategy has been implemented so as to tax the products with the highest sugar contents. The previous rate was a 10 percent excise duty on all “soft drinks”, while the new law only taxes those drinks with sugar content higher than 25g/l at a rate of 0.18USD per 100g of sugar.

Figure 19: Excise Revenue by source, % of Tax Revenue (2016)

Direct taxes

Ecuador’s corporate income tax design is similar to peer countries, although tax rates are on the low side and exemptions are on the high side of the spectrum of peer countries. The CIT is applied to the worldwide income of enterprises incorporated in Ecuador (resident corporations) and Ecuadorian-source income of nonresident corporations. The standard CIT rate is 25 percent, which is in line with peer countries. A higher rate of 28 percent applies to taxable income corresponding to shareholders resident in tax havens or low-tax jurisdictions. If shareholding exceeds 50 percent, the applicable rate for entire

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29 https://sph.unc.edu/sph-news/one-year-later-berkeleys-soda-tax-significantly-reduced-sales-of-sugary-drinks/
30 http://www.sri.gob.ec/web/guest/impuesto-consumos-especiales
firm is 25 percent. A reduced rate of 15 percent or 18 percent applies when corporate profits are reinvested, provided that some specific requirements are met. Cases in point could include inbound tourism companies, for example, or when income is reinvested in purchasing machine, equipment, or new technology). A lower CIT rate of 22 percent applies to micro and small companies. Exemptions from the CIT apply to public institutions, education institutions, international organizations and non-profits, and PPPs (for the first ten years). This list of exemptions is larger than in many other countries and could be trimmed to preserve revenue (cf IMF 2019). There is also a generous exemption for the first five (ten) years in the life of new investments outside the main cities of Quito and Guayaquil (border areas), in selected priority sectors (basic industries). Income from occasional sales of real estate can be deducted from the tax base, as can corporate shares and taxes paid on income abroad (except in tax havens).

**A minimum advance tax on firms has been used to mitigate tax base erosion through evasion.** For individuals, the advance tax is 50 percent of the previous year’s income tax liability, less any tax withheld during the tax period. This is a relatively standard way of determining advance payments. Half of the advance tax is paid in July (the exact deadline depends on the firm’s registration number) and the other half is paid in September. The remainder of the tax liability is paid at the end of the fiscal year. For firms with accounting records, the advance tax is calculated in a more complicated and less conventional way, as the sum of 0.4 percent of assets, 0.2 percent of wealth, 0.4 percent of taxable profits, and 0.2 percent of deductible costs. Exemptions from the advance tax are granted for firms with exceptionally long production cycles, such as software development and farming. Also eligible are firms that can provide evidence of losses or a decrease in operation activities. A final exemption is available to companies that have been subject to over-withholding (i.e. the amount of tax withheld is larger than the income tax liability). The advance tax is again payable in two parts, in July and September, and is creditable against the taxpayer’s final tax liability.

**Approximately half of all firms pay the advance tax, which may have significant implications for firms’ liquidity and cash-flow.** The base for the minimum advance tax is relatively sophisticated, featuring a combination of assets, profits, and deductions. However, it is possible that the minimum tax does not correspond to a firms’ exact tax liability on profits. This may be the case, for instance, if revenue or costs are highly seasonal or if wealth is high relative to profits. In addition, part of the tax has to be paid in advance, which might reduce liquidity of firms that make investments at the beginning of the fiscal year and generate most revenues towards the end of the year. This could be particularly true for small and growing firms. Both the revenue and productivity impacts of the minimum advanced tax are difficult to gauge without a careful analysis of micro data. That said, however, estimates from other countries show that well-designed minimum taxes increase revenue by reducing evasion. The minimum tax in Pakistan, for example, is estimated to reduce evasion by up to 60 percent. However, it is worth considering designs that limit distortions and impacts on firm liquidity (see Box 11 below).

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31 According to the law, a micro company is an entity with between one and nine employees and a gross income up to $300,000; a small company is an entity with ten to 49 people and a gross income between $300,000.01 and $1,000,000.

32 Selected priority sectors include food, forestry, metal and machinery, petrochemistry, pharmacist, tourism, bioenergy, renewable energy, software, and biotechnology, among others.

33 According to a presentation by the Chamber of Industries and Production, August 2016.
Box 10: Minimum Taxes

Minimum tax schemes are widely used in lower income countries and evidence from Pakistan (Best et al. 2015), Guatemala (Alejos 2018) and Hungary (Mosberger 2016) shows that they reduce evasion (see Best et al. 2015 for a list of countries using such a minimum tax scheme). The idea behind a minimum tax is that firms can evade a profit tax by either under-reporting sales or over-reporting costs. If over-reporting costs is relatively easier than under-reporting sales (e.g. because fake receipts for non-existent inputs can be fabricated, while output cannot be hidden), it may make sense to tax a base that is harder to evade than profits. The simplest and most common base for the minimum tax is sales.

In Pakistan, for instance, all corporations are required to calculate their tax liability based on both profits (at a tax rate of 35 percent) and sales (at a tax rate of 0.5 percent). Firms are then required to pay whichever liability is higher. This means that firms can evade taxes by under-reporting their profits only up to a certain point. When the profit rate falls below a certain threshold (which is the ratio of the two tax rates, i.e. 1.43 percent in Pakistan), the firm has to pay the tax on sales. Consistent with this, empirical evidence shows that a large share of firms under-report profits until the profit rate reaches around 1.43 percent. They then ‘bunch’ at this level. The degree of bunching in the distribution of the profit rate can be used to estimate the degree of evasion. Using this approach and firm-level tax records from Pakistan, it was shown that the minimum tax in Pakistan reduces evasion by about 70 percent. In Guatemala and Hungary, the alternative tax base is also sales and the scheme generated a very similar bunching response to that observed in Pakistan.

While the bunching approach enables the calculation of an estimated evasion response, it is not suitable for estimating the production effect of the minimum tax. Indeed, an obvious concern with taxing sales is that it introduces an inefficiency in production because firms with the same level of sales but with different profit rates might face similar tax liabilities. This discourages investment by the relatively more productive firms. In addition, a tax on sales tends to cascade through the production chain and thus generate additional distortions, particularly in economies with long production chains. Research by Caprettini (2016) using data from Brazil suggests that this is not a major concern in middle- and low-income economies, where production chains are relatively short. Another concern is that sales might still be easy to evade in a largely cash-based economy or where the government has weak administrative capacity. In the hope of limiting distortions, some countries have therefore chosen alternative tax bases other than sales, such as fixed assets.

It should be noted that the Ecuadorian scheme is not a minimum tax in the conventional sense, but rather an advance payment creditable against the corporate tax liability calculated at the end of the fiscal period. If the advance tax payment is higher than the final corporate tax liability, the taxpayer can request a refund of the difference. Of course, requesting a refund generates a slight hassle cost for the taxpayer and might increase the (perceived) audit probability, which can deter refund requests. However, taxpayers with sufficiently low profits should have an incentive to ask for a refund.

The personal income tax is well-designed and progressive on paper but not in practice. The minimum and maximum personal income tax rates in Ecuador are set at 5 percent and 35 percent, respectively. This is approximately on par with regional and structure peers. The exemption threshold, at $11,290 is slightly above the 90th percentile of the income distribution ($10,320), but below the 95th percentile ($14,400). The 13th and 14th monthly salary in a year is tax exempt, which is an unusually generous rule. With eight tax brackets, Ecuador’s personal income tax schedule is more complex than in most peer countries (except Mexico) and potentially more progressive. However, the reduction of the Gini coefficient due to the personal income tax is only 1.4 percent during 2013-2014 (Figure 20), which falls well short of the reduction in inequality recorded in European countries and is below the average for Latin America for 2013-2014.
Reasons for the limited revenue take and progressivity of the PTI may be the exclusion of many forms of capital gains, pensions, and the large share of allowed deductions. The current income tax exempts several types of capital gains, such as interest payments for savings and checking accounts, interest payments on bonds below a certain threshold, financial return to public debt, and income from the sale of real estate and corporate shares. The National Assembly approved a full-fledged capital gains tax with a 75 percent rate in December 2016. This was repealed in February 2018 by referendum. The 75-percent-tax was supposed to be applied if the transaction amount exceeded $8,784, if the property had been traded at least once since the passage of the law, and if the realized capital gains could not be duly justified. The stated aim of the tax was to avoid real estate speculation and replenish municipal budgets that received the tax. However, the policy remained controversial and was thus abolished. In particular, critics argued that the tax hurt homeowners and may have caused a downturn in the construction sector. Another reason for the limited progressivity of income taxation is the fact that the PIT does not tax pension contributions, which are taxed in most other countries. Specifically, among the 14 peer countries for which the information was available, only three exempt pensions from the income tax (Azerbaijan, Malaysia, and Thailand). Finally, following a reform in 2008, the PIT allows deductions for personal expenses of up to the minimum of 50 percent of total income and $14,677 (1.3 times the exempt portion of pre-tax income). \footnote{There are also deduction caps for individual items: 0.325 times the exempt portion of pre-tax income for housing, 0.325 times for education, 0.325 times for meals, 0.325 times for dressings, and 1.3 times for health.}
Box 11: Effects of changes in deduction for personal income tax.

Deductions reforms

Personal income tax deductions were introduced in 2007. Individuals could deduct personal expenses excluding VAT and Excise Tax up to 50 percent of their income, but not exceeding the equivalent amount of 1.3 times the legal not-taxable income per year. Deductions could include personal expenses made for partners and dependent children in five categories: food, housing, clothing, education, and health. It is worth noticing that initially individuals could reach the maximum deductible amount from any category (1.3 times the legal not-taxable income). For independent workers, personal expenses also include wages, social benefits, and health insurances for their employees, as well as contributions to social security and reserve funds and management costs (e.g. business meetings or business trips).

In 2010, a reform set caps on the maximum amount of deductions for each category. The caps for personal expenses in food, housing, clothing, and education were set at one fourth of the non-taxable income or 0.325 times the non-taxable income. For health, the cap was determined at 1.3 times the legal not-taxable income per year. Total deductions could not exceed 1.3 times the legal not-taxable income.

In 2017, the Law of Economic Recovery and Consolidation of Dollarization increased the cap for personal expenses deductions of health to twice the legal not-taxable income per year for individuals with catastrophic illness. Total deductions in this case cannot exceed twice the legal not-taxable income.

Finally, a recent reform to the Tax Law implemented in 2018 expands the education category to include personal expenses of art and culture, such as restauration and conservation of art, concerts, photography, musical instruments, books and magazines. The reform maintains the caps implemented in 2010.

Assessment of changes in deductions

This box summarize results of simulating changes in deductions considering four scenarios: (i) Base: this scenario computes PIT revenues applying the Tax Legislation from 2008 to 2017; (ii) No caps on deductions: this scenario assumes that caps on deductions were not implemented in 2010, which means maintaining the original rule to compute deductions introduced in the Tax Reform of 2007; (iii) Caps on legal limits: this scenario assumes that individual can deduct personal expenses, excluding VAT and/or Excise Tax up to 25 percent of their income, but not exceeding the equivalent amount of not taxable income, and; (iv) No deductions: this scenario computes PIT revenues assuming deductions on personal expenses were not introduced in the Tax Reform of 2007.

These simulations are based on the Income Tax Dataset for Ecuador constructed by Gachet et al. (2107). This dataset combines the tax legislation of Ecuador with labour surveys from 2001 to 2017. We estimate changes in total tax revenues by applying changes in total PIT computed in our dataset to total PIT reported by SRI from 2008 to 2017. These scenarios assume perfect compliance of individuals on the tax legislation and should be consider as an upper bound estimated of PIT. This implies that we are not considering tax evasion. Our estimates could therefore be higher than the total tax revenue reported by the tax administration. Also, we assume no behavioral changes of individuals to different deductions scenarios.

Effects on tax revenue

Results show that changes in the structure of the deductions could have important effects on government revenues. Panel A-Figure 8 shows that for the case of no-deductions scenarios and for caps on legal limits, tax revenues would have increased in 73 percent (about 5.4 billion) and 18 percent (about 1.4 billion) cumulative over the period 2008-2017, respectively. In our extreme case no-deductions scenario, total tax revenues almost double total tax revenue in 2017. The results for the no-caps-on-deductions scenario show that the reform of 2010 (imposed limits on deductions in each category) had a positive effect in total tax revenues. Also, if caps on deductions were not implemented in 2010, total revenues would have decreased in about 3 percent (about 260
million) cumulative over the period 2008-2017. This shows that the government could improve total tax revenues by implementing reforms to deductions’ incentives.

**Distributional effects**

Simulations show that any changes in the structure of personal income taxes would not generate negative impacts on the welfare at the bottom of the distribution in the short-run. Panel B-Figure 8 shows that the distribution of taxpayers ranked by per capita household income is skewed to the right for 2017 (this is similar for all year). We observe that the population benefit from deductions are concentrated in the upper tail of the distribution (deciles 8 to 10). However, there are individuals in the middle of the distribution that are also benefiting from the deductions policy. This implies that any reforms to deductions will affect the middle-class that is either not paying taxes or paying less taxes after deducting their personal expenses from their income. Yet, in general, changes in the deductions structure could make the tax system more progressive. For instance, Toder et al. (2016) show that tax expenditures reduce tax liability by over 13.4 percent of income for taxpayers in the top one percent of the income distribution and by much smaller amounts in other income groups. In addition, Lambert’s (1997) theoretical model describes the channels in which the positive effects of a progressive income tax reduce inequality in the distribution of income. Thus, individuals among the bottom 40 of the income distribution will not be affected because their incomes will be lower than the minimum taxable income.

**Figure 8: Effects of Deduction Changes**

Pane A: Effects on tax revenue

Panel B: Taxpayers rank by per capita income in 2017

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**Revenue from social security contributions has been almost consistently increasing, despite low rates.**

For 2018, Ecuador collected around 5.12 percent of GDP in social security contributions, up from 1.2 percent of GDP in the year 2000. Among its peers, Ecuador’s social security revenue ranks above average, being surpassed only by Argentina and Brazil. Contribution rates vary across sectors, as shown in Table 3 below. Private sector employees contribute 9.35 percent of monthly wages and employers contribute 12.15 percent of the monthly pre-tax wage bill. Public sector employees contribute slightly more and the government (their employer) contributes slightly less. This is unusual in Latin America and the Caribbean. Self-employed individuals, however, contribute about twice as much as employees because they do not benefit from the employer contribution. In addition to social security contributions, employers also pay 0.5 percent of the wage bill as payroll tax. The revenue from this is earmarked for a national training fund.

**Table 3: Social security contribution rates by sector in 2017**

<table>
<thead>
<tr>
<th>Sector</th>
<th>Employee Contribution</th>
<th>Employer Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</table>

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57
<table>
<thead>
<tr>
<th>Sector</th>
<th>Tax Rate 1</th>
<th>Tax Rate 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public sector</td>
<td>11.45</td>
<td>9.15</td>
</tr>
<tr>
<td>Private sector</td>
<td>9.45</td>
<td>11.15</td>
</tr>
<tr>
<td>Voluntary</td>
<td>20.6</td>
<td>N/A</td>
</tr>
<tr>
<td>Armed Forces</td>
<td>11.45</td>
<td>9.15</td>
</tr>
<tr>
<td>Police</td>
<td>11.45</td>
<td>9.15</td>
</tr>
</tbody>
</table>

*Source: Government of Ecuador*

Taxes on immovable property are levied at the municipal level, and constitute 0.6 percent of GDP, being the least important source of revenue. Urban properties are taxed at progressive rates ranging from 0.025 percent to 1 percent. Rural properties are taxed in a similarly progressive manner, but with the maximum rate reaching up to 0.3 percent. Discounts of up to 10 percent of the tax liability are offered to taxpayers who pay their annual liability in advance—a common occurrence in other countries. The maximum tax rate of 1 percent places Ecuador at the midpoint of peer countries, while property tax revenue is consistently the lowest among peers.\(^{35}\) Low collection can occur as a result of lack of compliance or because property tax registers are out of date and out of sync with market values. As circumstances vary across municipalities (including the way the property value is derived and updated) and no harmonized micro data is available, it is challenging to estimate compliance with this tax and potential discrepancies between the cadaster and current real estate values. However, anecdotal evidence suggests that low compliance is partly responsible for the low tax revenue. The city of Quito, for instance, collected only 72 percent of projected liabilities in 2016.\(^{36}\) In addition, critics claim that frequent outages of the relevant website prevent taxpayers from accessing their tax bill. The property tax is also criticized for being insufficiently progressive.\(^{37}\)

Reforms of tax rates and bases have been uneven across municipalities. Certain municipalities saw rises in the property tax rate, with Quito experiencing an increase in the top rate to 2 percent. Other municipalities enacted reforms that charged higher taxes to owners with more than one property. Yet other municipalities enacted updates to the cadaster, bringing the valuation of properties up to date with their commercial value. In Quito, about 80 percent of properties in the city had valuations close to their commercial value as of December 2017. While this has increased revenue collected, taxpayers have at times seen exorbitant increases in their tax obligations.\(^{38}\)

**Trade taxes**

Tariffs in Ecuador are high, which explains the relatively high tariff revenue (1.7 percent of GDP). This is higher than in all peer countries for which data was available and has increased between 2015 and has then declined again (Figure 21). Ecuador’s imports are concentrated in few trading partners, with over half of its imports originating in the US, China, or the EU. Ecuador is a member of the World Trade Organization, maintains a free trade zone with other member states in the Andean Community, and offers preferential duty rates for countries participating in the Latin American Integration Association. It also

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\(^{35}\) 2012 CEPALSTAT data, also consistent with ICTD revenue data.


entered into a trade agreement with the EU in 2016, further lowering trade barriers. Ecuador applies non-zero tariffs to nearly all imports, frequently employing surcharges to a wide range of goods across all classes (HS). Ecuador’s most rigorous tariffs apply to agricultural imports. In 2016, nearly 70 percent of all foreign agricultural goods entered with a tariff of at least 10 percent. For non-agricultural goods, the corresponding frequency was approximately 25 percent. Ultimately, only 10 percent of agricultural goods enter Ecuador’s economy duty-free, compared to 60 percent of non-agricultural products. Ecuador’s most-favored-nation duty rate in this period (weighted by national trade share) sits just under 10 percent, considerably above the global average of approximately 4 percent but close to the regional average of 9.7 percent. However, WTO records on Ecuadorean duties (Figure 22) indicate that Ecuador’s use of tariffs generally decreased between 2003 and 2010 by standard measures, but then increased thereafter due to numerous surcharges. The fact that tariff rates and tariff revenue seem negatively correlated may appear surprising. However, it is tricky to disentangle the share in revenue changes that arises from (possibly excessive) tariff increases, on the one hand, and the share arising from economic cycle fluctuations and changes in the compositions of imports, on the other.

The last tariff surcharge instituted in March 2015 has been gradually phased out and was eliminated by June 2017. The import tariff increase led to a sharp rise in revenue in the months immediately after the policy change. Overall, it yielded a revenue gain of about $495 million, comparing the 12-month period following March 2015 to the 12-month period preceding March 2015. This corresponds to 0.5 percent of annual GDP. The Chamber of Industries estimates that imports have fallen by 43 percent ($4.2 million), comparing the 16-month period following March 2015 to the 16-month period preceding March 2015. The automobile industry was particularly adversely affected.

Figure 21: Import Tax Revenue as Percent of GDP

Figure 22: Ecuadorean Tariffs, all goods (weighted by import share)

Source: Government of Ecuador, OECD, WTO

Source: Government of Ecuador, OECD, WTO
Ecuador has used a tax on capital outflows (impuesto a la salida de divisas, ISD) with the objective of reining in capital flight and preserving liquidity in its dollarized economy. The ISD was introduced in December 2007, at the onset of the global financial crisis, with the objective of advancing Ecuador’s economic stability and growth on two fronts. First, the tax serves to disincentivize dollar outflows, thus preserving national liquidity. To this extent, the tax operates as a form of pseudo-monetary policy. Second, the tax disincentivizes investment abroad by persons and entities domiciled in Ecuador, while incentivizing long-term ‘productive’ investments within the Ecuadorean economy from abroad (effectuated through a series of explicit exemptions). The tax has raised about 10 percent of total tax revenue in each of the last three years (8.4 percent in 2016 and 11.4 percent in 2018). The tax could potentially reduce the productivity of firms, although it is difficult to estimate to what extent.

Since its inception in 2008, the ISD has seen a variety of reforms to its rate and base. The tax rate was only 0.5 percent in 2008, but this was gradually increased to 2 percent during the following years. In 2012, it was raised to 5 percent, where it remains today. Additionally, modifications to the tax granted exemptions to different groups in varying magnitudes. A reform in December 2009, for example, allowed individuals traveling abroad to transport cash up to the value of 3-months of the minimum wage. The following year saw an extension of the exemptions to industries classified as Special Zones of Economic Growth (ZEDE), including petroleum refining and university technology research. In November 2011, tax credits were introduced for ISD payments on imports of raw materials and specific ‘productive goods/investments’. Finally, among many other reforms, a 2014 reform granted an exemption from the ISD for domestic investments from abroad that remained for at least one year (and thus deemed productive). It is difficult to rigorously evaluate whether the ISD achieved its objective of containing capital outflows. However, a first look at the data suggests that the tax served its purpose, at least in the short-term (Figure 24). Capital outflows initially continued to increase after the introduction of the ISD, which is likely due to the global financial crisis. Indeed, it is possible that capital outflows would have been higher in the absence of the ISD. The increases in the ISD rate in 2011 and 2012 are correlated with a sharp decline in capital outflows, suggesting the ISD might have achieved its aim. However, capital outflows picked up again in 2014.
The ISD is unique in that it operates simultaneously as a pseudo monetary policy for a dollarized economy, a form of capital controls and a tariff. By providing specific exemptions, the tax encourages the development of specific industries. While many countries have implemented controls on the purely domestic movement of capital and income originating from the financial system (taxes on financial/banking transactions, e.g. the 0.0012 percent tax on stock transactions in the US since 2002), the ISD is not strictly designed to temper financial activity. One might liken it more to a form of capital controls – albeit applied to a broader base than capital assets. Distinct in its design, the ISD is also distinct in its revenue-raising power, which is much stronger than that of financial transactions taxes and other forms of capital controls.

**Tax structure and oil revenue**

The presence of oil revenues may partly explain Ecuador’s tax structure and low tax take. It is well known that resource-rich countries raise less taxes as a share of GDP and have a lower growth trend in tax revenue than similarly developed countries with fewer resources. For instance, Jewell et al. (2016) show this for oil economies in the Middle East and North Africa. In particular, many of these economies do not have VATs and apply the PIT only to foreigners. As such, the presence of oil revenues may help explain why Ecuador applies a low VAT rate of 12 percent and its PIT revenue ranks lowest among all peer countries.

However, there is no clear correlation between tax rates and oil prices over time (Figure 25). While oil prices fell between 1980 and the early 1990s, the top PIT rates have been reduced. Meanwhile, the VAT was first introduced at a 10 percent rate in 1982 and the CIT rate was increased in 1999. These developments may have been precipitated by the fall in oil prices. When oil prices started to rise again in the early 2000s, the top PIT rate rose while the CIT rate was decreased. The fall in oil prices since 2013 has finally been followed by a slight increase in the standard CIT rate. In 2018, the rate was 25 percent.
Tax expenditures

Tax expenditures are high compared to regional peers, in particular for the corporate income tax (Figure 26). Tax expenditures reached about 4.6 percent of GDP in 2016, 2.1 percent of which was due to income tax exemptions and 2.1 percent due to VAT exemptions. This figure is up from the 4.1 percent in 2014. Corporate income tax expenditures in Ecuador are higher than in most other countries considered.

CIT expenditures are mainly due to credits for the tax on capital outflows. This tax, which is creditable against the CIT, represents 24 percent of CIT expenditures. A larger contribution to tax expenditure comes from exempted income, which accounts for 27.7 percent of CIT expenditures. Other important contributors to tax expenditures are exemptions for non-profit institutions (14.1 percent) and exempt institutions (19.9 percent), such as international institutions, embassies, educational institutions, and investments by state service providers in the oil sector. In addition to these, significant CIT expenditures are due to double taxation treaties (18 percent of CIT expenditures) and deductions due to “special laws” (unspecified in the tax expenditure report; 8.6 percent). The tax on capital outflows is considered by export businesses as a major bottleneck to their activities, although estimating its effect precisely is challenging. It therefore seems sensible to allow the tax on capital outflows to at least be creditable against the CIT.

Incentive schemes under the corporate income tax are numerous but take-up is low, which mitigates concerns about distortions and tax base erosion. The objective of most incentive schemes is to support sectors subject to competition from neighboring countries and economic activity in certain rural areas. However, the private sector considers that the incentives are weak and that the cross-checks done by SRI to verify requirements are too onerous.

VAT expenditures are mostly due to the large number of exempt goods in food, transport, and education. Among these expenditures, 54.1 percent are for goods, among which 48.8 percent are due to agricultural and fishery products. However, these so-called “bienes alimenticios” do not include milk products, bread, sugar, or flour. VAT expenditures for services account for 37.9 percent of the VAT expenditures.
expenditure. These are more dispersed than those for goods, with 25.2 percent due to transport, 20.5 percent due to education and 16.1 percent due to health and rent/purchase of housing respectively.

The choice of items for zero-rating under the VAT largely corresponds to international best practices, with a few exceptions (Table 4). Reduced VAT rates are applied to essentials (e.g. health care and food), utilities, socially desirable activities (e.g. culture and sport). Activities that support employment are considered commonly accepted practices. Exemptions are granted in circumstances where it is impractical to apply the tax (e.g. finance and insurance services), for equity reasons (e.g. health and education), or for traditional public sector services. In addition to exports, Ecuador’s list of zero-rated goods includes food products, agricultural inputs, medicine and health services, educational materials and services, utilities, and transport. Hybrid and electrical vehicles (below a maximum value) are zero-rated on environmental grounds. The same is true for electrical kitchens. However, the zero-rating of airplanes, helicopters, and tourism packages likely benefits the richer part of society that travels internationally. The zero-rating also applies to funeral services, which is unusual, and to lotteries, which is problematic as these can impose negative externalities. In addition, while the broad categories of exemptions largely correspond to best practices, it is possible that sub-categories of goods (i.e. luxury food products) are consumed primarily by the rich and thus should not be zero-rated. Simulations suggest that room exists for collecting additional revenues by reconsidering the list of zero rate goods, without significant impacts on the poor, as discussed in more details below.

<table>
<thead>
<tr>
<th>Goods</th>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unprocessed food products in their natural state. Examples include</td>
<td>Transportation of passengers (land and water) and cargo.</td>
</tr>
<tr>
<td>fruits, vegetables, meat, and seafood.</td>
<td>Health, prepaid medicine, and drug manufacturing services.</td>
</tr>
<tr>
<td>Milk in its natural state or powder of national production</td>
<td>Housing rental real estate.</td>
</tr>
<tr>
<td>Bread, sugar, panela, salt, butter, margarine, oats, cornstarch,</td>
<td>Public services of electric power, potable water, sewerage, and garbage collection.</td>
</tr>
<tr>
<td>noodles, flours for human consumption, sausages, canned tuna, mackerel,</td>
<td>Education services at all levels.</td>
</tr>
<tr>
<td>sardine, trout, and edible oils (except olive oil).</td>
<td>Nursery schools and homes.</td>
</tr>
<tr>
<td>Inputs for agricultural use and others used in raising animals for</td>
<td></td>
</tr>
<tr>
<td>human consumption. Examples include certified seeds, bulbs, plants,</td>
<td></td>
</tr>
<tr>
<td>cuttings, and live, balanced roots, fertilizers, and insecticides.</td>
<td></td>
</tr>
<tr>
<td>Machinery and other elements of agricultural use established by</td>
<td>Electric energy and fluorescent lamps.</td>
</tr>
<tr>
<td>presidential decree. Examples include tire tractors up to 200 hp,</td>
<td>Aircraft and helicopters, intended for the transport of passengers, cargo, or services.</td>
</tr>
<tr>
<td>portable fumigation pumps, and grass cutters. Drugs and drugs for</td>
<td>Exceptional cases include goods introduced by international organizations and through the regime of international</td>
</tr>
<tr>
<td>human use, as well as the raw materials and supplies used to produce</td>
<td>postal traffic and express mail, as well as donations to the public sector.</td>
</tr>
<tr>
<td>them, whether local or imported. Bond paper, books and</td>
<td>Electric cookers for domestic use with induction mechanism.</td>
</tr>
<tr>
<td>complementary material that is marketed jointly with books. Goods</td>
<td></td>
</tr>
<tr>
<td>destined for export. Electric energy and fluorescent lamps.</td>
<td></td>
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<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Religious services.  
Book printing services.  
Funeral services.  
Administrative services provided by the state and public sector entities, for which a price or fee is paid.  
Public shows.  
Services that are exported.

Source: Own elaboration based on “Mi guía tributaria-Impuesto al Valor Agregado, SRI 2018”.

**Figure 26: Tax Expenditures (2013 – 2016)**

Source: Pelaez Longinotti, F. “Overview of Tax Expenditures in Latin America, main statistics of the CIAT Database” (2017)
Tax administration

The tax administration has a strong enforcement capacity. Enforcement activities are conducted systematically on the extensive (non-filing) and the intensive (mis-reporting) margin of compliance. They rely heavily on data collected through VAT annexes, lists of deductions and costs provided by taxpayers, and third-party information from financial institutions and customs. An extensive withholding system, in which credit and debit card companies and selected large firms act as withholding agents, ensures that an important share of liabilities is remitted by third parties. The government has also rolled out electronic billing to all firms except SMEs and independent professionals, aiming to have paper-less economy in 2018. For wage earners, tax returns are pre-filled and require only taxpayers’ approval, thus creating a default compliance mechanism.

On the downside, the extensive collection of third-party data for tax enforcement purposes increases compliance costs for taxpayers. Taxpayers need to submit detailed receipts for all deductible expenses, provide detailed annexes to tax declarations, and adapt to the frequently changing format of tax declarations. The time to comply with taxes in Ecuador is estimated at 664 hours per year in 2015, which places the country at rank 145 among 189 countries in PWC’s Paying Taxes Report. The recent introduction of electronic billing should allow the tax administration to collect third-party reports at a lower cost to taxpayers, and should facilitate the cross-checking of information, hence improving enforcement.

Figure 27: Labor informality

Source: OECD/CIAT/IDB (2016), “Taxing Wages in Latin America and the Caribbean”. Note: the graph shows the percentage of workers aged 15-64 contributing to social security.

Despite these tax enforcement efforts, informality remains high in Ecuador. The share of workers not contributing to social security (and hence probably also not paying income taxes) is below the Latin America regional average, of 45.2 percent in 2013. However, the figure significantly increased between 2003 and 2013. An analysis by quintiles reveals that labor informality in Ecuador is disproportionately...
concentrated in the bottom quintile. Informality here reaches almost 100 percent, far below the regional average of 85 percent. Informality in Q2-Q4 is also higher than the regional average, while informality in the fifth quintile is on par with the rest of the region. Informality is also high among firms. The World Bank Enterprise Survey reveals that only 88 percent of firms are formally registered when they start operations. This is probably an over-estimate. Even so, the proportion is still lower than in most peer countries (Figure 45).

Figure 28: Firm informality

Percent of firms formally registered when they started operations in the country

Source: World Bank's Enterprise Survey (WBES). Note: the year of the survey data indicated in parenthesis for each country.

The tax administration is active in the fight against international tax avoidance and tax havens and is compliant with the OECD guidelines for transfer pricing. A tax fraud reform in 2014 enabled the tax authorities to identify the ultimate beneficiary of companies, including those registered in tax havens, and to publish the names of individuals and companies involved in tax avoidance schemes. In its move towards repatriating Ecuadorian-owned wealth, the tax authorities offered an amnesty scheme in 2015. This raised an additional 1 percent of taxes in GDP, according to estimates by the authorities. However, it may also have created negative dynamic incentives.

Whether tax refunds for VAT are granted in reasonable time spans is unclear, and reliable data is not available. The maximum legal delay is between 90 and 120 days, depending on the type of taxpayer. SRI reports that approximately 90 percent of refunds are granted within three days. However, private sector representatives report that many refund requests are delayed for 90-120 days. In addition, given the government’s cash constraints, refunds are not made in cash but rather in credit notes and Central Bank titles. These can be liquidated within a few days and thus generate only a small transaction and liquidity cost for firms.

39 For details, see http://www.sri.gob.ec/de/306.
Distributional analysis of VAT reforms

This section presents the different reform scenarios in the VAT scheme, the distributional impacts of these reforms and the results when compensating vulnerable households. The methodology is described in more detail in the appendix.

Reform scenarios and results

We consider four alternative scenarios for the VAT reform. The first scenario increases VAT by two-percentage points for items with a 12 percent rate. In the second scenario, we change from 0 to 12 percent the VAT rate for items mostly consumed by households of the highest deciles regardless of their importance in the lowest deciles. The third scenario similarly increases the VAT rate from 0 to 12 percent for all goods except those items that are relatively important in the consumption structure of the three lowest deciles. The final scenario increases to 14 percent the current products taxed at 12 percent and those identified in the third scenario.

The two percentage points increase in VAT rate could increase fiscal revenues significantly while being pro-poor but could be slightly more regressive. Results show no significant changes in the contribution of each decile to total tax collection in this first scenario. The first two deciles still contribute around 11 percent of the total VAT tax-collection, while the share from the bottom 40 adds 23.3 percent (Figure 29, Panel A). However, overall contributions increase, with the lowest deciles paying a relatively larger portion of their average income (Figure 29, Panel B). For instance, while the 10 percent most deprived faces an increase of almost three percentage points in the VAT share of the household income increases (from 20.6 to 23.0 percent), the wealthiest ten percent only faces a one percentage-point increase (from 7.5 to 8.5 percent). This reform would make the system more regressive. However, the VAT collection may increase by 12.7 percent, around 0.8 percent of GDP (Table 5). Even after compensating the most vulnerable population, the net tax collection could be significant. For instance, if the government offset the bottom 30 percent, the revenues would increase by 10.4 percent, more than 0.6 percent of GDP.

<table>
<thead>
<tr>
<th>Table 5: INCREASE IN VAT COLLECTION FOR DIFFERENT REFORM SCENARIOS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Without Compensation</strong></td>
</tr>
<tr>
<td>Reform 1</td>
</tr>
<tr>
<td>Reform 2</td>
</tr>
<tr>
<td>Reform 3</td>
</tr>
<tr>
<td>Reform 4</td>
</tr>
</tbody>
</table>

Source: Own elaboration based on INEC, ENIGHUR (2011) and ENEMDU (2017)
Under the two selective reform scenarios, the contribution of the lowest deciles would be slightly lower than under the current VAT scheme. The bottom 40 percent contribution to total VAT collection would decrease from 23.1 percent to 23.0 or 22.8 percent in these scenarios (Figure 30 and Figure 31, Panels A). Additionally, if the reform only includes the products in subclasses mostly consumed by households of the highest deciles regardless of their importance in the lowest deciles, then the contribution to VAT as a share of per capita household income would marginally increase over the whole income distribution (Figure 30, Panel B). In addition, excluding those products with relatively high importance for the lowest deciles would practically maintain the tax burden in the bottom deciles (Figure 31, Panel B). The effect on tax revenue deteriorates when the reform excludes more products. The VAT collection would increase by 7.7 percent (almost 0.5 percent of GDP) in the first reform scenario, while only 4.2 percent (0.25 percent of GDP) in the second one (Error! Reference source not found. 4).
Adding the most selective reform to the VAT rate increase to 14 percent could further increase fiscal revenues while maintaining the tax burden for the lowest deciles. By adding products in subclasses mostly consumed by households of the highest deciles but without relative high importance for the lowest deciles to the VAT rate increase, the VAT collection could increase by six additional percentage points. In this forth scenario, the tax collection could increase up to almost 19 percent (1.1 percent of GDP) without compensation and up to 16 (0.9 percent of GDP) after compensating the bottom 30 (Figure 32).
Policy implications

The Ecuadorian VAT scheme is pro-poor and regressive by design. Broader reforms such as the increase of two percentage points could have a greater effect on the poorest households and could intensify the regressive nature of the VAT. However, it is possible to put in place compensation mechanisms to attenuate the impacts on the poor. Even though these types of reforms would increase the tax collection significantly, they could also generate adverse reactions from the public if not well designed or communicated. A successful reform would need to balance the trade-off between minimizing the impacts on vulnerable populations and maximizing the VAT tax collection. This objective could be achieved either by compensating vulnerable households or by focusing on items mostly consumed by the wealthiest families, or a combination of both.

Recent reforms

While frequent changes in tax rates and bases have been a source of uncertainty for firms, the government is committed to growth-enhancing tax reforms. Ecuador’s tax system has not been very stable in the past two decades (Box 12). The government has created a number of new taxes, for example, such as the tax on capital outflows, the sugar tax, and the airport tax. Successive administrations have also conducted frequent changes to tax rates and bases for all major taxes, with the most significant reforms happening in 2007-2008. Although recent reforms brought about increased tax incentives for firms, the unpredictability of the tax system has simultaneously made it more difficult for firms to make accurate projections about returns on investment. For this reason, they may have hampered growth.

Box 12: Tax form in the last two decades

<table>
<thead>
<tr>
<th>VAT reforms</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 1999: rate increased from 10 percent to 12 percent.</td>
</tr>
<tr>
<td>- 2011: all transactions involving property rights considered services, included in tax base.</td>
</tr>
<tr>
<td>- 2012: financial services included in tax base.</td>
</tr>
</tbody>
</table>
- 2015: devolution of tax to the elderly and disabled reduced.
- 2016-2017: temporary rate increased to 14 percent.

**CIT reforms**
- 2006: special rate introduced for stakeholders domiciled in tax havens.
- 2007: simplified regime (RISE) created.
- 2010-2013: rate reduced to 22 percent.
- 2011: tax incentives introduced.
- 2015-2016: tax incentives increased.
- 2017: rate increased to 25 percent for large companies.

**PIT reforms**
- 2004: profits on distributed dividends and sale of equity included in tax base.
- 2008: three brackets added, top rate increased to 35 percent.
- 2008: deduction of housing, health, tertiary education, clothing and feeding expenses allowed.
- 2017: personal expenses in art and culture allowed.

**The Productive Development Law, approved by the National Assembly in August 2018, introduces various measure to encourage growth, including waivers of fines and interest for late payments.** The law stipulates that micro, small and medium-sized firms can benefit from a waiver if they pay their outstanding tax liabilities within two years, while large firms are given 90 days to comply. A similar fine waiver is established for late payments of social security contributions, for which firms are granted 180 days to become compliant. The degree of the waiver is progressively reduced during this period. It is estimated that the measure will bring in revenue of $774 million between 2018-2020. An amnesty can adversely affect firms’ tax compliance propensity in future periods if they expect another amnesty to be granted at a later point in time. It is reasonable to expect such an eventuality given the frequent changes to tax policy in the country.

**The law establishes several exemptions to the CIT, ISD, and VAT.** First, the law introduces a waiver of the CIT for all new investments in priority sectors (applicable to the income tax for the next eight years in Quito and Guayaquil and ten years in all other cities). It also provides waivers of 10 years for strategic industries, 15 years for basic industries, and 20 years for investments in priority sector and border areas. The extent of the waiver would be proportional to the size of the investment. Second, the law introduces an exemption from the CIT for ten years for projects in Special Economic Development Zones, plus a ten percentage-point reduction in the tax rate for the next ten years. Third, new investments in the import of capital goods and raw materials would be exempted from the ISD. Additional incentives apply to the tourism sector. Finally, the law introduces a refund of VAT to social enterprises for purchases from local suppliers, and a reduction of the VAT rate to 0 percent for social housing projects. This would require careful screening of projects to prevent other construction projects from disguising as social housing to benefit from the lower VAT rate.

**The government’s goal is to abolish the ISD and the advance minimum tax.** It plans to move towards eliminating the ISD by implementing the exemptions mentioned previously and by allowing exporters to receive refunds for their ISD payments within 90 days – a policy that was introduced by the previous government but not fully implemented. This measure would reduce revenue, although determining
precisely how much would require micro data on firms with positive net income in foreign currency. The elimination of the advance minimum tax is estimated to cost only $140 million. The scope of application of this tax was already reduced by executive decree at the end of 2017. Under these changes, firms with sales below $500,000 were exempted from the tax and firms with sales between $500,000 and $1 million received a 60 percent reduction of the tax. Firms with sales above 1 million, meanwhile, received a 40 percent reduction of the tax.

The granting of tax exemptions and elimination of the ISD could lead to a large erosion of the tax base, making the projected deficit reduction difficult to attain. While estimating the exact coverage of the exemptions would require detailed micro-empirical work, it is clear that the exemptions cover a large variety of sectors and – in some cases – the entire country. The exemptions cover investments in the next two years. This period can be further extended by another two years by executive decree. The incentives would remain available for firms for the next ten years (extending to 15-20 years in some cases), which means a base erosion would have long-lasting effects. While this may lead to increase investment, it might also attract particularly risky projects that could create volatility and accentuate business cycle fluctuations.

A regulation to ensure firms share a sufficient fraction of their profit with their employees was derogated by the Constitutional Court in March 2018. The regulation had already been reformed by the previous administration. Before the reform, firms in most sectors were obliged to ensure that their employees received at least 15 percent of pre-tax profits. This rule effectively constituted a floor on the wage bill. The reform modified the rule by stipulating that the amount of pre-tax profits to be shared with employees be capped at 24 minimum wages ($8,784 in 2016) per employee and year, with the remainder of the 15 percent of profits required to be paid to the government in the Social Security solidarity provisions. For specified sectors (including oil, gas, mining and telecommunications), 3 percent of profits have to be paid directly to employees and 12 percent of profits to the government for direct investment in social projects where these commercial operations are located. In this sense, the measure is not a tax but rather a spending directive on pre-tax revenue.

The current government is committed to increase revenue collection by 1.4 percent of GDP by 2021, primarily though improvements in compliance, as part of the IMF program. The aim is to improve the targeting of audits and the monitoring of compliance in customs and as well as internal revenue administration. In particular, the authorities aim to target firms operating in tax havens, fake firms, and smuggling activities. They estimate that these activities would increase revenue by $810 million during 2018-2021. This seems a plausible but perhaps optimistic estimate as larger revenue gains are usually only experienced through increases in tax rates. The government also announced it would not change domestic tax rates. While it did temporarily increase tariffs (without providing for a projection of expected revenue gains), this was within the WTO framework and it did not compromise raw materials or capital.

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The government also aims to eliminate regressive tax exemptions. From the current list of over 130 exemptions, five have been identified that primarily benefit rich individuals with an annual income above $100,000. This would save an estimated $1,037 million during 2018-2012 (see the breakdown in Table 6).

Table 6: Planned elimination of tax expenditures and fiscal savings ($ millions)

<table>
<thead>
<tr>
<th>Instrument</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total tax expenditure saved</td>
<td>12</td>
<td>100</td>
<td>463</td>
<td>463</td>
</tr>
<tr>
<td>Elimination of credit for Impuesto a la Salida de Divisas</td>
<td></td>
<td></td>
<td>330</td>
<td>330</td>
</tr>
<tr>
<td>Increase of VAT rate to 12 percent for fluorescent lights</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Increase of VAT rate to 12 percent for insurance products</td>
<td>11</td>
<td>23</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td>Elimination of personal tax expenditures under PIT, taxation of the 13th and 14th salary if gross income above $100,000</td>
<td>22</td>
<td>55</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>Optimization of vehicle tax</td>
<td>33</td>
<td>33</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>Reduction in the exemption from the environmental tax for productive vehicles from 100 percent to 50 percent</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>

Source: Government of Ecuador.

Other reform options

The government could reform the tax system while protecting the poor. A comprehensive tax reform would provide the opportunity to increase the efficiency of the tax system and reduce the dependence on oil by increasing non-oil tax revenues and reducing distortions. The distributional impact of alternative reform options should be carefully assessed, and compensatory mechanisms should be designed as needed to ensure that the tax reform is not regressive.

In the short-term, a return of the VAT rate to 14 percent, as during the temporary earthquake-related increase, would significantly improve revenues. This seems a natural reform choice, as the VAT is a productive revenue collection tool in Ecuador, hampered mostly by its very low rate. The temporary rate rise generated a significant increase in revenue and was implemented with seemingly little opposition. An approximate calculation indicates that a two percentage-point increase in the VAT rate could increase tax revenue by 1 percent of GDP. Research suggests that VAT is better for economic growth than income taxes if that VAT has less negative impact on the economic decisions of households and businesses than the income tax (Johansson et al., OECD, 2008). While increasing the VAT rate in Ecuador could be politically costly, some studies suggest that the country’s VAT scheme is actually not as regressive as usually thought. Indirect taxes on consumption are commonly thought of as regressive, for example, as the poor spend a larger share of their income on consumption than the rich. However, indirect tax schemes like Ecuador’s VAT system may actually become less regressive due to lower rates and exemptions granted to goods primarily consumed by the poor, such as food, basic hygienic products and
certain health products. In addition, the poor may purchase a considerable share of their consumption from the informal sector, where transactions are not taxed or only partially taxed.  

**Map 1. Tax Multipliers in Latin America**

![Map 1. Tax Multipliers in Latin America](image)

*Source: Gunter et al (2017)*.

**In addition, the VAT base could be broadened.** To improve the efficiency of VAT expenditures and increase tax collection, it is important to analyze the list of exempted and zero-rated goods in order to identify regressive measures and eliminate them. Alternatively, the government could consider removing all VAT exemptions and design compensatory mechanisms to protect low-income households. The World Bank collaborated with countries in the region, such as Mexico, to analyze the distributional impact of alternative VAT reform options. The options included removing exemptions and introducing compensatory transfers for low-income households.  

The government is also encouraged to pursue its current strategy to extend electronic billing. It should also consider adopting additional incentives for consumers and retailers to conduct transactions through electronic payment methods. Uruguay’s financial inclusion law could serve as a good reference point here. The law provides VAT rebates to consumers using credit or debit cards, as well as offering subsidies to firms that adopt card terminals. The measure has led to a quadrupling of the volume of card transactions.

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41 Arteta (2006) and CEPAL (2014)

42 Impact estimates from actual reforms are not available as yet.
The low tax multiplier in Ecuador suggests that a VAT reform is unlikely to affect economic growth adversely. Using a narrative approach, as per Romer & Romer (2010), Gunter et al. (2017) classify VAT change into endogenous and exogenous changes and then examine the impact of exogenous changes on output. They find that the effect of tax changes on output is highly non-linear. For tax increases from a low level of taxation, the changes are small or non-existent. These changes increase sharply for higher levels of taxation. The analysis allows the authors to calculate country-specific tax multipliers, as displayed below in Map 1. They conclude that Ecuador, with a very low VAT rate and a low level of VAT revenue as share of GDP, has a zero multiplier. This suggests that scope exists for increasing the VAT rate and base without affecting growth.

Once a VAT-based revenue increase is ensured, it would be possible to start phasing out the capital outflow tax. This would lead to a revenue loss, as the ISD currently raises about 10 percent of tax revenue. On the other hand, it would increase the efficiency of the tax system. The tax on capital outflows is considered by export businesses as a major bottleneck to their activities. It seems sensible therefore to allow the tax on capital outflows to at least be creditable against the CIT. However, the tax may have helped limit capital outflows. As a consequence, any removal of this tax should thus be gradual and accompanied by frequent monitoring of capital flow responses.

In the medium term, revenues could be increased through an expansion of the income tax base. As for the personal income tax, the government could consider omitting the exemption of the PIT for the 13th and 14th monthly salary, as well as taxing pensions that are not exempt in many other countries in the region. A proposal for this had to be withdrawn due to popular opposition. However, it could be considered again if a package was designed that included targeted exemptions or compensatory transfers for low-income pensioners. If the taxing of pensions requires a compromise in order for the public to accept it, then the taxed could be set at lower rates or a higher exemption threshold than other incomes could be granted. Meanwhile, deductions for the personal income tax should be eliminated as these do not serve equity purposes. Examples include deductions for art and culture, as well as for tertiary education. With regards to corporate income tax, exemptions should be rationalized to bring expenditures down to the level observed in peer countries. It would also be useful to collect better data on corporate tax incentives (e.g. which countries obtain which types of incentives, under which eligibility criteria) to better evaluate whether these incentives are distributed according to the statutory eligibility criteria and whether they achieve their stated aim in terms of increasing productivity and employment. This information should be published regularly and transparently, as is already done with annual tax expenditure reports. The government might also want to consider a cap on tax exemptions as a share of the annual budget, which is akin to a fiscal rule. Such a rule would need to be accompanied by specified consequences for non-compliance, such that policy makers have an ex ante incentive to design exemption rules considering the compliance with the annual cap.

To improve property tax revenues, it will be important in the medium term to update the property tax cadaster. It is unclear however how much additional revenue could be generated as the state of the cadaster and the most recent data of re-valuation differs across municipalities. The government may also decide to invest in municipalities’ enforcement capacity. Options here could include better training, for instance, or performance bonuses for municipal tax collectors. Indeed, given that property tax rates in Ecuador are not out of the norm with regional and structure peers, the low revenue from this tax is either due to weak enforcement of statutory obligations or outdated valuations of land and buildings.
Other reform measures would require careful planning. These include a redesign of the minimum tax to estimate and minimize its distortionary effect on investment. Another measure could be to reduce the requirement that firms share 15 percent of profits with employees. Facilitating the procedure to reclaim a refund could lessen the potential distortionary effect of the minimum tax. So too could a delay to the payment deadline for the advance payment as this would reduce the liquidity cost imposed on firms.

Avenues for World Bank engagement

Steps have already been initiated to collaborate in a systematic study of the capital outflow tax. This study would rely on a difference-in-difference approach, comparing domestic companies with exporting and importing companies overtime. It would exploit tax rate changes and the introduction and elimination of exemptions to the capital outflow tax as quasi-experimental source variation in the exposure to the tax. The aim is to study the effect of the tax on firm output, profit margins, and employment. A more qualitative macro-level study that compares Ecuador to neighboring countries would be used to examine whether the tax was successful in stemming capital outflows.

The World Bank could support a study of effective tax rates, if missing data sources can be provided. Effective tax rates on factor inputs and consumption provide a picture of potential allocative distortions across inputs and distortions to citizens’ consumption/savings decisions. To estimate effective tax rates, we would follow the methodology described in Mendoza et al. (1994). This consists in allocating the revenue from different tax instruments to labor, capital, or consumption, measured from national accounts. This revenue is then divided by aggregate payments to labor, capital, or consumption – again based on national accounts data. A detailed description of the methodology can be found in the appendix. While most of the data needed for this analysis is available from the OECD and national accounts data, some data are missing.43

Studying the impact of investment tax incentives would be important but challenging. The World Bank has collaborated with the government of Colombia on a detailed assessment of tax expenditures44, which identified tax expenditures of an amount similar to government spending on security and defense. In Ecuador, however, there are data availability challenges that make it difficult to conduct a careful impact evaluation of tax expenditures. Indeed, it is not possible to determine which tax expenditures have benefitted a firm from the current data (Box 13).

Box 13: The challenge of studying corporate tax expenditures in Ecuador

While there is a large literature on investment tax incentives, starting with Jorgenson (1963) and Hall and Jorgenson (1967), it is only recently that researchers have been able to compellingly identify causal effects. Most of the well-identified studies focus on R&D tax incentives and find positive effects. Guceri and Li (2017) show that incentives for R&D investment in the UK increased R&D spending, with an implied user cost elasticity of -1.6. Guceri (2017) demonstrates that R&D incentives increase employment, while Dechezlepretre et al. (2016) reveals that they also increase innovation. Looking at incentives in the form of accelerated depreciations, Maffini, Xing, and Devereux (2016) show that they increase investment by firms in the UK. Meanwhile, Mahon and Zwick (2017) demonstrates even stronger results for firms in the US, particularly small firms.

43 These include employer’s contribution to Social Security and national accounts data on operating surplus of private unincorporated enterprises, household’s property and entrepreneurial income, wages and salaries, and the total operating surplus of the economy.

44 http://documentos.bancomundial.org/curated/es/945121468022751656/pdf/658790REPLACEM0UBLIC00final0version.pdf
The corporate tax in Ecuador provides various types of tax exemptions. Among the firms included are those in specific regions, those that conduct specific types of activities, those that are recently created, and those below certain size thresholds. It would be possible to study the effect of these exemptions on investment, employment, and other targeted outcomes, by using the eligibility rules and by the timing of the introduction or elimination as quasi-experimental sources of variation.

However, the data required to conduct such a study is apparently not available. In fact, since 2014, the corporate tax return contains only one box. Firms use the box to report whether they have benefited from a tax exemption, but without specifying which exemption is relevant. Prior to 2014, the tax return distinguished between two types of exemptions (although one had with a very low take-up) and combined all other exemptions in one box. Even the specialized agencies managing specific types of exemptions do not keep a beneficiary register. It is therefore necessary to wait a few years before conducting a rigorous study of tax exemptions using the new tax returns, which, since 2016, collect more detailed exemption information.

It would also be useful to study the political economy reasons that could explain why beneficiaries of tax exemptions are not systematically identified.
References


Methodological Appendix:

Distributional Impact Analysis

The distributional impact analysis of a reform that affects prices of goods and services paid by consumers demands information at the household level on how much these households spend on each of these products. Thus, a consumption or expenditure survey is required to implement this methodology. Ideally, the year of the analysis should be close to the survey year. However, this may not always be the case. Expenditure surveys in some countries are carried-out every five or ten years, and some variables are missing which poses a challenge for implementing this type of methodology. Thus, we must explore some strategies that allow us to impute data from the expenditure survey to another and a more recent one.

The distributional analysis of the VAT reform in Ecuador relies on a strategy divided into two steps: the data preparation and the imputation from the budget (ENIGHUR, 2011) to the last available labor force survey (ENEMDU, 2017). In the first step, we process the information in the budget survey (ENIGHUR, 2011) by creating the variable to be imputed in the other survey, a common welfare measure and other covariates that are common variables in both surveys which then will be used in the imputation model. For instance, in the case of the VAT, our variable of interest is the amount paid by households as a share of their welfare measure. This variable will be imputed into the labor force survey (ENEMDU, 2017).

The key to obtaining the tax paid by households is to identify the rate and the value for each of the products that each household consumes. The household budget survey allows us to classify almost 3,000 goods and services into two categories: with 0 or 12 percent VAT tax rate. This source of information also provides the total amount that each household consume in each product. Then, the calculation of the total tax contribution is straightforward. This strategy works as the statutory scheme of the VAT and
ignores both the role informality (purchase place) and exemptions may have in the effective tax paid by households.\footnote{When the sellers of 0 percent rate products cannot claim the credit tax for their inputs (as in the Ecuadorian case), the VAT paid for the inputs could be incorporated in their cost function and transferred to the consumers. So, some unknown share of the price paid by the consumers corresponds to VAT of the upstream sectors.}

Other conceptual and practical challenges may arise when preparing the data in both surveys. For instance, differences in questionnaire designs, reference periods and sampling strategies. Despite these difficulties, we managed to create a standard welfare variable between both surveys and other variables to be used in the second step. However, when comparing these variables between 2011 ENIGHUR and ENEMDU, there were significant differences in the shape of variables across households and surveys. To overcome this difficulty, we adjust the income by a quotient between the averages of ENEMDU’s and ENIGHUR’s incomes by percentiles. Formally:

\[
X_{\text{adj}}^{p,E}_{h} = X^{p,E}_{h} \frac{\overline{X}^{p}_I}{\overline{X}^{p}_{E}}
\]

Where \(X_{\text{adj}}^{p,E}_{h}\) is the adjusted income from a household \(h\) in the percentile \(p\) in the ENIGHUR, \(X^{p,E}_{h}\) is the original welfare measure in the ENIGHUR, \(\overline{X}^{p}_I\) is average income in the percentile \(p\) in the ENEMDU, and \(\overline{X}^{p}_{E}\) is the average income in the percentile \(p\) in the ENIGHUR. Using \(X_{\text{adj}}^{p,E}_{h}\) and the VAT estimate for each household, we imputed among surveys the amount paid by households as a share of their per capita income. This share comes from the consumption structure observed in the 2011 survey and we implicitly assume that it remains valid in the 2017 distribution.

A survey to survey imputation strategy is implemented by treating missing variables as missing values in the labor force survey. To do so, we first append ENEMDU to ENIGHUR with the same welfare measure and covariates. Now, all observations from ENEMDU have missing values. Then, we drop outliers (i.e., the highest one percent) in ENIGHUR and fill ENEMDU’s missing values with some predicted values. The predictive mean matching (PMM) method combines the standard linear regression and the nearest-neighbor imputation approaches to predict those missing values. It uses the normal linear regression to obtain linear predictions which are then used as distance measures to create the set of nearest neighbors or potential donors. Finally, it randomly draws an imputed value from this last set of values. In this case, we choose five nearest neighbors and two imputed values, for which we take the average. The results do not change when considering 5 or 10 imputed values with 10 and 20 nearest neighbors, respectively.

This strategy allows us to measure the distributional impact of the current VAT scheme as well as any other simulation reforms in the last available labor force survey. As the complete household consumption structure is observed only in the ENIGHUR, we do first need to simulate changes in the ENIGHUR, and then compute the new share of the paid VAT on the per capita household income and finally impute the simulated share from the ENIGHUR to the ENEMDU. The simulations are a partial equilibrium exercise without economic agents’ behavioral responses.
Effective Tax Rates on Factor Income and Consumption

To measure effective rates on factor incomes and consumptions we combined the 2015 central government tax revenue collection data with national statistics from the income and expenditure approaches. We use Public Revenue Office (PRO) data to assign the shares of personal income tax revenue from labor and capital. The calculations follow the approach of Mendoza, Razin & Tesar (1994):

\[
t_{\text{labor}} = \frac{PIT \times \text{Labor share}_{PIT} + SSC}{Wages}
\]

\[
t_{\text{capital}} = \frac{PIT \times \text{Capital share}_{PIT} + CIT + \text{Property Taxes}}{\text{Operating Surplus}}
\]

\[
t_{\text{consumption}} = \frac{VAT + \text{Excises}}{\text{Household Consumption} + \text{Government Consumption} - GW - VAT - \text{Excises}}
\]

The calculations make the following assumptions and simplifications:

- We assign mixed income from the personal income tax to capital.
- The labor share and capital share in the personal income tax are calculated before deductions and are likely to over-estimate the share of labor income in PIT revenue.
- The base for the tax rate on labor does not include employer paid social security contributions
- Local taxes are not included
- The incidence of corporate taxes falls entirely on capital

Chapter 3. Ecuador’s Public Sector Wage Bill

Ecuador’s public employment as a share of total employment has increased in the last decade but it is still low by international standards. From 2009 to 2017, public-sector employment as a share of total employment remained constant in established high-income countries (HICs) and regional peers but decreased in structural peers and new HICs. In this same period, public sector employment increased from 8 percent to 9 percent in Ecuador, which kept the country below benchmark countries (Figure 33, Panel A). The number of individuals employed by the government was 38 per 1,000 inhabitants (average of 2001-2015). This is below the average for structural peers (80 employees per 1,000 inhabitants) and regional peers (40 employees per 1,000 inhabitants).

**Figure 33: Public employment in Ecuador is below average for regional, structural, and HIC peers**

Public employment in Ecuador grew faster than private sector employment between 2009 and 2017. Ecuador’s private sector employment increased faster than its regional peers, as well as established and new HICs. However, the country’s public employment grew on average 4.8 percent from 2009 to 2017, around two percentage points more than private sector employment. Ecuador has followed the opposite trend of all benchmark groups, where private sector employment has outgrown public sector employment.

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46 Chapter prepared by Daniel Ortega Nieto (Senior Public Sector Specialist), Priscila Mireya Vera Jibaja (Consultant), Daniel Walker (Consultant), and Leandro Ezequiel Chalela (Consultant).
47 Includes all levels of government as well as state owned enterprises (SOEs).
48 The largest groups of public sector employees (teachers, physicians and the police), are also below the average levels in structural and regional peers (Korczyń, 2018).
Ecuador’s public sector wage bill, which is high compared to regional and structural peers, almost doubled between 2001 and 2016, with the bulk of the increase happening after 2007. In 2001, Ecuador’s public-sector wage bill as a share of GDP was lower than its regional and structural peers, as well as HICs. By 2016, the wage bill for the general government (GG) as a share of GDP (10.2 percent) had almost doubled compared to 2001 (5.5 percent). This wage bill’s increase puts Ecuador above its regional and structural peers, as well as the new HICs. Between 2004 and 2014, the Ecuadorian economy grew 4.4 percent on average, which was higher than the average for Latin America and the Caribbean. This growth is likely linked to high oil prices that helped finance an expansion of the public sector. The public wage bill was also affected by labor reforms introduced during this period, which led to a new compensation structure that established categories and salaries for every position in the public sector. Ecuador’s relatively large public wage bill, combined with modest shares of employment in the public sector, suggest that public sector salaries are relatively high compared with peer countries.

Figure 35: General Government compensation of employees as a share of GDP (%)
The low share of public-sector employment, together with the high wage bill, suggests relatively high public sector salaries. Ecuador’s general government compensation as a share of GDP is closer to the levels observed in HICs than those in emerging markets. On average, government wage bills vary between 10 percent of GDP in advanced economies and 7.5 percent of GDP in low-income developing countries (LIDCs), with emerging market economies generally in between (IMF, 2016). Ecuador’s wage bill in 2016, at 10.2 percent of GDP, is above the average level observed in HICs and was close to the levels observed in Australia, Canada, the United States, Spain, and Switzerland.

Ecuador’s wage bill as a percentage of both general government spending and revenues has been relatively high. Ecuador’s wage bill constitutes around 26 percent of total expenditures, the highest when compared to regional and structural peers, as well as HICs. The figure peaked in 2007, reaching 30 percent of government spending before decreasing four percentage points by 2016. This decrease was due to other items such as capital spending and oil imports gaining importance. However, when measured in terms of revenue, the public wage bill has been increasing continuously, moving from 27 percent in 2001 to 33 percent in 2016. This trend can be partially explained by the decrease in oil revenues after 2014. The opposite can be seen among Ecuador’s regional and structural peers, which reduced their wage bill over the revenue by around 7 percentage points during the same period. At current levels, the wage bill could create serious fiscal pressures. According to the World Bank’s Strategic Country Diagnostic 2018, Ecuador’s revenues are strongly correlated with changes in oil prices. This consequently increases in rigidity expenditure such as wages add to fiscal risks.

Figure 36: General government wage of employees as a share of expenditure and revenue

Panel A: GG wage bill as a share of expenditure

Panel B: GG wage bill as a share of revenues

Source: World Bank staff’s calculations based on data from World Economic Outlook

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50 Ecuador has a high relative participation of revenues from non-renewable natural resources. According to the Organization for Economic Co-operation and Development (OECD) and the Inter-American Development Bank (IDB) (2014), this source of revenue accounted for over one third (35 percent) of total revenues between 2009 and 2012, higher than that of Mexico, Colombia, Chile, Peru, Argentina, and Brazil.
Institutional setting

The Ministry of Labor (ML) and the Ministry of Economy and Finance (MEF) play key roles in defining the government’s wage bill. The ML controls the pay-scale setting system, whereas the MEF manages the wage bill through the budgetary process and partially through fiscal rules (Directrices). The ML is responsible for all salary adjustments and revisions to special salary scales are subject to its approval. Pay-scale setting does not involve the participation of the representatives of employees. Furthermore, according to the ML, its decisions are informed by studies comparing the private-public wage gap, government strategic priorities, and fiscal sustainability objectives. Based on this information, central government institutions prepare their annual budgets for personnel expenditures.

The Ministry of Economy and Finance must authorize new hires. The MEF must authorize all hiring, after previous notification by the central government institution that requests the opening of a new position. Currently, 96 percent of the public wage bill is classified as permanent spending. With the aim of controlling the wage bill, its increase is therefore highly restricted, subject as it is to both resource availability for public investment initiatives and the priorities set out in the government’s Development Plan. Similarly, the MEF registers new positions as non-permanent expenditures. This restricts the possibility of hiring new personnel under the nombramiento modality, which is characterized by an indefinite contract (see below). After 2014, the MEF has kept the same norm, but is stricter when there is a requirement to open a new position, especially after Decree 135 and the Prosperity Plan 2018-2021, and Inter-Ministerial Agreement 001 (see Box 14).

Ecuador’s central government employment system is position-based, with each government entity having an organizational structure with specific positions. Every position is linked to a grade and occupational group, which is reflected in a salary scale. In 2010, a new Public Servants’ Law (Ley Orgánica del Servicio Público, LOSEP) aimed, among other things, to homologate salaries by introducing two pay scales that established monthly remuneration ceilings and floors. The first is for high-ranking officials, including the president, and has ten levels. It sets the ceiling at $5,072 and a floor at $2,115. The second has twenty levels. In this case, the pay scale ranges from $817 to $3,542 per month for operative staff and from $733 to $527 for support staff. These pay scales aim to revert historical wage dispersions in job categories. While there are several scales for different professional categories and sectors, they are all mapped to a common base pay schedule (or “single pay spine”), as defined by the ML for all public-sector employees. As a result of the pay-scale system, the only way to obtain a salary increase – other than the adjustments in the grid – is by applying for a new position.

Since 2003, Ecuador has implemented a set of policy measures aimed at establishing standards for labor conditions and compliance with labor law in all public-sector institutions. The Civil Service and Administrative Career Law (Ley Orgánica del Servicio Civil y Carrera Administrativa, LOSCCA) was one of the first attempts to unify and homologate public-sector salaries. The law established compensation and retirement policies, as well as providing merit-based guidelines for civil service recruitment exams.

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51 There are eight salary scales. See example of scales in Annex 1.
52 There are two additional levels for researchers, which are from $4,276 to $5,000.
53 The law also establishes that no-one can earn more than the president.
54 If an employee wants to be promoted, he should apply for a vacancy. Vacancies are filled through public competitive processes. Public-service employees do not have specific career guidelines. Moreover, every ministry has its own hiring manual to develop its terms of reference for employees.
mmodation and Constitutional Oversight (LOFL); (v) the Organic Electoral Law (Ley Orgánica Electoral, LOFL); (vi) the Organic Law of the Judicial Function (Ley Orgánica de la Función Judicial, COFJ); (vii) the Organic Law of the Legislative Function (Ley Orgánica de la Función Legislativa, LOFL); (viii) the Organic Electoral Law (Ley Orgánica Electoral), and (viii) the Organic Law of Jurisdictional Guarantees and Constitutional Oversight (Ley Orgánica de Garantías Jurisdiccionales y Control Constitucional).

Regímenes especiales also has nombramientos and contratos.

57 The Decree 813 authorizes the government to purchase employees’ resignation, called compra de renuncias voluntarias obligatorias. In 2019, each employee’s resignation costs $5,000 and is paid with bonus.
receive compensation for discharge if she/he has worked for over five years in the government. However, employees hired under a *contrato ocasional* or *nombramiento provisional* modality do not receive labor compensation under any circumstance if they are dismissed.

The government also hires staff under the *Código del Trabajo*, most of whom are support staff with different benefits, tenure, and job security than those hired under LOSEP. Under *Código de Trabajo*, employees are not recruited through exams and are subject to discharge. These employees receive an additional benefit of approximately $20 per week for food. In terms of dismissals, employees under *Código del Trabajo* receive labor compensation after the first year and can be fired if s/he breaks the law. Contracts cannot be terminated unilaterally. If this happens, it would be considered untimely dismissal, hence generating an economic penalty. In the past, the government has faced lawsuits that have resulted in financial losses that are as yet uncalculated. The *Código del Trabajo* legislation is more inflexible than LOSEP. Partly as a result of this, the ML made 16 amendments in November 2015 that enabled new public sector employees to be hired only under the LOSEP regime.  

The Ministry of Labor has tried to provide public sector employees additional benefits, such as daycare and transportation, but there have been important variations in benefits over time and across entities. In 2010, LOSEP and the ML established that public entities could provide free transportation, food, daycare, and uniforms to their employees. However, in 2013, the food service benefit was eliminated from the public-sector entities. This occurred after the ML calculated that only 12 percent of public employees were benefiting and that the government could save around $480 million per year. The elimination of the food service benefit was adopted for LOSEP workers, but not for *Código del Trabajo* employees. The latter still receive a food service benefit of $20 per week. In terms of daycare, the ML issued a reform requiring public and private entities with more than 50 workers to have a childcare service. Transportation and uniform benefits vary among public institutions and the guidelines are not clear. The National Planning and Development Secretariat (*Secretaría Nacional de Planificación y Desarrollo, SENPLADES*), for instance, eliminated its transportation service in March 2018. All other ministries still provide this benefit. In 2018, LOSEP integrated additional reforms to the non-monetary benefits, indicating that these benefits require prior approval from the ML and budget support.

Since 2012, Ecuador has implemented reforms to reduce the expenditure on public sector salaries. In 2012, the government introduced a nominal freeze on the salary scale of public officials. After this measure, in March 2015, a nominal cut in salaries of the upper hierarchical level of between 5 to 10 percent was implemented. Despite these initiatives, total wage spending continued to grow in 2016, although at a slower pace. In addition, Ecuador’s president issued an executive decree on austerity (*Decreto de Austeridad N. 135*) in 2017. This established new rules to optimize expenditures (*Error! Reference source not found.*). It included the unification of the remunerative scale of public companies’ staff with other public service workers. Likewise, it determined a 10 percent salary cut for employees at a high hierarchical level except for those of the armed forces, the national police, and the Transit Commission. Decree 135 also eliminated the payment of variable remuneration for efficiency and froze vacancies from all state institutions. The only exception here is if a technical report determines that the position is truly necessary. The last salary reform was undertaken in December 2018 through Decree 624. In this reform, the levels 8, 9, and 10 of the hierarchical scale suffered a salary decrease of 10 percent. Employees in levels 4 to 7, meanwhile, had a five-percent decrease. Moreover, new employees under

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59 People who were hired by *Código del Trabajo* before the amendments will maintain their original regime.
contracto ocasional had their remuneration decreased. According to the Ministry of Finance, these reforms affected around 70,000 employees and saved around $300 million.

**Box 14: Summary of Government Reforms**

**Executive Decree 135**

In September 2017, Ecuador’s president issued executive decree N. 135, Decreto de Austeridad. The decree established austerity measures in all state institutions. The measures mean that:

- The government will continue to improve the unification of the remunerative scales.
- Civil servants earning above grade 2 of the high-ranking officials’ pay scale are subject to a 10 percent salary cut starting September 1, 2017.
- The variable performance compensation is suspended for fiscal years 2017 and 2018.
- All vacancies across government ministries are eliminated, except those for staff focusing on technical reports for the Ministry of Labor.
- Public companies, such as Petrocomercial and Petroamazonas, are required to evaluate the optimal workloads of their officials and workers, according to their activities.
- Travel expenses must be rationalized, and international travel must be authorized by the Secretariat of the Presidency.
- The government will sell high-end vehicles, while the purchase of non-specialized cars is prohibited.
- The government will try to reduce expenditures on advertising and publicity; hiring of these services requires prior authorization of a Communication Plan.
- The government will try to reduce the number of personnel assigned to providing security to public authorities.
- All institutions must submit semiannual reports of compliance with this decree.

**Key characteristics of public-sector workforce**

The public sector workforce gender gap is positive, but it has been reduced since 2007. This reduction is likely the result of government efforts to close this gap. Since 1995, the government has issued 12 pieces of legislation\(^1\) that include actions to promote gender equality. Nowadays, women comprise 45 percent of Ecuador’s public-sector workforce. The average age of public-sector employees has declined similarly for both genders. The average age was 43 in 2007 and 40 in 2014, remaining constant thereafter.

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\(^{60}\) The public sector refers to financial and non-financial public institutions.

\(^{61}\) Ley 103 con la Violencia a la Mujer y a la Familia (1995); Código de la niñez y adolescencia (2003); Código del Trabajo (2005); Ley Orgánica del Consejo de Participación Ciudadana y Control Social (2009); Ley Orgánica Electoral (2009), Ley Orgánica de la Función Legislativa (2009); Código Orgánico de Organización Territorial, Autonomía y Descentralización (2010); Código Orgánico de Planificación y Finanzas Públicas (2010); Ley Orgánica de Educación Intercultural (2011); Ley Orgánica de Comunicación (2013); Código Orgánico Integral Penal (2014), and; Ley Orgánica de los Consejos Nacionales para la Igualdad (2014)
The education of public-sector employees has improved over the past decade. The average time in education for public workers increased from 14.2 years in 2007 to 14.7 years in 2017. Over the same period, the proportion of public employees with higher education increased from 65 percent to 68 percent. In contrast, the proportion of public employees with primary education fell from 9 percent to 5 percent. In 2015, Ecuador reached the sixth position in the Public Service Efficiency assessment, which evaluates the civil service performance in 16 Latin American and Caribbean countries. Ecuador rose eight positions between 2011 to 2015. This was due to its investment in human talent, as well as the strengthening of merit and competitive entry exams.

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Strazza (2015)

The study considers 16 Latin American and Caribbean countries: Chile, Brazil, Costa Rica, Uruguay, Colombia, Mexico, Dominican Republic, Nicaragua, El Salvador, Peru, Panama, Paraguay, Guatemala, Bolivia, Ecuador, and Honduras.
In terms of occupation, the professional and scientist categories have had the greatest participation as well as growth within the public sector. From 2007 to 2017, professional and scientific workers grew from 36 percent to 43 percent, respectively. The groups with higher participation were mid-level technicians and professionals or service and commerce workers, all with 13 percent in 2017. In contrast, in the same period, managers and office workers reduced their participation by four and three percentage points, reaching levels of 3 percent and 8 percent, respectively.

*Figure 39: Public-sector employment categories*

From 2007 to 2017, real wages increased for all occupations except for machine operators, which decreased by 0.2 percent. In this period, technicians and middle professionals had the highest real wage increase (3.5 percent), whereas operators and artisans decreased by 0.2 percent. Managers have the highest monthly salaries ($1,344), followed by average salaries of between $700-$900 for members of the army, professionals, scientists, middle level professionals, and technicians.
Ecuador’s public-sector wage premium

Ecuador’s wage gap between public and private-sector employees in Ecuador is among the highest in the region. Public sector employees in Latin America and the Caribbean enjoy higher average wages than comparable workers in the private sector (Figure 41, Panel A). In 2012, the wage of public-sector employees in Ecuador was, on average, 42 percent higher than that of private-sector workers. This is substantially higher than the regional average (22 percent). In fact, it is the second highest in the region, after only Honduras. At the same time, when measuring the average civil servant’s wage as a share of GDP per capita with the aim of capturing the relation with living standards, the public-sector wages in Ecuador fall below the regional average. Ecuador’s average government wage as a share of monthly GDP per capita is 1.8, versus an average of 2.0 across Latin America and the Caribbean.

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64 The information shown in this section was taken from the work of Gasparini, et al. (2015), in which wages refer only to salary without any additional compensation.

65 The relationship between the average government wage and GDP per capita measures the condition of government employees in relation to living standards (IMF, 2010).
Public sector workers in Ecuador receive higher salaries than comparable workers in the country’s private sector and in peer countries. Public employment as percentage of total employment in Ecuador is low by international standards, but its wage bill is among the highest. This suggests that public-sector workers have high salaries, something that has been reinforced by previous evidence in the region (Gasparini, 2015). Further analysis of public sector salaries in Ecuador confirms that there is also an important public-sector wage premium. 67

Although it remains high, the wage premium between public and private sectors has been declining over the past six years. The average salary in public-sector jobs was around 57 percent higher than in the formal private sector in 2007. It continued to rise, reaching a maximum of 72 percent in 2011, before dropping back to 54 percent in 2017. The average wage figure hides significant differences between different types of workers, but the wage premium is common to all occupational groups and workers with a different combination of years of experience and educational level. The wage premium for almost all groups peaked in 2011. This can be explained by the wage-freeze strategy established in 2012. Lastly, it is important to note that for “managers”, “professionals and scientists”, and workers with higher education, the wage premium in 2017 is higher compared to initial levels in 2007.

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66 The data presented in Panel A was taken from Gasparini et al. (2015), while Panel B considers the last updated data from SEDLAC. Even though there is a data limitation that led to the analysis spanning two different periods, the authors consider that the two data sources contribute to the study, especially to the comparison. A paper by Olivieri, Chalela, & Fatima (Forthcoming) estimates that the earning differentials between public and private-sector workers for Ecuador in an endogenous switching regression model, including employee type and the main characteristics of work as covariates. It uses data from labor force surveys, so the public sector is broadly defined. Earnings are considered as hourly income in the main occupation and non-wage benefits are excluded. Finally, to ensure the accuracy of the comparison, the sample is limited to salaried formal workers in occupational groups and to economic sectors with workers in both the public and private sectors.
Evidence suggests that less-skilled workers in the public sector have had a higher wage premium. First, public-sector wage premiums are higher for lower occupational groups. In 2017, the wage premium for “office staff” and “services and commerce workers” – jobs associated with low skills – was 31 percent and 52 percent, respectively. The premium for these occupations almost doubled that of “managers” (13 percent), “professionals and scientists” (19 percent) and “middle level technicians and professionals” (17 percent), who generally have higher levels of education. Furthermore, for “managers”, the wage premium was negative in 2013 and only 1 percent in 2014. Nevertheless, it is useful to consider that “managers” only account for 3.5 percent of total public-sector employees, while “office staff” and “services and commerce workers” jointly comprise 22 percent. The shares of “professionals and scientists” and “middle level technicians and professionals”, meanwhile, add up 62 percent.

Within educational levels, the wage premiums are higher for public-sector workers with less experience. Public-sector workers with less than five years’ experience and superior educational levels have a wage premium of 45 percent. This is twice as much as public-sector workers with ten or more years of experience and the same level of education. These dynamics were similar for public sector workers with secondary and primary education levels. Public-private wage premiums for workers with less than five years of experience are 13 and 27 percentage points higher than for workers with ten or more years of experience, for secondary and primary levels of education, respectively.
Finally, in 2007, public-sector workers with less educational attainment had the largest wage premium, but this reversed by 2012. In 2007, the wage premium for public-sector workers with primary and secondary education was 57 percent and 55 percent, respectively. This figure fell to 27 percent for workers with higher education. This trend was reversed in 2012, when the wage premium for the latter became the highest, reaching 52 percent. Workers with primary educational level, meanwhile, dropped back to 42 percent. Nevertheless, by 2017, public-sector workers with secondary educational level had gained a slight advantage, with a wage premium of 36 percent. This was five percentage points higher than that of workers with a superior educational level and six percentage points above that received by workers with primary education.

High relative public-sector wages of comparable workers generate allocative inefficiencies in labor markets. This generates a pressure on the private sector to match the offer and may well reduce the pool of workers who seek jobs in the private sector. In addition, it could affect the growth of private sector firms that face a reduced pool of workers and need to either pay higher wages or reduce employment. Higher wage premiums for unskilled workers could reduce returns to education and possibly discourage human capital accumulation. Moreover, a large public-private wage premium can act as a barrier to expanding service delivery in a fiscally sustainable term. Thus, aligning public to formal private sector wages would not only increase governmental savings in the short-term, it would also attenuate these distortions. In turn, this would favor greater public-services coverage and stimulate private-sector job creation in the medium term.
Evolution of Ecuador’s Central Government Wage Bill and Workforce

The central government’s wage bill grew at an average annual rate of 1.5 percent in real terms from 2012 to 2016. Previous paragraphs explained the nominal wage freeze adopted in 2012 and the nominal cut of salaries of high ranked officials in 2015. This second measure brought annual fiscal savings of around $21 million. Nevertheless, increases in the levels of individual wages during the freeze were driven by job reclassification to higher categories within the pay scale. Also pushing the wage bill upwards was wage drift in those professional regimes that include step salary progression to, for example, teachers, military, and the police. Base salaries and mandatory social security contributions account for around 72 percent of total personnel spending by the central government. Over 8 percent is spent on additional remuneration – mainly 13th & 14th salaries – while 3 percent is spent on compensatory wages.

Central government hiring contributed to the wage bill growth before 2014. Average annual growth in central government employment was around 2.7 percent between 2011-2015. During this period, the public-sector workforce increased by about 50,000 employees, with the majority of hiring concentrated in four sectors: health, police, judiciary, and social protection (bienestar social). According to government documents, employment increases in recent years were driven by strategic priorities aimed at improving service delivery. This is reflected in the government’s decision to increase annual spending on health and education by 0.5 percent of GDP, until it reaches 6 percent of GDP as mandated by the Constitution. At the same time, even though the education sector has the most public employees, it experienced a 2.7 percent reduction in employment in 2016. This reduction was influenced by the large retirement process of administrative staff, teachers, and workers of the National Education System, as well as employees of Higher Education System.

The evolution of the central government’s workforce centers on two key moments. The first was a period of payroll correction instigated by the government between 2006 and 2008. During this period,
outsourcing was banned, and an important number of workers were incorporated in current public contracting modalities. In 2009, the central government’s workforce increased by almost 24 percent (Figure 46). The second moment came in 2010 when the newly established LOSEP began regulating public-sector contracts, including those for the judicial and legislative powers, the national police, the armed forces, the overseas services, and the Transit Commission.

Figure 46: The evolution of the central government workforce

![Graph showing the evolution of the central government workforce from 2006 to 2015.](image)

Source: Ministerio del Trabajo, 2015

The vast majority of central government workers were hired through the Otros Regímenes Especiales regime. The largest groups within the special regimes were teachers (64 percent), followed by police (about 18 percent), and army personnel (14 percent). Panels A and B in Figure 46 show the evolution of central government employment. Although the largest number of public-sector employees were employed under Otros Regímenes Especiales (Panel B), this modality also had the highest reduction between 2011 and 2015 (around 6 percent). In contrast, LOSEP-regime employees grew around 5 percent during this same period, while civil servants hired under the Código del Trabajo have remained constant over time.

Figure 47: Central government employment

<table>
<thead>
<tr>
<th>Panel A: Central government employment</th>
<th>Panel B: Central government employment by regime</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>Number of Employees</td>
</tr>
<tr>
<td>-----------</td>
<td>---------------------</td>
</tr>
<tr>
<td>2011</td>
<td>441,706</td>
</tr>
<tr>
<td>2012</td>
<td>469,377</td>
</tr>
<tr>
<td>2013</td>
<td>482,443</td>
</tr>
<tr>
<td>2014</td>
<td>496,264</td>
</tr>
<tr>
<td>2015</td>
<td>491,520</td>
</tr>
</tbody>
</table>
Panel C: Percentage of central government employees hired by *Otros Regímenes Especiales*

- average (2011-2015) -

Source: World Bank staff calculations based on MEF data

In 2018, from a total of 528,955 jobs, 92 percent of the positions were occupied, and 8 percent were vacant. Most of the positions (61.2 percent) as well as the vacancies (62.8 percent) are categorized as *Otros Regímenes Especiales* regime. Under Código de Trabajo, only 7.4 percent are occupied positions and less than one percent are vacant, as per Panel A in Figure 48. At the sectorial level, the vast majority of vacancies are in Asuntos Exteriores (21.0 percent). If all the vacancies are occupied (44,453 positions), the government would spend around $57 million per month, with an average cost per employee of $1,367.

Figure 48: Composition of public positions

Panel A: Vacancies and occupied positions by regime

Panel B: Vacancies by sectors

Source: World Bank staff calculations based on MEF microdata, February 2018
The analysis of the workforce structure of specific scales reveals that the number of employees and expenditure under LOSEP and Código de Trabajo varies significantly. The Hierarchical LOSEP level, for instance, has a pyramid structure where most employees (40 percent) and the expenditure (34 percent) is concentrated in the second scale (see Figure 49, Panel A). The operational level scale concentrates employees in the middle, showing that it will become an inverted pyramid in the future. As seen in Panel B of Figure 49, the highest expenditure and number of employees occur in Servidor Público 5, grade 11 (19 percent), and in Servidor Público 7, grade 13 (11 percent). The analysis of these scales shows that there are important distortions that need to be addressed as they may be having a negative impact on motivation and productivity. With respect to the Código de Trabajo regime, the vast majority of employees are on the two extremes. Since 2015, the government has been working to reduce and eventually eliminate new hiring under Código de Trabajo due to distortions that it has caused to the public service system (See Panel C of Figure 49).

**Figure 49: Central government’s scale**

**Panel A: Scale for hierarchical level**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Before the reform</th>
<th>After the reform</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Salary</td>
<td>Difference in each scale</td>
</tr>
<tr>
<td></td>
<td>US $</td>
<td>%</td>
</tr>
<tr>
<td>10</td>
<td>5635</td>
<td>225</td>
</tr>
<tr>
<td>9</td>
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<td>8</td>
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<td>253</td>
</tr>
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<td>1</td>
<td>2115</td>
<td></td>
</tr>
</tbody>
</table>

*Source: MEF, February 2018*

**Panel B: Scale for operational level**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Occupational Group</th>
<th>Salary</th>
<th>Difference in each scale</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>US $</td>
<td>%</td>
</tr>
<tr>
<td>22</td>
<td>Servidor Público 16</td>
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<td>21</td>
<td>Servidor Público 15</td>
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<td>20</td>
<td>Servidor Público 14</td>
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<td>17</td>
<td>Servidor Público 11</td>
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*Source: World Bank staff calculations based on MEF microdata, February 2018*
Panel C: Scale for Código del Trabajo

The proportion of sobrevalorados\(^7\) is only 2.1 percent of employees of the total wage bill. Even though sobrevalorados' salary is about 45 percent higher, they represent 3.2 percent of the total Central Government’s expenditure – see Figure 50, Panel A. Moreover, the average age of sobrevalorados is 48 years and over 60 percent of them are 48 years or older. Given that 21.4 percent have more than 60 years, more than a half of sobrevalorados are in the retirement age and will be leaving the central government workforce in the coming years.

Source: World Bank staff calculations based on MEF microdata, February 2018

Figure 50: Sobrevalorados

Panel A: Composition of Sobrevalorados in the wage bill

Panel B: Sobrevalorados’ Age Distribution

\(^7\) Sobrevalorados are employees who were hired by the LOSSCA regime and whose salaries are higher than the LOSEP regime. Since the law does not allow for employees’ salaries to be reduced, sobrevalorados retain their salary under the LOSEP system.
The switch rate\textsuperscript{71} indicates that central government employees have a low probability of changing their type of contracts as well as their grade. The highest annual likelihood of such a change by a central government employee is 0.21. This tends to be related to his or her job title. On a sectoral basis, meanwhile, the lowest probability of change is 0.01 (see Figure 51, Panel A). This pattern is the same across the sectorial level, except for Agricultural Sectorial (see Panel B). Even though a low switch rate reduces fiscal pressure, it could be a problem in terms of incentives and relocating employees in areas that are more required.

\textbf{Figure 51: Switch Rate}

![Image of Switch Rate Chart]

\textit{Source: World Bank staff calculations based on MEF microdata, 2014-2018}

**Micro-data Simulations**

Given the substantial increase of new hires over the past four years, Ecuador’s wage bill is expected to grow annually at around 1.2 percent in real terms on average. Efforts were made to control the wage bill in 2019, which included cutting 36,000 positions under \textit{contrato ocasional}. The wage bill contracted by 2.9 percent as a result. That said, if a baseline scenario of “business as usual” now follows, the wage bill is expected to increase again in 2020. This situation shows that structural reforms are required to stabilize the public wage bill in both the short and medium term. With this in mind, we simulated five alternative policies, as well as a set of combinations to assess their potential fiscal impact.\textsuperscript{72} Given the urgency of controlling the wage bill, the government requested simulations for the next three to five years using data from 2014-2018 to create a baseline. A number of assumptions agreed between the World Bank as well as the government were key to determining the different policy scenarios.\textsuperscript{73}

\textsuperscript{71} The switch rate is the probability that an employee changes his/her sector, type of contract, location, grade or job title over a year.

\textsuperscript{72} See annex III for a summary of fiscal impacts of all scenarios.

\textsuperscript{73} The following simulations consider some assumptions, such as (i) average wage bill growth from 2014-2018; (ii) a 0.3 switch rate, (iii) average net hiring of 7,000 new workers; (iv) a reduction of 36, 000 \textit{contratos ocasionales} and a target of 35,000 workers under \textit{contrato ocasional}; and (v) a probability distribution of retirement that considers that people at the age of 70 have 100 percent probability of retirement and that, upon retirement, they receive a compensation of $53,100, as per the Law.
• **Scenario 1 considers a 10 percent salary reduction to new hiring under *contrato ocasional* and a 5 percent cut at hierarchical level.** These policies can generate savings of up to US $480 million in the next three years and US $1.4 billion in the next five. By 2023, these policies will lead to a wage bill that is 0.6 percent of GDP lower than the baseline. However, this outcome is driven mainly by the changes in *contrato ocasional*, as cuts at the hierarchical levels have a relatively small impact.

• **Scenario 2 considers a contract buy-out strategy, with the buy-out of 5,000 positions annually.** This policy costs around US $53,100 of compensation per contract buy-out. In the next three years, the policy would cost the government about US $256 million, generating savings of US $38 million net in the following five years. In 2023, this scenario has the same wage bill as the cut of 5 percent salary at the hierarchical level. It is 0.2 percent of GDP lower than in the baseline scenario.

• **Scenario 3 is based on policies that reduce the replacement rate; showing that this can have a considerable impact on the wage bill.** This scenario simulates a reduction of the replacement rate to around one quarter of its current level. From 2014 to 2018, the average replacement rate was 1 to 1.7 (i.e. for every employee that leaves or retires, 1.7 employee is hired). Modifying this current trend for a 2-to-1 replacement rate will reduce the wage bill by US $1.4 billion in the next five years. This policy can lead to 0.5 percent of GDP decline in the wage bill by 2023, an important step in the right direction.

• **Scenario 4 continues with the government’s recent policy of reducing the number of employees under *contrato ocasional* to 35,000.** This scenario considers a baseline of 44,000 workers with *contrato ocasional* in 2019 and an annual reduction of 7,000 workers until reaching the goal of 35,000 employees hired under this modality. This policy could potentially save US $287 million in the following three years and US $839 million in the next five. The wage bill would be 0.4 percent of GDP lower than in baseline by 2023. At the same time, however, it is important that the government carefully assesses the areas where it would reduce temporary workers. One third (33 percent) of temporary workers are teachers and nearly one quarter (23.7 percent) are nurses, hence this could have a direct impact on the provision of this services.

• **Scenario 5 considers a combination of four policies and has larger fiscal impacts.** This simulation combines the following policies: (i) cut 10 percent the salary of new workers under *contrato ocasional*; (ii) cut 5 percent the salary for current hierarchical level workers (which has already been reduced); (iii) reduce new workers at the hierarchical level by an additional 5 percent; and (iv) reduce the salary of new workers under *nombramiento* by 10 percent. These adjustments reduce the wage bill by 0.8 percent of GDP compared to the baseline. In the next three years, the saving could reach US $655 million, increasing to US $1 billion in 2023. Annex III provides additional information on four more scenarios and their respective fiscal impacts, as well as a summary of the five basic scenarios.
Figure 52: Projections

"Business as Usual" Baseline

Scenario 1

Scenario 2

Scenario 3

Scenario 4

Scenario 5
**Conclusions**

Ecuador’s wage bill is large relative to its peers, mostly due to high wages. Despite efforts at containment, the wage bill has been growing at a rate of 1.2 percent in real terms. Future projections suggest that growth in the wage bill will mainly be driven by an increase in the number of employees and not necessarily to changes in the average salary. This is despite the fact that salaries of *contrato ocasional* are converging with *nombramiento* workers. Workers have a particularly low mobility within existing salary scales, which in turn is reflected in the stability of the average salary. Both aspects have reduced the exponential growth of the wage bill. Therefore, alteration in the mobility of the workers should be considered cautiously since it can have a considerable potential impact on the overall wage bill. Finally, the reduction of workers under *contrato ocasional* that is currently under discussion by the government should be carried out carefully and strategically since most of the employees affected work in service provision. Any drastic changes, therefore, could affect the coverage and quality of services.

Wage bill expenditure projections show that a combination of reforms over the next three to five years can reduce the wage bill and generate significant savings. However, measures aimed at increasing the productivity of the public sector should also be considered. In particular, attention is required in respect to how the social impacts of unemployment and informality might best be mitigated. In addition to fiscal policies, the Ecuadorian government needs to invest in strategic workforce planning since evidence shows that hiring practices can improve substantially and can help contain the wage bill. In addition to the fiscal impact, establishing a strategic national workforce planning policy would allow the government to identify the appropriate number of workers in strategic areas. This is also critical since wage bill projections indicate that modifying the replacement rate could generate significant savings. These are in the order of US $558 million in three years and US $1.4 billion in five years. Finally, as this chapter has shown, the government should revise the structure of the salary scales given the important distortions that exist and their impact on productivity. In addition, the government should consider investing in revamping its human resource management systems with the aim of, among other things, improving its ability to take evidence-based decisions.
BIBLIOGRAPHY


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### Operative Staff

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| Servidor Público 12  | 2,641 |
| Servidor Público 11  | 2,472 |
| Servidor Público 10  | 2,308 |
| Servidor Público 9   | 2,034 |
| Servidor Público 8   | 1,760 |
| Servidor Público 7   | 1,676 |
| Servidor Público 6   | 1,412 |
| Servidor Público 5   | 1,212 |
| Servidor Público 4   | 1,086 |
| Servidor Público 3   | 986  |
| Servidor Público 2   | 901  |
| Servidor Público 1   | 817  |
| Servidor Público de Apoyo 4 | 733 |
| Servidor Público de Apoyo 3 | 675 |
| Servidor Público de Apoyo 2 | 622 |
| Servidor Público de Apoyo 1 | 585 |
| Servidor Público de Servicios 2 | 553 |
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Annex 2

Table A2. Earning differentials between public and private sectors

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Source: Olivieri, D. L, Chalela and F. Fatima (Forthcoming). Note: Earning differentials are estimated based on predicted earning from endogenous switching regression model. Results are expressed in percentage with respect to private sector.
## Annex 3

### Initial Conditions:

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### Baseline

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<th>Savings in the next 5 years (in millions)</th>
<th>Average Change (%)</th>
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### Scenario 1:
5% cut to Hierarchical Level’s salary & Cut 10% to contrato ocasional salary

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### Scenario 2:
Contract Buy-Out

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2 to 1 replacement rate

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<th>Savings in the next 5 years (in millions)</th>
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### Scenario 4:
Less contrato ocasional

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<tr>
<th>Total number of employees in 2023 (in thousands)</th>
<th>Total Wage Bill in 2023 (in billions)</th>
<th>Savings in the next 3 years (in millions)</th>
<th>Savings in the next 5 years (in millions)</th>
<th>Average Change (%)</th>
<th>Wage Bill as share of GDP in 2023 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>523</td>
<td>8.79</td>
<td>287.00</td>
<td>839.00</td>
<td>-0.02</td>
<td>10.4</td>
</tr>
</tbody>
</table>

### Scenario 5:
Additional Adjustments

<table>
<thead>
<tr>
<th>Total number of employees in 2023 (in thousands)</th>
<th>Total Wage Bill in 2023 (in billions)</th>
<th>Savings in the next 3 years (in millions)</th>
<th>Savings in the next 5 years (in millions)</th>
<th>Average Change (%)</th>
<th>Wage Bill as share of GDP in 2023 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>525</td>
<td>8.43</td>
<td>655.00</td>
<td>1,847.00</td>
<td>-0.44</td>
<td>10.0</td>
</tr>
</tbody>
</table>

### Scenario 6:
5% cut to Hierarchical Level’s salary

<table>
<thead>
<tr>
<th>Total number of employees in 2023 (in thousands)</th>
<th>Total Wage Bill in 2023 (in billions)</th>
<th>Savings in the next 3 years (in millions)</th>
<th>Savings in the next 5 years (in millions)</th>
<th>Average Change (%)</th>
<th>Wage Bill as share of GDP in 2023 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>544</td>
<td>8.91</td>
<td>97.00</td>
<td>436.00</td>
<td>0.11</td>
<td>10.6</td>
</tr>
</tbody>
</table>

### Scenario 7:
Cut 10% to contrato ocasional salary

<table>
<thead>
<tr>
<th>Total number of employees in 2023 (in thousands)</th>
<th>Total Wage Bill in 2023 (in billions)</th>
<th>Savings in the next 3 years (in millions)</th>
<th>Savings in the next 5 years (in millions)</th>
<th>Average Change (%)</th>
<th>Wage Bill as share of GDP in 2023 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>525</td>
<td>8.59</td>
<td>455.00</td>
<td>1,355.00</td>
<td>-0.25</td>
<td>10.2</td>
</tr>
</tbody>
</table>

### Scenario 8:
Contract Buy-Out & Less contrato ocasional

<table>
<thead>
<tr>
<th>Total number of employees in 2023 (in thousands)</th>
<th>Total Wage Bill in 2023 (in billions)</th>
<th>Savings in the next 3 years (in millions)</th>
<th>Savings in the next 5 years (in millions)</th>
<th>Average Change (%)</th>
<th>Wage Bill as share of GDP in 2023 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>498</td>
<td>8.6</td>
<td>31.00</td>
<td>875.00</td>
<td>-0.24</td>
<td>10.2</td>
</tr>
</tbody>
</table>

### Scenario 9:
2 to 1 replacement rate & Cut 10% to contrato ocasional salary

<table>
<thead>
<tr>
<th>Total number of employees in 2023 (in thousands)</th>
<th>Total Wage Bill in 2023 (in billions)</th>
<th>Savings in the next 3 years (in millions)</th>
<th>Savings in the next 5 years (in millions)</th>
<th>Average Change (%)</th>
<th>Wage Bill as share of GDP in 2023 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>498</td>
<td>8.12</td>
<td>1,021.00</td>
<td>2,772.00</td>
<td>-0.82</td>
<td>9.6</td>
</tr>
</tbody>
</table>
Chapter 4. Improving Strategic Public Procurement

Public procurement expenditure in Ecuador

The procurement of goods, works, and services carried out by the government of Ecuador added up to more than $35.5 billion between 2013 and 2017 (Figure 54). The country’s public procurement accounts for 33 percent of total government expenditure. This is one of the highest rates observed among Latin American countries. It also represents significant amounts in absolute terms, providing an excellent opportunity to improve the efficiency of public spending through lower prices and better quality.

Public works account for the largest share of the government’s procurement, amounting to almost 34 percent of the total in the period 2013-2017. This is followed by the purchase of goods (more than 30 percent of the total) and services (28 percent). However, data for 2017 show a different profile of procurement as a result of a substantial decrease in construction works. Services and goods consequently dominated government purchases, with each accounting for more than 30 percent of the total.

The procurement carried out by the government is geographically concentrated in a few provinces, thus facilitating the implementation and management of public procurement strategies. In fact, more than half of government purchases are executed in the province of Pichincha alone, where the capital Quito is located and where most of the central administration is based.

This analysis describes potential opportunities for procurement-related savings and efficiency gains as well as examining areas that could benefit from incremental improvement measures. The second part of the analysis delves into three product categories – vehicles, fuel, and paper – that represent ‘low-hanging fruits’ in Ecuador; i.e. areas that hold out the opportunity for high savings with little risk, coupled with additional short-term savings via customized strategies that are easy to implement. All three categories comprise a small number of homogeneous products that are easy to standardize with specifications well-known in the marketplace. Furthermore, these categories are procured by multiple...
government agencies in a fragmented fashion. This presents simple solutions to leverage the scale in order to lower purchasing prices and improve average quality.

**Savings analysis**

**An estimation of savings potential was conducted based on SERCOP data from 2013-2017.** The model used for this estimation explains 84 percent of unit price variance – a robust result for procurement data. It reveals several variables that have a statistically significant impact on contract prices. In each case, the variables can be directly leveraged by the government through the implementation of specific strategies or policies. These variables comprise: the quantities purchased; the procurement method; the bid evaluation and award time; the seasonality of the purchases; the rate of success of the processes; the bid preparation time, and; the publication of tender announcement and award notification. Several variables that could only be indirectly triggered by the government also presented a statistically significant impact. These include: the number of bidders; the market concentration; the level of supplier specialization; the size of the suppliers; the level of concentration of the awards in procuring entities; the nationality of the supplier, and; the supplier’s province of origin. Figure 55 presents a breakdown of the variables that impacted prices as well as a quantification of the potential savings through the proposed policy and strategy.

**Figure 55: Variables that impacted prices and quantification of the impact**

<table>
<thead>
<tr>
<th>Variable with impact on prices</th>
<th>Savings</th>
<th>Suggested policy or strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directly impacted by procurement policies or strategies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quantity</td>
<td>7.3%</td>
<td>One main contract to supply 80% of the annual demand of goods of high volume and low complexity.</td>
</tr>
<tr>
<td>Procurement method</td>
<td>2.5%</td>
<td>(1) To expand the use of e-catalogues for goods of high volume and low complexity; (2) to deploy reverse auctions more selectively, for goods of low complexity and competitive markets; (3) to curb noncompetitive procurement, especially for &quot;menor cuantia&quot; and &quot;regimen especial&quot; procedures.</td>
</tr>
<tr>
<td>Time to award a contract</td>
<td>1.3%</td>
<td>To implement electronic processes that are more dynamic and efficient to support award processing.</td>
</tr>
<tr>
<td>Seasonality</td>
<td>1%</td>
<td>To improve procurement planning and more predictable budget releases so as to avoid large concentrations of procurement in the last months of the year, and smooth distribution along the year.</td>
</tr>
<tr>
<td>Bidding success ratio</td>
<td>0.5%</td>
<td>To modernize procedures and information availability for contract management, with the goal of curbing cost and schedule overruns. To train officials in charge of contract management.</td>
</tr>
<tr>
<td>Time allowed to prepare and submit bids</td>
<td>0.3%</td>
<td>To allow more reasonable time for bidders to prepare responsive bids.</td>
</tr>
<tr>
<td>Publication of bidding opportunity</td>
<td>0.3%</td>
<td>(1) To publish an electronic request for bids for simple procedures; and (2) to notify electronically all registered bidders of any bidding opportunity on their area of business.</td>
</tr>
</tbody>
</table>
The analysis identified potential savings of between $7.3 billion and $7.9 billion, which could have been achieved between 2013 and 2017 through the development and implementation of new procurement strategies and policies. In order to achieve these savings, no changes to procurement laws and regulations would be required, but only a reengineering of current procurement strategies.

Potential savings are presented both on a conservative scenario, which demands changes to procurement strategies and policies, and an aggressive scenario, which requires demand management in addition to these strategies. To achieve the savings potential of the conservative scenario, changes and improvements to the strategies and policies used to undertake procurement and bidding processes will be needed. For the aggressive scenario, besides these strategies and policy changes, the government will need to work on the demand side. It can do so by managing procurement requests and replacing products and materials.

Figure 56: Savings potential in Ecuador’s public procurement relative to 2013-2017 (in billion dollars)

The strategic consolidation of the demand presents the opportunity to generate the largest savings (estimated at 7.3 percent). The analysis confirms that purchases in large volumes result in lower unit prices (Figure 58). It also shows that the government has considerable room for improvement in this area given the current level of demand fragmentation. Adopting one main purchase per year to supply to the government’s annual demand for high volume, low complexity items would result in material savings as
shown in the data. Even small consolidations, such as a main purchase for 30 percent of the annual demand, would result in prices that are significantly more economical.

**The second variable with the most potential for savings is the procurement method.** The use of appropriate procurement methods was estimated to carry a savings potential of 2.5 percent. Framework agreements, in particular, provide the best prices and should thus become the method of choice for the procurement of high volume and low complexity goods. The government could generate efficiency gains by increasing the use of procurement methods that rely on competitive processes and that enable demand consolidation, such as e-catalogues. This approach could also improve the competitiveness of public procurement processes as well as their transparency (Figure 58 and Figure 57).

**Figure 58: Unit prices (log) and procurement methods**

**Figure 57: Awarded value by level of competition in procurement methods**

Other direct variables with significant impact on purchasing prices include the efficiency of the bid evaluation and award processes and the seasonality of purchases. More efficient processes for bid evaluation and award (those that resulted in quicker turnaround times to make a decision and sign a contract) are associated with lower prices. This indicates that the development of electronic and simplified procedures could generate additional savings. The data revealed that seasonality is another aspect with significant influence on purchasing prices. In particular, the purchases carried out in the last two months of the calendar year present significantly higher prices (Figure 57). Considering that almost 30 percent of purchases are taking place in the last quarter of the year, the government could achieve substantial savings by improving its procurement planning, especially by smoothing out demand along the calendar year to benefit from lower prices.

**Other variables with a lower, yet still statistically significant impact on prices were identified through the savings analysis.** The rate of successful processes, measured as the share of procurement processes leading to an award, seemed to have an influence on purchasing prices. According to the results of the analysis, the government could save 0.5 percent on the total amount contracted by improving its performance in this area. The rate of successful procurement processes is an important metric in government procurement as failed processes will delay availability of the inputs necessary for delivery of
public services. Furthermore, procurement processes may fail for different reasons. These include the lack of bidder turnout, an absence of responsive bids, litigation, and bid prices over the available budget, among other reasons. Extending the time allowed for bid preparation in processes with short bid preparation periods (under 9 days) could also lead to a saving of around 0.3 percent. Publishing the tender announcement and the award notice for all procurement methods could deliver savings of a similar size.

A number of variables that can be indirectly triggered by government policies or strategies were also observed to have a significant impact on purchasing prices. The analysis confirms that the levels of competition and participation in procurement processes are critical to achieve savings. In fact, even a modest increase in the level of participation, such as having three bidders instead of one or two, is already shown to result in much lower prices (Figure 59). The government could save 2.4 percent of the awarded value with the increase of one additional bidder in low competition processes with just one or two bidders. Between 2013 and 2017, however, only 16 percent of procurement processes were carried out with three or more bidders and only 27 percent of processes had more than one bidder. This indicates that the government’s procurement processes have significant room for improvement in this area. Market concentration is another indirect variable that exerts a significant impact on prices. In markets where one supplier concentrates most of the awards, purchasing prices are significantly higher (Figure 60). Given the high levels of concentration observed in the data, this seems to be another area where specific strategies could yield significant savings for the government. Indeed, strategies aimed at diversifying the base of suppliers could deliver an estimated saving of 1.8 percent of the awarded value. Finally, the savings analysis reveals that a moderate level of specialization of the suppliers is associated with better prices. It also shows that additional savings could be obtained by encouraging increased participation from large firms and foreign suppliers, as well as local firms from the same province as the procuring entity.

The savings potential identified through the analysis is not homogeneous across all procuring entities and all item categories. The cost-benefit ratio in terms of saving opportunities and improvement of procurement outcomes is shown by experience to emerge from procurement strategies that consider factors such as volume of demand, complexity, and risk.
The spending analysis shows that the government procures a large array of goods, works, and services with varying levels of complexity and risk. A “supply positioning” tool was used as part of the analysis to identify item categories with the highest savings opportunities, on the one hand, and the least complexity and risk, on the other. As part of this exercise, the goods, works, and services purchased by the government were classified according to the following three variables: (i) amount of the expenditure, (ii) market complexity, and; (iii) number of suppliers. Based on these criteria, three categories were selected for strategic sourcing. Collectively, they hold a savings potential estimated between $199 million and $260 million over a five-year period.
Strategic Sourcing Analysis

Identification of three families of items with high potential for short-term savings

This study was carried out with the objective of identifying a first set of strategies to be implemented in the short term. Three item families were selected to be analyzed in detail – vehicles, fuel and paper supplies. The identification of these specific items was based on the following criteria:

- They consist of a small group of homogeneous goods and services;
- They are easy to standardize with known and established specifications from the market;
- They are procured by multiple government entities in a fragmented and dispersed fashion;
- Demand consolidation is relatively simple and has the potential to reduce prices.

Two different scenarios were designed to estimate the potential savings that could derive from the implementation of strategic changes in these three item categories. The “conservative” scenario assumes the implementation of innovative and modern procurement strategies that leverage the purchasing power of the government in the market to obtain lower prices and, in some cases, increase and standardize quality. The “aggressive” scenario simulates that - in addition to the procurement strategies - the government adopts optimization measures to curb its current level of consumption and/or replace products. In both scenarios, these savings can be achieved without any modification to existing procurement laws or systems.

The potential savings for the three selected families of items are substantial in regard to the volume of purchase of the government. The conservative scenario, which assumes the implementation of low-cost and short-term measures, shows potential savings of 19 percent ($199 million) for all three families. The implementation of more comprehensive procurement changes, as estimated by the aggressive scenario, would yield potential savings of 25 percent ($260 million) for all three families.

Figure 64. Potential savings on three strategic families of items, 2013-2017 (in million dollars)

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74 Savings for this scenario are calculated based on prices currently paid by the government.
Analysis of a category for strategic sourcing: procurement of vehicles

This section analyzes the family of items with the highest potential for the implementation of cost-saving strategies and policies: namely, the procurement of vehicles. The analysis looks at the main characteristics of this specific family of items, as well as at the impact on purchasing prices of a set of variables. This set includes: the volume of purchase; the procurement method; the level of competition; the level of demand fragmentation, and; the seasonality of the purchases. The section ends with specific proposals of procurement policies or strategies that could be implemented to improve government efficiency in the procurement of vehicles and related items.

The procurement of vehicles provides an excellent opportunity for strategic sourcing. Vehicles are high-value products with standard specifications. They are also purchased by numerous government entities. These two factors make them ideal candidates to generate substantial short-term savings through the implementation of specific procurement strategies.

Between 2013 and 2017, the government’s demand for vehicles and related products amounted to $560 million. Public expenditure in this category was distributed between motor vehicles (80 percent of the total) and vehicle parts and accessories (20 percent). Pickup trucks were the main product purchased in this category, accounting for 21 percent of the total amount purchased.

The analysis revealed that 54 percent of the government’s demand for vehicles comes from the province of Pichincha, where the capital Quito and the central administration are located. However, the demand from local governments (provinces and municipalities) is also significant (more than 40 percent of the total). These findings call for the implementation of strategies to consolidate government demand for these products.

Substantial demand fragmentation can be observed in the purchases of vehicles. More than 1,200 government entities procured products from this category, most of them in relatively small volumes. Of these entities, 75 percent purchased three vehicles or fewer per year. In 2016, meanwhile, a total of 807 processes were carried out for the purchase of vehicles. However, 75 percent of these were for one unit only. In addition to impeding economies of scale, purchases in small volumes were associated with higher-unit prices, possibly resulting from over-specifications (Figure 65).

Figure 65: Purchased quantity and unit prices, purchases of pickups

Vehicle purchases are also characterized by extremely low levels of competition. More than 75 percent of the processes conducted between 2013 and 2017 were carried out with a single bidder. This result is consistent across all sectors of governments, including in entities with a large volume of purchases. The analysis confirmed that the number of bidders impacted both the unit price and the discount rate obtained by the government.

Demand fragmentation and low levels of competition results in a large dispersion of prices paid for similar products. The data show that some suppliers charge different prices to different government entities for similar or identical products. Price dispersion might also result from the lack of a comprehensive policy for the purchase of new vehicles, which allows government agencies to purchase products with functionalities that exceed user needs.

The analysis also reveals that most vehicle purchases occur in the last quarter of the year. This trend is particularly visible in the purchases of the main product of the category, which are heavily concentrated in the last quarter (45 percent) and particularly in December (28 percent). This could result from a repressed demand throughout the year or from an attempt to execute a large portion of the remaining budget at the end of the fiscal year, given that vehicle purchases are relatively simple to carry out and are typically high value.

December is the month with the highest volume of purchases, but also the highest unit prices. The main product in the category, for example, presents a unit price 15 percent higher in December than the median unit price of the other 11 months of the year. The introduction of new vehicle models towards the end of the calendar year is one of the possible explanations for this result.

Figure 66: % of awarded value and unit price (median) per month

As expected for this high-volume and low-complexity category of products, the choice of procurement method presents a significant impact on purchasing prices. In particular, framework agreements demonstrate consistently better unit prices than other procurement methods. This result seems consistent with the fact that framework agreements allow the government to leverage its purchasing power and to generate economies of scale through demand consolidation.

75 The discount rate is calculated as a percentage difference between the budget planned by the authorities and the actual amount awarded for a given procurement process.
Consolidated purchases are particularly well-suited to the purchase of vehicles and should respond to a large part of government demand. However, the use of framework agreements for the procurement of vehicles remains relatively low among procuring entities, accounting for only 25 percent of the total amount purchased. This could indicate a dissatisfaction with the offer available in the electronic catalogue or could simply reflect the preference of buyers for specific vehicle models. In any case, this trend could have counterproductive consequences such as higher demand fragmentation, efficiency loss, increased costs, and more complex fleet management.

Government demand for vehicles seems to be attractive to suppliers, which should provide the government with certain bargaining power. Despite the low competition levels observed in the data, the government managed to attract more than 1,100 suppliers for its vehicle purchases. Further proof of the government’s credibility as a buyer of vehicles is the fact that major car manufacturers and foreign suppliers are among the largest suppliers of the category.

The government purchased 1,437 new vehicles per year on average between 2013 and 2017. Despite the deceleration observed since 2015, the size of the fleet remains sufficiently significant to justify the definition and implementation of specific procurement strategies and policies. The adoption of a fleet management policy would be particularly useful to control the fleet’s annual growth rate and costs.

In Ecuador, the bid evaluation criteria for government entities procuring vehicles consider the price of acquisition but not the cost of either maintenance or operation. The use of a more elaborated metric that considers fuel and maintenance costs – such as the price per kilometer – could help the government generate additional savings. Experience has shown that the acquisition price tends to represent only 67 percent to 85 percent of the total cost of ownership (TCO) of a vehicle. With an adequate and efficient fleet management policy, the operating costs of the fleet should represent between 14 percent and 33 percent of its total costs. The data of vehicle purchases reveal that the government is far from this ideal scenario since the operating cost of its vehicle fleet currently represents 55 percent of its total costs (Figure 67).

Figure 67: Total costs of the government’s vehicle fleet

A centralized fleet management strategy that considers asset depreciation could also generate fiscal savings by helping to minimize the total cost of ownership of the government’s fleet. The operating cost of a fleet of vehicles is known to increase with asset depreciation. Considering the current size of the

76 World Bank analysis based on Automotive Fleet and Business Fleet.
government’s fleet and its annual growth rate, the development of a dedicated strategy could ensure that a gradual replacement of the fleet minimizes total acquisition and operating costs.

Based on the main findings and results of the analysis carried out for vehicles, the following tactics are proposed for future procurement policies and strategies:

Conservative Scenario:

- Consolidate the demand in one main contract for products purchased in large volumes in low complexity markets, in particular through framework agreements;
- Design functional specifications and establish limits to individual requirements for the purchase of vehicles in order to avoid over-specifications.

Aggressive Scenario:

- Adopt a more sophisticated criterion for the evaluation of bids when acquiring vehicles that reflects the total cost of ownership (TCO), such as the price per kilometer;
- Standardize the technical specifications and requirements in accordance with the needs of the end users;
- Develop and implement a fleet management policy to optimize the replacement of aging assets and to minimize the total cost of ownership of the vehicles;
- Improve procurement planning to control the demand for vehicles in the last months of the year, which tend to have higher unit prices;
- Combine different strategies, such as leasing or purchase and maintenance, based on the expected use of the vehicle.

Methodology

The methodology used to analyze each of the selected families of items is based on the "strategic sourcing" model. This approach, which has been applied by many high-performance private and public sector entities, consists of the following six milestones (Figure 68). The present analysis advanced the three first three milestones; namely, the spend analysis, the market analysis, and the identification of potential strategies to generate savings.

Figure 68: Strategic Sourcing Model


The spend analysis consists of a review of current procurement arrangements and their implementation. This involves achieving an understanding of the existing procurement processes, identifying internal and external limitations on each of the selected procurement item group, and assessing the needs and requirements from management and users for those items. In general, this stage includes a review of eight key dimensions: volume, prices, demand, suppliers’ competitiveness, evaluation criteria, restrictions, specifications, and processes. The extent of the review is dependent on the information available.
The market analysis involves a review of the supplying market. This stage is also reliant on the availability of relevant information but should include factors such as the structure of the local supply market, the level of competition, relevant laws and regulations, and government purchasing power, among others.

The third step in the strategic sourcing model is the development of a procurement strategy aimed at generating savings. The parameters that guide this analysis include economies of scale, price negotiation, expansion of the supplier base or optimization of the relationship with current suppliers, improvement of procurement procedures, and changes in technical specifications (Figure 69). The results of the analysis lead to the selection of different strategies for each of the families of items identified for strategic sourcing, based on their specific characteristics. These strategies might be oriented towards price reduction, which is generally a more conservative approach, or towards the improvement of efficiency, which is a more aggressive approach and requires deeper measures.

Figure 69. Parameters for the definition of a savings strategy

Once the strategies have been assessed and defined, their implementation details can be developed. This requires the confirmation of the key aspects needed to implement the strategies, such as commitment from key agencies, legal support, and definition of roles and responsibilities among relevant government functions. Relevant information includes reports on data, redefined bidding documents, and the design of new processes. This stage culminates with the agreement of the government to implement the strategy. In general, the strategies should be designed so that no law or decree is necessary for their undertaking. In this case, the incremental changes proposed for each of the items are a series of separate, although coherent, actions that can be implemented in the short-term and that do not require changes to the procurement legal framework.

Finally, the last milestone corresponds to the implementation of the strategies. It supports the government during contract execution and includes evaluation of the performance of suppliers through performance indicators, monitoring of savings and results, collection of feedback from end users, and training and capacity building for government officials. The goal of the capacity-building initiatives is to create permanent conditions for implementing the successive approaches, as per the methodology described above.
Ongoing reforms

The Government of Ecuador drafted a new procurement law after the presentation of the main conclusions of the procurement chapter. The draft law features substantial improvements to the prevailing law when this work was done, and many novelties align with the conclusions of this procurement chapter. The draft law places MEF as the chair of the Board of Directors of the procurement system, which seems to indicate increased focus on efficiency.

The draft law tightens the conditions for use of special regimen procurement procedures, which the analysis of this report found to result in more expensive prices. In addition, the draft law improves the ability of the procurement regulatory body to monitor and fight monopolies and oligopolies in public procurement at the buyer level. This work showed a good number of buyers with concentrated markets and this new feature can potentially help break up inefficient monopolies or oligopolies in procurement.

On the subject of preparation for bidding, the draft law adds the pre-bidding stage to the scope of the regulation. This report shows that poor planning led to bunching of procurement at the end of the year, biased and over specifications among other issues that can only be addressed prior to the launch of the bidding.

The draft law restricts the use of “menor cuantia” procedures or small value procurement, by removing awards based on raffle and direct selection. These could be awards up to US$ 70k on goods and services and US$250k on works per contract. However, the process remains arbitrary and award criteria for “menor cuantia” will not be based on monetary criteria. Still on small-value procurement, the draft law will require reporting of procurement under “infima cuantia”, which are contracts up to US$7,000 individually. Reporting of these procurements are important to identify buyers that are chopping demand to fit the threshold.

The draft law tightened procedures for procurement under emergency situations and requires reporting. But a few opportunities were missed by the draft law, starting with the use of catalogues, which are not mandatory; data showed that the catalogues resulted in the most economical prices in the past. Many countries with high-performing systems will require buyers to purchase from catalogues unless a buyer can justify, such as finding a lower price somewhere else, or specifications do not meet requirements.

The draft could treat bidding procurement based on strategies rather than just thresholds. This report showed that buyers employ the same strategy to procure goods, works and services regardless of their risk, complexity, buyer leverage and criticality for service delivery.

On the area of unsuccessful bidding, the reasons for canceling a bidding process could be better developed as this has a material impact on prices and efficiency. The draft law allows for the use of a less competitive method following cancellation of a process and this might become an incentive for buyers to pay little attention to successfully completing a bidding process.

The draft misses innovative approaches in procurement, such as the use of life cycle costs as evaluation criterion. The analysis presented in this report showed that awards based on lowest acquisition price might not be the lowest cost to the government when maintenance, repairs and operational costs are factored in. Also, innovative procurement methods such as competitive dialogue, best and final offer which can benefit complex contracts could be considered.
As with the original law, the draft places a heavy preference on domestic companies and domestic content on bids. While this is a legitimate goal to pursue in procurement, it could also consider allowing some wiggle room to have a more level-playing field for foreigners in special circumstances, such as inefficient monopolies and oligopolies as well as cases in which the Government might need to hire top-notch consultants or innovation.

The draft law is silent about technical specifications, despite the fact that data showed that specifications played a critical role in less competitive methods, lower bidder turnout and, ultimately, higher prices. Either at the law or at lower level regulations, the Government should consider giving clear instructions on requirements for preparing technical specification, so as to base them on functionality and needs as opposed to wants (which result in specifications that buy exactly based on available budget).

An additional remaining opportunity is in the area of thresholds for noncompetitive and less competitive methods, such as “infima cuantia” and “menor cuantia”. At the time of this writing, they are one of the highest in Latin America. Perhaps linking the use of these methods to specific items, rarely purchased by the government, rather than a threshold which can be applied to all products could be a good solution. Thresholds that apply to all products can have the undesired consequence of evasion of demand consolidation initiatives, such as the catalogues.
Chapter 5. Efficiency of Public Spending in Basic Education in Ecuador

Ecuador has made important investments in public education in recent years. According to data from UNESCO, Ecuador’s public expenditure on education increased from 1.5 percent to 5.0 percent of GDP between years 2000 and 2015. This increase, the largest one registered in Latin America and the Caribbean during this period, led Ecuador to surpass the average levels of education spending of its regional peers (Angel-Urdinola and Vera Jibaja, 2018). During these years, the country made significant progress towards achieving universal access in primary and secondary education, while improving overall education quality. Yet, despite these achievements, Ecuador still has important access and learning gaps that particularly affect children in poor, rural localities and those from minority ethnic groups (ibid.).

Ecuador will need to maintain and sustain the progress achieved in the past decades within a context of limited fiscal resources. The rise in social spending in Ecuador between 2001 and 2014 was fueled by government-led economic growth and procyclical public investments that were possible due to high public revenues from oil exports in a context of favorable international oil prices. After international oil prices began to drop in 2015, fiscal savings in Ecuador started to deplete quickly, making it hard for the country to sustain its levels of social expenditure. These fiscal imbalances are expected to continue to affect the country in the coming years. To sustain the progress achieved and continue to improve its education outcomes, Ecuador’s education system will need to do more with less. This requires it to build the capacity of school districts to develop policies and interventions that are targeted to schools and children with the largest needs, while promoting widespread efficiency gains.

The main purpose of this chapter is to assess the efficiency of spending on basic education amongst school districts in Ecuador and identify districts capable to use available resources more effectively. The study uses available administrative data on educational inputs and per-pupil spending to quantify how much school districts in Ecuador can generate, with these inputs, student learning and progression/retention rates into secondary school. Using Data Envelopment Analysis (DEA) to produce a technical efficiency frontier, it is possible to assess how different school districts fare when compared to other districts with similar resources. Based on the model assumptions, differences in efficiency across districts can be attributed to variances in management practices and/or governance across districts. Results from the analysis allow to rank districts according to their observed efficiency. Such an approach would allow the government to develop targeted interventions to support districts with low levels of efficiency, as well as to assess and scale-up good management practices in districts that show high levels of efficiency.

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77 This chapter was prepared by Diego F. Angel-Urdinola, Juan Bedoya (World Bank), and Victor Javier Prado (Ministry of Education). The authors acknowledge important inputs and contributions from technical staff from the Education Research Directorate at the Ministry of Education, the National Institute of Evaluation (INEVAL), and the Ministry of Economy and Finance (MEF).

78 Regional Peers: Argentina, Brazil, Chile, Colombia, Mexico, and Peru. Structural Peers: Azerbaijan, Belarus, Colombia, Kazakhstan, Malaysia, Peru, Romania, and South Africa.

79 Between years 2007 and 2017, net enrollment rates in basic education in Ecuador increased from 91.4 percent to 96.1 percent, while net enrollment rates in upper-secondary rose from 51.2 percent to 70.8 percent (Angel-Urdinola and Vera Jibaja, 2018). Of all Latin American and Caribbean countries, Ecuador displayed the highest improvement in student performance for reading and mathematics per UNESCO’s SERCE (2006) and TERCE (2013) standardized tests.
Education Spending in Ecuador

Despite significant increases in education spending as a percentage of GDP, relative spending on basic education has remained largely unchanged in recent years. Ecuador’s public expenditure on education increased from 1.5 percent to 5 percent of GDP between 2000 and 2015. This increase led Ecuador to surpass the average education spending of its structural and regional peers (Figure 70). This increase was primarily driven by higher expenditures in teacher salaries, recent capital investments, and tuition subsidies (Gratuidad) in higher education (HE). Since 2010, expenditures on basic education have oscillated between 2.4 and 2.6 percent of GDP, implying that expenditure increases after 2010 have been mainly explained by a rapid increase in HE spending.

Figure 70: Government expenditure on education, total (% of GDP), 2000-2015

Source: UNESCO for structural/regional peers. SICES (Sistema Integrado de Conocimiento y Estadística Social).

Teachers’ salaries in Ecuador grew rapidly between 2010 and 2018. Current expenditures in Ecuador (notably teachers’ salaries) accounted for between 72 percent and 88 percent of overall expenditures in Ecuador in the 2010-18 period (Table 10). As part of the government’s priority to revalorize the teaching profession, average monthly salaries for teachers more than doubled (from $396 to $817) between 2006 and 2015. Moreover, around 17,000 new teaching positions were created in basic education from 2011 to 2013, contributing to an 11-percent expansion in the number of teachers employed by MINEDUC (Harvey, 2016). In 2016, 90.6 percent of the teachers were regularized with open-ended appointments and 29.4 percent (or about 479,000 teachers) benefited from a salary increase thanks to the “Re-categorización” program.80

Table 7: Composition of Education Expenditures in Ecuador

<table>
<thead>
<tr>
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<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>% Current</td>
<td>87.9%</td>
<td>78.8%</td>
<td>83.7%</td>
<td>71.9%</td>
<td>74.9%</td>
<td>85.7%</td>
<td>86.9%</td>
<td>82.2%</td>
<td>87.9%</td>
</tr>
<tr>
<td>% Investment</td>
<td>9.1%</td>
<td>18.3%</td>
<td>14.2%</td>
<td>25.4%</td>
<td>20.0%</td>
<td>11.8%</td>
<td>11.0%</td>
<td>15.2%</td>
<td>10.4%</td>
</tr>
<tr>
<td>% Capital</td>
<td>1.9%</td>
<td>2.2%</td>
<td>1.6%</td>
<td>2.3%</td>
<td>4.6%</td>
<td>2.0%</td>
<td>1.7%</td>
<td>2.3%</td>
<td>1.1%</td>
</tr>
<tr>
<td>% Others</td>
<td>1.1%</td>
<td>0.7%</td>
<td>0.5%</td>
<td>0.4%</td>
<td>0.4%</td>
<td>0.5%</td>
<td>0.4%</td>
<td>0.3%</td>
<td>0.6%</td>
</tr>
</tbody>
</table>

80The program was developed for teachers who want a career in the teaching profession. The program includes a series of teacher examinations and evaluations that aim to make teacher promotions more transparent and meritocratic.
Nevertheless, Ecuador’s pupil to teacher ratios are still high compared to its regional and structural peers. Despite the government’s efforts to increase the number of teachers, pupil to trained teacher ratios in Ecuador for basic education are higher than those of its regional and structural peers (Table 8). In particular, Ecuadorian teachers in the basic education system need to serve classes that are larger by between 5 to 10 students on average, as compared to comparator countries. It is well established in the literature that lower pupil to teacher ratios are more conducive to learning as smaller classes allow teachers to provide more individualized attention to its students.

Table 8: Pupil-Trained Teacher Ratio [average 2010-18]

<table>
<thead>
<tr>
<th></th>
<th>Pre-primary</th>
<th>Primary</th>
<th>Secondary</th>
<th>Upper-secondary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecuador</td>
<td>27.4</td>
<td>30.4</td>
<td>30.3</td>
<td>28.3</td>
</tr>
<tr>
<td>Regional peers</td>
<td>27.9</td>
<td>25.8</td>
<td>23.0</td>
<td>22.5</td>
</tr>
<tr>
<td>Structural peers</td>
<td>17.2</td>
<td>19.4</td>
<td>18.8</td>
<td>20.6</td>
</tr>
</tbody>
</table>

Source: World Bank, Edstats

Moreover, teachers in Ecuador still display lowest levels of pay compared to other public administrators working on the education and culture sector. Having attractive and competitive teacher salaries in an essential factor to attract high-quality professionals into the teaching profession. Despite significant increases in teacher salaries in recent years, teachers display amongst the lowest salaries when compared to public administrators in the education-culture sector (Figure 71, left panel). For instance, the average monthly salary of professionals in the MINEDUC is about 37 percent lower than that of other professionals in the sector. Moreover, teacher salaries are significantly lower than those of bureaucrats and administrators within the same ministry (between 30 and 85 percent) (Figure 71, right panel).

Figure 71: Monthly salaries in the Education-Cultural Sector in 2018 [in US$1000]

Source: Ministry of Economics and Finance

Investment and capital expenditures in Ecuador reached a peak in 2013 but have been decreasing since then. Ecuador has made important investments on infrastructure over the last decade, such as the
construction of a series of new schools and universities, known as the *Millennium Schools* and the *Universities of Excellence*, respectively. These expenditures accounted for up to 28 percent of all expenditures in 2013. In 2018, the figure fell back to 10 percent, which is similar to 2010 levels. Moreover, the government has implemented several programs to reduce household out-of-pocket expenditures related to education. These programs, which aim to support school enrollment and prevent school drop-out, often come in the way of in-kind transfers to students, such as provision of uniforms and textbooks, school feeding programs, and fee waivers.\(^{81}\)

**Ecuador spends a very high share of resources on higher education compared to its regional and structural peers.** In the 2008 Constitution, Ecuador implemented the *Gratuidad* policy for higher education, which assures free access to public education (tuition plus other student subsidies) to individuals who enter State-run HE institutions. This policy has led Ecuador to spend a proportionally higher share of its education budget on tertiary education compared to its structural and regional peers (Figure 72). Moreover, this trend has been increasing rapidly in recent years since the HE system has been going through a rapid process of expansion (Ferreyra *et al*., 2017). Traditionally, countries spend a larger share of their budget on basic education because investments on primary and secondary education yield the highest social returns (Woodhall, 2007; Psacharopoulos and Patrinos, 2004). As such, spending on basic education is usually the priority for public spending on education in countries that have yet to achieve near universal enrollment in basic education, such as Ecuador. In addition, it is well documented in the education literature that the richest segments of the population benefit most from HE investments. This is especially true for developing countries. Yet it is this demographic who, in principle, are best placed to pay for these services and who should be responsible for part of their HE costs. In Ecuador, the majority of individuals enrolled in public HE belong to the highest income quintiles (Angel-Urdinola and Vera Jibaja, 2018), making HE spending highly regressive.

**Figure 72: Expenditure by educational level**
(% of government expenditure on education) (Right panel, circa 2015)

Note: Figures include expenditures on primary, secondary, and tertiary education. Data excludes other expenditures, such as expenditures on pre-primary education and adult education.

At the same time, Ecuador's average per-pupil spending in basic education remains low by international standards. Per-pupil current spending is considered as the best proxy to assess education expenditures.

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81 Since 2006, the $25 voluntary contribution for grades one to seven was eliminated and free text books were provided for students in these grades. In addition, the school feeding program (*Plan de Alimentación Escolar, PEA*) increased from 0.06 to 0.1 percent of GDP between 2010 and 2015 (Gutierrez *et al*., 2017).
According to administrative data provided by the MINEDUC, between 2010 and 2016 per-pupil expenditure in Ecuador on primary and secondary education increased by 10 and 23 percent, respectively (Error! Reference source not found. Table 9). Despite these observed increases, the levels of per-pupil expenditures in basic education in Ecuador are quite low for international standards. Indeed, comparative data from UNESCO for 2014 indicates that per-pupil current expenditure in primary (secondary) education in Ecuador is two (five) times smaller than that of regional peers (Figure 73) and is very low as compared to OECD standards. In contrast, Ecuador’s per-pupil expenditures in HE are almost twice as much as those of its regional peers (Figure 73). While per-pupil expenditures in HE are generally higher than those in basic education (because delivering HE is more expensive), the expenditure gaps in Ecuador are very large. This suggests that Ecuador is largely underinvesting in basic education.

Table 9 Per-pupil current expenditure in Basic Education [$ constant]

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>633</td>
<td>618</td>
<td>700</td>
<td>720</td>
<td>803</td>
<td>685</td>
<td>697</td>
</tr>
<tr>
<td>Secondary</td>
<td>273</td>
<td>282</td>
<td>322</td>
<td>328</td>
<td>372</td>
<td>335</td>
<td>336</td>
</tr>
</tbody>
</table>

Source: MINEDUC

Figure 73: Per-pupil current expenditure by education level ($ constant, PPP) (2014)

Finally, Ecuador stands out as one of the region’s most efficient countries in respect of its use of limited resources to support basic education. Despite its relatively low levels of per-pupil expenditure in basic education, Ecuador is one of the countries in the region that uses its resources most effectively to produce student learning. Figure 74 displays the efficiency frontier using Data Envelope Analysis (DEA) (see Section III below) for performance in mathematics using the sample of the 13 Latin American countries that participated in UNESCO’s TERCE learning assessment in year 2013. The figure indicates that, with an average expenditure on education per-student like that of Honduras, Paraguay and the Dominican Republic, Ecuador obtains better results in mathematics. Its math results are comparable to those of countries such as Colombia and Brazil that invest far more resources per-pupil. In fact, Ecuador is one of the countries in the region capable of producing the highest results in mathematics, given its level of per-pupil expenditure.
Relative Efficiency of Public Spending in Basic Education

The efficient use of public investments on education constitutes a major policy challenge. It is well established in the education literature that investments in education, especially in basic education, have high social returns and a strong capacity for triggering higher rates of economic growth (Hanushek and Woessmann, 2008; Barro, 2000). Nonetheless, the literature also shows that higher levels of education expenditure do not warrant better educational outcomes (Jackson et al., 2015; Hanushek, 2003). Available studies, for example, indicate that the median school in OECD countries could improve learning outcomes by 22 percent using the same amount of available resources (Kocak and Mete, 2011; Sutherland et al., 2007). Differences in efficiency of spending across schools and school districts has often been attributed to differences in governance and management practices (Gupta and Verhoeven, 2001). As such, governments not only face the challenge of spending the adequate level of resources on education, but also the challenge of spending them effectively and efficiently at the local level.

This section assesses efficiency of public spending in basic education among school districts in Ecuador for academic years 2015-16 and 2016-17. Efficiency studies have been used by researchers and policy makers for several decades (Farrel, 1957; Lovell & Schmidt, 1988). Efficiency represents an important concept from both a theoretical and empirical point of view. Efficiency analysis permits the identification of best practices among production units in the education systems (e.g. schools and/or school districts) in the allocation of available resources. The goal of such an analysis is to achieve the maximum possible results with the available inputs. In a context of great heterogeneity of needs, resources, and management capacities throughout the territory, assessments of expenditure efficiency help highlight where resources are being used properly and which best practices could be scaled up.

Decisions about education spending in Ecuador have traditionally been highly centralized, limiting the capacity of schools and school districts to manage their own budget. Notwithstanding, the education organic law of 2011 (Ley Orgánica de Educación Intercultural, LOEI) gave schools districts in Ecuador higher
levels of autonomy for the allocation of resources. The new law also devolved responsibility to school districts to develop and implement plans aimed at improving education quality in their constituent schools. This section assesses the efficiency of public spending on basic education among Ecuador’s 140 school districts. School districts in Ecuador are responsible for allocating resources for schools within the district and for developing plans to improve the education quality of its constituent schools. A typical school district in Ecuador oversees between 50 and 100 schools. The analysis is conducted for academic years 2015-16 and 2016-17 (Costa and Sierra regimes).

Efficiency estimates are produced using the Data Envelope Analysis (DEA). Efficiency analysis mainly consists in estimating a technical efficiency frontier, which represents the highest level of output that can be produced with the available inputs and for a given production technology. DEA is a methodology widely used to estimate technical efficiency frontiers. It is a deterministic methodology that uses linear programming methods. Given a set of observed inputs and products, the methodology constructs the technical efficiency frontier by joining linear segments that measure how far each unit of analysis is from the best-performing unit for a given level of inputs, assuming all units have a common production technology (Coelli and Rao, 2005). It does not require the establishment of distributional assumptions and it allows analysis with multiple products simultaneously. This feature is very relevant in the field of education, where products often relate to several outcomes, such as performance in tests standardized, as well as to variables concerned with coverage, graduation, dropout, and repetition, among others (see Box 15).

Box 15: Data Envelope Analysis

Considering that information is available for $N$ school districts, the linear programming problem presented in [1] is a solved for district $i$ with an output-oriented DEA (i.e. policy makers seek to maximize educational products given the inputs available):

$$\begin{align*}
\text{max}_{\theta, \lambda} \theta, \\
\text{st.} \quad -\theta y_i + Y\lambda, \\
\quad x_i - X\lambda \geq 0, \\
\quad \lambda \geq 0
\end{align*}$$

$y_i$ is a vector $M \times 1$ of output quantities for district $i$

$x_i$ is a vector $K \times 1$ of input quantities for district $i$

$Y$ is a matrix $N \times M$ of output quantities for the $N$ districts

$X$ is a matrix $N \times K$ of input quantities for the $N$ districts

$\lambda$ is a weights vector and $\theta$ is a scalar

The problem presented in [1] is solved for each of the $N$ districts, producing a value of $\theta$ and a vector $\lambda$. The parameter $\theta$ gives information about the technical efficiency of the district ($TE = 1/\theta$) and the vector $\lambda$ identifies the peer districts against which the district is compared for which the linear programming problem is being solved. The figure below graphically presents the efficiency measurement using an output-oriented DEA model. Suppose then that we have four districts (A, B, C, D), which have the same levels of inputs to produce two educational outcomes: (i) pass rate, and (ii) standardized test scores. For the case of district B, the peer districts are districts A and C. Suppose that the product combination reached by district B corresponds to point B'. The

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82 Given its deterministic nature, DEA is highly sensitive to outliers in the data and measurement errors. To minimize these effects, estimates presented here use Robust DEA estimates (Ben-Tal and Nemirovski, 2000). Robust estimates account for some uncertainty in the observed levels and distribution of inputs and reduce specification errors.
The analysis relies on data provided from the MINEDUC, the Ministry of Economic and Finance (MEF), and the National Institute of Evaluation (INEVAL). Efficiency estimates are produced using three main sources of information: (i) the AMIE dataset (MINEDUC); (ii) the eSIGEF system (MEF), and; (iii) the Ser Bachiller assessment (INEVAL). The AMIE contains administrative information about education inputs and results in public and private educational institutions throughout the country. The AMIE contains school-level information related to human resources (students, teachers and administrative staff), physical infrastructure, and selected education outcomes (such as student enrollment and progression). For information related to expenditures allocated to school districts, the study uses data from the Integrated Financial Management System (eSIGEF). Finally, the analysis uses data from the Ser Bachiller assessment, a compulsory exam and a main requirement for students to graduate from secondary school. The assessment is used as the entry exam by most HE institutions. The test is implemented periodically by the INEVAL and is designed to assess the skills and abilities that students must achieve at the end of their secondary education.

**Education Outputs**

**Three main education outcomes were included in the analysis.** The selection of education outcomes was made to assess the main two main objectives education systems, notably their capacity to (i) retain students in the system, and (ii) to assure that student learn. To quantify the system’s capacity to retain students in the system, we used available administrative data to calculate “pass rates” and “retention rates” at the district level. These variables were constructed for students in General Basic Education (EGB) and Unified General Baccalaureate (BGU). The pass rate was constructed as the ratio between the total number of students who passed the respective grade divided by the total number of students enrolled at the end of the year. The retention rate was constructed as the ratio between the total number of students enrolled at the beginning of the academic year who remain enrolled at the end of the year divided by the...
total enrollment at the beginning of the year. To quantify the system’s capacity to ensure that students learn, we calculated the average score in mathematics and language (which oscillates between 1 and 10) obtained by students in their last year of BGU, along with which students took the Ser Bachiller learning assessment in their respective district. Table 10 presents a set of descriptive statistics for each output.

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Variable</th>
<th>Mean</th>
<th>S.D.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015-16</td>
<td>Pass rate (%)</td>
<td>95.74</td>
<td>1.97</td>
<td>87.43</td>
<td>99.08</td>
</tr>
<tr>
<td></td>
<td>Retention rate (%)</td>
<td>97.52</td>
<td>1.11</td>
<td>93.08</td>
<td>99.33</td>
</tr>
<tr>
<td></td>
<td>Average Score “Ser Bachiller”</td>
<td>7.05</td>
<td>0.46</td>
<td>5.79</td>
<td>8.44</td>
</tr>
<tr>
<td>2016-17</td>
<td>Pass rate (%)</td>
<td>95.38</td>
<td>2.03</td>
<td>88.29</td>
<td>98.78</td>
</tr>
<tr>
<td></td>
<td>Retention rate (%)</td>
<td>97.35</td>
<td>1.20</td>
<td>92.67</td>
<td>99.58</td>
</tr>
<tr>
<td></td>
<td>Average Score “Ser Bachiller”</td>
<td>7.30</td>
<td>0.29</td>
<td>6.09</td>
<td>7.89</td>
</tr>
</tbody>
</table>

Source: AMIE and “Ser Bachiller” datasets.

**Education Inputs**

The analysis includes inputs whose allocation can be influenced by school district authorities. The analysis only includes discretionary inputs, defined as those that are susceptible to being transformed through public policy and whose allocation can be influenced by educational authorities at the school-district level. These inputs are mainly related to human resources (notably teachers), school infrastructure, and per-pupil spending. To assess human resources, we use the Number of teachers per 100 students; to assess infrastructure we use the Number of Computers per 100 students and Number of classrooms per 100 students. Finally, we use data on Current per-pupil expenditure. Table 11 below shows a set of descriptive statistics for each of the inputs included in the analysis.

---

83 While the level of inputs of the education production function is important, the quality of education inputs is also important. Unfortunately, there is no information available about the quality of infrastructure at the school district level. Data from INEVAL allows to proxy for teacher quality based on the results of teacher assessments (Ser Maestro), conducted in year 2016. However, this information is only available for one academic year. We included in the analysis a variable with the district’s average score of teachers for year 2016. With the inclusion of this variable, the results of the analysis remained practically unchanged. Since the analysis conducted aimed also to assess changes in efficiency over time, we decided to exclude this variable to assure total comparability of the analysis across academic years (2015-16 and 2016-17).

84 Students and households are important inputs in the education production function (Glewwe and Kremer, 2016). However, they are not discretionary to public policy. Education authorities need to attend and adjust to the levels of human capital and ability of their students and of the households where they reside. As such, some school districts may not reach full efficiency levels (in terms of educational outcomes) because they need to attend students who may enter the system with cognitive or developmental gaps. For this reason, to avoid such noise in the analysis, variables often used to proxy for quality of students and households (such as local poverty estimates and levels of education of the students’ parents) are deliberately excluded from the analysis.
Table 11: Descriptive statistics of education inputs included in the analysis

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Variable</th>
<th>Mean</th>
<th>S.D.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015-16</td>
<td>Computers x 100 students</td>
<td>3.55</td>
<td>1.72</td>
<td>0.90</td>
<td>9.49</td>
</tr>
<tr>
<td></td>
<td>Teachers x 100 students</td>
<td>4.78</td>
<td>1.13</td>
<td>3.02</td>
<td>8.87</td>
</tr>
<tr>
<td></td>
<td>Expenditure x student</td>
<td>859.54</td>
<td>461.01</td>
<td>304.96</td>
<td>4024.36</td>
</tr>
<tr>
<td></td>
<td>Classrooms x 10 students</td>
<td>3.01</td>
<td>1.40</td>
<td>0.79</td>
<td>7.67</td>
</tr>
<tr>
<td>2016-17</td>
<td>Computers x 100 students</td>
<td>3.59</td>
<td>1.66</td>
<td>0.87</td>
<td>9.60</td>
</tr>
<tr>
<td></td>
<td>Teachers x 100 students</td>
<td>4.77</td>
<td>1.05</td>
<td>3.01</td>
<td>7.72</td>
</tr>
<tr>
<td></td>
<td>Expenditure x student</td>
<td>839.36</td>
<td>416.01</td>
<td>318.93</td>
<td>3719.18</td>
</tr>
<tr>
<td></td>
<td>Classrooms x 10 students</td>
<td>2.93</td>
<td>1.36</td>
<td>0.76</td>
<td>7.42</td>
</tr>
</tbody>
</table>

Source: AMIE dataset and eSIGEF

Main Results

The results indicate that school districts in Ecuador are quite efficient at maintaining children in the education system, but not so much at ensuring their learning. Using DEA, we obtain an efficiency estimate that oscillates from 0 to 1 for each of the 140 school districts in Ecuador. Higher values indicate higher efficiency levels. We produce such estimates for two different models: (i) model 1, which uses output variables that proxy the district’s capacity to retain children in the school system (e.g. pass rates and retention rates at school districts), and; (ii) model 2, which uses learning as the main output variable (e.g. average district score in mathematics and language in the Ser Bachiller assessment). Figure 75 presents a series of histograms that illustrate the distribution of the efficiency estimates across all 140 school districts for both models presented above and academic years 2015-16 and 2016-17. Results indicate that education districts in Ecuador are reaching their maximum efficiency capacity when it comes to maintaining children in the education system. The average efficiency of school districts at maintaining children in the system reaches 0.98 (very close to 1). At the same time, there is little dispersion across districts in this efficiency measure, with the lowest performing district still reaching a high level of efficiency (0.93). On the contrary, results also indicate that school districts are less efficient when it comes to assuring student learning. The average efficiency of school districts at assuring learning was 0.84 in academic years 2015-16 and 0.92 in academic year 2016-17 (a significant increase). Also, there is higher dispersion across districts in this efficiency measure. Efficiency results under both models are positively correlated (with a correlation coefficient of 0.24 for academic years 2015-16 and 0.36 in academic year 2016-17) (Table 12). This positive correlation indicates that schools that are more efficient at maintaining students in the education system are also positively associated with higher student learning. However, this correlation (albeit positive) is not that high, suggesting that achieving higher levels of efficiency in student retention does not always ensure high levels of efficiency in student learning (and vice-versa).
Results from the analysis confirm that having access to more resources does not necessarily assure better educational results. Figure 76 and Figure 77 present the technical efficiency frontiers obtained applying DEA at the school district level for model 1 and 2, respectively. The Y axis plots the efficiency frontier and the X axis plots an index of resources constructed as the simple average of all inputs used in the analysis, normalized between 0 and 1. A higher index is associated with a higher level of school resources. Results in Figure 76 illustrate that school districts can achieve high levels of efficiency (model 1) rather independently of their level of resources. Indeed, school districts with low levels of resources, such as Pascuales, can achieve similar efficiency levels of school districts with a much higher level of
resources, such as Calvas Gonzanama. At the same time, large gaps can exist in efficiency across districts with similar levels of resources, such as between Pangua and Lograno Sacua (Figure 76).

Figure 76: Technical efficiency frontier using DEA, 2016-17
Model 1: Pass and retention rates

Source: Author’s estimates

Figure 77: Technical efficiency frontier using DEA, 2016-17
Model 1: Learning assessment (*Ser Bachiller*)

Source: Author’s estimates
Differences in efficiency are often attributed to governance and management practices. Figure 77 indicates that having access to more resources does not necessarily ensure better student learning. Interestingly, these two school districts display similar efficiency patterns under models 1 and 2. Moreover, we also observe large gaps in the capacity to ensure student learning across districts with similar levels of resources, such as between San Pedro de Pelileo and Taisha. As mentioned before, differences in efficiency of spending across schools and school districts have often been attributed to variances in governance and management practices. Using these results, the government could therefore try to assess good practices in school districts that show high levels of efficiency. It could then seek to replicate these across districts. At the same time, the government could try to identify bad practices (or capacity constraints) in districts with low levels of efficiency to develop support plans aimed at helping them improve their performance.

Figure 78: Changes in efficiency between academic years 2015-16 and 2016-17
Top 10 best and worst performers (in %)

Box 16: Spending vs Efficiency.

While higher levels of spending per students tend to translate to higher inputs, there is heterogeneity across municipalities. The efficiency analysis presented in this chapter, evaluates the technical efficiency of education production, i.e. how efficiently municipalities in transform inputs into outcome. This measure might not necessarily translate exactly into the efficiency of public spending. It is possible that municipalities spend on items that are not considered inputs to education or pursue different mix of education inputs that can be more or less efficient producing education outcomes. The right-side graph shows that although there is a positive correlation between spending per student and inputs per student, there is a large variation across municipalities. For example, the municipality of San Cristobal Santa Cruz Isabela, spend more than three times the amount spent by Canar el Tambo Suscal for a similar level of educational inputs.
High spending municipalities tend to be less efficient. The left graph shows that there is a mildly negative correlation between the amount of dollars spent per student and the technical efficiency in education across municipalities. Combine the two graphs below suggest that spending is not being allocated optimally and that high spending municipalities could improve efficient by reevaluating their education input choice and how they are transformant in education achievements.

DEA also allows for changes in the efficiency of production units to be quantified over time. Having data for two time periods, DEA allows to assess dynamic changes in technical efficiency using the Malmquist Index (Cave et al., 1982). The index quantifies the growth in total factor productivity (TFP) of a productive unit and decomposes it in: (i) changes in efficiency of units over time (i.e. changes in productivity), and; (ii) changes in technology over time (Box 17). The index allows for the identification of the school districts that displayed the largest changes (positive and negative) in their efficiency. Figure 78 displays changes in the efficiency of selected school districts between the academic years 2015-16 and 2016-17. The figure presents the percentage change in observed efficiency for the ten school districts that show the largest positive and negative changes in their efficiency over the period of study. Results indicate that in one academic year, districts were able to change their efficiency by up to 30 percent. This indicates that it is possible to achieve significant improvements in short periods of time. Results also show that some school districts, such as San Vicente Sucre and Paltas, were able to increase their efficiency at both retaining students in the school system and at ensuring their learning. On the other hand, other districts such as Pichinca and Lacatunga display systematic reductions in the efficiency in their performance under both models. As indicated above, the government could try to assess the causes that triggered such changes in these school districts and learn from the findings.
The Malmquist index is constructed from a set of outputs as defined in [2]. This set contains all possible output vectors that can be produced based on an input vector $x$.

$$P(x) = \{ y : x \text{ can produce } y \}$$

The product distance function defined in the output set $P(x)$ is presented in [3]. This function takes a value greater than or equal to or less than 1 depending on whether the output vector considered is within the output set $P(x)$.

$$d_0(x,y) = \min \{ \rho : \left( \frac{x}{\rho} \right) \in P(x) \}$$

The output-oriented Malmquist index between the periods $t$ and $t+1$ is presented in [4]. This index measures the change in Total Factor Productivity (TFP) between the two periods of reference, for units of analysis using a common technology.

$$m_0(y_t,x_t,y_{t+1},x_{t+1}) = \left[ \frac{d_0^t(y_{t+1},x_{t+1})}{d_0^t(y_t,x_t)} \times \frac{d_0^{t+1}(y_{t+1},x_{t+1})}{d_0^{t+1}(y_t,x_t)} \right]^{1/2}$$

$$m_0(y_t,x_t,y_{t+1},x_{t+1}) = \left[ \frac{d_0^t(y_{t+1},x_{t+1})}{d_0^t(y_t,x_t)} \times \frac{d_0^{t+1}(y_{t+1},x_{t+1})}{d_0^{t+1}(y_t,x_t)} \right]^{1/2}$$

In summary, the variation of the TFP can be decomposed into changes in technical efficiency, on the one hand, and to changes in production technology, on the other. The first part on the right side of equation [5] corresponds to the change in technical efficiency measured as the ratio between the efficiency in the period $t+1$ with respect to the efficiency in period $t$. On the other hand, the expression in brackets corresponds to technological change, measured as the geometric mean of the change in technology between the two periods evaluated at different levels of inputs. To measure the distances needed to calculate the Malmquist index, it is necessary to use linear programming techniques, such as those used in DEA.

Conclusions

The efficient use of public investments on education constitutes a major policy challenge in Ecuador. Over the past decades, the country’s average expenditure on basic education has oscillated between 2.4 and 2.6 percent of GDP. During this period, Ecuador made significant progress towards achieving universal access in primary and secondary education, while also improving the quality of overall education. Indeed, Ecuador stands out as one of the countries in Latin America and the Caribbean that uses its limited resources most efficiently in support of basic education. Despite all these achievements, however, the country still has important efficiency gaps across school districts, especially when it comes to their
capacity to ensure that students learn. Ecuador will need to maintain and sustain the progress achieved by the education sector in the past decades within a context of limited fiscal resources. As such, Ecuador’s education system will need to do more with fewer resources. This analysis presented in this chapter indicates that there is still scope for school districts in Ecuador to achieve better education results without additional resources. Results indicate that school districts in Ecuador could improve their capacity to assure student learning (as proxied by results in the Ser Bachiller learning assessment) by 10 to 15 percent with the resources at hand.

The government should consider achieving a better balance between investments in basic education and higher education. Ecuador spends a very high share of its education budget on HE (55 percent). This rate is much higher when compared to regional and structural peers (at 20-25 percent). Traditionally, countries spend a larger share of their budget on basic education because investments on primary and secondary education yield the highest social returns. As such, spending on basic education is usually the priority for public spending on education in countries that have yet to achieve near universal enrollment in basic education, such as Ecuador. Investments in HE generally accrue in the richest segments of the population. This is largely true in Ecuador, where the majority of all individuals enrolled in public HE belong to the highest income quintiles – making spending on the higher education sector highly regressive. At the same time, the levels of per-pupil expenditures in primary and secondary education in Ecuador are very low for international standards (two and five times smaller than that of regional peers respectively). Achieving a better balance in education investments between basic and higher seems of extreme urgency for Ecuador. This is confirmed by that results from standardized tests (TERCE, 2013) reveal that only 36 percent of all sixth-grade students in Ecuador could infer, deduct, and analyze information in a written text (vs. 47 percent in Latin American and the Caribbean, on average). Regarding mathematics, results showed that half of all Ecuadorian students in 6th grade could only perform simple arithmetic operations but were incapable of resolving simple math problems that require analysis or interpretation of charts, solving equations, and/or involve geometry. These results are quite important given the fact that seven out of every ten individuals in Ecuador will only attain basic education prior to entering the labor force.

Results indicate that school districts in Ecuador are quite efficient at maintaining children in the education system, but not so efficient at ensuring their learning. The analysis presented in the chapter indicates that education districts in Ecuador are reaching their maximum efficiency capacity when it comes to maintaining children in the education system. While this is a positive result, it needs to be also analyzed with care. For instance, school in Ecuador may be allowing students to pass from one level to the next without necessarily ensuring that they master the curricula. While this approach helps children stay in school, it can also contribute to low levels of college readiness and can perpetuate learning gaps. Results also indicate that school districts are less efficient when it comes to ensuring student learning, which is ultimately the main channel through which students can enhance their human capital and productivity.

The information resulting from the analysis can be used to target interventions in school districts that need to increase their efficiency levels. Differences in efficiency of spending across school districts can be attributed to differences in governance and management practices. Based on the information resulting from this analysis, the government could try to identify good practices in school districts that show high
levels of efficiency and try to replicate them in less performing districts. At the same time, the government could try to identify bad practices (or capacity constraints) in districts with low levels of efficiency and then develop support plans to help them improve their performance. Results from the analysis allow districts to be ranked according to their observed efficiency. Such ranking would allow the government to develop targeted interventions to support districts with low levels of efficiency, as well as to assess and scale up good management practices in districts showing high levels of efficiency.

References


