



INTERNATIONAL DEVELOPMENT IN FOCUS



Jobs and Growth

Brazil's Productivity Agenda

Mark A. Dutz

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Foreword

Brazil enters the election year 2018 with an economy that is gradually recovering from the deepest recession in its recent economic history. However, for many Brazilians, the recovery has not yet translated into new and better jobs, or rising incomes. This book is motivated by the need to understand the possible drivers of future income and employment growth. Its key finding: Brazil needs to dramatically improve its performance in terms of productivity if the country is to generate lasting gains in incomes and provide better jobs for its citizens. This is all the more important, because Brazil is aging rapidly and the boost the country has enjoyed thanks to its young and growing labor force in the past three decades will disappear in just a few years' time.

Productivity is a measure of how efficiently a firm, an industry, or a country uses its existing assets. Brazil has abundant natural resources, an increasingly more educated labor force, and some world-class companies in sectors ranging from agribusiness and aeronautics to textiles and oil drilling. In aggregate, however, the country uses its assets poorly. As documented in the book, if Brazil were to use its existing assets as productively as the United States, Brazil's income per capita would increase by 2.7 times. This is not, as is often argued, because Brazil specializes in the wrong activities. Rather, the country is inefficient in the great majority of activities it undertakes. Shifting Brazil's production structure to be the same as that of the United States would raise productivity by just 68 percent; making all Brazilian industries work as efficiently as their counterparts in the United States would boost productivity more than four times.

This book analyses some of the factors that may be behind such low productivity. Among the most important: (a) a lack of competition both internally, thanks to a business environment that favors incumbents and hampers innovation and entry, and externally, due to high-tariff and nontariff barriers to trade; (b) government policies that have concentrated on subsidizing existing firms, and distorting capital and labor markets, rather than fostering competition and innovation; and (c) fragmented government institutions for business support that have allowed policies to persist without much regard for whether or not they had shown to be effective. The book recommends a policy shift in all three areas, with the ultimate objective to change the

relationship between business and the state from one governed by perks and privileges to one built on creating a level playing field that incentivizes initiative and supports workers and firms to adjust to the demands of the market.

This book fits into the context of a growing policy debate about what should be Brazil's future development model. Few researchers have made more important contributions to this debate than Regis Bonelli, who sadly passed away before the publication of this book. Regis was an outstanding economist, a deeply patriotic man committed to his country's future, an affectionate and generous colleague, and above all, a true gentleman. This book was inspired by conversations with him; he encouraged this work and offered extensive commentary. This book is dedicated to him.

Martin Raiser

Brazil Country Director
The World Bank

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About the Contributors

Vivian Amorim is a consultant of the Human Development Department of the World Bank. She holds a master's degree in economics from the University of São Paulo (IPE-USP). She performed the empirical analysis of chapter 5.

Jorge Thompson Araujo is Economic Adviser to the Vice President for Latin America and the Caribbean at the World Bank. He holds a doctorate in economics from the University of Cambridge. He contributed to chapter 1.

Diego Arias is Lead Agriculture Economist in the Agriculture Global Practice of the World Bank. He holds a doctorate in agrifood and environmental economics from the University of Valencia. He contributed to the agriculture productivity section, and is one of the authors of the associated background study.

Steen Byskov is a Senior Financial Economist in the Finance, Competitiveness, and Innovation Global Practice of the World Bank. He holds a master's degree in economics from the University of Copenhagen and an MBA from the University of Maryland. He is a co-author of the financial markets part of chapter 4, and the associated background study.

Pietro Calice is a Senior Financial Sector Specialist in the Finance, Competitiveness, and Innovation Global Practice at the World Bank, currently on external service with the government of Argentina. He holds a doctorate in economics from University of Messina. He is the lead author of financial markets portion of chapter 4, and the associated background study.

Xavier Cirera is Senior Economist in the Finance, Competitiveness, and Innovation Global Practice of the World Bank, and is currently based in the Brazil office. He holds a doctorate in economics from the University of Sussex. He contributed to different parts of the report.

Roland Clarke is a Lead Public Sector Specialist in the Governance Global Practice at the World Bank. He holds a doctorate in economics from Bradford University. He is the main author of chapter 6, and the associated background study.

Elisio Contini is an agricultural economist researcher in the Brazilian Agricultural Research Organization, Embrapa. He holds a doctorate in public economics from Muenster University, Germany. He contributed to the work on Brazilian agricultural productivity.

Alice Duhaut is an Economist in the Development Impact Evaluation (DIME) unit within the Development Research Group. She holds a doctorate in Economics from Université Libre de Bruxelles. She contributed to chapter 3.

Mark Dutz is Lead Economist in the Macroeconomics, Trade, and Investment Global Practice of the World Bank. He holds a doctorate in economics from Princeton University. He is the book's lead author.

Barbara Farinelli is an Agricultural Economist at the World Bank, based in Brasilia. She holds a master's degree in agricultural and natural resources economics from the University of California, Davis, and is a doctoral candidate in agricultural and natural resources policies at the Wageningen University in the Netherlands. She contributed to the agriculture productivity section and is one of the authors of the associated background study.

Tanja Goodwin is Senior Economist with the Markets and Competition Team in the Macroeconomics, Trade, and Investment Global Practice of the World Bank. She holds a master's degree in economics from New York University. She contributed to chapter 3 of the report.

Mariana Iotty is Senior Economist with the Markets and Competition Team in the Macroeconomics, Trade, and Investment Global Practice of the World Bank. She holds a doctorate in economics from the Federal University of Rio de Janeiro (IE-UFRJ). She contributed to chapter 3 of the report, and is one of the authors of the associated background study.

Somik V. Lall is the World Bank's Global Lead on Territorial Development Solutions and its Lead Economist for Urban Development. He contributed to chapter 3 of this report.

Martha Martinez Licetti is Global Lead at the World Bank's Macroeconomics, Trade, and Investment Global Practice, where she heads the Markets and Competition Policy Team. She has doctoral, master's, and advanced studies degrees in economics from University of Texas at Austin, Northeastern University, and the Institute of World Economics in Kiel, Germany. She contributed to chapter 3.

Michael Morris is Lead Agriculture Economist at the World Bank. He holds a doctorate in agricultural economics from Michigan State University. He contributed to the work on agricultural productivity.

Antonio Nucifora is Lead Economist for Brazil at the World Bank. He holds a doctorate in economics from Oxford University. He contributed to chapter 1, and the associated background study, as well as helping with the overall structuring of the book.

Pedro Olinto is Program Leader for Human Development and Poverty for Brazil at the World Bank. He holds a doctorate in applied economics from the University of Wisconsin-Madison. He contributed to chapter 5, and the associated background study.

Truman Packard is Lead Economist in the Social Protection and Jobs Global Practice, working currently on labor market issues in Indonesia, Brazil, and Chile. He holds a doctorate in economics from the University of Oxford in the United Kingdom. He is the lead author of the labor markets part of chapter 4, and the associated background study.

Rong Qian is Senior Economist for the Philippines at the World Bank. She holds a doctorate in economics from University of Maryland. She is the lead author for chapter 1, and the associated background paper.

Martin Raiser is Brazil Country Director at the World Bank. He holds a doctorate in economics from Kiel University. He contributed immensely to all chapters, as well as to the formulation of the ideas underlying the book.

José Guilherme Reis is Executive Director for Brazil and Suriname at the Inter-American Development Bank. Reis was a Practice Manager of the Macroeconomics, Trade, and Investment Global Practice at the World Bank during the preparation of this report. He holds a master's degree in economics and public finance from the Catholic University of Rio de Janeiro. He contributed to chapter 3, and is one of the authors of the associated background study.

Eduardo Pontual Ribeiro is an associate professor at the Federal University of Rio de Janeiro. He holds a doctorate in economics from the University of Illinois at Urbana-Champaign. He was the author of a background study for the financial markets part of chapter 4.

José Signoret is Economist in the Macroeconomics, Trade, and Investment Global Practice of the World Bank. He holds a doctorate in economics from University of California, Berkeley. He contributed to chapter 3 in this report.

Michael Toman is Lead Economist and team manager for research on sustainable development in the World Bank's Development Research Group. He contributed to the agricultural productivity section.

Pedro Abel Vieira is an agricultural economist researcher at the Brazilian Agricultural Research Organization, Embrapa. He holds a doctorate in agronomy from São Paulo University, and economics from Unicamp. He contributed to the work on Brazilian agricultural productivity.

Mariana Vijil is Economist in the Finance, Competitiveness, and Innovation Global Practice of the World Bank. She holds a doctorate in economics from the French National Institute for Agricultural Research, Agrocampus Ouest. She is the lead author for chapter 5 and the associated background paper, and helped with the overall structuring of the book.

Abbreviations

AEO	authorized economic operator
BNDES	Banco Nacional de Desenvolvimento Econômico e Social (National Bank for Economic and Social Development)
CAGR	compounded annual growth rate
CGE	computable general equilibrium
CMAP	Comitê de Monitoramento e Avaliação de Políticas Públicas Federais (Committee of Monitoring and Evaluation of Federal Public Policies)
FDI	foreign direct investment
FTS	full-time school
GDP	gross domestic product
GVC	global value chains
ICT	information and communication technologies
ITIF	Information Technology and Innovation Foundation
LAC	Latin America and the Caribbean
LCR	local content requirements
LP	labor productivity
MDIC	Ministry of Industry, Foreign Trade and Services
ME	Mesas Ejecutivas (Executive Working Groups)
MEI	Microempreendedor Individual (Individual Micro-Entrepreneur)
MF	Ministry of Finance
NTM	nontariff measures
PAC	Program to Accelerate Growth
PPP	purchasing power parity
PRONAF	Programa de Fortalecimento da Agricultura Familiar
PSE	producer support estimate
PSI	Programa de Sustentação do Investimento (Investment Support Program)
PTA	preferential trade agreements
SBE	Sociedade Brasileira de Econometria (Brazilian Econometric Society)
SME	small and medium enterprises

SPE	Secretaria de Política Econômica (Secretariat for Economic Policy)
STRI	Services Trade Restrictiveness Index
TAA	trade adjustment assistance
TE	tax exemptions
TFP	total factor productivity
TJLP	Taxa de Juros de Longo Prazo (long-term interest rate)
TLP	Taxa de Longo Prazo (long-term rate)
TR	Taxa Referencial (referential rate)
VA	value added
ZFM	Zona Franca de Manaus (Manaus Free Trade Zone)

1 Introduction

BRAZIL'S PRODUCTIVITY IMPERATIVE

Broadly shared progress can be achieved with policies that are designed specifically to benefit consumers and workers....They can focus on ways to encourage competition and discourage rent-seeking. With the right policies, capitalist democracy can work better for everyone, not just for the wealthy....We need to put the power of competition back in the service of the middle and working classes.

Angus S. Deaton, December 2017

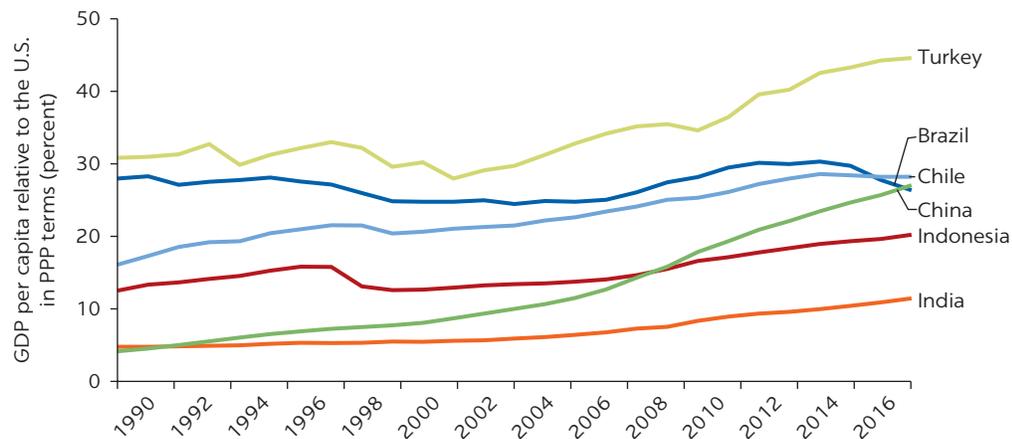
The small Nordic countries... knew... they had to remain open. But they also knew that remaining open would expose workers to risk. Thus, they had to have a social contract that helped workers move from old jobs to new and provide some help in the interim...They knew that unless most workers regarded globalization as benefiting them, it wouldn't be sustained. And the wealthy in these countries recognized that if globalization worked as it should, there would be enough benefits to go around.... We can learn from such successes what to do, just as we can learn from past mistakes what not to do.

Joseph E. Stiglitz, December 2017

BRAZIL'S PROMISE IS MORE SUSTAINABLE AND INCLUSIVE GROWTH

Brazilians have a legitimate aspiration to raise their standards of living to the level of high income countries. However, their country has been stuck in middle-income status for several decades, unable to achieve convergence. Brazil has experienced many of the structural changes associated with rapid growth and convergence to high income economies, including the transformation of its agriculture, the continued urbanization of the country, substantial investments in education with some improvements in the quality of the country's human capital, and the demographic bonus, as Brazil's baby boomers of the 1970s and 1980s entered the labor force. Yet, the average Brazilian today is no better off

FIGURE 1.1
GDP per capita as a percent of the United States: Brazil and selected peers,
purchasing power parity, 1990–2016



Source: World Development Indicators.

than a generation ago relative to the US, as Brazilian per capita income in purchasing power parity (PPP) terms remains about 25 percent of US levels (figure 1.1).

The lack of convergence in living standards is associated with a poor record in productivity growth. An average worker in Brazil today is only around 17 percent more productive than 20 years ago, compared to a 34 percent increase for an average worker in high income countries. Productivity growth is a critical driver of development in all countries (box 1.1). Yet, Brazil has not been good at it, with labor productivity since the mid-1990s increasing only around 0.7 percent per year and total factor productivity (TFP) growth declining (see chapter 2). It is true that since the early 2000s, Brazil experienced a significant increase in per capita incomes and a remarkable reduction in poverty. However, the drivers of these improvements are unlikely to be sustained. Most importantly, Brazil's income growth relied predominantly on an increase in employment, as many young people entered the labor force for the first time. With the population aging rapidly, this source of growth will soon be exhausted. Moreover, high commodity prices and loose fiscal policies fueled a consumption based growth model during the 2000s, which generated rapid employment gains. During the past five years, however, these factors have gone into reverse plunging Brazil into the deepest recession in over a century. Neither commodity prices nor government spending can be sustainable sources of growth over the long-term. Finally, investment-led growth will remain constrained by low domestic savings.

Brazil's low productivity may be the source of past disappointments, but it also offers a big promise for the country's future. This point can be illustrated with the help of a simulation, based on a simple growth accounting framework (figure 1.2).¹ Let us assume that Brazil's TFP growth remains negligible, that the investment rate remains at the recent low level of 17 percent of gross domestic product (GDP) and the growth of the labor force is set at 1 percent per year, with improvements in the quality of human capital also kept at 1 percent per

BOX 1.1

What is productivity and why is it important?

Productivity is an indicator of technical efficiency that captures how firms, industries (groups of firms in the same product market), sectors (groups of industries) or the country transform measured inputs into the production of goods and services. The two most common productivity measures are: labor productivity (LP) and total factor productivity (TFP). While these two concepts are related, they are in fact distinct.

LP captures the value of the outputs produced (or value-added) divided by the number of workers. It is therefore a measure of the amount of wealth creation per worker. This is determined by the amount of capital and other non-labor inputs available to workers, as well as the efficiency with which these inputs are used. Nobel prize winning economist Paul Krugman famously said: “Productivity isn’t everything, but in the long run it is almost everything. A country’s ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker.” (Krugman 1994). Hence the evolution of labor productivity is key to understand the growth in living standards over time.

TFP is derived as a residual of output once the impact of all measured inputs is accounted for, notably labor (augmented by the quality of human capital) and capital (including physical capital, such as machinery, computers and buildings, and also energy, materials, and services, plus some measures of intangible capital). TFP therefore captures the efficiency with which

all inputs are combined into the productive process. The evolution of TFP can be thought of as an economic measure of technical progress. TFP growth can be the result of reallocation (shifting resources from less to more efficient firms within the same industries or across industries and sectors) or innovation. Innovation can include the development of entirely new products and technologies and the adoption and adaptation of existing technologies.^a In the long-term, how efficiently countries use all available inputs is the key determinant of differences in economic growth rates and resulting income levels.^b

Although the two measures of productivity are generally highly correlated, since efficiency gains obtained through TFP will make labor more productive, they will not be correlated if LP gains are obtained through the accumulation of capital instead of TFP.

Accurately measuring productivity is a challenging task. For instance, deriving TFP as a residual from a production function will yield accurate estimates only if output and factor prices adequately reflect marginal costs and marginal factor productivity. If this is not the case, the effect of price distortions due to market power or government intervention may be misinterpreted as changes in efficiency. Another common difficulty is associated with measuring quality of output and factor inputs accurately. These measurement issues need to be borne in mind in the discussion that follows.

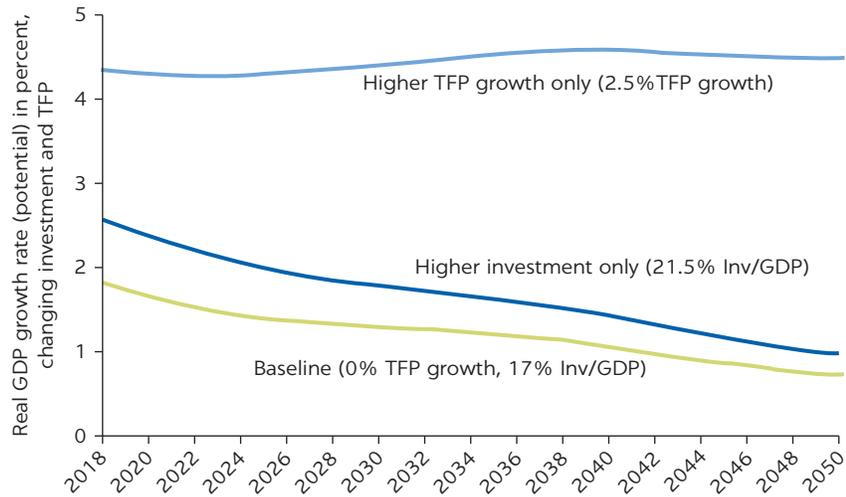
a. See Cirera and Maloney 2017. The benefits from innovation and resulting productivity growth go significantly beyond income: Lichtenberg (2014) documents a large impact of foreign drug research on life expectancy. Hence, the ability to transfer and adapt health advances developed elsewhere with modest amounts of innovative effort likely generate large social returns for adopting countries.

b. Cross-country evidence confirms that TFP is the main driver of income differences across countries and of sustainable per capita income growth (Caselli 2016; Easterly and Levine 2001).

year (roughly what they were on average over the past decade). The resulting potential growth rate is 1.8 percent per annum. Considering the projected decline in labor force growth to zero by 2035 and -0.7 percent by 2050, potential growth falls to 1.2 percent and 0.7 percent respectively. Assuming an increase in the investment rate to 21.5 percent of GDP—the level observed in the 1970s—would increase potential growth to 2.5 percent over the coming decade, but would fall below 1 percent in the long run because of diminishing returns to capital. Alternatively, boosting TFP growth to 2.5 percent per year—a rate achieved in

FIGURE 1.2

Productivity is Brazil's only sustainable growth option: Real GDP growth rate (potential), changing investment, and TFP



Source: World Bank calculations.

Note: Simulations using the LTGM-PC calibrated to Brazil, assuming one-percent human capital growth. Inv/GDP is the share of total investment in total domestic production. GDP = gross domestic product; TFP = total factor productivity.

Brazil in the 1960s and 1970s—would raise Brazil's growth potential permanently to 4.4 percent even without an increase in investment. Of course, the gains to Brazil's potential growth would be even higher if national savings and investment rates could also be raised alongside productivity growth.

Productivity growth is critical for the generation of better jobs, but it also improves people's living standards by lowering the prices and improving the quality of the goods they consume. As the example in box 1.2 demonstrates, productivity growth leads to improvements in welfare both thanks to higher wages and lower prices. We will consider both effects throughout this report in examining the impact of policies to raise productivity growth on different groups of workers and Brazilian citizens. And we will consider what can be done to help those that run the risk of being displaced by technological progress or increased competition, two key elements of productivity growth analyzed in this report.

RESHAPING POLICIES TO BOOST PRODUCTIVITY

At the heart of Brazil's low and stagnant productivity is an economic system that discourages competition and innovation and induces misallocation of resources and inefficiency. Brazilian companies operate in an environment of high costs. These high costs, often referred to as *Custo Brasil*, result from inefficient financial markets and high interest rates, an extraordinarily complex and burdensome tax system, the inadequate state of the country's infrastructure, an extensive set of administrative rules, and the peculiar challenges of operating in a federal country with a myriad of different and frequently changing regulations.

BOX 1.2

How productivity matters for living standards: A tale of two workers

The average Brazilian worker in car manufacturing needs to work more than five times as many hours to generate the local purchasing power to buy one medium-sized car (a Toyota Corolla) as the average Canadian worker. This simple example illustrates the concept of productivity. When workers can produce more during each working day or take less time for the same tasks, the company in which they work becomes more competitive. This matters because the company will be able to lower prices, sell more output and hire more workers; and over time, it will pay higher wages. The same Canadian car worker on

average earns over US\$19.00 per hour, while her Brazilian counterpart just over US\$6.00. But the Canadian factory produces more and much more efficiently, so in output per worker terms, the Brazilian factory is more expensive. To compensate for this difference plus associated taxes and infrastructure costs, mark-ups afforded by lack of competition and other elements of *Custo Brasil*, a Toyota Corolla sold in Brazil costs 75 percent more than the same car sold in Canada.^a Both higher wages and lower-priced products make Canadian car workers better off. This is the promise of productivity.

a. A Toyota Corolla produced in Brazil sold for about US\$22,000 in June 2016, the highest of any country producing the model in substantial volumes (except for Thailand, where prices are elevated, because of an aggressive excise tax system favoring pickup trucks for export and mini-cars for the domestic market). The same Corolla sells for only US\$12,500 in Canada. One element of productivity for cars is scale economies from volume, with Canadian Corollas benefiting from being produced in a factory with annual output of 549,000 units with significant exports, while Brazilian Corollas come from a factory with an annual production of 176,000 units (Sturgeon et al. 2017). In 2015, Canadian auto workers earned US\$19.13 per hour compared with US\$6.17 per hour in Brazil (based on Wards Auto and Boston Consulting Group data, as reported in the *Wall Street Journal*, August 14, 2016). So, the average Canadian worker needs to work around 650 hours to generate the value equivalent of a Toyota, while the average Brazilian worker needs to work approximately 3,500 hours, more than five times longer.

Addressing these costs through cross-cutting financial, tax and administrative reforms and boosting infrastructure investments has historically proved difficult. Instead, government has compensated for these high costs through a variety of interventions in the functioning of product and financial and labor markets that have arguably further reduced competition. High import barriers, local content requirements, differential tax rates and tax exemptions, credit subsidies and other measures were introduced to benefit specific industries, regions and often particular firms (so-called “national champions”). These benefits have done little to spur productivity in the target sectors or firms. Instead, they have distorted the playing field, discouraging new entrants, and creating incentives for incumbent firms to lobby for state support. As a result, Brazil’s resources are poorly allocated, employment and income growth are weakened, and consumers pay high prices for sub-standard products.²

This is not just a recent phenomenon, but by and large dates back to the adoption of import-substitution based industrialization policies in the 1930s. Many defend Brazil’s state-led development model referring to the rapid growth rates it was able to generate during the half century after the introduction of import substitution. However, Brazil’s early phase of catch-up growth ended in huge macroeconomic imbalances and was characterized by growing inequality (Soares 2016). The attempt to introduce a more expansive welfare state on top of an inefficient business sector following the 1988 constitution, while generating important social progress, has increased the tax burden, reduced investment and has been unable to return Brazil to the growth rates of the past (World Bank 2016). Moreover, the policies and institutions required to generate early catch-up

growth based primarily on structural change are different from those required to integrate into a dynamic global economy based on value chains and technological innovation (Aghion, Akcigit, and Howitt 2014). There is no simple return to the recipes of the past. This report thus argues that it is time for a more fundamental policy shift.

A new set of policies to open Brazilian markets to more competition, reduce the costs of doing business, eliminate government induced distortions, and shift public spending to support innovation and efficiency gains could boost productivity dramatically. This report presents ample evidence that the protectionist and distortionary nature of existing business support policies has inhibited an efficient allocation of resources, and hampered investment and innovation. Brazil remains one of the most closed economies in the world, even accounting for its size, and more protected industries (with lower import penetration) show higher markups (chapter 3). Brazil is not much integrated into Global Value Chains—thereby foregoing opportunities to co-learn with global businesses and take advantage of higher sales and scale economies in world markets rather than just meeting the needs of the local market (chapter 3).

Fostering greater competition in domestic product markets would reduce market power by firms, force a reduction in price mark-ups, and boost productivity. New findings for this report show that a 10 percent decrease in the average manufacturing price-cost margin, as would likely occur with greater competition, is associated with an increase in labor productivity growth of over 3 percent per year—which corresponds to an expansion in employment of about 1.4 million jobs per year (chapter 3). More integrated domestic markets, by allowing lower international prices to benefit firms and consumers in all parts of the country, would similarly stimulate higher productivity growth across the economy.³

Accelerating trade integration would also help to increase competition, boosting efficiency and productivity, which in turn would enable Brazil to take advantage of dynamic global markets. Brazil could achieve significant gains from coordinated trade reforms at the Mercosul level, increasing exports and imports by 7 and 6.6 percent, respectively, permanently raising GDP by about 1 percent—and expanding employment by over 400,000 jobs (chapter 3).⁴ Reductions in tariff and nontariff barriers on imports would raise real incomes of households, including among the bottom 40 percent of the population through lower consumer prices and more jobs with higher wages. From a broader perspective, reducing the costs of trade would increase competition facing domestic producers, provide access to larger external markets and thus allow domestic producers to exploit economies of scale, and facilitate access to new technologies—and thereby significantly boost the country's innovation and growth potential. However, for Brazil to fully take advantage of external integration, it needs to strengthen the integration and level of competition in its domestic market as well, including further reforms especially in tax and financial policies, as well as reducing other distortions in product, capital and labor markets and investing in ICT (information and communication technologies), transport and logistics infrastructure.

Greater competition will require firms to adjust—and will require business policies to support this adjustment rather than undermine it. Brazil spends a lot on largely ineffective business support policies: around 4.5 percent of GDP was spent at the federal level in 2016 on a mix of industry and firm-specific tax exemptions, subsidized credit and other transfers (World Bank 2017).⁵

Business support policies, including the SIMPLES tax reductions for small and medium enterprises (SMEs), payroll tax exemptions (*desoneração da folha*), the Manaus Free Zone, the Informatics Law (*Lei de Informática*) and *Inovar-Auto* all show limited outcomes at high fiscal cost. For example, the SIMPLES has contributed little to either the formalization of jobs or the improved performance of SMEs and instead has likely hampered efficient firm growth (Piza 2016). The cost of the *desoneração da folha* program is more than 3 times the average salary of each job saved (FGV 2013, 2014a, 2014b; IPEA et al. 2017; Scherer 2015), and the *Lei de Informática* has been ineffective at stimulating productivity-enhancing R&D as beneficiaries have not been able to produce internationally competitive ICT products (Kannebley and Porto 2012). Moving forward, effective policies to support productivity will need to help firms build their capabilities to adapt and take advantage of new opportunities. They require a fundamental re-think of the objectives and instruments of business support policies in Brazil.

WOULD GREATER COMPETITION AND PRODUCTIVITY COME AT THE EXPENSE OF THE POOR AND VULNERABLE?

There is growing concern around the world that recent technological changes may be detrimental to the economic prospects of the lower-skilled, and that advances in globalization may have worsened economic inequality. The increasing automation of production processes has been associated with a loss of employment particularly for workers performing routine tasks requiring fewer sophisticated skills, unless there is the creation of sufficient countervailing new labor-intensive tasks (e.g. Acemoglu and Restrepo 2017, 2018). At the same time, it is feared that new production technologies like 3D printing may reduce employment opportunities in manufacturing particularly in developing countries, thereby undermining one of the channels through which they had successfully integrated in the world economy and seen their income levels converge in the past (Hallward-Driemeier and Nayyar 2017). Finally, some critics of globalization point to the fact that it has created losers as well as winners and that government policy has generally been ineffective at compensating the former (Rodrik 2017).⁶ These concerns may discourage Brazilian policy makers from adopting the policy shift advocated here.

While the above concerns should not be dismissed, little suggests that productivity growth in Brazil would come at the expense of greater shared prosperity. First of all, Brazil uses its existing assets (both capital and labor) so inefficiently that the potential output gains from greater productivity are likely to substantially exceed any losses in particular industries, regions or firms. These productivity and output gains will generate jobs, improvements in income and lower-cost products, which in turn will translate into additional demand and new economic opportunities, including potentially for the lower skilled (Dutz, Almeida, and Packard 2018).⁷ Second, Brazil's own experience with trade opening has been inclusive. Thus, Brazil's 1990s trade liberalization increased the real incomes of the poor twice as much as those of the richest households. As reported in chapter 5, further trade liberalization would increase the real incomes of all households on average within each percentile of the income distribution and has the potential to lift almost 6 million people out of poverty. Third, and perhaps most importantly, the technological changes happening

around the world reinforce the importance of policies to increase the flexibility of labor markets, reduce the cost of doing business and improve connectivity, and invest in skills and worker retraining to take advantage of the new opportunities (Hallward-Driemeier and Nayyar 2017). The policy shift is not just necessary because the old policies are no longer effective; it is also urgent because without it Brazil risks falling further behind.

Distributional consequences of technological change and increasing international and domestic integration are critically important, however, to fashion the design of appropriate complementary policies. There is evidence that the trade liberalization in Brazil of the 1990s did have negative effects concentrated on groups of individuals in specific regions and industries due to high labor adjustment costs (Dix-Carneiro 2014; Dix-Carneiro and Kovak 2017). The same is likely to be true for any further trade liberalization.⁸ This experience highlights that the impact of opening to trade and competition will not affect all workers and consumers equally, and some compensatory policies will be necessary. Workers in affected regions and industries will require support. Brazil can learn from effective international approaches to support them better during the transition period (chapter 5).

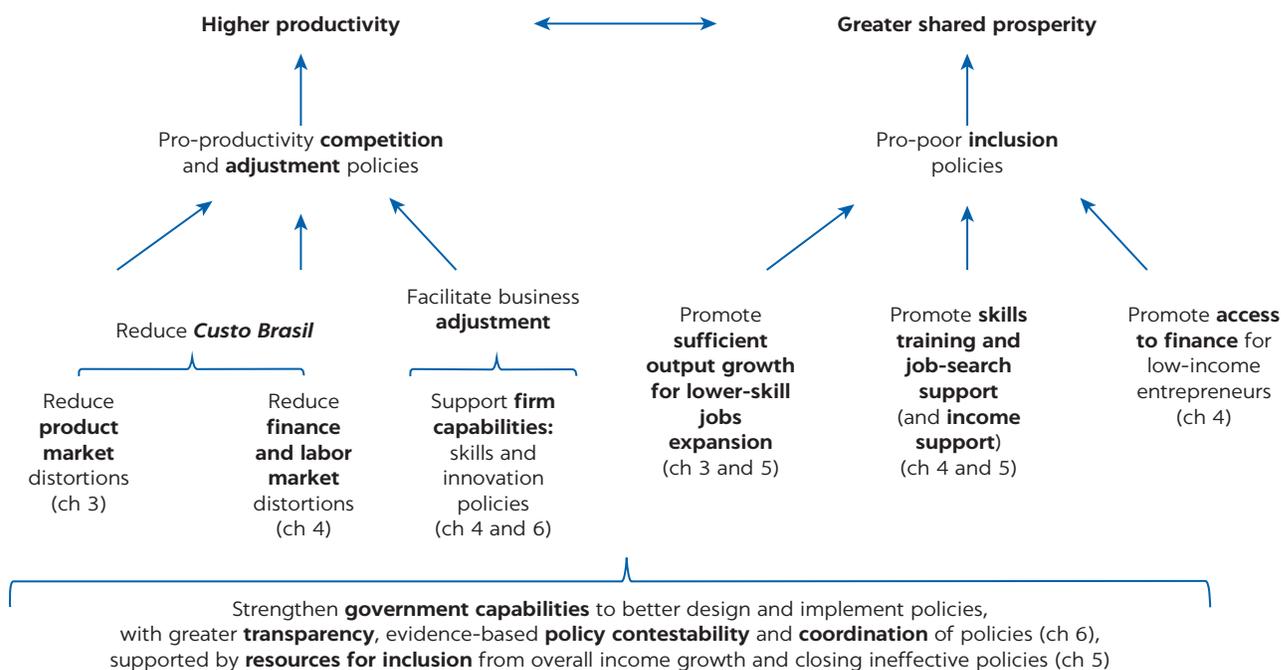
Brazil already allocates significant resources to support workers and businesses, but the composition of spending needs to change to facilitate the necessary adjustment. In 2015, Brazil spent around 2.6 percent of GDP on labor market policies and social transfers. Of this, 1.1 percent of GDP was spent on labor market programs that sustain income of people who have lost formal jobs and assist in the search for new employment. Adapting these programs to make them more effective would require eliminating duplication of benefits and lack of coordination. Most importantly, it would require moving more resources towards active labor programs (such as training) instead of passive programs (such as income support) (World Bank 2017; and chapter 4). This said, international evidence underscores the need for mid- and late-career workers displaced by trade and technological changes to benefit from more intensive support. The program of trade adjustment assistance introduced by the United States to help workers displaced by the North American Free Trade Area and other similar initiatives provide lessons on what not to do, illustrations of the degree of effort that re-skilling and placing this segment of the labor force can require, and some directions for how to achieve better results (chapter 5).

A DIFFERENT WAY FORWARD: REALIZING THE PROMISE OF PRODUCTIVITY

The basic policy options explored in this report can be summarized in a simple framework that highlights the promise of increased productivity. The core objective is to increase the incomes and consumption of all groups in the population—in other words, to achieve shared prosperity. As figure 1.3 illustrates, this objective can be reached only through productivity policies that support net job creation and lower consumer prices including for most of Brazil's poor people, and through complementary inclusion policies for the remainder of Brazil's poor people. The productivity policies focus on removing policy-induced distortions to allow Brazil's significant existing assets to earn a better rate of return, as well as introducing productivity-enhancing policies to support firms to acquire the needed additional capabilities to innovate and adjust to the more competitive business environment (chapter 3). Policies are also required to

FIGURE 1.3

Policy options to boost productivity for shared prosperity



Source: World Bank.

reduce distortions in financial and labor markets, and to foster the ability of workers to acquire the needed skills (chapter 4). Complementary inclusion policies are needed to help those who have not directly benefited from productivity growth to adjust to the pressures of competition and benefit from new opportunities. These policies include measures to facilitate the entry and growth of firms in industries allowing lower-skill jobs expansion, increased investment in skills-training and job-search support, access to finance supporting low-income entrepreneurs, and targeted social safety nets (chapter 5).

The policies proposed in this report are mutually reinforcing and must be seen as a package. Without domestic integration, the effects of opening to external competition may be muted. Without well targeted policies to support the losers from greater competition particularly among the poor, policies to allow markets to function more effectively may run into political obstacles. Nonetheless, given capacity and political constraints, the reform agenda will need to be sequenced. To ensure the reform effort is sustained and not diluted, an upfront vision and commitment are key. One option would be to commit to gradual external liberalization upfront as an anchor to shift incentives in favor of accelerating domestic policy reforms to reduce the cost of doing business and make firms more competitive. The reality of global technological change may help convince businesses of the need to adjust. A complementary option is to use Brazil's fiscal constraints and the constitutional spending rule as a lever to embark on a careful review and reform of business support policies and to refocus labor market policies on helping workers adapt.

Finally, strengthened institutional arrangements to design, implement and coordinate better government actions are required to support the policy shift advocated in this report. For it to succeed, policy makers will need to overcome the resistance of powerful vested interests and champion a new role for the state

in the economy. This transition is not easy and requires new institutional arrangements for policy making (chapter 6). Brazil's state has the ability and talent to drive this process forward. Yet, it gets little return from the large institutional apparatus it has created. Political incentives drive short-term and often rent seeking behavior. And fragmentation leads to the poor coordination of policies across ministerial portfolios as well as across all levels of government (chapter 6). To overcome these constraints, new institutional arrangements are needed, based on the principles of transparency regarding policy design and implementation, policy contestability linked to rigorous evidence of impact, and improved coordination of policies both within government and between government and business.

THE STRUCTURE OF THE REPORT

The objective of this report is to stimulate a national debate on the role that government policies could play in boosting productivity growth for shared prosperity. A rich literature has studied the evolution of productivity and emphasized the importance of productivity growth for Brazil (for an exemplary recent overview, see Bonelli and Veloso 2016; Bonelli, Veloso, and Pinheiro 2017; De Negri and Cavalcanti 2015, 2014, and the authors therein). This report builds on the existing literature with the objective of emphasizing one key policy message: productivity growth will need to become the main source of economic growth, as the growth drivers of Brazil's traditional economic model are running out of steam. Accordingly, this is the time to engage in a deep debate to transform policies that have been ineffective for productivity growth for several decades. This report aims to contribute to this debate. It highlights some options regarding policy and institutional changes that can increase productivity growth in Brazil. A more detailed analysis can be found in the complementary set of background papers.

Based on the framework highlighted above, the remainder of this report is structured in four parts: (a) the evolution of productivity; (b) the causes of low productivity growth; (c) the link between productivity and inclusion; and (d) a possible policy reform agenda.

- Chapter 2 describes the evolution of economic growth over the past two decades, and highlights Brazil's disappointing performance in terms of productivity growth. The chapter assesses the extent of productivity growth within each sector, industry and firm, as well as the ability of the economy to increase productivity by reallocating resources towards the most productive sectors, industries and firms.
- Chapters 3 and 4 focus on competition and allocative efficiency in product and in financial and labor markets, respectively, highlighting some the reasons why productivity growth has remained stagnant together with possible alternative policy solutions that are more supportive of productivity growth. Chapter 3 describes how different policy distortions impede better integration of external and internal product markets and their impact on productivity growth. It argues that reductions in distortions in both are essential to reap the full benefits of increased productivity and shared prosperity. Chapter 4 then discusses how policies have distorted the allocation of finance and labor inputs across firms and introduced further impediments to productivity

growth and inclusion. The chapter discusses policy options to address these distortions and promote better allocation of resources across the economy.

- Chapter 5 examines the linkages between productivity and inclusion, and highlights the benefits of productivity growth for households as consumers and income earners. It emphasizes the role of productivity growth in generating price reductions for consumers as well as job creation and wage increases for workers including the lower-skilled. Because the effects of competition are heterogeneous and negative effects tend to be concentrated in specific regions and industries, the chapter discusses some policy options to enhance the mobility of workers and to support those unable to adjust and directly benefit through participation in the labor market.
- Chapter 6 focuses on options for the policy agenda and discusses some principles and institutional arrangements for better policy design. The chapter examines the historical prevalence of ideas of state-led development together with fragmented decision-making to explain the ineffectiveness of recent business support policies in promoting productivity growth. It argues that a policy shift requires institutions with new features. Chapter 7 concludes with a set of short- and medium-term options that could be the basis for a productivity agenda in Brazil.

NOTES

1. The framework is based on a simple Cobb-Douglas production function calibrated to Brazil's recent historical averages, with a labor share in output of 0.56 and a capital output ratio of 3.5. Data are taken from the Penn World Tables and the IMF FAD database.
2. The problems associated with subsidizing existing less efficient firms and thereby slowing down reallocation (broadly defined to include entry and exit) and discouraging innovation by both continuing firms and new entrants are not specific to Brazil, only more acute there. Foster, Haltiwanger, and Krizan (2001, 2006) show that reallocation accounts for around 50 percent of manufacturing and 90 percent of retail US productivity growth. Numerous papers show how variations in reallocation across countries play a major role in explaining differences in productivity (TFP) levels and growth—see, for example, Hsieh and Klenow (2009, 2014), Bartelsman, Haltiwanger, and Scarpetta (2013), Syverson (2011), and Restuccia and Rogerson (2017). Importantly, Acemoglu et al. (2017) show that policies that improve both reallocation and innovation can induce significant increases in annual growth and welfare, even in the US.
3. The jobs increase estimate of about 1.4 million per year is based on a back-of-the-envelope calculation using an employment-to-GDP elasticity of 0.4 percent and a labor force of about 104 million. It does not include possible dynamic effects. New findings for this report show that the pass-through of tariff reductions during the 1990s' tariff liberalization was only 27 percent on average across metropolitan areas and as low as 1 percent in Brasilia and Belem. Lowering barriers that prevent the same product being sold for a similar price in all locations should result in productivity growth benefits like those from the reduction in price-cost margins also reported here.
4. The estimate of 409,000 jobs is based on the predicted 0.93 percent increase in GDP by 2030 resulting from coordinated trade reforms at the Mercosul level (chapter 3), together with an assumed employment elasticity of GDP of 0.5, a UN estimate of the working age population in 2030 of 154.2 million, and a derived base employment in 2030 of 88 million (based on assumed labor participation and unemployment rates of 62.2 percent and 8.2 percent, respectively).
5. Between 2006 and 2015, total spending on these industrial policies at the federal level increased from 3.0 to 4.5 percent of GDP—9 times more than allocated to *Bolsa Familia* to reduce poverty. Most of this spending takes the form of tax expenditures and subsidized credit through public banks, and therefore is off-budget.

6. Helpman et al. (2017) show using Brazilian firm data from 1986 to 1995 that exporting firms pay much higher wages controlling for other factors than non-exporting firms. If trade opening remains selective, or internal integration is incomplete, the opportunities resulting from trade may worsen wage inequality across firms.
7. Country studies on Argentina, Chile, Colombia and Mexico find inclusive growth due to the increased productivity impact of adoption of ICT by firms and the resulting positive output effects on lower-skilled jobs (Dutz, Almeida, and Packard 2018).
8. See Goes et al. (2017), who simulate differential labor market impacts from trade liberalization across different micro-regions of Brazil to identify what regions and industries may require additional support to help smooth the adjustment; see also SAE (2018).

REFERENCES

- Acemoglu, Daron, Ufuk Akcigit, Harun Alp, Nicholas Bloom, and William Kerr. (forthcoming) “Innovation, Reallocation, and Growth.” *American Economic Review*.
- Aghion, Philippe, Ufuk Akcigit, and Peter Howitt. 2014. “What Do We Learn from Schumpeterian Growth Theory?” In *Handbook of Economic Growth*, edited by Philippe Aghion and Steven N. Durlauf, vol. 2, 515–63. Cambridge, MA: Elsevier.
- Bartelsman, Eric, John Haltiwanger, and Stefano Scarpetta. 2013. “Cross-Country Differences in Productivity: The Role of Allocation and Selection.” *American Economic Review* 103 (1): 305–34.
- Bonelli, Regis, and Fernando Veloso. 2016. *A crise de crescimento do Brasil*. Rio de Janeiro: Elsevier and FGV/IBRE.
- Bonelli, Regis, Fernando Veloso, and Armando Castelar Pinheiro, eds. 2017. *Anatomia da produtividade no Brasil*. Rio de Janeiro: Elsevier and FGV/IBRE.
- Caselli, Francesco. 2016. “The Latin American Efficiency Gap.” In *Understanding Latin America and the Caribbean’s Income Gap*, edited by J. Araujo, M. Clavijo, E. Vostroknutova, and K. Wacker, 34–58. Washington, DC: World Bank.
- Cirera, Xavier, and William F. Maloney. 2017. *The Innovation Paradox: Developing-Country Capabilities and the Unrealized Promise of Technological Catch-Up*. Washington, DC: World Bank. <https://doi.org/10.1596/978-1-4648-1160-9>.
- De Negri, F., and L. R. Cavalcante. 2014. *Produtividade no Brasil: desempenho e determinantes. Vol 1: Desempenho*. Brasília: ABDI and IPEA.
- . 2015. *Produtividade no Brasil: desempenho e determinantes. Vol 2: Determinantes*. Brasília: ABDI and IPEA.
- Dix-Carneiro, Rafael. 2014. “Trade Liberalization and Labor Market Dynamics.” *Econometrica* 82 (3): 825–85.
- Dix-Carneiro, Rafael, and Brian Kovak. 2017. “Trade Liberalization and Regional Dynamics.” *American Economic Review* 107 (10): 2908–46.
- Dutz, Mark, Rita Almeida, and Truman Packard. 2018. *The Jobs of Tomorrow: Technology, Productivity and Prosperity in Latin America and the Caribbean*. Directions in Development. Washington, DC: World Bank.
- Easterly, William, and Ross Levine. 2001. “It’s Not Factor Accumulation: Stylized Facts and Growth Models.” *World Bank Economic Review* 15: 177–219.
- FGV. 2013. *Avaliação do Impacto da Desoneração Tributária da Folha de Pagamento nos Setores de Confeccões, Couro e Calçados e Tecnologia de Informação e Comunicação*. Ministério da Fazenda. Secretaria de Política Econômica (SPE). Brasília: Relatório Final.
- . 2014a. *Avaliação de Impactos Econômicos e Setoriais da Desoneração Tributária da Folha de Pagamentos*. Ministério da Fazenda. Secretaria de Política Econômica (SPE). Brasília: Relatório Preliminar.
- . 2014b. *Avaliação de Impactos Econômicos e Setoriais da Desoneração Tributária da Folha de Pagamentos—Setores Selecionados*. Ministério da Fazenda. Secretaria de Política Econômica (SPE). Brasília: Relatório Preliminar.

- Foster, L., J. Haltiwanger, and C. J. Krizan. 2001. "Aggregate Productivity Growth: Lessons from Microeconomic Evidence." In *New Developments in Productivity Analysis*, edited by Charles R. Hulten, Edwin R. Dean, and Michael J. Harper, 303–72, Chicago: University of Chicago Press.
- . 2006. "Market Selection, Reallocation, and Restructuring in the U.S. Retail Trade Sector in the 1990s." *Review of Economics and Statistics* 88 (4): 748–58.
- Goes, C., A. Messa, and E. Leoni. 2017. "Análise prospectiva dos efeitos heterogêneos de uma liberalização comercial sobre o mercado de trabalho." Mimeo, Brasília.
- Hallward-Driemeier, M., and G. Nayyar. 2017. *Trouble in the Making? The Future of Manufacturing-Led Development*. Washington, DC: World Bank Group.
- Helpman, E., O. Itskhoki, M. Muendler, and S. Redding. 2017. "Trade and Inequality: From Theory to Estimation." *Review of Economic Studies* 84 (1): 357–405.
- Hsieh, Chang-Tai, and Peter Klenow. 2009. "Misallocation and Manufacturing TFP in China and India." *Quarterly Journal of Economics* 124 (4): 1403–48.
- . 2014. "The Life Cycle of Plants in India and Mexico." *Quarterly Journal of Economics* 129 (3): 1035–84.
- IPEA, Lenita Maria Turchi, and José Mauro de Morais, eds. 2017. *Políticas de Apoio à Inovação Tecnológica no Brasil: Avanços Recentes, Limitações e Propostas de Ações*. Brasília: IPEA.
- Kannebley, Sérgio, Jr., and Geciane Porto. 2012. "Incentivos Fiscais à Pesquisa, Desenvolvimento e Inovação no Brasil: Uma avaliação das políticas recentes." Discussion Paper 236, Washington, DC: Inter-American Development Bank.
- Krugman, Paul. 1994. *The Age of Diminished Expectations: US Economic Policy in the 1990s*. Cambridge, MA: MIT Press.
- Lichtenberg, Frank. 2014. "Pharmaceutical Innovation and Longevity Growth in 30 Developing and High-Income Countries, 2000–2009." *Health Policy and Technology* 3 (1): 36–58.
- Piza, Caio. 2016. "Revisiting the Impact of the Brazilian SIMPLES Program on Firms' Formalization Rates." Policy Research Working Paper 7605, World Bank, Washington, DC. <http://documents.worldbank.org/curated/en/901421467995383598/Revisiting-the-impact-of-the-Brazilian-SIMPLES-program-on-firms-formalization-rates>.
- Restuccia, Diego, and Richard Rogerson. 2017. "The Causes and Costs of Misallocation." *Journal of Economic Perspectives* 31 (3): 151–74.
- Rodrik, Dani. 2017. *Straight Talk on Trade: Ideas for a Sane World Economy*. Princeton, NJ: Princeton University Press.
- SAE. 2018. "Abertura Comercial para o Desenvolvimento Econômico." *Relatório de Conjuntura* 3, March, Brasília: Imprensa Nacional.
- Syverson, Chad. 2011. "What Determines Productivity?" *Journal of Economic Literature* 49 (2): 326–65.
- World Bank. 2016. *Retaking the Path to Inclusion, Growth and Sustainability*. Report 101431-BR, Brazil Systematic Country Diagnostic. Washington, DC: World Bank.
- . 2017. *Back to Planning: How to Close Brazil's Infrastructure Gap in Times of Austerity (English)*. Washington, DC: World Bank. <http://documents.worldbank.org/curated/en/386151499876913758/Back-to-planning-how-to-close-Brazils-infrastructure-gap-in-times-of-austerity>.

2 Brazil's Productivity Slump

For Globo Usinagem, a São José dos Campos-based metallurgical company, to become a supplier to Embraer's global value chain opened its doors to a larger market, bringing clients for its products not only from other sectors but also from other countries. The company started exporting to the United States and Europe, and reducing total operation costs has become a permanent goal. Guimarães Pinheiro, administrative and financial manager, points out: "You cannot create a chain of local suppliers based on the artificial protection of the domestic market. If you do, what is the incentive for these local firms to be efficient?"

ABSTRACT Brazil has experienced negative total factor productivity growth over the 1996–2015 period. An analysis of the patterns of productivity growth in Brazil (from aggregate, sectoral and firm-level viewpoints) highlights an economy where resources do not seem to flow easily to their most productive use and where few improvements occur at the firm level either. Over the past two decades, productivity dynamics have been characterized by: (a) limited structural change, with recent economic performance driven mainly by the increasing productivity in agriculture and the expanding size of the services sector; (b) large and increasing productivity dispersions across firms, indicating poorly functioning markets and limited competition; and (c) substantial misallocation of capital and, to a lesser extent, labor. Removing policy distortions, promoting market opening and internal integration, and facilitating economic adjustment by supporting firm capabilities could yield sizable income gains. By way of illustration, Brazil would almost triple its income per capita if it could achieve US TFP levels.

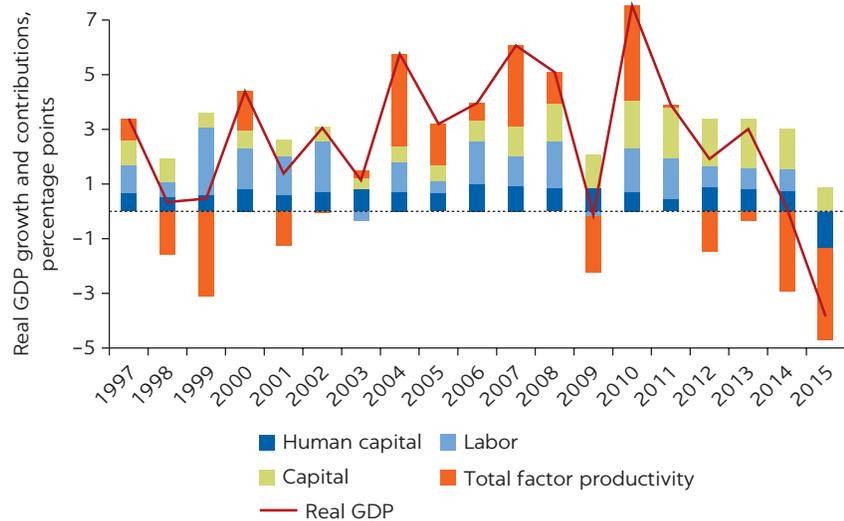
Brazil's economic growth during the past 20 years was relatively low and largely driven by increases in the size and education of the labor force. Between 1950 and 1980—or Brazil's post-World War II Golden Age—GDP growth averaged an impressive 7.4 percent per year. Structural transformation from

agriculture to industry and services and the growth of the labor force were the key drivers, while investment rates remained moderate (Ferreira and Veloso 2013). Growth was volatile since 1961, however, with a downward trend from 1974 to 1981 followed by a decade of stagnation. Over the past 20 years (1996–2015), economic growth was very volatile and only averaged 3 percent per year versus 9 and 7 percent for China and India, respectively (figure 2.1). Over this period, the contribution of total factor productivity (TFP) fell by 1 percent; expansions in education and in the labor force explain around two thirds of overall growth.¹ Brazil will need to find new sources of growth, as the country’s demographic transition is far advanced and its labor force is projected to stop growing in the near future.²

A comparison with other emerging market economies highlights the limited contribution of investment and TFP to overall growth in Brazil. The results of the growth accounting are affected by economic fluctuations such as the East Asia crisis in the late 1990s, the global financial crisis in 2008, and the recent recession in Brazil. Nevertheless, a few clear findings emerge. Capital accumulation has played a smaller role in Brazil than in a number of fast growing comparator countries (figure 2.2). The contribution of labor has been very large in Brazil, far above any other comparator. The contribution of improvements in the quality of human capital was also higher than that experienced in the comparators, notably China and India, where, as mentioned, capital played the driving role. TFP growth has been negligible in Brazil, while it has made a significant contribution to fast growth in other emerging countries.

Low TFP growth is reflected in the evolution of Brazil’s labor productivity, which grew less than in both advanced and emerging countries over the past 20 years. Between 1995 and 2015, value added (VA) per worker in Brazil grew at about the same rate as the rest of Latin America and the Caribbean (LAC) countries, but much below advanced economies and other emerging

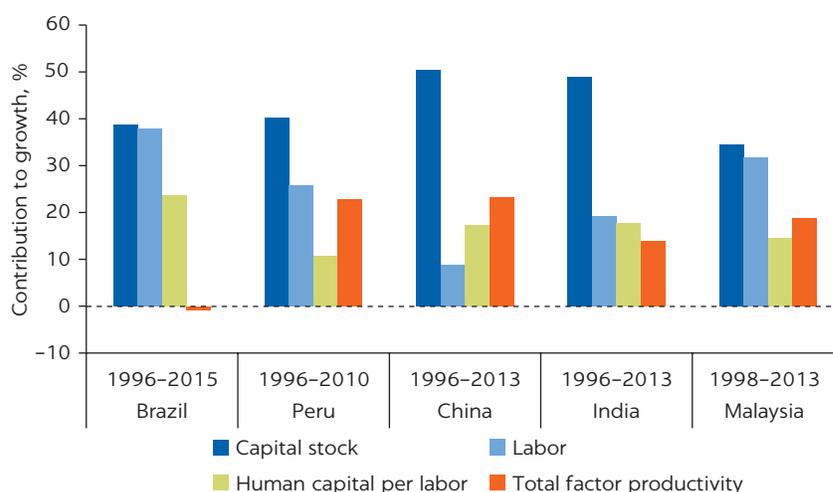
FIGURE 2.1
Volatile productivity (TFP) has not contributed to GDP growth on average over the entire 1996–2015 period



Sources: Instituto Brasileiro de Geografia e Estatística (Brazilian Institute of Geography and Statistics) and World Bank calculations.
 Note: GDP = gross domestic product.

FIGURE 2.2

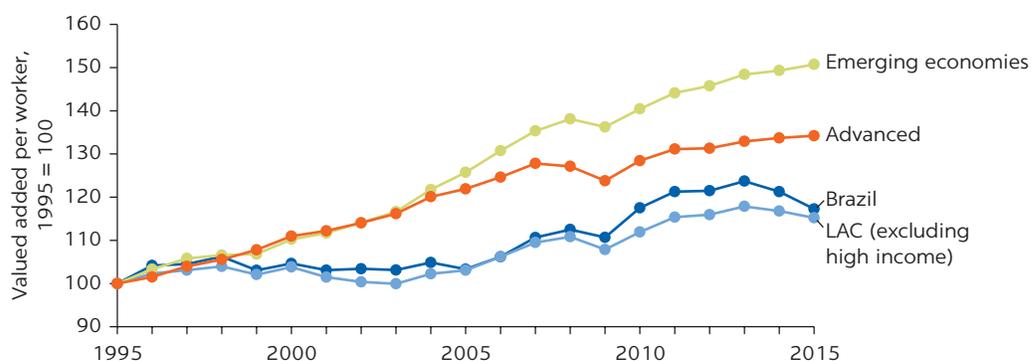
TFP contribution to growth was well below fast-growing countries (circa 1996–2013)



Sources: Instituto Brasileiro de Geografia e Estatística, World Development Indicators, and World Bank calculations.

FIGURE 2.3

Value added per worker grew less than in other emerging economies over the period and decreased in recent years



Source: World Development Indicators.

Note: Chile and Uruguay are excluded from the LAC group (as they are high-income countries). LAC = Latin America and the Caribbean.

economies (figure 2.3). Over this entire period, the gap in labor productivity between Brazil (and LAC) and advanced countries continued to increase steadily. This contrasts with other emerging countries, whose labor productivity has been rising faster than advanced economies notably since 2004, thereby moving to gradually close their productivity gap.

Overall, these results highlight that productivity has contributed very little to growth in Brazil, and that growth has been driven mainly by demographics and higher employment levels. Although Brazil still has significant room to improve its physical and human capital assets, in comparison to other countries Brazil would benefit the most from increasing its TFP (box 2.1).

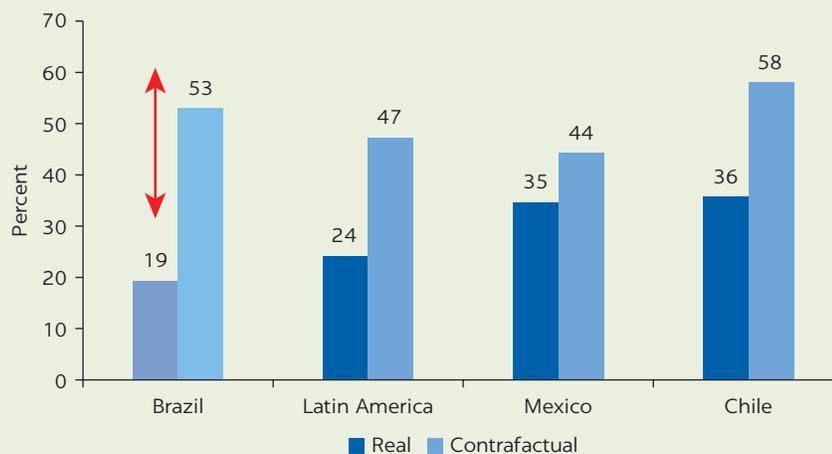
BOX 2.1

Brazil can triple GDP per capita by achieving US total factor productivity levels

Within LAC, Brazil would benefit the most from increasing its total factor productivity (TFP). Brazil's output per worker is only 19 percent that of the United States, the lowest among main LAC economies (figure B2.1.1). At the same time, Brazil does not have notably lower capital stock per worker, or notably lower education levels than its LAC comparators. The reason for a much lower output per worker is the low level of TFP. Brazil would increase its income per capita by 2.7 times if its TFP were as high as that in the

United States against an increase of around two times for the average LAC country. It is notable that countries like Chile and Mexico, who have gone through a process of deep international integration and have largely open markets, show the lowest productivity gap to the US. One of the messages of this report is that by following suit with more open markets, Brazil would be able to raise substantially its own productivity level and re-start economic convergence even without major increases in investment.

FIGURE B2.1.1
Aggregate output per worker relative to the United States



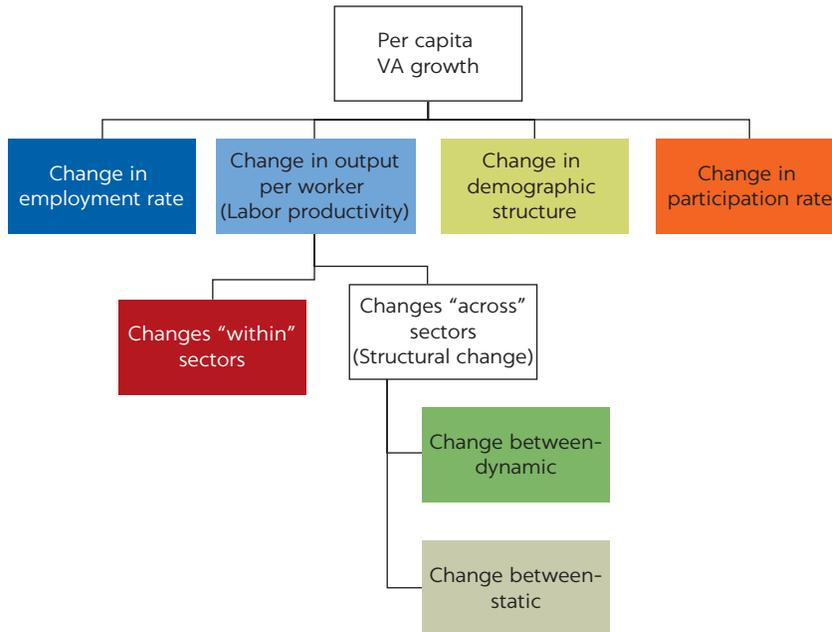
Sources: Caselli 2016 and World Bank calculations.

Note: Counterfactual refers to output per worker that countries would have had if their TFP were equal to that of the US. GDP comparisons are not in purchasing power parity (PPP) terms (and hence different from figure 1.1).

PRODUCTIVITY GROWTH AND STRUCTURAL CHANGE: A SECTORAL PERSPECTIVE

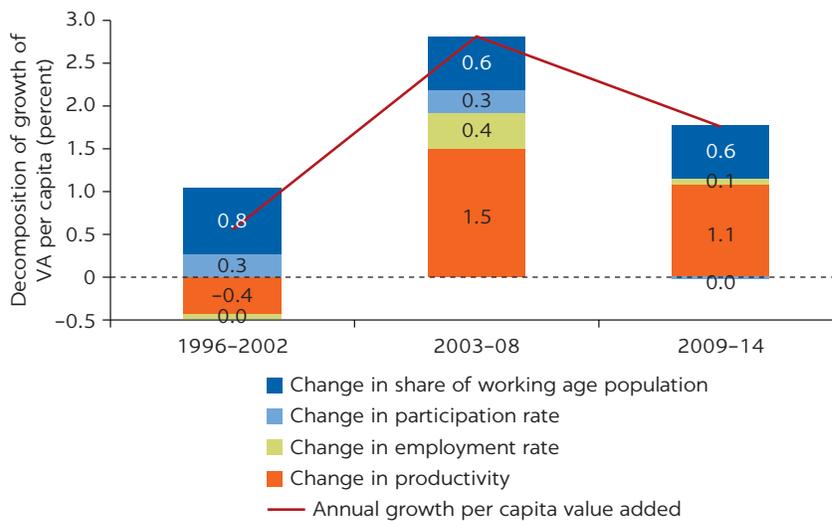
A decomposition of growth in per capita VA can be used to drill down to the causes of Brazil's productivity slump. To explore the dynamics of the Brazilian economy, per capita VA growth can be decomposed into the contribution of changes in the demographics, the level of employment and participation in the labor force, and the level of labor productivity growth (figure 2.4). The latter can then be further divided into two additional components: changes in sector level productivity ("within" component) and changes arising from a reallocation of labor between sectors ("across" component), which measures the extent of structural change in the economy. The structural change component can be further decomposed into "between-static" and "between-dynamic" components, where the former (between-static) measures whether workers move to sectors with above-average labor productivity whereas the latter (between-dynamic)

FIGURE 2.4
GDP per capita growth decomposition



Source: World Bank elaboration.

FIGURE 2.5
Labor productivity growth contributed to growth in VA per capita only after 2003



Sources: Instituto Brasileiro de Geografia e Estatística, World Development Indicators, Groningen, and World Bank calculations.

Note: Reported per capital VA growth is annualized growth rate between 1996 and 2014.

measures whether labor productivity growth is higher in sectors that expand in terms of employment shares.

Labor productivity made a limited contribution to overall growth in VA per capita. At 0.6 percent per annum, labor productivity accounted for just 39 percent of the rise in per capita incomes between 1996 and 2014, the remainder coming from demographic changes and increased labor force participation rates (both contributing to a growing share of employment in the population, figure 2.5).

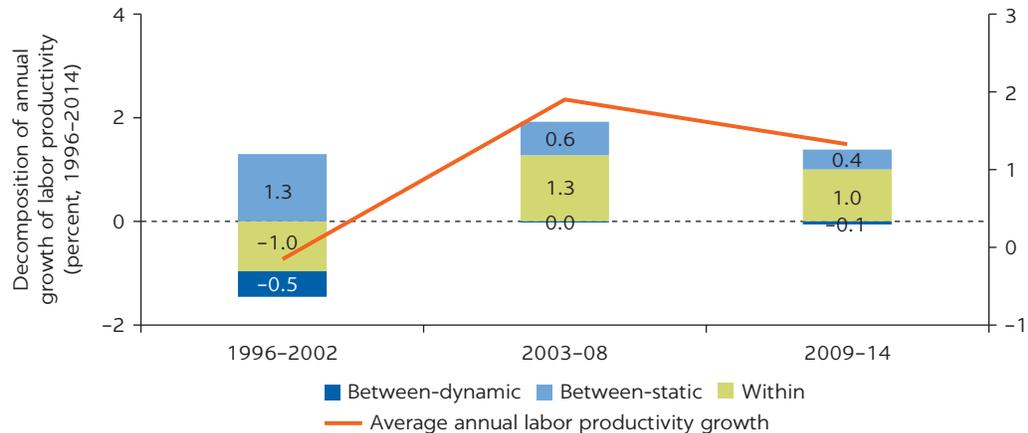
TFP was negative on average during this period (figure 2.1), hence even this modest increase in labor productivity was driven by the increase in capital per worker.³ As the contribution of the growth in the labor force as a share of the population declines, Brazil needs to boost labor productivity merely to maintain, let alone increase, the growth rate in gross domestic product (GDP) per capita.

Structural change did not add much to labor productivity growth over the past two decades, but within sector improvements were also modest. The contribution of structural change to labor productivity growth was positive throughout (average of 0.43 percent) but declined to 0.3 percent per annum after 2008 (figure 2.6).⁴ While employment movements across sectors contributed to overall productivity growth (positive between-static), labor did not move to sectors that were becoming more productive (negative between-dynamic) (figure 2.6).⁵ Within sector productivity improvements were also not particularly strong, albeit rising over time to become the dominant source of labor productivity growth (around two thirds) after 2003.

Employment shifted from agriculture to services while the share of labor in manufacturing remained stable. Between 1996 and 2014, total employment increased from 72 to 106 million workers because of demographic change and rising labor market participation. Most of the new labor force went to services while agriculture shed labor. The employment share of services increased from 56 to 66 percent while the share of employment in agriculture declined from 25 to 13 percent between 1996 and 2014 (figure 2.7). Within services, the main expansion was in business services, accompanied by a contraction in domestic services. These patterns highlight a limitation of the Brazilian economy, which appears to have been driven by productivity increases in agriculture and an expansion in the size of services sector, but has seen widespread stagnation in the productivity of most services and manufacturing.⁶

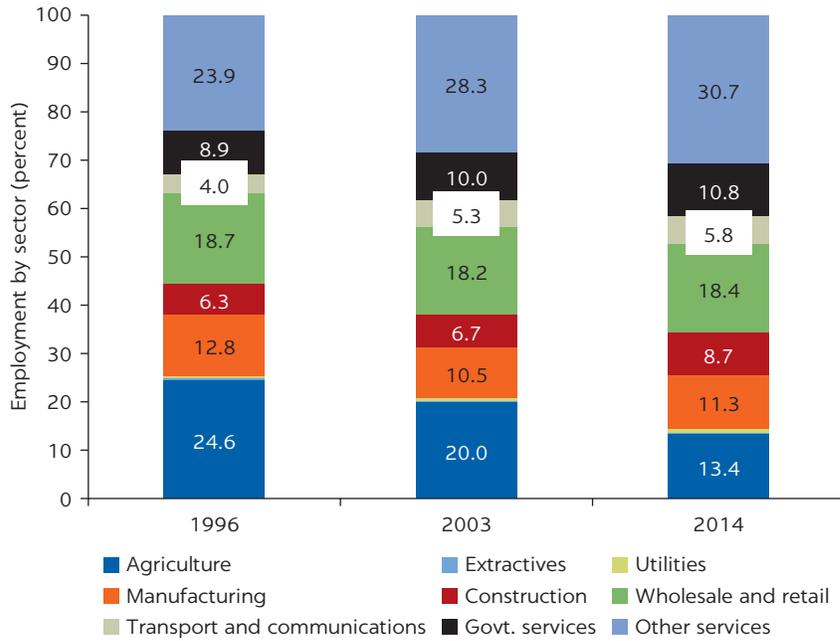
Two additional exercises illustrate the role of structural change as a source of productivity growth in the past. Figure 2.8 shows changes in employment

FIGURE 2.6
A declining role for structural change and modest within-sector improvements in labor productivity



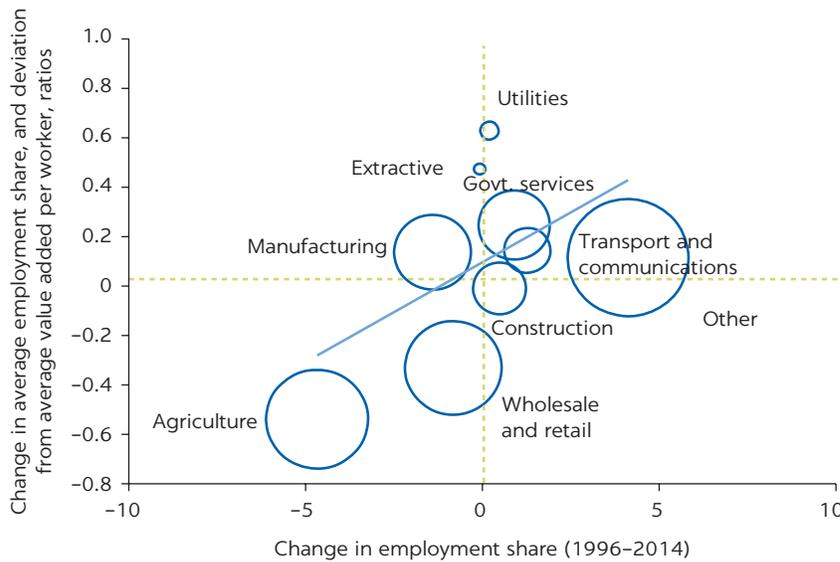
Sources: Instituto Brasileiro de Geografia e Estatística, World Development Indicators, Groningen, and World Bank calculations.
 Note: Reported growth of VA per worker is average growth rate between 1996 and 2014.

FIGURE 2.7
Employment shift from agriculture to services



Sources: Instituto Brasileiro de Geografia e Estatística, World Development Indicators, Groningen, and World Bank calculations.

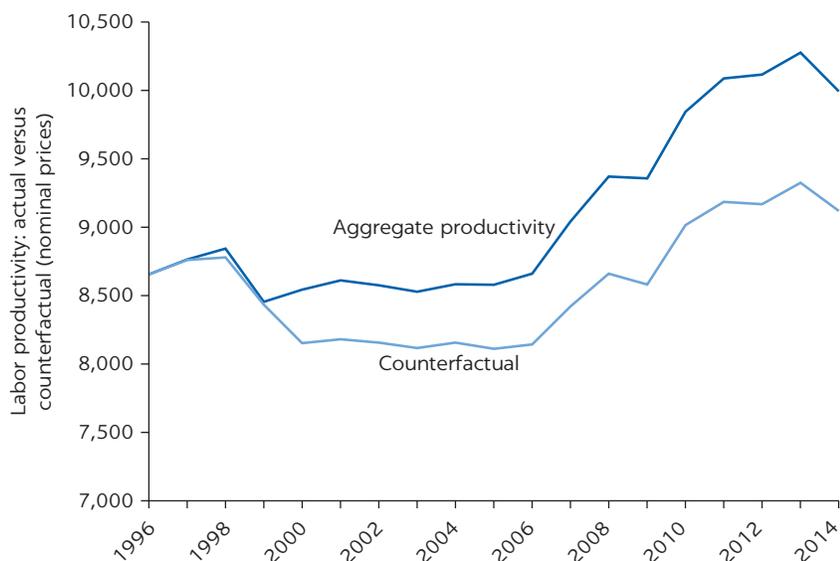
FIGURE 2.8
Labor shifts from agriculture to higher return services contributed to productivity during 1996–2014



Sources: Instituto Brasileiro de Geografia e Estatística, World Development Indicators, Groningen, and World Bank calculations.

Note: Size of the circles refers to size of sectoral employment share in the economy.

shares and the relative productivity of sectors, measured as the log of the ratio between sectoral productivity and average productivity between 1996 and 2014. For positive gains to occur through structural change, sectors would either be in the top-right quadrant (e.g. other services) where labor shifts into relatively high-productivity sectors or the bottom left quadrant (e.g. agriculture) where

FIGURE 2.9**Structural change contributed to increased labor productivity growth between 1996 and 2014**

Sources: Instituto Brasileiro de Geografia e Estatística, World Development Indicators, Groningen, and World Bank calculations.

Note: To calculate the counterfactual labor productivity, it uses 1996 employment distribution and actual labor productivity.

labor shifts out of low productivity sectors. The graph shows that structural change played a positive role in Brazil, but that this was limited mainly to a shift between agriculture and other services. Figure 2.9 computes a counterfactual labor productivity, using the 1996 employment distribution and actual labor productivity dynamics and labor force increases. This shows that aggregate productivity due purely to structural change was around 5 percent higher in 2000 and roughly 10 percent higher in 2014 (figure 2.9).

While structural change has made a contribution to increasing productivity in the past, Brazil's structural composition is not the main source of its productivity gap. A recent study across 35 economic sectors shows that if Brazil had the same sectoral labor allocation as the US, aggregate productivity would increase 68 percent. But if Brazil had the same sectoral productivities as the US, aggregate productivity would increase 430 percent (Velooso et al. 2017). Hence, low Brazilian productivity relative to the US is mainly due to low productivity “within” most activities. The next subsection examines possible proximate causes of this low productivity, notably the poor allocation of resources across firms and limited within-firm innovation (including technology adoption).

PRODUCTIVITY GROWTH AT THE FIRM LEVEL: THE COSTS OF LIMITED COMPETITION

Beyond the decomposition at the economy and sectoral level, it is important to analyze the dynamics of productivity at the firm level. As in the case of structural change at the aggregate level, labor productivity growth at the firm level

BOX 2.2

Decomposing labor productivity measures at the firm level

The sources of *economy-wide labor productivity change* at the firm level can be decomposed into five subcomponents, which include the Schumpeterian notions of firm entry and exit:

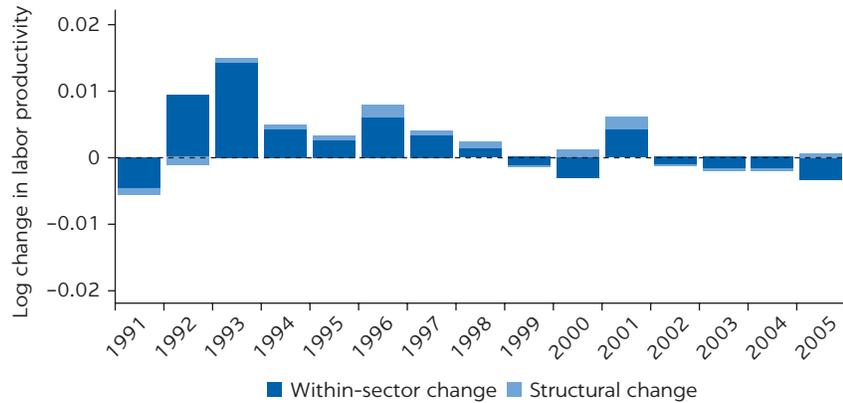
- **Within-firm:** measures the contribution to labor productivity growth of innovation (better resource use) within surviving firms. It contributes positively (negatively) to industry-level productivity if labor productivity of surviving firms increases (decreases).
- **Between-firm:** measures the contribution of changes in market share to industry-level labor productivity through reallocation between surviving firms. It contributes positively (negatively) to industry-level productivity if there are market share expansions (reductions) of high-productivity firms or reductions (expansions) of low-productivity firms.
- **Cross:** measures the contribution of firm-size growth through reallocation between surviving firms. It contributes positively (negatively) to industry-level labor productivity if fast-growth firms expand (shrink) in size or slow-growth firms shrink (expand).
- **Entry:** measures the average difference between entering firms' labor productivity and initial labor productivity at the sector level. It contributes positively (negatively) to industry-level labor productivity if entering firms have higher (lower) productivity than the initial industry average.
- **Exit:** measures the average difference between initial labor productivity at the industry level and exiting firms' labor productivity. It contributes positively (negatively) to industry-level labor productivity if exiting firms have lower (higher) productivity than the initial sector average.

As workers shift from declining to expanding or from exiting to newly entering firms, they may stay within the same sector or move from one sector to another. In this way, employment shifts across firms also drive changes in productivity due to structural change.

can originate from the reallocation of resources to firms across sectors (that is, from structural change) or from improvements in the productivity of firms within each given sector (box 2.2). Within each sector, labor productivity improvements can be decomposed into gains due to resources shifting from low to higher productivity firms (between-firm) and improvements realized at the firm level. In addition, the process of competitive selection also contributes to labor productivity growth as poor performing companies exit, and new enterprises enter the market.

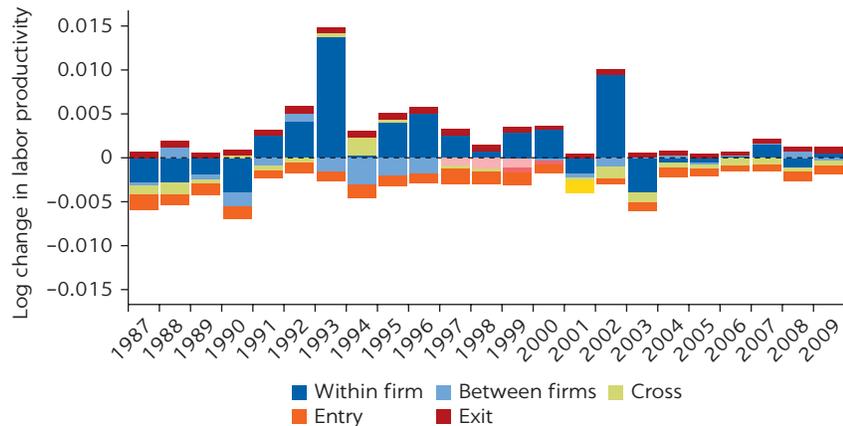
Firm-level analysis confirms that productivity growth in Brazil has been hampered by a combination of limited “within” firms labor productivity improvements and limited reallocation of resources across firms. Firm-level data for the period 1987–2009 across 20 industries (of which 11 are manufacturing and the remaining services industries) allow such a decomposition to be made for Brazil. By decomposing labor productivity growth into growth from within-firms and those coming from various reallocation channels, Bazzi, Muendler, and Rickey (2014) show that the within-sector component explains most of the evolution in labor productivity over the period. On average over 1991 through 2005, structural change accounted for about 18 percent of the improvement in labor productivity, while within-sector labor productivity accounts for the balance of 82 percent (figure 2.10). Within sectors, the within-firm component greatly dominates the cross-firm component over this

FIGURE 2.10
Within-sector labor productivity changes dominated overall changes, 1991–2005



Source: Bazzi, Muendler, and Rickey 2014.
 Note: 20 industries, of which 11 industries within manufacturing.

FIGURE 2.11
Entrants reduce labor productivity growth; exit contributes positively, 1991–2005



Source: Bazzi, Muendler, and Rickey 2014.

period across all firms (figure 2.11). The dominance of the within-sector and within-firm components of productivity is in line with data from other upper middle income countries (see for example Raiser and Wes 2014 for Turkey and references therein).

There are limited productivity gains from entry and exit of firms in Brazil, with both entering and exiting firms exhibiting lower than average productivity.² The patterns of entry, exit and firm growth differ across size categories, however. Small firms with fast productivity growth seem to attract more employment, potentially related to the shift of workers from informal to formal employment, particularly in construction, retail and transportation (Barbosa Filho, and Veloso 2016). Among large firms, by contrast, labor appears to shift to less productive firms over time (Bazzi, Muendler, and Rickey 2014). The latter pattern in particular is not consistent with the experience in high growth

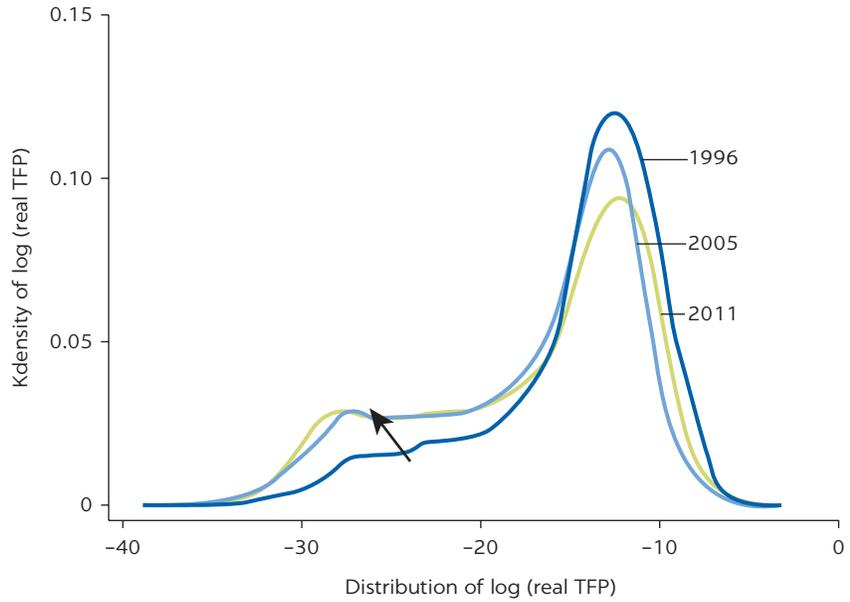
countries and indicates the presence of distortions in the allocation of resources to the detriment of overall productivity growth.

A comparison of TFP levels across firms further strengthens the impression of barriers to competition and hence the efficient allocation of resources. In a well-functioning economy, the process of competition results in more resources being allocated to more productive firms, allowing them to expand output and generate more jobs—with less productive firms either learning from their competitors or downsizing and exiting. This process should lead to TFP distributions within industries that are relatively narrow and concentrated around a high and growing average level. In Brazil, the dispersion of real TFP across firms within the same industry averaged across manufacturing is high and asymmetric with a fat lower tail (Vasconcelos 2017). The highly dispersed TFP is indicative of resource misallocation. This is because high dispersion implies that some firms can produce more output with the same amount of inputs. Furthermore, the distribution in Brazil became more dispersed through time, with more firms concentrated into the low tail of the TFP distribution in 2011 than in 1996 (see top diagram of figure 2.12)—suggesting that the problem has been increasing over time.

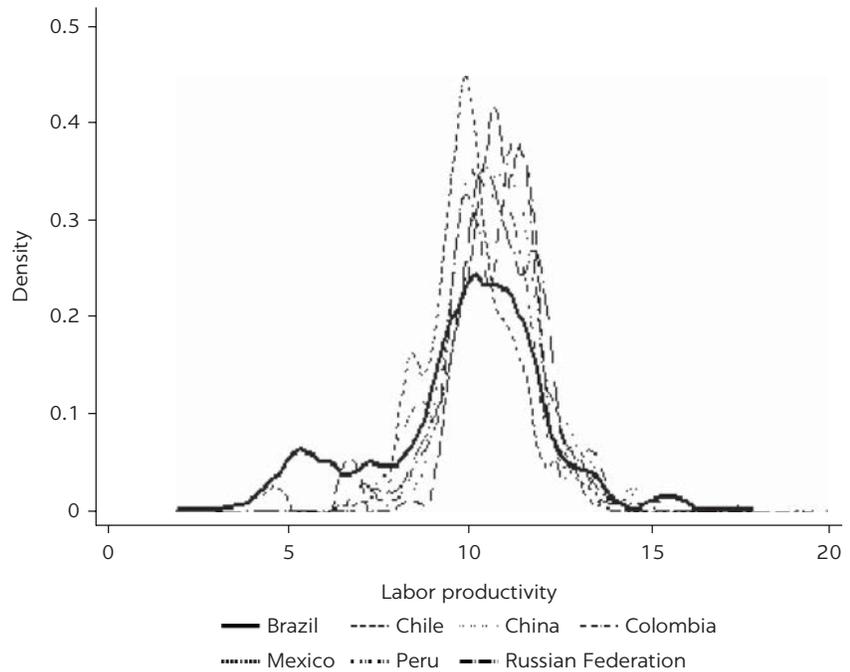
This impression is confirmed by international comparisons of productivity dispersion. Compared to international peers across both manufacturing and services industries, the fat tail of low productivity firms is larger and the average productivity is lower in Brazil (bottom diagram of figure 2.12) (Barbosa Filho, and Correa 2017). In addition, the dispersion of productivity presented in Brazil is the largest among the countries analyzed. Disaggregating the data at the sectoral level shows that the problem affects most sectors of the economy, albeit to different extents (Barbosa Filho, and Correa 2017). The high dispersion observed in Brazil, associated with the concentration of companies with low productivity and limited resource shifts from lesser to more productive firms is indicative of significant and persistent resource misallocation. Potential productivity gains from within-industry reallocation of resources to the most efficient producer are in the order of 40 percent in manufacturing and over 250 percent in retail (De Vries 2014). Just as at the aggregate level, Brazil could achieve dramatic gains in productivity at the sectoral and firm level by using its existing assets and resources more efficiently.

The misallocation of resources is particularly accentuated for capital, reflecting severe policy distortions in financial markets. If capital and labor were allocated efficiently, differences in marginal returns of capital and labor among firms should be limited. In Brazil, the input productivity difference or wedge between the 90th and 10th percentile producer, both for capital and labor, has been increasing from 1996 to 2011. Importantly, the capital wedge is more than twice the level of the labor wedge: the productivity of capital of the 90th percentile producer is roughly 4 times greater than the capital productivity of the 10th percentile producer, versus a 2 to 1 ratio for labor (figure 2.13). Relative to comparator Latin American countries, input distortions as measured by the dispersion in the return of capital relative to labor between the 90th and 10th percentile producer in 2005, are again higher in Brazil. As elaborated in subsequent chapters of this report, Brazil's financial markets have suffered severe policy-induced distortions, including forced savings, directed credit, government-determined interest rates, and enormously high spreads. This arguably is an important reason behind the substantial misallocation of capital and the resulting stagnation in Brazil's overall productivity.

FIGURE 2.12
Competition distortions are suggested by fat left tails of firm productivity distributions



Source: Vasconcelos 2017.

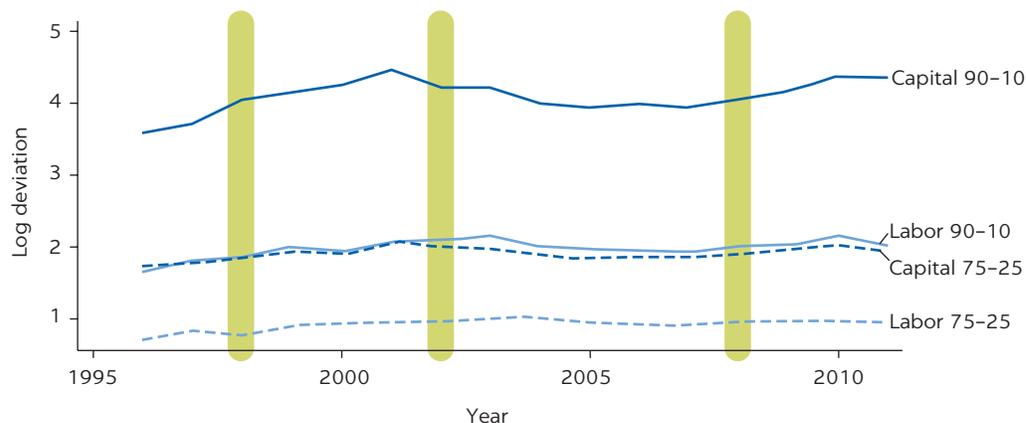


Source: Barbosa Filho and Correa 2017.

Together the aggregate and micro-level analyses suggest that low productivity growth results from barriers to competition and significant distortions in the operation of capital markets in particular—that stifle innovation including technology adoption at the firm level and hamper the efficient allocation of resources. The findings of the analysis are consistent with the characteristics of Brazil’s

FIGURE 2.13

Productivity wedge between 90th- and 10th-percentile firms is substantially larger for capital than for labor



Source: Vasconcelos 2017.

Note: Light green bars indicate three shocks that occurred during the period: the Asian financial crisis reduced the availability of capital in the Brazilian economy, which had a recent stabilization of inflation and a regime of fixed exchange rates; the second crisis was a domestic crisis in 2002, caused by uncertainties in the Brazilian political situation; the third was the subprime crisis of 2008–09.

policy environment, as reviewed in more detail in subsequent chapters. While it is impossible to directly map existing distortions to productivity patterns and establish the relative weights of their contribution to low growth, chapters 3 and 4 present evidence that is indicative of the most important factors and allows some policy conclusions to be drawn. In a related recent quantitative analysis, the OECD finds that reforms to bring Brazil's policy environment to the level of the average middle-income country could boost annual growth by 1.3 percent (OECD 2018). This would amount to a doubling of labor productivity growth above its historical average of the past 20 years. The case for Brazil's productivity promise could not be better made.

NOTES

1. This growth accounting analysis is based on a simple production function that allows to assess the sources of growth since 1996. It uses a constant return to scale Cobb-Douglas production function with a share of capital of 46 percent of GDP. The labor supply is estimated adjusting the working age population by participation rate, employment rate and average year of education. The stock of capital was estimated using the Perpetual Inventory Method assuming a depreciation rate of 5 percent. It should be noted that estimating the capital stock is beset with problems. It is also worth noting that TFP can be shown to be a component of labor productivity, but that the two do not coincide as the latter is also influenced by the amount of capital per worker.
2. Brazil's demographic "window of opportunity" is quickly closing as the country's population "ages." Brazil's demographic profile will soon start to resemble that of many European countries, although at a much lower level of economic development and per-capita value added. Population projections by the United Nations Population Division show that by the start of the next decade, the share of Brazil's population aged 15–64 is expected to peak. The dependency rate will start rising in 2020, driven by a growing share of elderly in the population.

3. Labor productivity growth was negative prior to 2003, but turned positive thereafter, averaging 1.3 percent between 2003 and 2014. With the recession of 2015–16, labor productivity has recently declined again.
4. For comparison, Macmillan and Rodrik (2011) calculated that during 1990 to 2005 the “within” component in China, Hong Kong SAR, China, India, Malaysia, Mauritius, Taiwan, China, and Turkey ranged from 7.8 percent per year to 1.7 percent per year, while the structural change component accounted for between 1.4 percent per year to 0.4 percent per year. They also found, however, that in many Latin American and Sub-Saharan African countries “structural change” between 1990 and 2005 has been negative, depressing economic growth.
5. The negative between-dynamic effect for 1996–2002 is driven by a decline in labor productivity in utilities combined with an expansion of its employment share. Between 2003 and 2008, manufacturing absorbed labor while labor productivity declined, resulting in a negative between-dynamic effect, although much smaller than in the previous period. Similarly, between 2009 and 2013, mining and government services expanded their labor share while labor productivity of these sectors declined slightly.
6. Labor productivity in manufacturing experienced virtually no change over the period with an initial increase followed by a decrease back to initial levels over the ensuing years.
7. The fact that new entrants have lower productivity is not that surprising. The critical point about the role of entry in a well-functioning high-productivity growth economy is the contribution of relatively large numbers of new successful firms to growth thanks to their rapid expansion after their initial adjustment to prevailing demand patterns. For the US, Haltiwanger, Jarmin, and Miranda (2013) find that high-growth firms tend to be relatively young and make disproportionate contributions to output, productivity and employment growth. For Brazil, Bastos and Silva (2017) find that less than 1 percent of new entrant firms account over a third of the relatively low number of new jobs created by the cohort 13 years after birth.

REFERENCES

- Barbosa Filho, F. H., and P. Correa. 2017. “Distribuição de produtividade do trabalho entre as empresas e produtividade do trabalho agregada no Brasil.” In *A Anatomia da Produtividade no Brasil*, edited by Regis Bonelli, Fernando Veloso e Armando Castelar Pinheiro, 109–42. Rio de Janeiro: Elsevier.
- Barbosa Filho, F., and F. Veloso. 2016. “A Contribuição da Formalização para a Elevação da Produtividade do Trabalho no Brasil nos Anos 2000: Uma Análise Exploratória.” In *Causas e Consequências da Informalidade no Brasil*, edited by F. Barbosa Filho, G. Ulyseia, e F. Veloso, 303–25. Rio de Janeiro: Editora Elsevier.
- Bastos, Paulo, and Joana Silva. 2017. “The Origins of High-Growth Firms: Evidence from Brazil.” Mimeo, Washington, DC: World Bank.
- Bazzi, Samuel, Marc-Andreas Muendler, and Lindsey Rickey. 2014. “Sources of Labor Productivity Changes in Brazil.” Mimeo, San Diego.
- Caselli, Francesco. 2016. “The Latin American Efficiency Gap.” In *Understanding Latin America and the Caribbean’s Income Gap*, edited by J. Araujo, M. Clavijo, E. Vostroknutova, and K. Wacker, 34–58. Washington, DC: World Bank.
- De Vries, Gaaitzen J. 2014. “Productivity in a Distorted Market: The Case of Brazil’s Retail Sector.” *The Review of Income and Wealth* 60 (3): 499–524.
- Ferreira, P., and F. Veloso. 2013. “O Desenvolvimento Econômico Brasileiro no Pós-Guerra.” In *Desenvolvimento Econômico: Uma Perspectiva Brasileira*, edited by F. Veloso, P. Ferreira, F. Giambiagi, and S. Pessôa, 129–65. Rio de Janeiro: Campus/Elsevier.
- Haltiwanger, J. C., R. S. Jarmin, and J. Miranda. 2013. “Who Creates Jobs? Small versus Large versus Young.” *Review of Economics and Statistics* 95 (2): 347–61.
- McMillan, Margaret, and Dani Rodrik. 2011. “Globalization, structural change and productivity growth.” Chapter 2 in *Making Globalization Socially Sustainable*, edited by Marc Bacchetta and Marion Jansen, 49–84. Geneva: ILO and WTO.
- OECD. 2018. *Economic Survey of Brazil*. Paris: OECD.

- Raiser, Martin, and Marina Wes. 2014. *Turkey's Transitions: Integration, Inclusion, Institutions*. Report 90509-TR. Washington, DC: World Bank.
- Vasconcelos, Rafael. 2017. "Misallocation in the Brazilian Manufacturing Industry." <http://bibliotecadigital.fgv.br/ojs/index.php/bre/article/view/61801>.
- Veloso, F., S. Matos, P. Ferreira, and B. Coelho. 2017. "O Brasil em Comparações Internacionais de Produtividade: Uma Análise Setorial." In *Anatomia da Produtividade no Brasil*, edited by R. Bonelli, F. Veloso, and A. Pinheiro, 63–107. Rio de Janeiro: Elsevier.
- Wu, X., and M. Ramesh. 2014. "Market Imperfections, Government Imperfections, and Policy Mixes: Policy Innovations in Singapore." *Policy Sciences* 47 (3): 305–20.

3 The Causes of Low Productivity Growth

POLICIES IMPEDING GLOBAL AND DOMESTIC INTEGRATION AND OTHER DISTORTIONS TO PRODUCT MARKET COMPETITION

The low level of economic opening of the country has a negative effect on the productivity of the Brazilian economy by limiting at the same time the entry of new competitors into the market and the access of local firms to new technologies. Excessive bureaucracy and the so-called *Custo Brasil* discourage local producers from seeking markets outside the country. “We get better prices abroad, and exporting could protect us from fluctuations in the domestic market,” says Daniel Marques, managing partner of the *Doce Paixão* brand, a small designer, producer and seller of women’s lingerie, beachwear and fitness in the south of Minas Gerais, which is taking its first steps in export markets. However, Marques states: “It is a difficult process for most small businesses, which therefore end up being limited to export sales of small quantities through the Post Office.”

ABSTRACT With trade flows less than one third of gross domestic product (GDP) in 2015, Brazil is the least open of all the large economies in the world. This lack of openness directly retards Brazil’s productivity by limiting exposure to international competition and slowing down the acquisition of new knowledge and modern technologies. However, the benefits of integration into global trade networks would be amplified if accompanied by the parallel integration of domestic product markets. The lack of domestic market integration limits the degree of competition faced by domestic suppliers to exporting companies and reduces the linkages from opening to international trade and investment. The high costs of connectivity in Brazil reduce market opportunities for more isolated regions and exacerbate adverse impact of foreign competition on specific industries and locations. Important additional distortions to competition and impediments to productivity growth are provided by domestic entry, operational and exit-related regulatory barriers that are a key part of the *Custo Brasil*. And business support policies, primarily in the form of tax exemptions have ended up

misallocating resources away from the most productive firms. Removing barriers to external and internal integration requires sequencing of reforms. The report suggests that a commitment to a gradual external trade liberalization could serve as an anchor to create the context for businesses to support domestic reforms to enhance competitiveness in the interim, further stimulated by the necessity to adjust to global technological trends. Similarly, Brazil's constitutional spending rule can serve as an anchor to embark on a careful review of business support policies—as an important first step for complementary domestic integration and competition reforms.

One of the main causes of Brazil's low productivity growth arguably is the lack of competition, resulting from poorly integrated domestic and external markets. This chapter explores some of the key causes of policy-induced distortions in goods and services markets that may explain low productivity growth. Its focus is on the costs to Brazilian society from barriers to competition limiting external trade, domestic market integration and stronger rivalry among local firms to meet the needs of consumers, and the benefits from more vigorous competition (box 3.1).¹

The main conclusion of this chapter is that Brazil could gain significantly from opening up to foreign trade and reducing barriers to the integration of domestic markets. Strengthening the integration of the Brazilian economy into global markets could unleash multiple sources of efficiency gains for domestic firms and encourage resources to shift to more productive enterprises:

- it enlarges the markets where firms can sell their products, allowing maximum cost reductions from economies of scale;
- it allows firms to access inputs of higher quality and variety at lower cost, which increases the returns to investment and innovation; and
- it exposes Brazilian firms to import competition and competition in their export destinations and to learning opportunities to upgrade their capabilities based on access to new global knowledge that trade enables, which then increases their overall incentives and ability to become more efficient and innovate.

Yet for Brazil to take full advantage of the opportunities that external integration offers, domestic markets also need to function better, so that:

- changes in international prices are passed through and reflected in local markets;
- firms can easily start a new business and set up plants in any municipality within the country; and
- goods and services can easily move across municipalities and states within the country.

Domestic market integration is constrained by inadequate infrastructure, high regulatory barriers and distortionary business support policies. If reallocation costs—which are ultimately influenced by policy interventions—are high, then the potential productivity returns accruing from further integration with the global economy will be more limited and liberalization may worsen domestic inequality. Domestic market integration is also needed to strengthen competition in non-tradable sectors, as the

BOX 3.1

What is competition and how does it serve society?

Product market competition refers to the rivalry between enterprises in the same good or service market for purchases by consumers based on lower prices and higher quality. The opposite of intense competition is market power, that is, a firm's ability to withhold sales to set its prices significantly above its costs or to offer poorer quality services without losing many of its customers. There are three main arguments for how competition serves society:

- **Productivity:** Competition encourages firms to produce more efficiently and to innovate, thereby expanding output. It promotes productivity by spurring existing firms to experiment and adopt new technologies and by reallocating resources toward more efficient firms—by forcing out inefficient firms and thereby creating market space for more productive new start-ups and incumbent firms to expand sales and jobs;
- **Affordability:** Competition lowers prices for consumers (both business users of goods and services produced by upstream firms and end-use households), directly by lowering mark-ups above costs (the entry and expansion of rivals makes consumers less captive and thereby puts downward pressure on prices) and indirectly

through the business productivity gains it spurs (which lowers costs, and in turn further lowers prices); and

- **Integrity:** Competition encourages firms to invest their resources to seek consumers' purchases rather than government privileges—it gives society access to the best the world has to offer. When there is competition, companies cannot obtain monopoly rents through government regulations, and therefore do not spend wasteful resources from society's point of view on rent seeking or corruption ("economic rents" are windfalls or excess returns to the owner of resources above their opportunity cost or what the resources would earn in a competitive market). The absence of free entry into markets may lead public officials to favor privileged local suppliers for reasons of friendship or political calculation rather than because they are the most cost-efficient suppliers. Political decision-makers who privilege local suppliers based on connections rather than efficiency do so at the expense of the taxpayer or the consumer, who will pay more or receive lower-quality services. Although a few people gain, society is worse off.

Source: Tirole 2017.

evidence presented in the previous chapter shows productivity being mostly stagnant in the majority of services. Even without taking into consideration these important complementary effects, however, external liberalization is unambiguously welfare enhancing on average for all Brazilians across the income distribution. This important point is elaborated and emphasized in more detail in chapter 5.

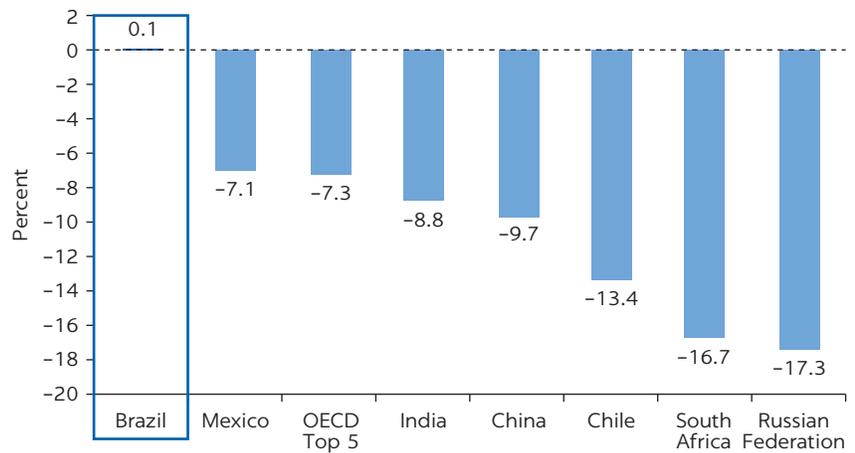
The impact of competition on productivity is quantitatively large. New findings for this report show that a 10 percent decrease in the average manufacturing price-cost margin in Brazil, as would likely occur with greater competition, is associated with an increase in labor productivity growth of over 3 percent per year.² These results matter all the more, because Brazil seems to suffer from significantly higher barriers to competition than comparator countries (figure 3.1). Restrictions to international trade are particularly notable as is the fact that Brazil is the only country among comparators where the overall restrictiveness of policies and regulations did not improve between 2008 and 2013

FIGURE 3.1
Brazil has higher policy and regulatory restrictions to competition than most comparator countries...



Source: Product Market Regulation World Bank-OECD database.
 Note: OECD top 5 are Austria, Denmark, the Netherlands, New Zealand, and the UK.
 OECD = Organisation for Economic Co-operation and Development.

FIGURE 3.2
... and is the only country with no reduction in restrictiveness to competition



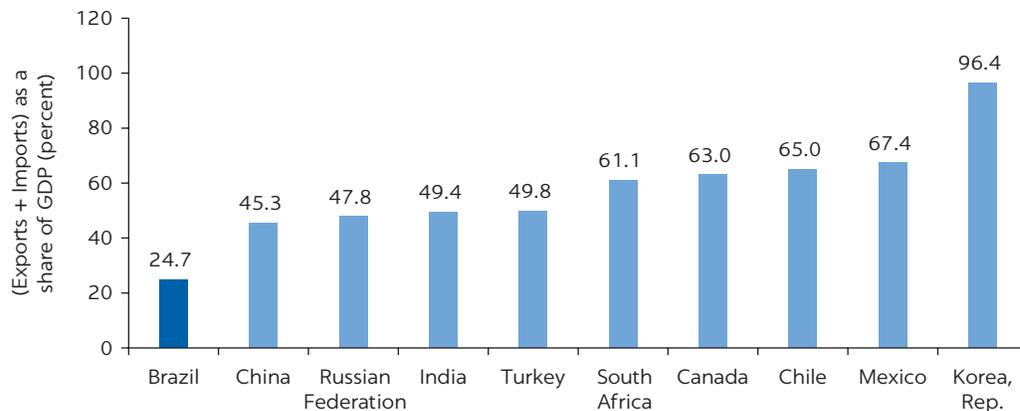
Source: Product Market Regulation World Bank-OECD database.
 Note: OECD top 5 are Austria, Denmark, the Netherlands, New Zealand, and the UK.
 OECD = Organisation for Economic Co-operation and Development.

(figure 3.2).³ The remainder of this chapter first focuses on the costs of barriers to global integration, followed by an overview of policy distortions hampering domestic integration. Particular attention is placed on the so-called *Custo Brasil*, factors that raise the cost of doing business, and business support policies that aggravate resource misallocation. The chapter then discusses evidence on the impact of limited competition on firm behavior and concludes by examining policy options to increase competition.

LIMITED INTERNATIONAL INTEGRATION

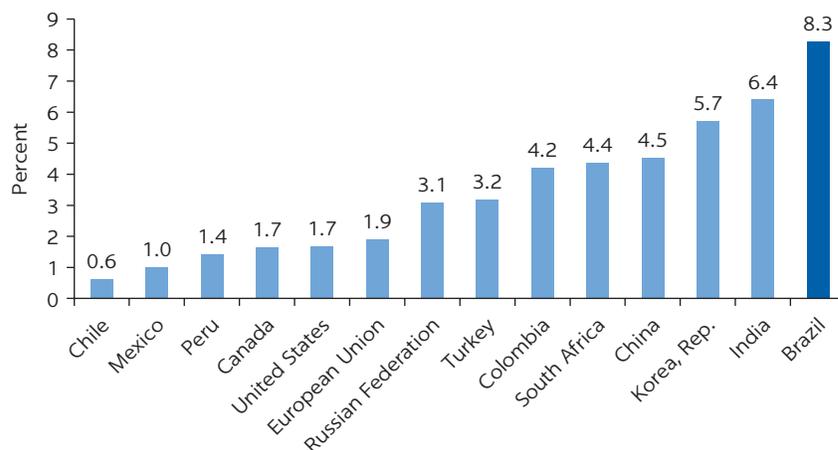
Openness to trade in Brazil is limited, reflecting a highly interventionist and protective policy stance. Brazil has one of the lowest indicators of trade openness in the world, with exports plus imports as a share of GDP at 24.6 percent in 2016 relative to the worldwide average of 51.3 percent (figure 3.3a).⁴ Protective trade policies including high tariff and nontariff barriers to imports contribute to this lack of global integration. Brazil’s average (trade-weighted) effective tariff rate was 8.3 percent in 2015, the highest rate in comparison to other emerging and advanced economies (figure 3.3b).⁵ Beyond tariffs, NTMs (nontariff measures) and procedural obstacles to trade are widespread, raising the costs of trade. The coverage ratio, or percentage of imports subject to at least one NTM is higher in Brazil than in other countries: 89 percent for technical barriers, 66 percent for sanitary and phytosanitary measures, and 65 percent for quantity controls, well above the world average (figure 3.4a). Between 2008 and 2014, Brazil was second only to

FIGURE 3.3A
Brazil has a lower trade share than peers (2010–16 average)



Sources: Estimations using UNCTAD TRAINS and UN COMPTRADE data.

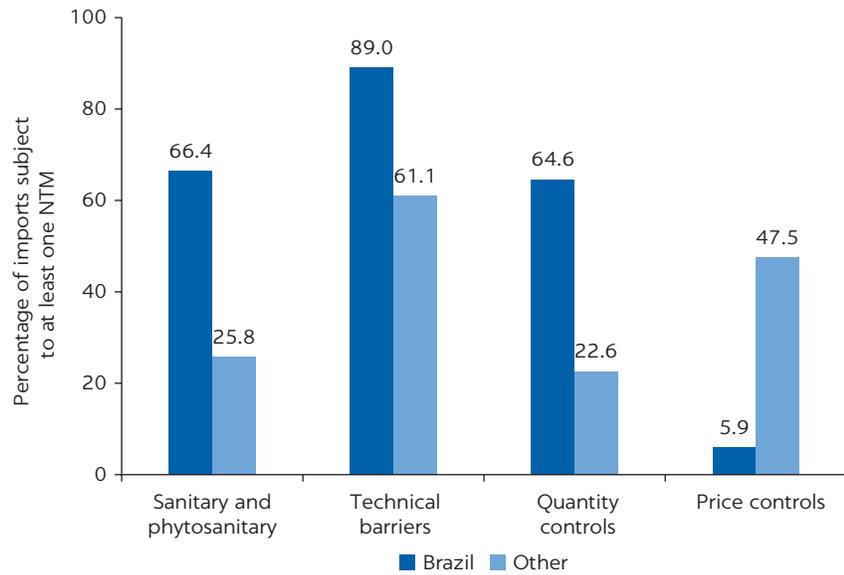
FIGURE 3.3B
Brazil has higher trade costs than peers (2015 average effective tariffs)



Sources: Estimations using UNCTAD TRAINS and UN COMPTRADE data.

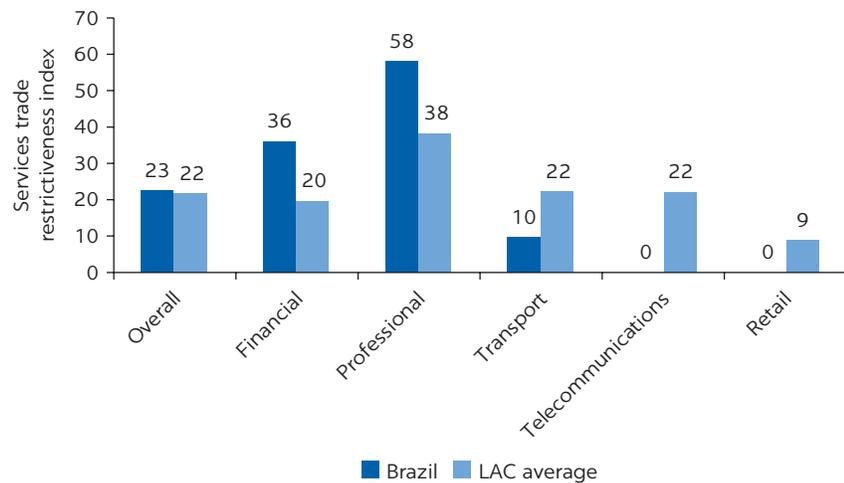
Indonesia in the number of LCRs (local content requirements) used with 17 LCRs in force.⁶ On average, Brazil has more restrictions to trade in services than the average in the LAC region, according to World Bank Services Trade Restrictiveness Index (STRI), with the most restrictive scores in financial and professional services, which are critical inputs across all industries for productivity growth and competitiveness (figure 3.4b).⁷

FIGURE 3.4A
Brazil has higher coverage of NTMs than the world average in most areas, 2015



Sources: Estimation using UNCTAD TRAINS and UN COMTRADE data.

FIGURE 3.4B
Services trade restrictiveness index, Brazil relative to LAC average



Source: Data from World Bank STRI dataset.

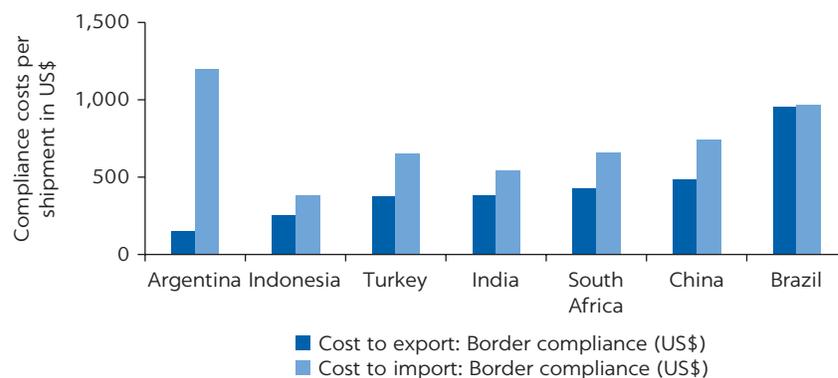
Note: Higher values means more restrictive regimes. LAC = Latin America and the Caribbean.

Brazil also faces challenges in trade facilitation. To compete in the global economy, traders require seamless supply chains, including efficient border management and clearance processes. Brazil's overall integration in GVCs (Global Value Chains) is low compared to international peers in part because of relatively lengthy and costly procedures to import and export.⁸ Indeed, firms' integration to GVCs critically depends on their capacity to provide good quality products delivered on time to buyers further up in the value chain. Lack of predictability in customs clearance due to physical inspection, or delays at border posts generated by excessive cargo handling in response to controls by multiple border agencies, increase uncertainty in delivery times. Recent introduction of the *Portal Único de Comércio Exterior*, an electronic data interchange system coupled with reengineering and review of all export and import procedures and formalities, has reduced the time for documentary compliance for both exporting and importing.⁹ Nonetheless, when compared to a range of peers, Brazil is still behind in terms of monetary costs of border and documentary compliance (figure 3.5). Brazil is also seeking cooperation between Customs and other border control agencies, as well as with third countries' agencies.¹⁰

Brazil's protective policy stance has persisted despite the large positive effects of the previous unilateral trade liberalization episode of the late 1980s and early 1990s. The productivity effects of Brazil's previous unilateral trade liberalization have been found to be overwhelmingly positive (see Rossi Jr and Ferreira 1999, Schor 2004, Muendler 2004 and Lisboa, Menezes Filho, and Schor 2010).¹¹ Cirera et al (2015) also find a positive impact on productivity among Brazilian firms via the effects of improved imported inputs (learning by importing) that diffuse with positive spillovers from direct importing to other firms. This past experience thus provides important evidence supporting the role trade opening can play in boosting productivity.

The positive effects of trade liberalization found in historical studies are confirmed using policy simulations. Using a computable general equilibrium (CGE) model, we explore several scenarios of trade liberalization to assess

FIGURE 3.5
Brazil lags all peers on border compliance costs in US\$
(exc. Argentine imports)

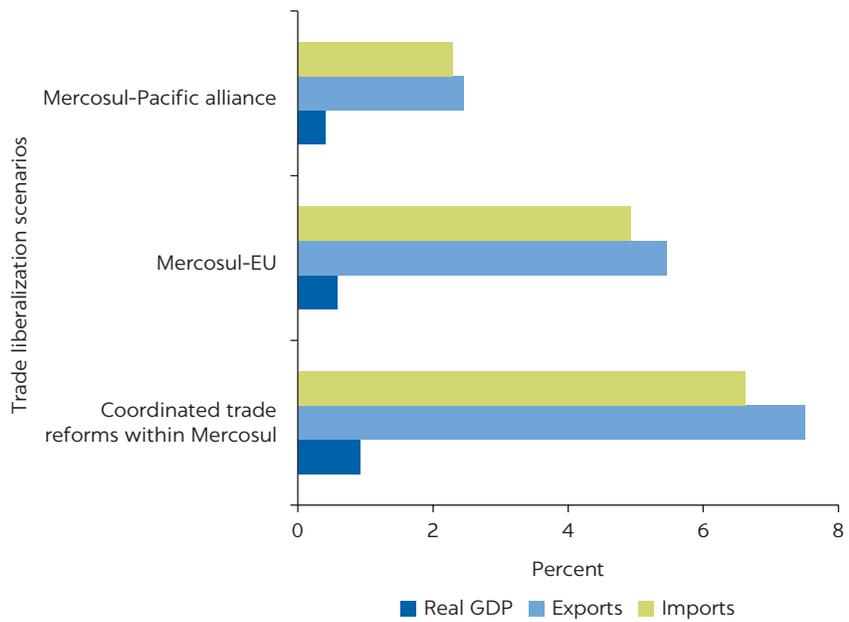


Source: Data from *Doing Business 2018*.

the potential impact on economic growth, export and imports (figures 3.6 and 3.7);¹² all modelled scenarios are merely illustrative to get a sense of impact:¹³

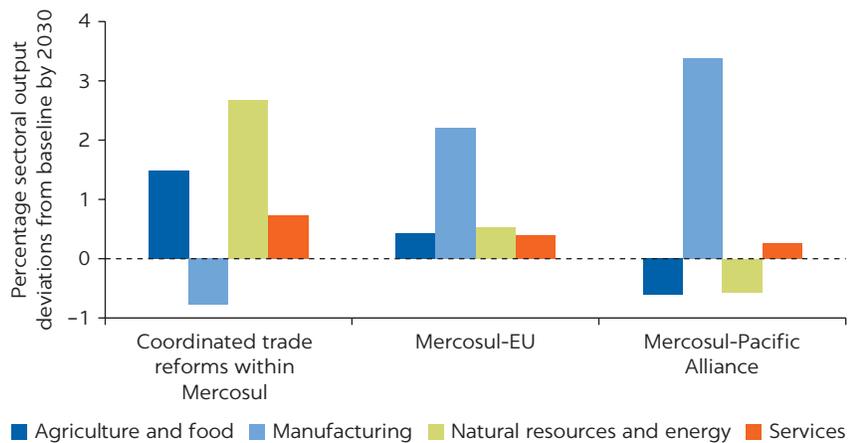
- coordinated trade reforms within Mercosul—where each Mercosul member unilaterally reduces tariffs by 50 percent with respect to non-Mercosul countries, NTMs are streamlined among the Mercosul parties¹⁴ and export taxes are eliminated among the parties—would increase exports and imports by 7.5 and 6.6 percent, respectively, while real GDP would experience a 0.93 percent increase (above baseline projections in 2030);

FIGURE 3.6
Economy-wide effects of CGE trade liberalization scenarios...



Source: Estimations from CGE analysis.
 Note: GDP = gross domestic product.

FIGURE 3.7
...and sectoral output deviations from baseline, 2030



Source: Estimations from CGE analysis.

- a reciprocal preferential trade agreement between Mercosul and the EU—where the average tariff applied by Brazil to EU products would fall from 10.7 to 3.2 percent in a 10-year time-horizon while the average tariff in the EU for Brazilian products would fall from about 2.5 percent to close to one, NTM tariff equivalents are reduced by 15 percent and export taxes are eliminated among Mercosul and EU countries—would boost exports and imports by 5.5 and 4.9 percent, respectively, with a permanent gain to GDP of 0.58 percent;
- a preferential trade agreement between Mercosul and the Pacific Alliance—where Mercosul countries and Pacific Alliance members gradually reduce tariffs over 10 years,¹⁵ NTM tariff equivalents are reduced by 15 percent and export taxes are eliminated among the parties—would increase exports and imports by 2.4 and 2.3 percent respectively, while GDP would grow by 0.41 percent (all above the baseline projections by 2030).

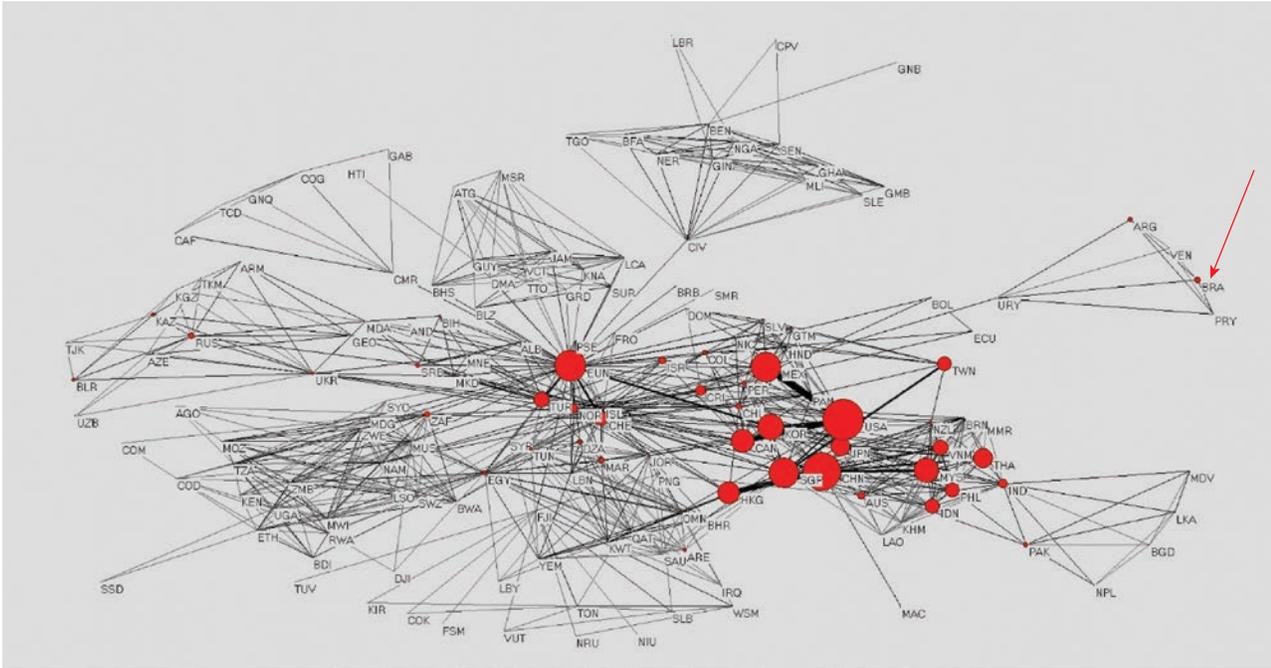
Dynamic gains from trade liberalization likely exceed the gains from resource reallocation by several orders of magnitude. It is important to note in interpreting the above results that the GDP and associated welfare gains from tariff liberalization obtained through CGE models tend to be small. Dynamic gains resulting from increased competition, improved access to inputs and technology and increased export opportunities, which cannot easily be modelled using CGEs are likely several times higher. A cross-country study comparing trade liberalization episodes shows an increase in the average growth rate post liberalization of 2 percent per year (Wacziarg and Welch 2008).

At the firm level, integration into GVCs offers particularly important potential productivity benefits. GVC participation can bring positive effects on productivity through three main channels: specialization in tasks, access to a larger variety and quality of intermediate inputs, and knowledge spillovers from multinational enterprises. New findings for this report suggest that stronger integration in GVCs (both as buyers and sellers) is associated with higher productivity levels of Brazilian firms. Indeed, the differences among Brazilian firms are much larger than in other countries, probably because integration overall has been so limited.¹⁶

Increasing the number and depth of preferential trade agreements (PTA) offers an important channel to increase firms' participation in GVCs. Brazil is isolated from learning opportunities with other countries both in terms of number of trade agreements signed and in terms of connections to countries and regions where a significant amount of GVC-related trade is taking place (figure 3.8).¹⁷ GVC-related trade—proxied by trade in parts and components—is higher on average for countries that have signed deeper agreements, such as commitments on anti-dumping measures, competition rules and intellectual property rights (figure 3.9a). Compared to other BRIC countries, Brazil has a large upside potential in increasing both the number and depth of its PTAs: compared to Russia (20 active PTAs) and India (11), Brazil has only one PTA (Mercosul) (figure 3.9b); and only 6 out of the 17 disciplines that are covered are currently in force.

Expanding Brazil's AEO (Authorized Economic Operator) program to more businesses and including all border control agencies could boost Brazil's overall exports and integration in GVCs. The Department of Federal Revenue of Brazil created the AEO program in 2014. The Program certifies importers, exporters, customs brokers and transport and logistics services providers that comply with a list of security, tax and customs requirements ("trusted operators"). The intended benefits include lower customs

FIGURE 3.8
Brazil's current network of agreements leaves it relatively isolated

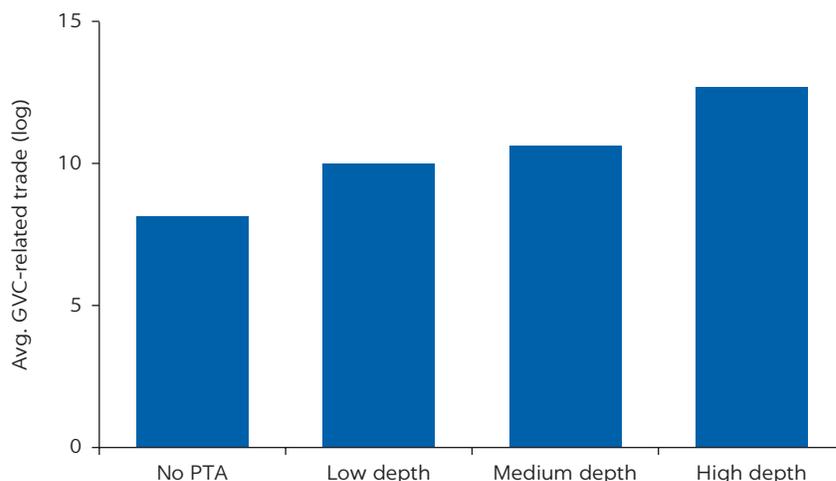


Source: Hollweg and Rocha 2017.

clearance time, higher predictability and lower logistics cost due to reduced movement of cargo within logistics terminals. The share of export and import declarations covered by the AEO program stood at 12 percent in 2016. It is expected to increase to 18 percent by 2019. Given that the top 1 percent exporters (190 firms) represented 72 percent of the Brazilian export value in 2014,¹⁸ reaching a critical mass of firms covered by the AEO program can bring significant benefits in terms of export receipts, increasing the intensive margin of exports and firms' participation in GVCs. The expansion of border control agencies within the AEO program would streamline border control processes, avoiding duplication of requirements and strengthening the risk management strategy. By involving more participants, it also increases the transparency of inspection processes. *Vigiagro*, the agency in charge of agricultural border inspection has recently joined the AEO Program and is currently implementing a pilot with the RFB.¹⁹

Would the opening of external trade not threaten the survival of domestic producers? Protective trade policies are often based on the misconception that they help domestic firms get prepared for competition. In fact, import protection instead often acts as a direct tax on exporters making them less, not more competitive.²⁰ This is confirmed by a closer examination of Brazil's recent export performance (Canuto, Cavallari and Reis 2013). Stripping out the effects of the commodity price and demand boom associated with rapid growth in China, Brazil's "pure" export performance was weaker than that of most major emerging economies. The connection of imports to exports has become even clearer in the context of twenty-first century trade: as GVCs can be described as "factories that cross international borders" (Taglioni and Winkler 2016), it is evident that imports are essential for exports and that

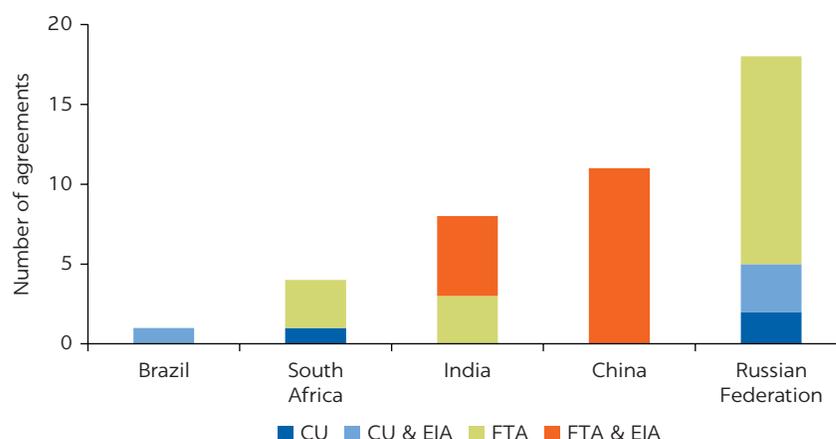
FIGURE 3.9A

Deeper PTAs are associated with higher GVC-related trade

Source: Hollweg and Rocha 2017.

Note: GVC = global value chains. Low-, medium-, and high-depth agreements constitute fewer than 15 provisions, between 15 and 30, and more than 30 provisions, respectively.

FIGURE 3.9B

Brazil has a high upside potential for more active PTAs, relative to BRICS peers, 2015

Source: Hollweg and Rocha 2017.

Note: FTA = Free Trade Agreement; EIA = Economic Integration Agreement; CU = Customs Union.

reducing the costs of imports is critical for a country to be a more dynamic exporter. The case of Brazilian airplane maker Embraer and its associated value chain is emblematic in this respect: while exports of aircrafts and aircraft parts totaled on average US\$6.1 billion over the 2011–16 period, imports of aircraft parts alone totaled on average US\$4.2 billion, a high ratio of imported inputs to exports.²¹

Another concern associated with trade liberalization is that it will hurt most of the poor. Such concerns are unfounded as elaborated in chapter 5. Simulations reported there suggest that further tariff liberalization and streamlining of nontariff barriers would benefit Brazilian households across the income distribution, with almost 6 million additional

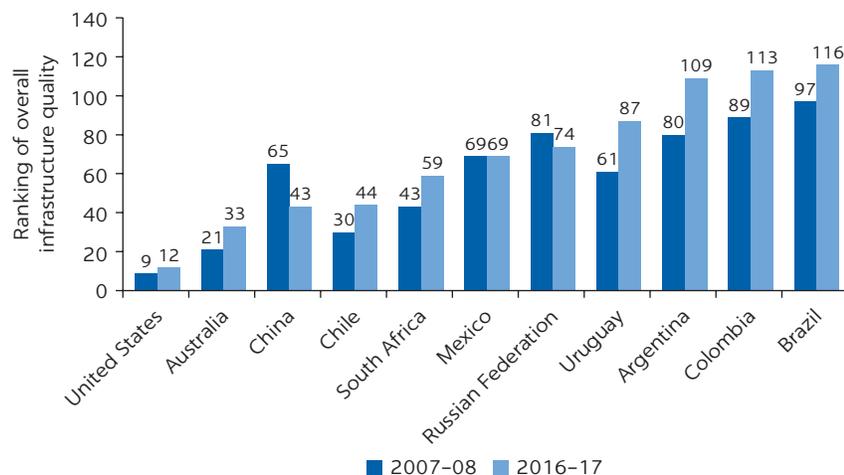
people getting out of poverty. Nonetheless, some specific groups may be negatively affected by competitive pressures, and hence the report considers complementary policies to mitigate this risk.

BARRIERS TO DOMESTIC INTEGRATION

The benefits from external integration can be significantly enhanced through concurrent greater domestic integration. A comparison between Brazil and Mexico illustrates how external and internal integration can work in complementary ways (Bacha and Bonelli 2016). Despite fundamentally different policy orientations, productivity growth in both countries followed a similar trajectory.²² In Mexico, while traded manufacturing activity did well in the externally well-integrated North, the low level of linkages to the rest of Mexico prevented externally driven dynamism to spread to the non-traded sector and especially to the large number of smaller and informal firms in the rest of the country. Brazil's low productivity growth, on the other hand, occurred under highly protective trade policies, with large manufacturing firms not integrating into the global economy, and the resulting slow productivity growth among leading Brazilian companies providing a weak lever to move up the rest of the economy. This section therefore highlights some of the remaining domestic integration challenges for Brazil if the country is to make the most of global market opportunities.

Brazil suffers from higher transport and logistics costs than most comparator countries—severely limiting domestic and international integration. Across all types of physical infrastructure, Brazil's quality ranks lower than comparator countries (figure 3.10). Brazil's infrastructure quality is particularly poor relative to comparators in transport, including railroad, airport and especially roads and ports (figure 3.11). And Brazil's quality of infrastructure has worsened on average, and especially with respect to transport and power provision (figure 3.11). Brazil also ranks below most comparator countries on logistics

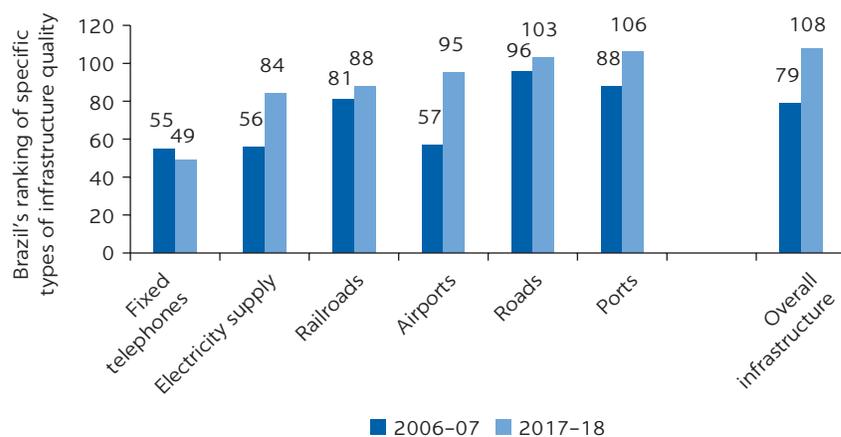
FIGURE 3.10
Brazil has lower (and worsening) quality of infrastructure than comparators...



Source: World Economic Forum 2007-08 and 2016-17 reports.
Note: Rank scale: 1 = best; 137 = worst.

FIGURE 3.11

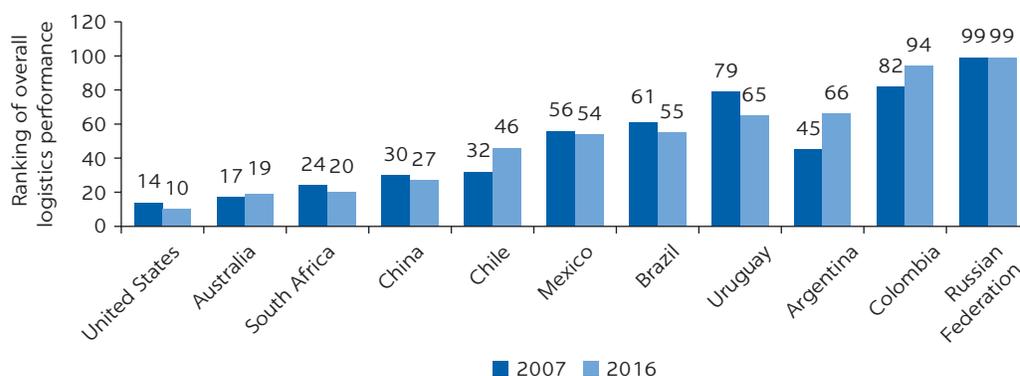
...with worsening quality in all areas except fixed telephony...



Source: World Economic Forum 2007-08 and 2016-17 reports.
Note: Rank scale: 1 = best; 137 = worst.

FIGURE 3.12

...and Brazil ranks below key comparators on overall logistics performance

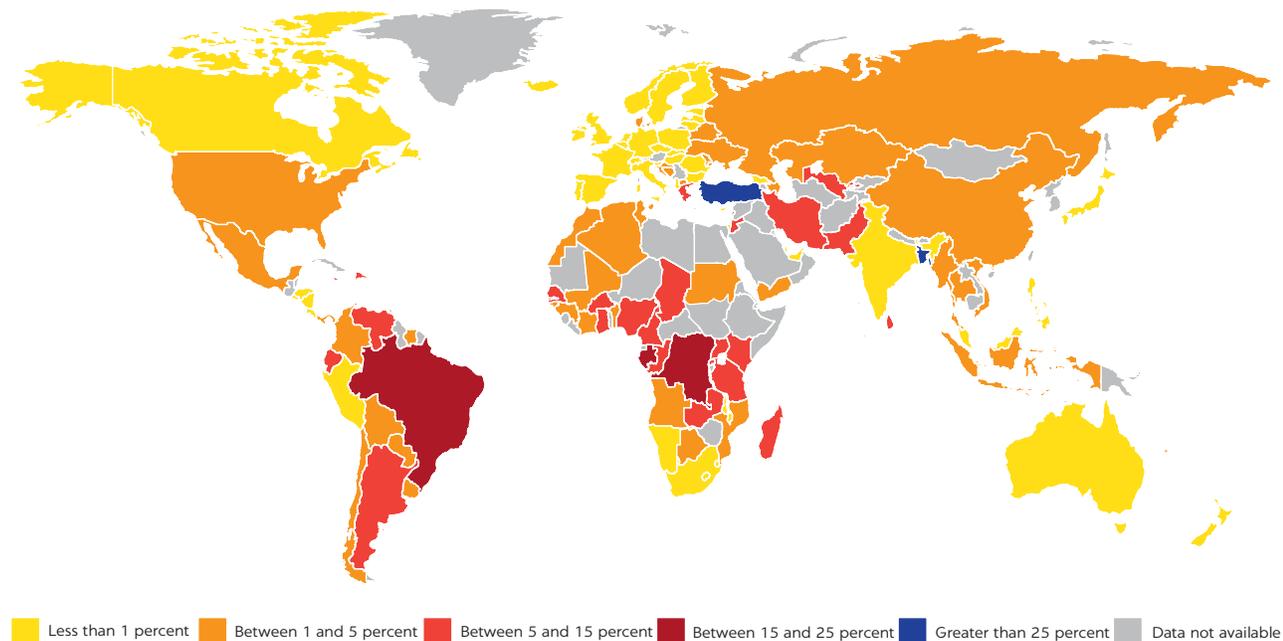


Source: Data from Logistics Performance Index database 2016.
Note: Rank scale: 1 = best; 160 = worst.

performance, including the ease of arranging competitively priced shipments, the competence and quality of logistics services, the ability to track consignments, and the frequency with which shipments reach consignees within scheduled or expected delivery times—though its performance has improved between 2007 and 2016 (figure 3.12). Inadequate transport and logistics services are associated with market segmentation and local market power. Because of these and other policy distortions impeding domestic integration, the productivity benefits from market opening may be dampened: for instance, the pass-through of tariff reductions to consumer prices during the 1990s trade liberalization was only 27 percent on average across metropolitan areas, and as low as 1 percent in Brasilia and Belem.

High costs of information and communication technologies also affect connectivity and may reduce the rate at which new technologies are adopted. As of September 2017, Brazil was the most expensive of 57 surveyed countries for buying an iPad: it cost more than twice as much as in California and Hong Kong.²³ Brazil is one of the five countries (out of 125) with the highest cost of adopting digital technologies (map 3.1), with tariffs adding 16 percent

MAP 3.1

Brazil could benefit from lowering its tariffs and taxes on ICT products

Source: IBRD 43707 (May 2018) adapted from Miller and Atkinson 2014.

and special taxes adding an additional 5 percent to the cost of a basket of information and communication technology (ICT) goods and services. The estimated increase in annual ICT adoption by firms due to the removal of these tariffs and special taxes in Brazil is significant, with increases in end-user consumer demand ranging between 17 and 37 percent. Removing these ICT tariffs and taxes could increase GDP per capita by 1.5 percent per year (Miller and Atkinson 2014). In addition to increasing average incomes, technology adoption has the potential to boost productivity growth, employment creation and wages. Higher employment and wages are found for both higher- and lower-skilled workers as a result of investment in ICT capital by manufacturing firms in Argentina (Brambilla and Tortarolo 2018), increased high-speed internet use in Colombian manufacturing firms (Ospino 2018), and a greater share of labor using the internet in Mexican manufacturing firms (Iacovone and Pereira-López 2018).

Improving the quality of transport, logistics and ICT infrastructure and connectivity requires an improved investment framework. A higher quantity and efficiency of spending on physical infrastructure raises productivity directly by making other investments more productive. However, Brazil's investment in infrastructure has been below the rate of natural depreciation (estimated at 3 percent of GDP) for the past two decades, thereby depleting the stock of infrastructure (table 3.1). At the core of the limited infrastructure development lie significant budget constraints that penalize public investment at the expense of earmarked expenditures, as well as capacity constraints in planning and project preparation, poor procurement and contract and asset management practices. Given these constraints, recent efforts to accelerate public investment such as the Program to Accelerate Growth (PAC) had limited impact. Public Private

TABLE 3.1 Infrastructure investment in Brazil has fallen dramatically as a percent of GDP

% GDP

	1971–80	1981–89	1990–2000	2001–11	2012	2013	2014	2015	2016	2017 (E)	2018 (P)
Energy	2.13	1.47	0.76	0.63	0.68	0.7	0.65	0.68	0.7	0.41	0.46
Telecom	0.8	0.43	0.73	0.67	0.5	0.42	0.52	0.46	0.41	0.29	0.33
Water and Sewage	0.46	0.24	0.15	0.19	0.2	0.22	0.22	0.17	0.16	0.14	0.14
Transportation	2.03	1.48	0.63	0.65	0.83	0.96	0.92	0.79	0.68	0.53	0.50
Total	5.42	3.62	2.27	2.14	2.21	2.3	2.31	2.1	1.95	1.37	1.43

Sources: Frischtak and Pinheiro 2014, and Inter.B Consultoria.

Note: E = estimated; P = projected.

Partnerships (PPPs) or concessions championed to overcome limited public funding have run into similar capacity constraints and additionally suffered from regulatory uncertainty, inadequate licensing procedures and the fragmentation of decision making across levels of government, all of which significantly increase pre-completion risks. Local capital markets have played a limited role as a source of infrastructure financing, which remains overly dependent of BNDES funding (see World Bank 2017).

Domestic market integration can be facilitated by regional policies that harness the benefits of economic agglomeration. When workers and firms locate in denser urban agglomeration areas, productivity increases: evidence provided in a background study for this report shows that in 2010, a 10 percent increase in the urban population concentration of a municipality was linked to a roughly 4 percent increase in a local productivity index, and a corresponding increase in earnings. In principle, regional development policies could facilitate these agglomeration economies by investing in urban infrastructure to reduce the potential diseconomies of traffic congestion and environmental pollution (among others). However, evidence provided in the background study shows that regional development programs in Brazil may generate higher productivity dividends if better coordinated.²⁴

DISTORTIONS TO COMPETITION FROM ADDITIONAL GOVERNMENT INTERVENTIONS

A key reason for persistent resource misallocation and limited competition arguably is the high regulatory and administrative barriers against doing business in Brazil. Brazil's cost of doing business is high and persistent enough to have earned it a special name—*Custo Brasil*. What is often less appreciated is that while incumbents have learned to live with high costs of doing business, *Custo Brasil* is a particular impediment to new entrants and young, growing firms. By making it more difficult for innovators and disruptors to grow, competition may be dampened and incentives for incumbents to change may be correspondingly reduced (Klapper, Laeven, and Rajan 2006).²⁵ Key components of *Custo Brasil*, in addition to the inadequate state of the country's physical infrastructure discussed earlier, include regulatory obstacles such as entry barriers (Fuentes and Mies 2017), high tax rates and an extraordinarily complex tax system (see box 3.2), high interest rates and a weak insolvency regime (see box 3.3), and cumbersome processes to operate a business, including time

BOX 3.2

How Brazil's complex tax structure can hamper efficient resource allocation across products: Concrete versus steel

The Brazilian tax structure with regards to goods and services is extremely complex, with four main taxes (ICMS, IPI, ISS and PIS-Cofins) that have distinct incidence coverage (cumulative, non-cumulative and mixed). More importantly, individual products are subject to different regimes depending on the industry, the way the production process is structured (vertical integration versus fragmentation) and the locality where the production process takes place. Thus, relative prices are distorted with impacts on resource allocation and productivity.

The construction sector provides an illustrative example. Since different types of buildings are taxed differently, there is an incentive for construction companies to prioritize the use of some inputs over others. Construction companies must pay ISS (5 percent at most) plus cumulative PIS-Cofins

(3.65 percent) on the value added at their construction sites when using cement for concrete structures, while paying significantly more if using pre-fabricated metallic structures—as steel companies as part of manufacturing industries must pay ICMS (12 percent) plus non-cumulative PIS-Cofins (9.75 percent) as well as IPI (in some cases) on the value added of their production. Because taxes on the value added of the manufacturing industries (including the production of metallic structures) is significantly higher than taxes at construction sites, most commercial buildings tend to be based on concrete rather than metallic structures, in spite of the relative cost advantages of metallic structures net of taxes in some cases—with an adverse impact on productivity, including through foregone specialization gains and economies of scale.

Source: Appy 2017.

BOX 3.3

How Brazil's inadequate insolvency regime stifles entrepreneurial entry, growth, and jobs, and even phone services—and a way forward

The willingness of banks and investors to support new and growing productive businesses and the jobs they provide depends importantly on the rules that govern failing businesses. An effective insolvency regime restructures and preserves jobs at struggling but viable firms when that is the most efficient solution, and allows faster reallocation of assets and jobs of unviable firms to other growing firms when that is more efficient. Knowing this, entrepreneurs are more willing to enter new markets, experiment and innovate—and can try again if their business plan needs tweaking. And banks and investors are more willing to lend, with greater availability of financing at lower costs, when they know they can recover quickly

some of their investments to re-invest them in growing productive firms.

An ineffective insolvency regime can hamper productivity growth by impeding firm exit, entry and growth. This can happen in different ways. One way is if viable firms are kept alive without restructuring their debts and operations deeply enough to allow them to thrive. Another is if unviable firms are protected from exit, trapping valuable resources in an inefficient organization. An ineffective regime might disrespect creditors' priority over stockholders, limiting the supply and increasing the cost of credit to new and growing firms. Furthermore, it could limit entry if the cost of failure is too high, and if failed

continued

Box 3.3, continued

entrepreneurs are unable to try again with the benefit of greater experience. Brazil's insolvency regime appears to harm productivity growth in each of these ways.

Today, the average debt recovery process in Brazil yields just 12.7 cents on the dollar and takes four years, compared to 21.5 cents and 2.4 years for Argentina, and 82.1 cents and one year in the US.^a It took 18 months from the time Brazilian telecom operator Oi filed for protection from its creditors in June 2016 to an agreement in December 2017. Does this long lag matter for the average Brazilian? Yes. Not only is Oi a major employer with jobs at risk, it had 63 million phone service subscribers at risk as of September 2017. And in the process, a huge amount of resources was spent, including the final creditor meeting to vote on Oi's debt deal taking nearly 14 hours, with the required presence of all parties filling a former Olympic Games venue in Rio de Janeiro.

Reforms are under preparation to improve Brazil's insolvency framework, based on relevant international experience adapted to Brazil's context. To avoid the types of problems facing companies like Oi,

creditors' rights and roles in insolvency proceedings would be improved. For example, the creditors' committee would be allowed to provide an opinion on the recovery plan proposed by the debtors—and if that plan is not approved after 4 months, the creditors would be entitled to approve their own plan, provided it does not impose greater sacrifice on shareholders' interests than would result from liquidation in bankruptcy.

Importantly, several amendments would simplify the process for micro and small enterprises, which represent around 70 percent of total requests for judicial recovery since 2005. Among others, the use of electronic communication would be preferred, the submission of some costly documents dispensed, and some procedural terms halved. And a simpler and more agile judicial recovery would reduce costs and may alleviate the caseload of the courts.

The reform proposal also seeks to simplify and speed up the liquidation process, thereby helping push unviable firms into liquidation, reallocating their resources in a more timely and efficient manner and allowing for a “fresh start” for failed entrepreneurs.

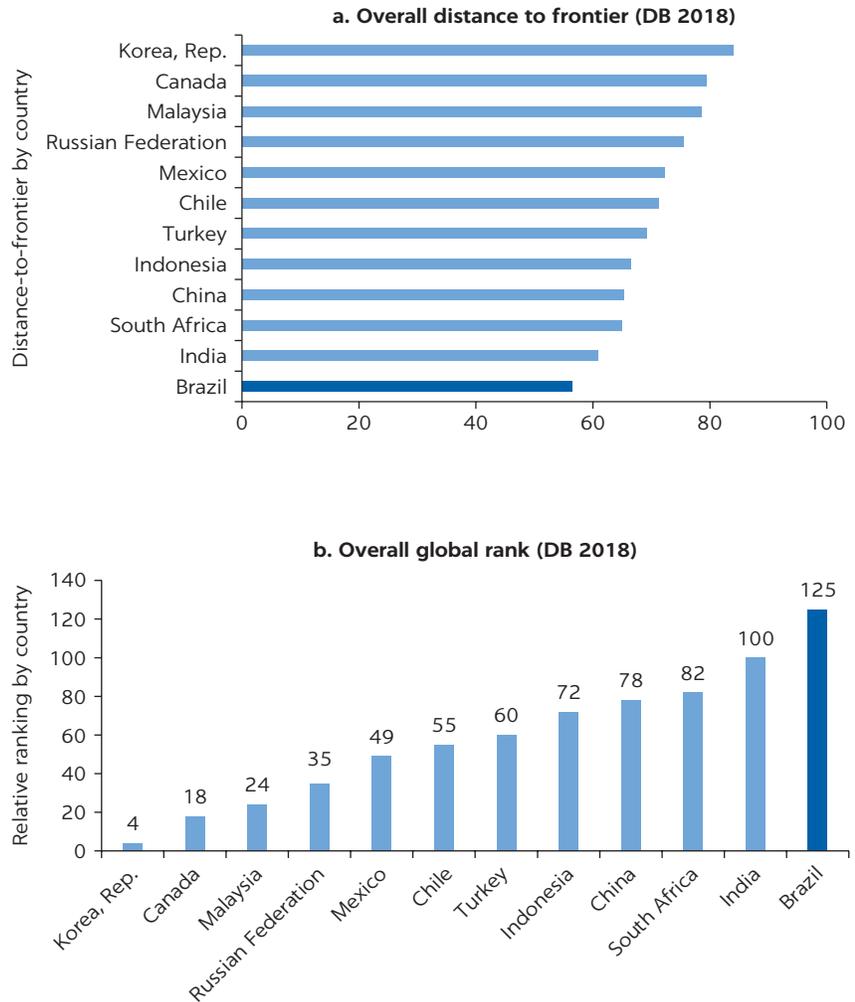
Sources: World Bank 2014, 2017; *Financial Times* (January 14, 2018).

a. To ensure comparability across countries, these figures are estimated recovery rates based on a hypothetical business case. For more information on the World Bank *Doing Business* methodology for the “Resolving Insolvency” indicator, see: <http://www.doingbusiness.org/Methodology/resolving-insolvency>

and cost to register property, obtain construction and environmental permits, and bid under government contracts—together with variations in many of these regulatory requirements across municipalities and states.²⁶ In international comparison Brazil ranks well below most of its peers (figure 3.13). According to the 2018 *Doing Business* survey, the time it takes to file taxes in Brazil is an outlier, with tax rates and tax compliance costs regularly quoted as the biggest impediment to doing business.

Business support policies further distort resource allocation and dampen incentives for innovation. Subsidies, directed credits, tax exemptions, local content requirements, government procurement preferences and other business support policies are often justified to compensate for the *Custo Brasil*, in addition to promoting other objectives such as regional development and the support of “national champions.” However, there is little evidence that they have had much impact (IADB 2017). Instead, they have created substantial rents that have sheltered inefficient companies, made it more difficult for new investors to enter the market and thus allowed

FIGURE 3.13
Brazil’s performance on doing business indicators is especially poor regarding paying taxes, both distance-to-frontier (top) and relative country ranking (bottom)



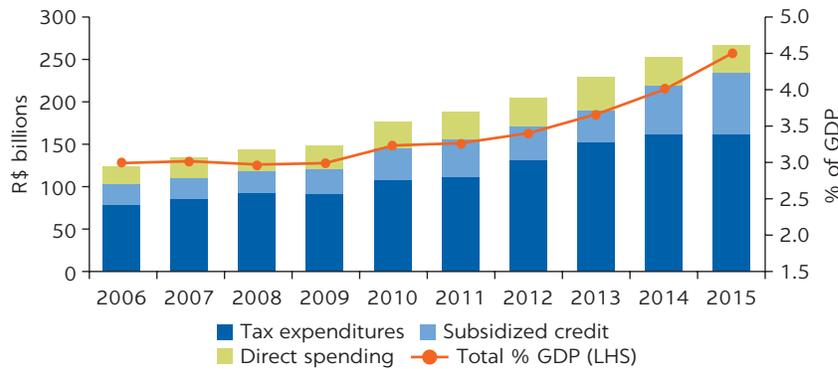
Source: World Bank 2018.
 Note: Distance-to-frontier scale: 0 = lowest performance; 100 = frontier; Rank scale: 1 = best; 190 = worst-performing country.

substandard business practices to persist. Moreover, despite limited benefits, the cost of business support policies has been very high. Federal spending on business support policies more than doubled in real terms in the past decade, jumping from R\$125 billion in 2006 to R\$267 billion in 2015 or around 4.5 percent of GDP—with tax exemptions being the main driver behind this overall expenditure rise, followed by subsidized credit and general spending (figure 3.14).

Evidence of the impact of specific tax exemption programs such as SIMPLES highlights that some of them may be not just ineffective and inefficient but harmful to productivity growth. While the objective of SIMPLES is to simplify and reduce the tax burden facing micro and small firms to

FIGURE 3.14

Total federal fiscal spending on business support policies grew to 4.5 percent of GDP



Source: Dutz et al. 2017.

Note: GDP = gross domestic product.

incentivize formalization and the creation of new ventures and to improve firm performance, there is little evidence to suggest it has delivered. Indeed, the main effect of SIMPLES may have been to facilitate tax arbitrage for high earning professionals who thereby escape from income and social security tax. A recent empirical study by Piza (2016) finds that SIMPLES was not effective in increasing formalization rates of small firms,²⁷ re-enforcing earlier findings by Monteiro (2016) that finds no significant effects in terms of formalization, employment and other performance indicators. Based on data from the Annual Industrial Survey (PIA), Corseuil and Moura (2017) also identify no positive effects of SIMPLES on labor market and performance indicators. More generally, policies that create inappropriate maximum size-based eligibility thresholds can lower the incentive for young and small firms from to grow beyond that threshold.²⁸ Box 3.4 provides additional evidence of the ineffectiveness and inefficiency of SIMPLES and other tax incentives and exemptions.

The resources spent on ineffective business support policies could be redirected to promote productivity and inclusion policies. For instance, abolishing SIMPLES and other tax exemptions for larger companies could finance a reduction in the tax burden for all firms, or provide the resources for public investment in infrastructure. This would be far less distortive than current policies, and aside from reducing business costs for all firms, would stimulate competition and encourage innovation and efficiency improvements.

Anticompetitive regulations further distort the playing field in specific sectors of the economy. Despite recent progress on the performance of the competition authorities (the Conselho Administrativo de Defesa Econômica, CADE for law enforcement and the Ministry of Finance's new Secretariat for Promotion of Productivity and Competition Advocacy for competition advocacy),²⁹ the perception of intensity of local competition and of the effectiveness of Brazil's anti-monopoly policy has not improved relative to its peers (figures 3.15 and 3.16). This is in large part explained by regulatory barriers

BOX 3.4

Tax exemptions: Little impact at high fiscal cost

Tax exemptions (TEs) are by far the most important component of federal spending on business support policies in Brazil, accounting for almost 61 percent of total spending and 2.9 percent of GDP in 2015. TEs have doubled in real terms over the past decade, from R\$79.6 to R\$162.8 billion between 2006 and 2015, a compounded annual growth rate (CAGR) of 8.3 percent. Due to the rapid growth of payroll TEs introduced in 2011, TEs grew at an even faster CAGR of 10 percent between 2011 and 2015. The major TE programs are SIMPLES, payroll tax exemptions, and the Manaus Duty Free Zone:

- **Tax simplification regimes.** Introduced in 2007, the SIMPLES Nacional is an optional taxation regime that aims to encourage the formalization and improve the performance of micro, small and medium-sized firms^a by allowing specific federal, state and municipal taxes to be paid via a single collection form, as well as paying lower tax rates. Among other benefits, using SIMPLES also reduces a firm's need to hire attorneys and accountants.^b The fiscal cost of SIMPLES in terms of foregone tax revenues amounted to 1.2 percent of GDP in 2015, with this program alone, the largest TE program, accounting for 43.5 percent of all TEs in that year. Evidence of impact includes ineffectiveness at meeting its formalization and improved performance objectives and likely hampering efficient firm growth (see main text). Another program that seems to be ineffective is MEI (Microempreendedor Individual), see Corseuil, Neri, and Ulyssea (2016).
- **Payroll tax exemptions.** The *desoneração da folha* exemption was introduced in 2011 to encourage job creation. It cost 0.4 percent of GDP in terms of foregone revenue in 2015. It replaced the 20 percent social security payroll tax (INSS) with a 1.5 percent tax on gross revenues for selected labor-intensive sectors, namely clothing, leather & footwear, software, and call centers (2.5 percent).

By early 2013, 42 sectors benefited from the program (including civil construction), and an additional 14 sectors were added in April that year, by which time the program benefited some 80,000 companies. Tax benefits were provided irrespective of whether the firms hired more workers or not. There are various studies which have looked at this program (Afonso and Barros 2013, Diniz and Afonso 2014, FGV 2013, 2014a, 2014b, Garcia et al. 2018, Scherer 2015, SPE 2015). The results indicate that the program has little impact on employment and that the cost of each job created (or protected) is very high, at more than 3 times the workers' salary. The fiscal cost of each job created or preserved by the payroll tax relief is estimated to range between R\$58,000 and R\$67,000 per year in 2012, that is, 300 percent more than the affected workers received in salaries that year. Workers could be given the same monetary benefits while saving two thirds of the public resources committed to the program.

- **Free Trade Zones.** The Zona Franca de Manaus (ZFM or Free Economic Zone of Manaus) was developed in the 1960s to create an industrial, commercial and agricultural center in the State of Amazonas in Brazil's less-developed Northern region. To promote economic development and integration of the region with the rest of Brazil, firms that locate in Manaus are given federal tax preferences such as import tax exemptions, as well as exemptions on other taxes. In terms of foregone tax revenues, ZFM amounted to R\$16.8 billion or 0.34 percent of GDP in 2015 or 16 percent of TE spending. There is virtually no analysis of the impact of the ZFM program, but anecdotal evidence suggests it is a highly inefficient scheme and Manaus would benefit more from receiving the same expenditure as a cash transfer. A study by Miranda (2013) suggests that it is an ineffective regional

continued

Box 3.4, continued

development policy and at least should be reformulated to contribute effectively to the local economy. It would be useful to explore how to best achieve the objectives of the program (which presumably are to stimulate investment and job creation in Manaus) at a lower total cost to the country.

- **Incentives for local content and R&D operations: *Lei de Informatica* and *Lei do Bem*.** The fiscal incentives created by the *Lei de Informatica* (Informatics Law), instituted in 1991 and renewed in 2001, 2004 and most recently in 2014, promote increased local content of ICT hardware and related electronics assembly plus investments in local R&D operations.^c The program was intended to assure ICT hardware and related electronics firms outside the ZFM that they would not remain at a competitive disadvantage for not relocating there. It has survived because it ensures that the Southeast of Brazil remains a hub for ICT and electronics alongside the ZFM.^d Similarly, the *Lei do Bem* (Fiscal Incentives Law), which was instituted in 2007 and replaced a prior 2005 law, sped up and expanded incentives for investments in R&D, authorizing companies that invest in R&D and meet certain requirements to claim tax incentives automatically for certain types of spending. The incentives for R&D and innovation provided by the *Lei de Informatica* have not been effective. Kannebley and Porto (2012) using firm-level data from 2000 to 2010 on 65,000 firms show that it has been ineffective in stimulating productivity-enhancing R&D, as beneficiaries have not been able to produce internationally competitive ICT products. Although the incentives have incentivized all 10 leading global ICT hardware firms to produce locally, Brazil continues to rely on imports of intermediate goods, registering a negative trade balance over 2010–14 in all eight identified ICT hardware-related subsectors, with a worsening of the trade balance in seven of these subsectors over this period. Moreover, Brazil's

exports of final ICT goods have also been falling over these past five years at a CAGR of –16 percent (Zylberberg 2016). Regarding the *Lei do Bem*, while the program has had a positive impact, its performance in boosting R&D intensity is significantly below what would have been expected for such a program (Devereux and Guceri 2015). More broadly, based on cross-country evidence, Bravo-Biosca, Criscuolo and Menon (2013) show that TE support for R&D only has a positive impact on employment growth in incumbent firms with relatively low growth rates, while it has a negative effect on firm entry and on the employment of firms in the top of the growth distribution. This suggests that R&D TE incentives are likely to favor incumbent firms and slow down the reallocation process.

- **Inovar-Auto.** The program has a significant TE component. Launched in October 2012 for the period 2013–17, its stated objective is to protect the local auto industry against imports and to support technology upgrading. The program raised the IPI (Tax on Industrialized Products) by 30 percent for all passenger cars and light commercial vehicles, thereby also raising the import cost for finished vehicles to penetrate the Brazilian market. The program then enables vehicle producers, assemblers and distributors to offset this tax increase by up to 30 percentage points if they meet several requirements for local production or sourcing, minimum spending on R&D or engineering and vehicle labelling for energy efficiency. While the program has been effective in limiting imports, it seems to have failed to make the Brazilian car industry competitive, as it appears to have had no impact on production and employment levels. In fact, a simple comparison with the agricultural machinery industry, which does not enjoy the same type of protection, shows that the expansion of the two industries has been very similar, such that the program did not alter industry competitiveness enough to have a

continued

Box 3.4, continued

positive effect on output and jobs in the automobile sector. It resulted in smaller scale production and higher consumer prices. Most of the protection is in the form of trade barriers.

As such, most of the cost is borne by consumers through higher domestic sales prices. The program has been found to be non-compliant with WTO rules.

Source: Dutz et al. 2017.

a. Although the program is specific to micro and small firms defined by gross revenue, eligibility criteria have expanded over time and eligible establishments now include medium-sized companies in terms of number of employees.

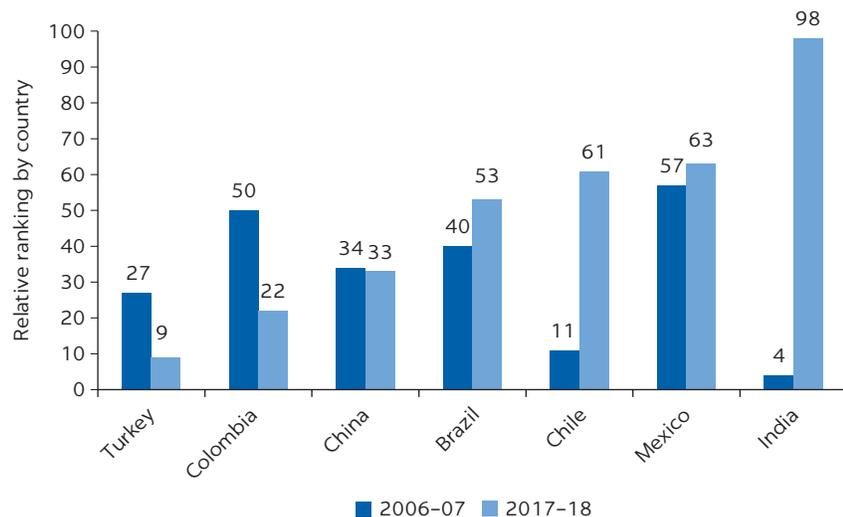
b. Qualifying firms also benefit from exemptions from other contributions and taxes.

c. To receive a reduction or exemption of IPI (depending on where the company resides and whether the goods were developed within Brazil), the company must be a producer within the computing, automation, telecom or microelectronics industries, and invest in R&D.

d. According to interview respondents, the granted benefits are sufficiently high in each that the expiry of either the ZFM or the Informatics Law would incite a mass migration of manufacturers from one to the other. See Zylberberg 2016.

FIGURE 3.15

Brazil has fallen backwards regarding the intensity of local competition...



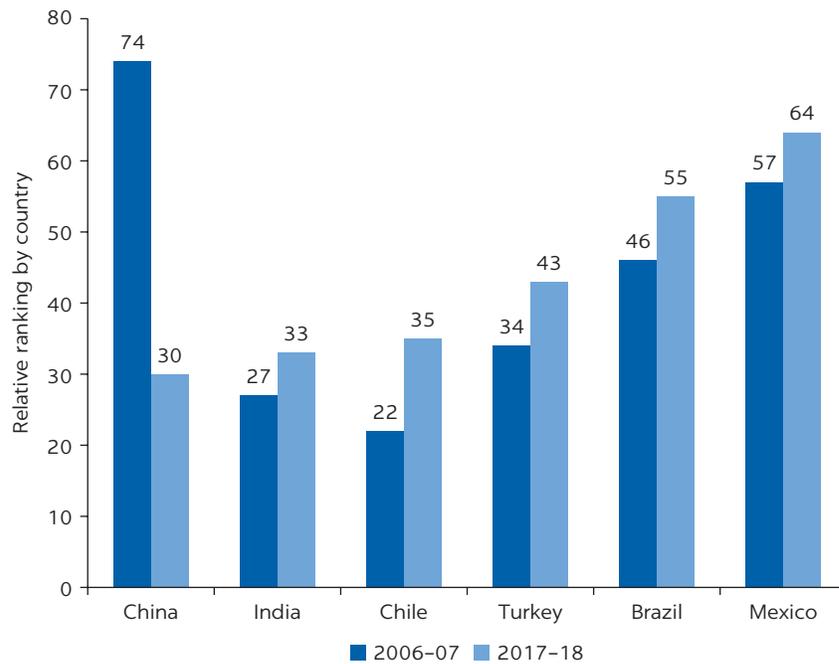
Source: World Economic Forum 2006-07 and 2017-18 reports.

Note: Rank scale: 1 = best; 137 = worst.

to entrepreneurship (entry and rivalry), with cumbersome license and permit systems, restrictions to competition in service sectors (especially in professional services), and high direct government participation through state-owned enterprises in markets in which private sector participation is typically viable and/or without the necessary rules that ensure competitive neutrality. In addition, some critical markets (as cement, fuel distribution and LPG) exhibit inherent features that reduce contestability and facilitate anti-competitive behavior.

FIGURE 3.16

...as well as the effectiveness of its anti-monopoly policy



Source: World Economic Forum 2006-07 and 2017-18 reports.
 Note: Rank scale: 1 = best; 137 = worst.

THE IMPACT OF LIMITED COMPETITION ON FIRM BEHAVIOR

Limited market competition allows firms to enjoy monopoly rents, suppressing efficiency and innovation. Limited competition because of protected markets allows firms, their managers and possibly also their workers to enjoy a more tranquil existence with higher prices, higher wages for those privileged to be employed in these firms, and fewer jobs (because of lower output than under full competition). Monopolies, or a small number of firms with significant market power, not only tend to have higher costs but usually generate less innovation. Without strong competitors, their owners and managers face no criticism for being less dynamic, so there is no strong impetus to invest in innovation (Tirole 2017).

Limited competition also jeopardizes the integrity of markets, incentivizing firms to invest in competing for rents rather than clients. For example, the visible costs associated with restrictive licensing procedures include the time spent to obtain the license and the cost of the administrative apparatus to issue it, plus the misallocation of resources if the license is granted to an inefficient firm with privileged connections. In addition to these visible costs, significant resources may be invested in competing for the licenses: if government officials decide who gets the license, resources are spent not only on legal lobbying activities, but also on bribing public officials—with the value of the rents accruing to the licensee competed away in these non-productive activities.³⁰ In other words, the incentives imbedded in the business

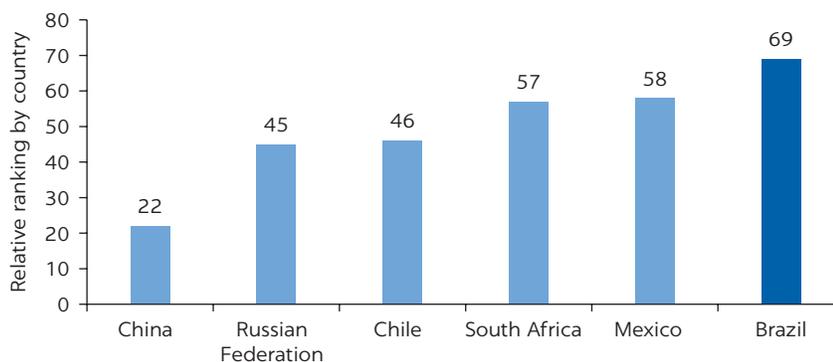
environment determine the relative payoffs to entrepreneurship, rent-seeking or outright bribery, thereby directly impacting an economy's growth potential and dynamism (Baumol 1990).

Brazil's poor record in innovation in recent years may be indicative of the impact of inadequate competition on firm behavior. Innovation performance can be captured at an aggregate level through a mix of indicators including knowledge workers and knowledge absorption capabilities as inputs and knowledge creation and diffusion-related activities as outputs. According to the Global Innovation Index which captures both input and output dimensions, Brazil in 2017 ranks below all comparator countries including Mexico, South Africa, Chile, Russia and China (figure 3.17). This may at least in part be linked to limited market demand for innovation, with businesses having fewer incentives to innovate thanks to misguided business support policies and high barriers to entrepreneurship.³¹

Another indication of the negative impacts of lack of competition on firm behavior comes from a comparison of management quality across Brazilian and peer country enterprises. A large literature has recently developed on management quality. One output of this research is the development of a management quality index at the firm level, which can be aggregated to compare countries. A causal link has been established between the adoption of better management practices and firm-level productivity growth, increased employment and wages (Bloom et al. 2013). Management quality differences can explain up to 35 percent of the income gap between countries; estimates suggest that around a quarter to a third of cross-country and within-country TFP gaps appear to be management-related (Bloom et al. 2016). Across countries, Brazil not only lags Mexico, Poland, Chile, Turkey and Argentina on average, but its tail of poorly run firms is fatter than Mexico, China and the US: almost one fifth of Brazilian firms were classified as poorly managed, nine times more than in the US (figure 3.18; Bloom et al. 2014 and Maloney and Sarrias 2017). And even for the best Brazilian performers, management practices would need to improve to reach the level of global leaders. Product market competition could encourage firms across the management quality spectrum to work harder, both thinning the badly managed (trimming the left tail) and incentivizing survivors (moving the whole distribution to the right).³²

FIGURE 3.17

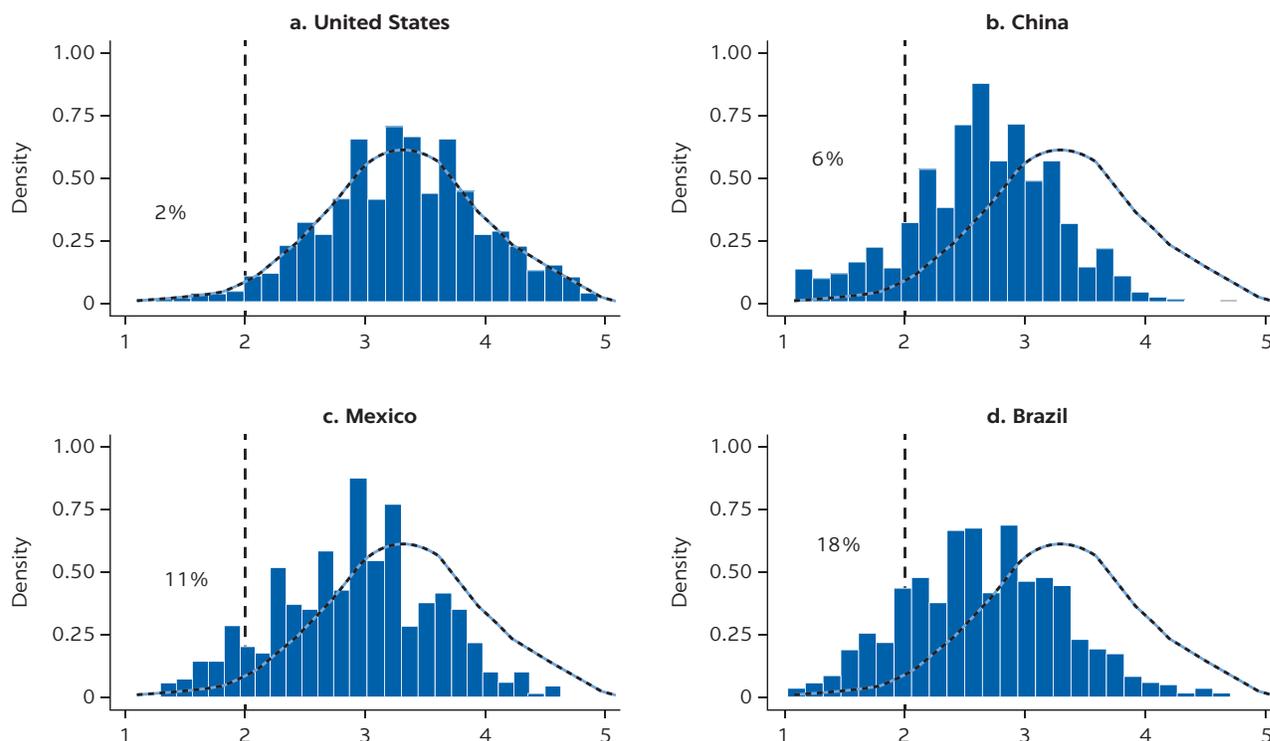
Brazil ranks poorly in terms of overall innovation performance



Source: Global Innovation Index rank, 2017 report.

Note: Rank among 127 countries, 1 = best.

FIGURE 3.18

Brazil's dispersion in managerial quality offers opportunities for productivity upgrading

Source: Prepared by Daniela Scur using World Management Survey data, www.worldmanagementsurvey.org.

Note: Each firm receives a management quality score from 1 to 5, with less than 2 indicating a very poorly managed firm.

POLICIES TO INCREASE COMPETITION

This report argues for a sequenced and coordinated policy commitment to both external and internal integration. A clear commitment to external liberalization could serve as an anchor for such a sequenced reform program, allowing the rest of the economy to benefit from productivity gains similar to the agriculture sector (see annex 3A). One possible option to consider in this regard would be an agreement by Brazil and its Mercosul partners to a unilateral trade liberalization—with unilateral tariff reductions by each Mercosul member vis-à-vis non-Mercosul countries, the streamlining of NTMs among Mercosul partners and the elimination of export taxes among parties. Such an agreement could serve as a commitment device to help accelerate the necessary domestic policy changes to support faster productivity growth. A credible commitment by Brazil to external integration, even if phased in over several years, could help create the context for businesses to support domestic reforms that would enhance their competitiveness in the interim. And advanced signals of future tariff reductions would give those negatively affected time to anticipate and adjust with appropriate government support. Brazil's recent fiscal commitment to limit the nominal growth of fiscal expenditures could serve as a corresponding domestic anchor to force a review of all business support policies. It has already helped create momentum for pro-competition reforms in a number of areas.

The focus of domestic reforms would be to remove distortions impeding domestic integration and competition. Among the most important impediments to competition are differentiated tax treatments and access to subsidized credit. The broader domestic policy agenda should also include addressing the *Custo Brasil*, by reducing tax complexity and other regulatory barriers to doing business, investing in infrastructure and ICT, and adopting new productivity and inclusion policies to support business and worker adjustment.

Beyond the removal of distortions and the reduction of *Custo Brasil*, competition policy has an important role to play in helping spur innovation and nurture a level playing field. Brazil's competition agency (CADE) has an appropriate mandate but has suffered in the recent past from delays in appointing key commissioners. Enforcement of anti-cartel provisions could be strengthened to create stronger disincentives for non-competitive practices. Moreover, poorly designed regulation, such as entry barriers to professional services that protect insiders and do little to raise quality standards, contribute to distort the playing field.³³ While state-owned enterprises are common in network industries around the world, in several cases in Brazil potentially contestable markets have been distorted due to privileged access to credit or favorable regulation benefiting them. In all these areas, robust competition advocacy by the new Secretariat for Promotion of Productivity and Competition Advocacy, close monitoring and strengthened enforcement of competition law provisions could greatly help increase the effectiveness of regulatory reforms and sustain them through time.

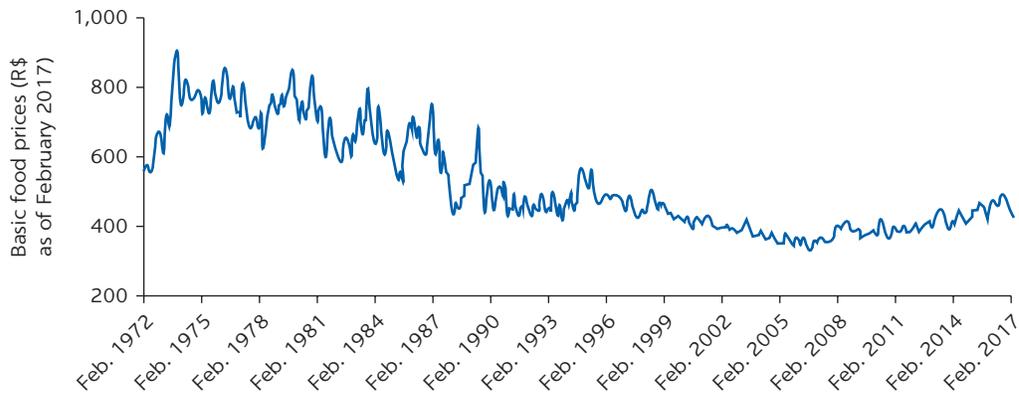
ANNEX 3A: SPOTLIGHT ON THE AGRICULTURE PRODUCTIVITY GROWTH STORY

Agriculture stands out as the only sector with consistently high rates of productivity growth in Brazil. Indeed, unlike in manufacturing and (to a lesser extent) in services, where Brazil lags the rest of middle and high-income countries, in agriculture Brazil is a leading innovator with high rates of productivity growth. A country that in the 1970s still experienced widespread hunger and needed to import a substantial share of its food needs has become one of the world's leading food and fiber exporters. As an illustration, prior to the 1970s, Brazil produced a negligible quantity of soybeans; today, it exports 80 times more than 40 years ago, and is the world's largest exporter (with the United States remaining the largest producer). Agriculture's success has also contributed to shared prosperity through job creation as well as a reduction in real food prices and food price volatility (figure 3A.1). What can be learned from agriculture's success about the possible impact of a shift in policies on performance, both for agriculture and for manufacturing and services industries?

Brazil's impressive agricultural productivity growth over the past decades has been made possible by both increased input use and by the adoption of new technologies. Brazil has been the top country, joint with China, in average annual agricultural TFP growth over the past five and a half decades, including both crops and livestock. And over the most recent decade (2005–14), it has continued to benefit from higher TFP growth than most comparator countries except China, France and India (figure 3A.2).³⁴ TFP growth was made possible by more productive use both of existing cultivated land as well as of significant amounts of previously under-utilized water and land

FIGURE 3A.1

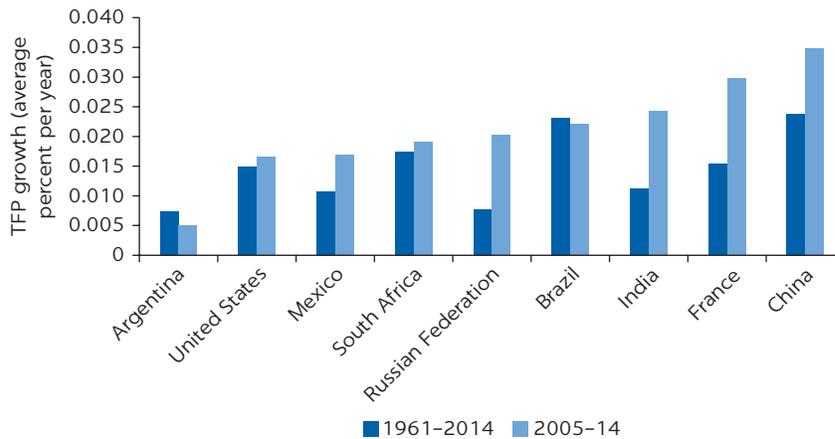
Brazil’s agricultural growth, reduced food-price levels, and volatility, benefiting both rural populations and urban centers (prices of basic food basket in São Paulo municipality)



Source: Departamento Intersindical de Estatística e Estudos Socioeconômicos (Embrapa/SGI).

FIGURE 3A.2

Brazil’s agricultural TFP growth has been and continues to be faster than many peers



Source: Calculations based on U.S. Department of Agriculture data.
 Note: TFP = total factor productivity.

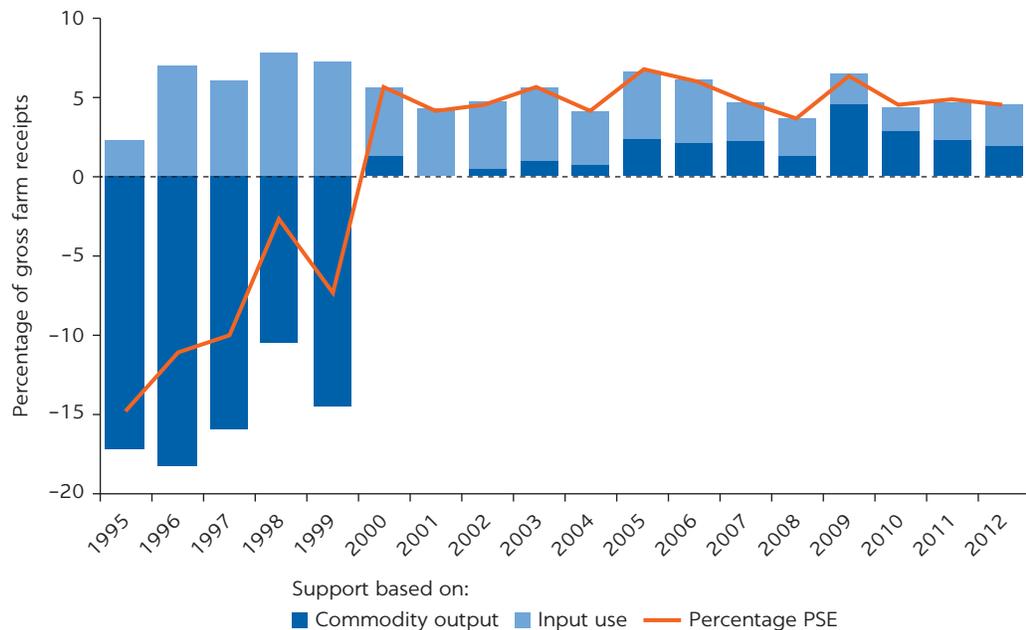
resources, such as huge areas of previously less-productive tropical and semi-arid lands in the Cerrado.

Agricultural productivity growth over the past decades highlights the productivity benefits of (a) being globally open, subject to world prices; and (b) benefiting from relatively effective public policies—even though their cost-efficiency and mix could be improved to promote further productivity growth and competitiveness. More efficient agricultural production and expansion was supported by public policies focusing on agriculture innovation (agriculture research, extension and education). Combined with private research and development, these policies helped especially the most efficient larger producers to find ways to increase yields of crops and cattle ranching by adapting production technologies to the specific ecological and

topographic conditions of Brazil's various biomes. Agricultural expansion also was supported by an increase in the volume of rural credit (including both subsidized credit and commercial and family producers' debt rescheduling), especially after the macroeconomic stabilization of the mid-1990s. Importantly, favorable export policies and the reduction of import tariffs on food in the early 1990s maintained a competitive playing field and enabled the boost in productivity.³⁵ This is a key difference from the manufacturing sector and may explain why subsidized credit and other policy interventions were associated with increases in productivity.

Despite past success, Brazil's agricultural support policies may be running into their limits and could be much more effectively targeted. The net level of support provided by Brazil's agriculture public policies and programs has historically been low and even negative until 2000 due to taxation (see figure 3A.3). Current support to the sector amounts to just 3.8 percent of gross farm receipts, which is equal to only 0.55 percent of total GDP (compared to an average of 1 percent in OECD countries). However, these policies are distortionary, relying heavily on directed (earmarked) and subsidized agriculture credit as the main tool to operationalize them, as well as subsidized farm prices administered through direct government purchases and various subsidized agricultural insurance programs. These support policies distort credit markets overall and farmers' production decisions, as many of these programs are targeted to specific crops, livestock products and inputs, and often vary by region. Moreover, the bulk of subsidized rural credit benefits Brazil's largest farmers which have access to market financing and hardly require additional support. If these policies and programs would be reformed to focus state

FIGURE 3A.3
Producer support estimate in Brazil over time



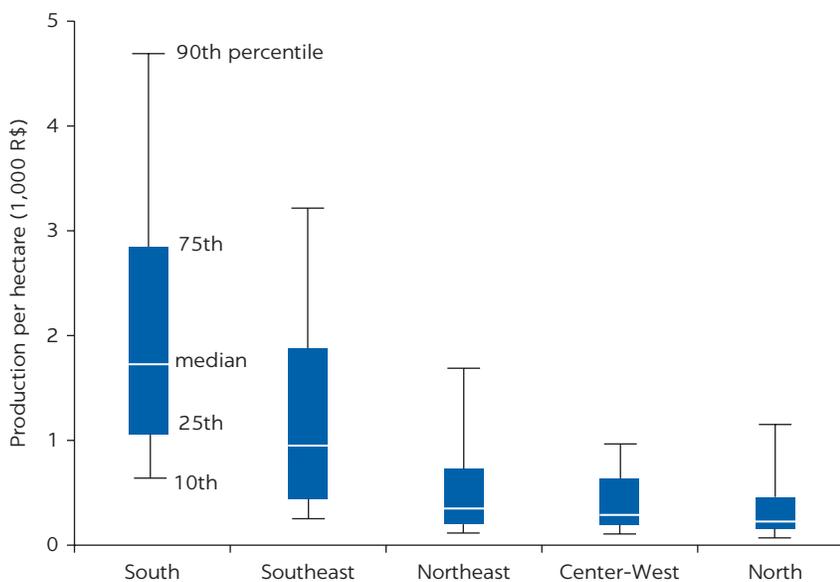
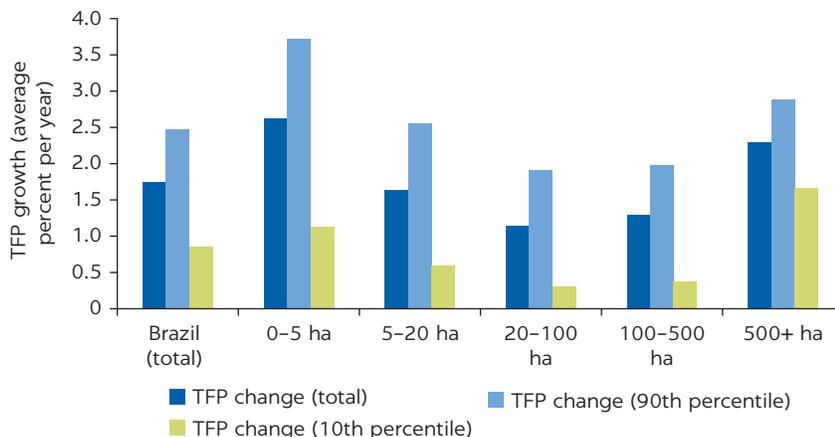
Source: OECD, PSE/CSE database, 2013. <http://dx.doi.org/10.1787/888932875057>.

support on small and medium sized firms and allow the development of complementary market-based support solutions for large commercial agriculture where feasible, the sector could see a further boost in productivity and competitiveness.

Moving forward, the agricultural sector will need to adjust to sustain past success and reconcile Brazil's role as a global source of food with the need to protect its natural patrimony. It is becoming evident that Brazil's rapid expansion of food and fiber production is running into limits. Pastures are increasingly degraded because of poor management practices, and soils exhausted from mono-cropping practices. Moreover, Brazil's fresh water resources are becoming less reliable due to climate change and increasing parts of the country are facing conflicts over water scarcity and destruction from raging wild-fires. And shortcomings in the domestic quality assurance system have led Brazil to lose market share in important sectors such as meat. Global demand is shifting increasingly towards higher quality, and environmentally sustainable production, which is where the greatest growth in value added is expected. Food quality will continue to shift to proteins, and the food system will integrate much further, using mechanisms such as blockchain to allow the end-product to be fully traceable and best practices apparent. Domestic agricultural support policies, in particular the large rural credit program, are not designed to incentivize such sustainable production methods and improved quality control and may instead crowd out market financing where it could easily operate.

Brazil can rely on its homegrown agricultural innovation capacity to make the necessary transition, while closing the domestic productivity gap. Brazil's federal agricultural research institute, EMBRAPA, has pioneered the adaptation of international crops and cattle ranching to Brazil's tropical and semi-arid regions, a key factor behind the country's success in recent decades. Brazil has also pioneered a range of low carbon agriculture technologies and some states have successfully mobilized international support to reconcile productive land use with preservation of forests and native vegetation. Brazilian producers, supported by world class publicly funded agricultural research, have developed technologies that if widely deployed would allow Brazil to increase production at least two-fold without the need to further reduce Brazil's globally significant forest resources. This is needed: Brazil's deforestation rate, which was slashed by 83 percent between 2004 and 2012, increased again during 2015–16 (although this increase appears to have been halted last year) and does not appear on track to meet Brazil's national target of no more than 3,900 square kilometers a year by 2020 and its international climate change commitment of zero illegal deforestation by 2030.³⁶ Domestic agricultural support policies could be shifted to accelerate the diffusion and adoption of such technologies and compliance with Brazil's forest code among rural producers. Last but not least, the dispersion of productivity across regions (in levels) and types of farms (in TFP growth rates) is huge (figure 3A.4). Focusing public support on ensuring less productive farmers are aware of and learn from the technologies and production processes that have made leading producers international champions of efficiency could help Brazil continue to expand its agriculture production at recent trend rates through 2040 without the need to convert any more native land for productive use.

FIGURE 3A.4
Brazil's significant dispersion in agriculture productivity across farm size (TFP growth, 1985–2006) and regions (output per hectare, 2006) offers scope for potential gains



Source: Helfand et al. 2015.
 Note: TFP = total factor productivity; ha = hectares.

NOTES

1. This chapter discusses a range of policies that can enhance competition and welfare-improving market dynamics. However, it does not reflect a comprehensive assessment of Brazil's competition policy implementation, which is beyond the scope of this report. For more details on what competition policy encompasses, see for instance Kitzmuller and Licetti (2012).
2. An econometric analysis presented in the background study for this chapter measures the association between the price-cost margin and subsequent labor productivity growth at the sector level. Drawing from the methodology in Aghion, Braun, and Fedderke (2008) and using data at the CNAE 3-digit level from the 2007–2014 *Pesquisa Industrial Anual*, the results suggest that a 10 percent decrease in the overall average manufacturing price cost

margin of 0.14 is associated with an increase in labor productivity growth for the manufacturing sector of 3.4 percent per year.

3. Comparator countries Chile, Mexico, South Africa and Russia all improved, as did all other OECD countries except Iceland, Ireland, Luxembourg and New Zealand.
4. Although Brazil as a large country and more distant from main trade partners than some others would be expected to trade less, it is the least open country and significantly below its benchmarked openness based on various econometric specifications controlling for country size and distance to main trade partners (Lederman et al. 2014).
5. This number considers bilateral preferences. The simple average MFN tariff rate was 13.5 for Brazil in 2016.
6. See Stone, Flaig, and Messent (2015) for the complete list of LCR measures in-force and implemented in Brazil between 2008 and 1 April 2014.
7. These results are also valid when using OECD STRI; latest numbers from 2017 show that Brazil scores worse than Mexico, Chile and Colombia for accounting, architecture, engineering and legal services and for commercial banking and insurance. For telecoms and retail, the value of the Brazil STRI index is zero.
8. This forces firms to adopt costly hedging strategies and complicates their ability to engage in just-in-time production or react quickly to demand shifts. Evidence suggests that inventory-holding costs can vary from 15 percent of the cost of goods per year to as much as 50 percent (Clark et al. 2016). Similarly, each day in transit is equivalent to an ad-valorem tariff ranging between 0.6 percent and 2.3 percent; and trade in components is extremely time-sensitive (Hummels and Schauer 2013). Customs delays also reduce exports value and export market diversification (Volpe Martincus et al. 2015).
9. Organized as a joint effort between more than 20 agencies and the private sector, Portal Unico promotes the simplification, streamlining and cost reduction of trade-related procedures and formalities with the support of risk management, automation and information technology tools. The initiative aims to eliminate redundant formalities and document requirements, to optimize the performance of the agencies which intervene in trade, and to reduce by 40 percent the average times to export and import. According to 2018 *Doing Business*, the average time to comply with documentary export obligations fell from 18 to 12 hours between 2016 and 2017, a reduction of a third. The average time on the import side decreased from 120 to 48 hours, a reduction of 60 percent. Brazil improved by 10 positions in the “Trading across borders” indicator.
10. Recent examples include the cooperation between Mercosul and the Pacific Alliance countries to enable the exchange of electronic trade documents. Certificates of origin, originally in paper, are already being replaced by digital documents with Argentina, Chile and Uruguay. Brazil is also working to exchange electronic phytosanitary certificates with the United States.
11. Rossi and Ferreira (1999) show that a 10 percent reduction of import tariffs is associated with an increase in labor productivity growth of 0.88 percent per year and of TFP by 3.3 percent per year at the sectoral level. Muendler (2004) and Schor (2004) find similar productivity effects from foreign competition pressures at the firm level. Lisboa, Menezes Filho, and Schor (2010) confirm that the 1990s’ trade liberalization brought positive impacts for productivity in manufacturing firms with the main driver being the reduction of input tariffs.
12. The CGE model used is the LINKAGE model, a dynamic, multisector, multiregional model with economy-wide coverage. The model tracks the interlinkages between sectors through input-output transactions, as well as various sources of final demand including private and government consumption, imports, exports, and investment. The first step for the dynamic analysis is the development of a long-term baseline scenario, which reflects a projection of the Brazilian and global economies with current policies in place. This baseline is then used to compare alternate scenarios under which policies are changed. Differences in estimated effects (on GDP, trade and output) reflect different hypotheses about the policy reform scenarios.
13. The CGE results are conservative estimates. While the model is dynamic in the sense that the capital stock can change over time, it does not include other dynamic factors such as productivity increases from endogenous growth effects via technological spillovers, “learning by doing,” and inflows of foreign technology and efficiency-seeking FDI induced by liberalization.
14. Resulting in a reduction of 15 percent in the tariff equivalents for goods and services.

15. In this case, the trade-weighted average tariff applied by Brazil to products from the countries in the Pacific Alliance would fall from 1.3 to 0.3 percent. The average tariff faced by Brazil in the Pacific Alliance would fall from 2.9 percent to 0.8 percent.
16. Brazilian manufacturing firms operating in industries with a high structural integration into GVCs, namely which equals or exceeds the 75th percentile across all 22 countries in the sample for that industry, show significantly higher labor productivity levels than those firms that operate in industries with lower GVC integration. Their difference in productivity is stronger for GVC integration as a seller (+11.2 percent on average) compared to GVC integration as a buyer (+8.5 percent on average) in the Brazil sample, holding all other variables constant. By comparison, the findings suggest that GVC integration as a seller at the industry level is correlated with a smaller labor productivity surplus (+3.8 percent on average) in the sample of 22 countries, and is non-existent for high GVC integration as a buyer.
17. In figure 3.8, the number of agreements signed is represented by the lines connecting different countries (nodes) through PTAs; GVC-related trade is represented by the size of the nodes and the width of the lines connecting the dots.
18. Exporter Dynamics Database.
19. The agriculture agency oversees international trade of animals, vegetables, agricultural inputs, including animal feed and other products from animal or vegetable origin. It currently performs 100 percent physical inspections and therefore has scope to improve its risk management strategy.
20. Conceptually, an increase in import tariffs appreciates the home real exchange rate as the domestic policy rate and the international interest rate differential increases. The terms of trade appreciation, in turn, induces a positive effect on consumption but a drag on real net exports (Linde and Pescatori 2017).
21. Based on COMTRADE data compiled by Timothy Sturgeon at the MIT Industrial Performance Center. See Sturgeon et al. (2013) for additional analysis on the aerospace, medical devices and electronic industries GVCs.
22. Bacha and Bonelli (2016) highlight how Brazil and Mexico have followed relatively similar labor productivity trajectories for a much longer period than the most recent twenty-year period shown in figure 2.3—with annual growth of labor productivity falling from 4.2 to 0.4 percent in Brazil and from 3.4 to -0.2 percent in Mexico between 1950-80/81 and 1981/82-2014.
23. Differences in prices include tariffs and extra local consumption taxes, freight, and different mark-ups. The product is the Apple Pro 10.5-inch 64GB Wi-Fi device, costing US\$1,619 in Brazil versus US\$703 in California and US\$638 in Hong Kong SAR, China as of September 9, 2017 (Commonwealth Bank of Australia 2017).
24. Empirical analysis presented in the background study for this chapter applies a propensity score method combined with a difference-in-differences estimator to assess how credit provided under the regional Constitutional Financing Funds as well as loans provided by BNDES under the Regional Dynamization Policy (the PDR)—specifically the BNDES Automatico and BNDES FINEM lines—impact local productivity growth between 2008 and 2014. The analysis compares minimally comparable areas (MCAs) according to the type of credits they receive: Constitutional Funds, BNDES, and both types of credits. A careful analysis of spatially targeted policies shows little evidence of a differentiated impact on local productivity. It is only when spatially targeted and sectoral policies are coordinated and reinforce each other that they are associated with improvement in productivity.
25. Reducing the cost of doing business is an important, but not sufficient measure to increase competition. Even if the cost of paying taxes, getting electricity or dealing with construction permits is reduced, there may still be sector- or market-specific regulatory barriers (licenses, permits) to entry, other government interventions as well as structural features of the markets that facilitate anti-competitive behavior such as collusive agreements.
26. According to Endeavor Brasil (2017), the variance in terms of average time to open a business across municipalities is high. Among 32 surveyed municipalities, Cuiaba is ranked first with an average time of 20 days. Porto Alegre is at the bottom with 145 days. The same report ranks municipalities in terms of tax “burden,” considering the following pillars: ICMS, IPTU and ISS tax rates and the average number of tax incentives. Ribeirao Preto is ranked first with an index value of 8.14, while Rio de Janeiro is at the bottom with 4.48.
27. This finding is aligned with a recent survey of rigorous impact evaluations of programs to help SMEs to formalize, which suggests that most formalization programs have limited impact, and that enforcement efforts of formality tend to have better results (Piza 2016).

28. Analysis regarding bunching at the thresholds has been highly informative in other countries and could be conducted easily in Brazil, if data are made available. Aghion et al. (2017) illustrate what is empirically possible. They make use of new French administrative data on individual tax returns, showing that eligibility thresholds in tax rates and tax simplicity create large excess masses (bunching) just below the thresholds. Importantly, they estimate the value of changes in tax rates and simplicity to self-employed workers/entrepreneurs. They find that the cost of tax complexity is regressive, affecting mostly the uneducated, low-income and low-skilled self-employed.
29. From 1999, the year of CADE's first cartel condemnation, to 2012, the year of the introduction of the current competition law, CADE collected R\$ 450 million in fines and settlements against anticompetitive practices. From 2013 to 2016, largely due to an increased focus on enforcement against anticompetitive practices and an improved settlement framework, CADE collected R\$ 1.6 billion, more than three times more money in less than one third of the time, a 10-fold efficiency gain. In 2017 alone, the competition advocacy entity in the Ministry of Finance helped shape the Uber legislation, advocated pro-competition changes to the proposed new *Rota 2030* automobile policy, and has undertaken direct interventions to limit the anti-competition impact of antidumping measures among other activities.
30. Krueger (1974) estimates the value of rents linked to imports, public investments, controlled commodities, railways and credit rationing in India in 1964 at over 7 percent of GNP; and the value of rents just from import licenses in Turkey in 1968 at roughly 15 percent of GNP. With competitive rent-seeking, the value of the rents represents the value of the domestic resources that could be completely lost to the economy—to the extent that they are transferred to foreign bank accounts and invested elsewhere.
31. Based on an examination of Brazil's position in research, technology transfer and innovation activities relative to peer countries, Zuniga et al. (2016) emphasize the need for more effective market competition as a necessary condition for more effective state support to innovation.
32. Maloney and Sarrias (2017) establish this result for more advanced economies, though they are not able to replicate this result for their full sample of countries. For additional analyses of the role of managerial practices as key firm capabilities for innovation, see Chapter 4 in Cirera and Maloney (2017).
33. For comparative analyses between Brazil and OECD economies of competition-related regulatory restrictions to the provision of engineering services and legal, accounting and architecture services, see World Bank (2016a, 2016b).
34. The background paper on agricultural productivity highlights that there was a positive structural break in the growth rate of TFP in 1997, from an average annual rate of 3 percent since the 1970s to a rate of 4.3 percent to 2014, and that it was driven by higher livestock TFP growth since 1990 being compounded by higher crop-related TFP from 2002 and especially from 2008 onwards.
35. A study by Gasques et al. (2012) highlighted in the background paper finds that a one percent increase in agriculture public research expenditures, in the value of agricultural credit, and in agribusiness exports respectively boost agricultural TFP by 0.35 percent, 0.25 percent and 0.14 percent, with various lags.
36. Brazil's deforestation rate reached a high of almost 27,000 square km a year in 2004, then fell to 4,570 square km a year in 2012 before rising again to reach 7,890 square km between August 2015 and July 2016, according to INPE, Brazil's satellite space research institute.

REFERENCES

- Afonso, José Roberto, and Gabriel Barros. 2013. "Desoneração da Folha: Renúncia Revisitada," Nota Técnica do IBRE, FGV-IBRE, Rio de Janeiro.
- Aghion, P., U. Akcigit, A. Hyytinen, and O. Toivanen. 2017. *Leaving the American Dream in Finland: The Social Mobility of Inventors*. Mimeo.
- Aghion, P., M. Braun, and J. Fedderke. 2008. "Competition and Productivity Growth in South Africa." *Economics of Transition* 16 (4): 741–68.

- Apy, Bernard. 2017. "Tributação e produtividade no Brasil." In *Anatomia da produtividade no Brasil*, edited by Regis Bonelli, Fernando Veloso, and Armando Castelar Pinheiro, 323–60. Rio de Janeiro: Elsevier and FGV/IBRE.
- Bacha, Edmar, and Regis Bonelli. 2016. "Dois colapsos de crescimento: Brasil e México desde o início dos anos 1980." *Novos Estudos* 105: 105–81.
- Baumol, William J. 1990. "Entrepreneurship: Productive, Unproductive and Destructive." *Journal of Political Economy* 98 (5): 893–921.
- Bloom, Nicholas, Benn Eifert, Aprajit Mahajan, David McKenzie, and John Roberts. 2013. "Does Management Matter? Evidence from India." *Quarterly Journal of Economics* 128 (1): 1–51.
- Bloom, Nicholas, Renata Lemos, Raffaella Sadun, Daniela Scur, and John Van Reenen. 2014. "The New Empirical Economics of Management." *Journal of the European Economic Association* 12 (4): 835–76.
- Bloom, Nicholas, Raffaella Sadun, and John Van Reenen. 2016. "Management as a Technology?," Mimeo, Stanford.
- Brambilla, Irene, and Darío Tortarolo. 2018. "Investment in ICT, Productivity and Labor Demand: The Case of Argentina." Policy Research Working Paper 8325, Washington, DC: World Bank.
- Bravo-Biosca, Albert, Chiara Criscuolo, and Carlo Menon. 2013. "What Drives the Dynamics of Business Growth?" *OECD Science, Technology and Industry Policy Papers* No. 1, OECD Publishing, Paris.
- Canuto, Otaviano, Matheus Cavallari, and Jose Guilherme Reis. 2013. "Brazilian Exports: Climbing Down a Competitiveness Cliff" *World Bank Policy Research Working Paper* No. 6302, World Bank, Washington, DC.
- Cirera, Xavier, and William F. Maloney. 2017. *The Innovation Paradox: Developing-Country Capabilities and the Unrealized Promise of Technological Catch-Up*. Washington, DC: World Bank. <https://doi.org/10.1596/978-1-4648-1160-9>.
- Cirera, Xavier, Daniel Lederman, Juan Máñez, María Rochina, and Juan Sanchis. 2015. <https://ideas.repec.org/a/zbw/ifweej/201522.html> <https://ideas.repec.org/s/zbw/ifweej.html>, Kiel Institute for the World Economy (IfW), vol. 9, pages 1-31.
- Commonwealth Bank of Australia. 2017. "CommSec iPad/iPhone indexes" *Economic Insights*, September 11, Sydney.
- Corseuil, Carlos Henrique L., and Rodrigo Leandro Moura. 2017. "O Impacto do Simples no Nível de Emprego da Indústria Brasileira." Mimeo. IPEA, Rio.
- Corseuil, Carlos Henrique L., Marcelo Neri, and G. Ulyssea. 2016. "Uma análise exploratória dos efeitos da política de formalização dos microempresários individuais." In *Causas e consequências da informalidade no Brasil*, edited by F. Barbosa Filho, G. Ulyssea and F. Veloso. Rio de Janeiro: Elsevier.
- Devereux, Michael, and Irem Guceri. 2015. "Can 'the Good Law' get better? An impact study of Isenção Fiscal em Pesquisa e Desenvolvimento, 'the Good Law,'" Mimeo, Centre for Business Taxation, University of Oxford.
- Diniz, Érica, and José Roberto Afonso. 2014. "Benefícios Fiscais Concedidos (e Mensurados) pelo Governo Federal", Texto de Discussão, January, FGV-IBRE, Rio de Janeiro.
- Dutz, Mark, Rafael Barroso, Joao Bevilacqua Teixeira Basto, Xavier Cirera, Cornelius Fleischhaker, Antonio Nucifora, and Mariana Vijil. 2017. "Business Support Policies in Brazil: Large Spending, Little Impact." Background Paper to *Um Ajuste Justo: Análise da eficiência e equidade do gasto público no Brasil*. World Bank, Brasília.
- Endeavor Brasil. 2017. *Índice de Cidades Empreendedoras - Brasil 2017*. Sao Paulo: Endeavor Brasil.
- FGV. 2013. *Avaliação do Impacto da Desoneração Tributária da Folha de Pagamento nos Setores de Confeções, Couro e Calçados e Tecnologia de Informação e Comunicação*. Ministério da Fazenda. Secretaria de Política Econômica (SPE). Relatório Final, Brasília.
- . 2014a. *Avaliação de Impactos Econômicos e Setoriais da Desoneração Tributária da Folha de Pagamentos*. Ministério da Fazenda. Secretaria de Política Econômica (SPE). Relatório Preliminar, Brasília.

- . 2014b. *Avaliação de Impactos Econômicos e Setoriais da Desoneração Tributária da Folha de Pagamentos—Setores Selecionados*. Ministério da Fazenda. Secretaria de Política Econômica (SPE). Relatório Preliminar, Brasília.
- Frischtak, Claudio, and Armando Castelar Pinheiro, eds. 2014. *Gargalos e soluções na infraestrutura de transportes*. Rio: FGV Editora.
- Fuentes, Rodrigo, and Veronica Mies. 2017. “Technological Absorptive Capacity and Development Stage: Disentangling Barriers to Riches.” Mimeo, October, Santiago, Chile.
- Garcia, Felipe, Adolfo Sachsida, and Alexandre Xavier Ywata de Carvalho. 2018. “Impacto da Desoneração da Folha de Pagamentos sobre o Emprego: Novas Evidências”, Texto para Discussão 2357, IPEA, Brasília.
- Gasques, J. G., E.T. Bastos, C. Valdes, and M.R.P. Bacchi. 2012. “Produtividade da agricultura brasileira e os efeitos de algumas políticas.” *Revista de Política Agrícola*, 21 (3): 83–92.
- Helfand, Steven M., Marcelo M. Magalhães, and Nicholas E. Rada. 2015. “Brazil’s Agricultural Total Factor Productivity Growth by Farm Size.” IDB Working Paper Series No. 609. Washington, DC: IADB.
- Hollweg, Claire, and Nadia Rocha. 2017. “Global Value Chain Participation and Deep Integration in Brazil.” Policy Note, World Bank, Washington, DC.
- Hummels, David L., and Georg Schaur. 2013. “Time as a Trade Barrier.” *American Economic Review* 103 (7): 2935–59.
- Iacovone, L., and M. Pereira-Lopez. 2018. “ICT Adoption and Wage Inequality: Evidence from Mexican Firms.” Policy Research Working Paper 8298, Washington, DC: World Bank.
- IADB (Inter-American Development Bank). 2017. *Assessing Firm-Support Policies in Brazil*. Office of Evaluation and Oversight. Washington, DC: IADB.
- Kannebley, Sérgio, Jr., and Geciane Porto. 2012. “Incentivos Fiscais à Pesquisa, Desenvolvimento e Inovação no Brasil: Uma avaliação das políticas recentes.” Discussion Paper 236, Washington, DC: Inter-American Development Bank.
- Klapper, Leora, Luc Laeven, and Raghuram Rajan. 2006. “Entry Regulation as a Barrier to Entrepreneurship.” *Journal of Finance* 82 (3): 591–629.
- Krueger, Anne. 1974. “The Political Economy of the Rent-Seeking Society.” *American Economic Review* 64 (3): 291–303.
- Lederman, D., J. Messina, S. Pienknagura, and J. Rigolini. 2014. *Latin American Entrepreneurs: Many Firms but Little Innovation*. Washington, DC: World Bank.
- Linde, J., and A. Pescatori. 2017. “The Macroeconomic Effects of Trade Tariffs: Revisiting the Lerner Symmetry Result.” IMF Working Paper 17/151, Washington, DC: International Monetary Fund.
- Lisboa, M., N. Menezes Filho, and A. Schor. 2010. “The Effects of Trade Liberalization on Productivity Growth in Brazil: Competition or Technology?” *Revista Brasileira de Economia* 64 (3): 277–89.
- Maloney, William, and Mauricio Sarrias. 2017. “Convergence to the Managerial Frontier.” *Journal of Economic Behavior and Organization* 134 (C): 284–306.
- Miller, Ben, and Robert Atkinson. 2014. “Digital Drag: Ranking 125 Nations by Taxes and Tariffs on ICT Goods and Services.” Mimeo. Washington, DC: The Information Technology and Innovation Foundation (ITIF).
- Miranda, Ricardo Nunes. 2013. “Zona Franca de Manaus: Desafios e Vulnerabilidades.” Texto para Discussão 126. Senado Federal, Brasília.
- Monteiro, Joana. 2016. “Saindo da informalidade: O impacto do SIMPLES na formalização de empresas.” In *Causas e Consequências da Informalidade no Brasil*, edited by Fernando Holanda Barbosa Filho, Gabriel Ulyssea and Fernando Veloso. 169–86. Rio de Janeiro: Elsevier.
- Muendler, Marc-Andreas. 2004. “Trade, Technology, and Productivity: A Study of Brazilian Manufacturers, 1986–1998.” Mimeo, San Diego, CA: University of San Diego.
- OECD. 2013. “Competition and Poverty Reduction: Contributions from Brazil to the Global Forum on Competition.” Directorate for Financial and Enterprise Affairs Competition Committee, Paris: OECD.

- Piza, Caio. 2016. "Revisiting the Impact of the Brazilian SIMPLES Program on Firms' Formalization Rates." Policy Research Working Paper 7605, Washington, DC: World Bank. <http://documents.worldbank.org/curated/en/901421467995383598/Revisiting-the-impact-of-the-Brazilian-SIMPLES-program-on-firms-formalization-rates>.
- Rossi, J.L., Jr., and P. Ferreira. 1999. "Evolução da Produtividade Industrial Brasileira e Abertura Comercial." Texto para Discussão IPEA # 0651, IPEA, Brasília.
- Scherer, Clóvis. 2015. "Desoneração da Folha de Pagamentos: Efeitos no Emprego e nos Salários." *Mercado de Trabalho* 59 (outubro): 35–43.
- Schor, Adriana. 2004. "Heterogeneous productivity response to tariff reduction: Evidence from Brazilian manufacturing firms." *Journal of Development Economics* 75 (2): 373–96.
- SPE (Secretaria de Política Econômica). 2015. "Nota de Análise sobre a Desoneração da Folha", April, Ministry of Finance, Brasília.
- Stone, S., D. Flaig, and J. Messent. 2015. "Emerging Policy Issues: Localisation Barriers to Trade." Working Party of the Trade Committee, TAD/TC/WP(2014)17/FINAL, OECD, Paris.
- Sturgeon, Timothy, Gary Gereffi, Andrew Guinn, and Ezequiel Zylberberg. 2013. *Brazilian Manufacturing in International Perspective: A Global Value Chain Analysis of Brazil's Aerospace, Medical Devices, and Electronics Industries*. Report prepared for Brazil's Confederação Nacional da Indústria (CNI). http://www.cggc.duke.edu/pdfs/CNI_Brazil_GVC_Report_Final_2013-09-05.pdf.
- Taglioni, Daria, and Deborah Winkler. 2016. *Making Global Value Chains Work for Development. Trade and Development*. Washington, DC: World Bank.
- Tirole, Jean. 2017. *Economics for the Common Good*. Princeton, NJ: Princeton University Press.
- Volpe Martincus, Christian, Jerónimo Carballo, and Alejandro Graziano. 2015. "Customs." *Journal of International Economics*, 96:1, 119–37.
- Wacziarg, Romain, and Karen Horn Welch. 2018. "Trade Liberalization and Growth." *World Bank Economic Review* 22 (2): 187–231.
- World Bank. 2014. "Debt Resolution and Business Exit: Insolvency Reform for Credit, Entrepreneurship, and Growth." Viewpoint, Note 343, Washington, DC: World Bank.
- . 2016a. "Restrições Regulatórias Relacionadas à Concorrência em Serviços de Engenharia no Brasil." Mimeo. Washington, DC: World Bank.
- . 2016b. "Uma Breve Análise das Restrições Regulatórias Relacionadas à Concorrência em Serviços de Advocacia, Contabilidade e Arquitetura no Brasil com base nos Indicadores de Regulação do Mercado de Produtos da OCDE." Mimeo. Washington, DC: World Bank.
- . 2017a. *Back to Planning: How to Close Brazil's Infrastructure Gap in Times of Austerity (English)*. Washington, DC: World Bank. <http://documents.worldbank.org/curated/en/386151499876913758/Back-to-planning-how-to-close-Brazils-infrastructure-gap-in-times-of-austerity>.
- . 2017b. *Um ajuste justo: análise da eficiência e equidade do gasto público no Brasil: Volume I: síntese (Portuguese)*. Washington, DC: World Bank. <http://documents.worldbank.org/curated/en/884871511196609355/Volume-I-síntese>.
- . 2018. *Doing Business 2018. Reforming to Create Jobs*. Washington, DC: World Bank.
- Zuniga, Pluvia, Fernanda de Negri, Mark Dutz, Dirk Pilat, and Andre Rauen. 2016. "Conditions for Innovation in Brazil: A Review of Key Issues and Policy Challenges", Mimeo, World Bank, Washington, DC.
- Zylberberg, Ezequiel. 2016. "Redefining Brazil's Role in Information and Communications Technology Global Value Chains." MIT-IPC Working Paper 16-003, MIT, Cambridge, MA.

4 The Causes of Low Productivity Growth

THE NEED FOR BETTER-FUNCTIONING FINANCE AND LABOR MARKETS

Attract private investors to the business. This was the only option that remained for Dalmo Marcolino, entrepreneur from Rio de Janeiro, to finance his brand of craft beer, BierTeria. Dalmo sought help to launch his brand based on artisanal recipes, unsuccessfully, from the Federation of Industries of the State of Rio de Janeiro and the Funding Authority for Studies and Projects (Finep). BNDES was not one of the entrepreneur's options due to its bureaucracy and his lack of sufficient guarantees to comply with the requirements of the public development bank. The path to public and subsidized credit, historically, has always been easier for large companies. Dalmo deplores the difficulty of access to financing: "Here in Brazil, you yourself pay to launch your company and you face the bureaucracy only later when they bill you."

ABSTRACT A key underlying reason for the misallocation of capital and labor and hence for Brazil's productivity slump is the set of prevailing policy distortions, ostensibly introduced to offset market failures. For instance, subsidized credit to targeted firms and sectors has had no discernible effect on the productivity of the recipient. Instead, it has been largely a tool to protect incumbents and distort competition. Many innovators and young, otherwise-growing companies conversely have been cut off from finance, which may in part account for their limited contribution to job creation and productivity growth. Similarly, labor market policies are mostly geared towards protecting incumbent formal workers, while job-search support, training and other active labor market policies receive considerably less attention and are under-resourced relative to Brazil's peers. Overlapping and poorly coordinated unemployment benefits create incentives for excessive turnover that discourages on-the-job learning and the formation of firm-specific human capital. Such distortions may have contributed to reducing

economy-wide returns to the large investments Brazil has made in education, even though private returns remain highly positive. Reforms in credit and labor markets mark important initial steps in reducing policy-induced misallocation of capital and labor in Brazil. As such they are critical ingredients of an agenda to boost productivity.

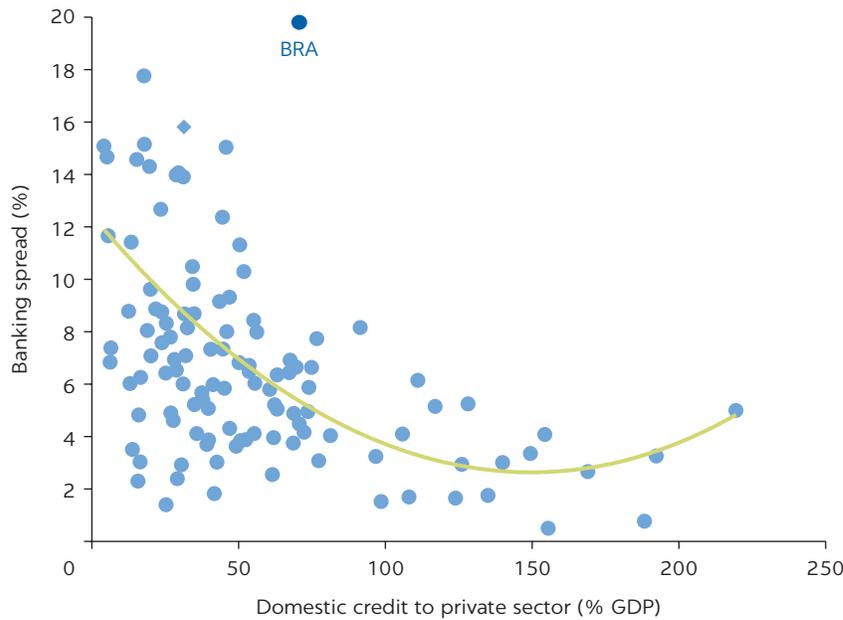
Capital and labor market policies may have contributed to Brazil's productivity slump by worsening rather than reducing distortions. More than half of the income difference between Brazil and the US can be explained by differences in the efficiency of the use of finance and workers (chapter 2). Consequently, while this chapter looks briefly at savings and investment rates in physical and human capital, it is mostly concerned with looking at inefficiencies in how capital and labor are allocated. The chapter documents how financial policies aimed at allocating low-cost finance to existing firms and labor market policies aimed at protecting and raising the incomes of those already in formal employment have had perverse, negative effects on productivity growth. The underlying theme is how purportedly well-intentioned policies designed with other goals in mind have resulted in distortions that prevent the allocation of capital and labor to young, growing, and productive firms. Distortions in input markets have thus compounded distortions in output markets and further muted competitive pressures. Moreover, if capital and labor markets do not allow resources to flow easily between firms and sectors, the impact of greater product market competition through external and internal integration on productivity may be dampened and those facing negative price shocks may be unable to adjust. Reforms to capital and labor markets are thus an integral part of the policy agenda for greater productivity and shared prosperity.

INVESTMENT AND FINANCIAL MARKET DISTORTIONS

Brazil has traditionally been a country with low aggregate savings rates and consequently low rates of investment. National savings have been consistently below 20 percent of gross domestic product (GDP). This low level of savings has translated into low levels of aggregate investment, which have rarely exceeded this level despite large inflows of FDI; when they did in the 1970s, the result was a balance of payments and foreign debt crisis. One reason for low savings and low investments may be the history of macroeconomic volatility that has characterized Brazil since the early 1960s, which may have discouraged higher rates of financial intermediation.

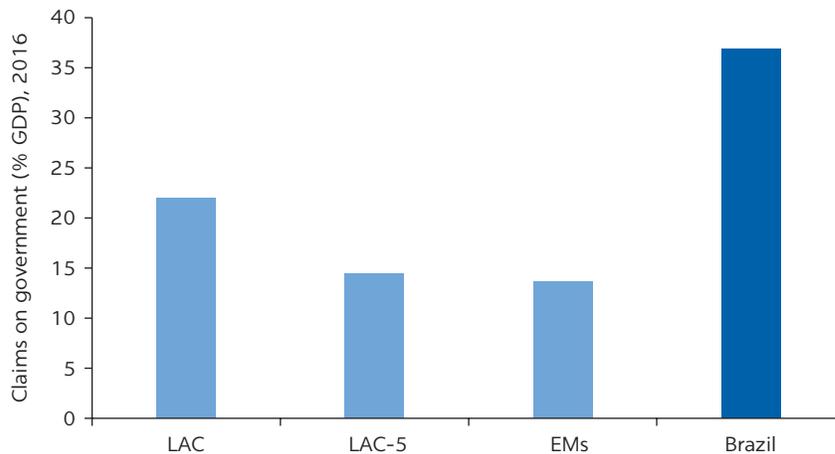
Macroeconomic imbalances and a legacy of high public sector debts are reflected in high interest margins. Compounded by microeconomic and institutional inefficiencies, interest rate spreads remain exceptionally high compared to similar economies (figure 4.1). Banks are prudentially regulated to avoid excessive risk taking, and in general show adequate levels of capitalization and profitability. The banking sector maintained healthy incomes even during the recent crisis, reflecting both cautious lending practices and the ability to charge high margins. A very large share of total banking sector assets is invested in government paper (figure 4.2), providing a boost to margins. However, the flip side is that access to credit for many firms has remained limited while maturities have tended to be short, constraining funding for longer-term capital investments.

FIGURE 4.1
Banking spreads in the open market are an international outlier...



Source: World Development Indicators.

FIGURE 4.2
...while a large share of banking assets is invested in government bonds



Source: World Development Indicators.

Note: LAC = Latin America and the Caribbean; LAC-5 are Argentina, Brazil, Chile, Colombia and Mexico; EMs are emerging markets (LAC-5 plus China, India, Indonesia, Hungary, Malaysia, Peru, Philippines, Poland, Russian Federation, Thailand, Tunisia, Turkey, and South Africa).

The structure and contestability of the banking market may also play a role in explaining the exceptionally high spreads observed in Brazil. Almost half of the banking system is state-owned and it is increasingly concentrated, with the largest six banks accounting for 81 percent of system assets. The two largest banks, state-owned Banco do Brasil and Caixa Economica Federal account for about 40 percent of system assets, while the three largest private banks account for 69 percent of private bank assets. Moreover, the competition policy

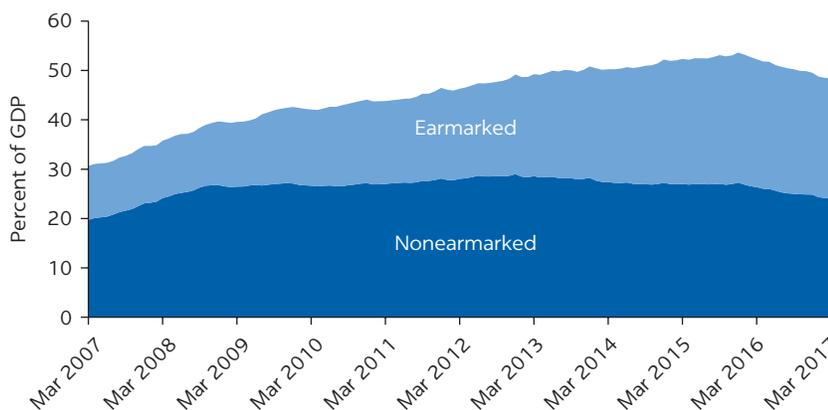
framework presents some shortcomings that may lead to unchecked market power, including complex regulations for the opening of branches and subsidiaries of foreign banks, which ultimately requires approval by the President, and the lack of interoperability of the payments system. Equally important, the legislation may not sufficiently clearly set out the responsibilities of the Central Bank and the competition authority regarding which entity is responsible for guaranteeing adequate competition in the banking system and avoiding abuses of market power by banks.¹

To counter the effects of a volatile macro-financial environment and address residual market failures, the federal government has intervened heavily in credit markets. Not only through direct ownership of commercial banks, but also and more importantly through the so-called earmarked credit system, directed credit has come to account for about half of total credit to the economy (figure 4.3). Subsidized earmarked credit expanded rapidly after the global financial crisis with a countercyclical objective but it was not scaled back when growth resumed. Earmarked credit is mainly targeted to infrastructure and development projects, rural activities and housing. Total credit is roughly equally divided between firms and households, and within these categories, roughly equally divided between earmarked and nonearmarked credit (figure 4.4).

While private banks marginally participate in the earmarked credit system, the bulk of it is intermediated through the public banks. Banco do Brasil and Caixa Economica Federal dominate the rural credit market and the residential housing lending market, with 55 percent and 73 percent market share, respectively.² However, BNDES is the single largest intermediary of earmarked credit—directly and through on-lending via the large private banks—accounting for about half of total earmarked credit. Importantly, BNDES accounts for about three-quarters of earmarked credit to firms or one third of total credit to firms, making this state-owned development bank the single largest provider of credit to the productive sector.

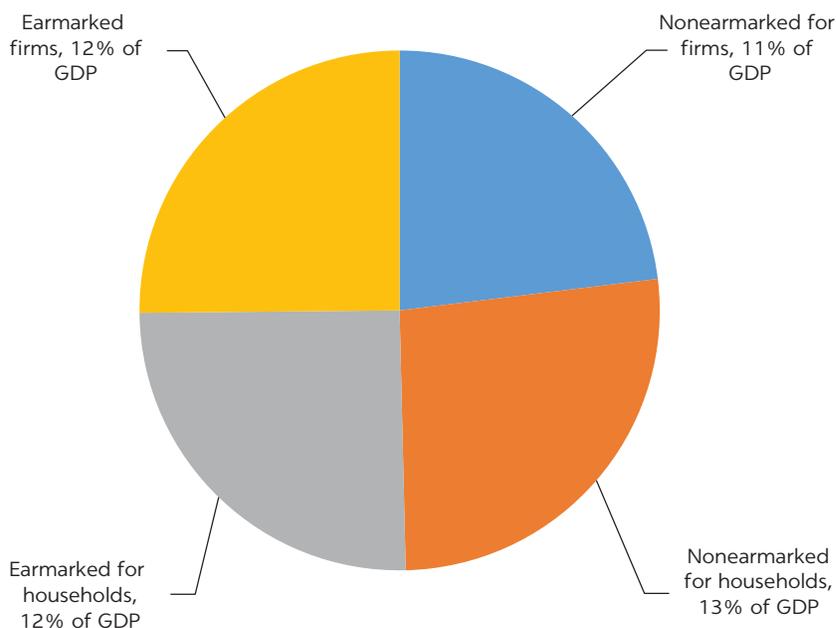
Regulated interest rates have been a key feature of government interventions in credit markets. Rates have typically been set well below market rates, and often below the government's own borrowing costs to shelter targeted sectors from the high cost of finance. Enterprise finance has been priced with a regulated rate, the TJLP (*Taxa de Juros de Longo Prazo*); the housing finance market

FIGURE 4.3
Directed credit increased rapidly after the global financial crisis...



Source: Brazilian Central Bank, May 2017.

FIGURE 4.4

...targeting both firms and households

Source: Brazilian Central Bank, SGS, May 2017.

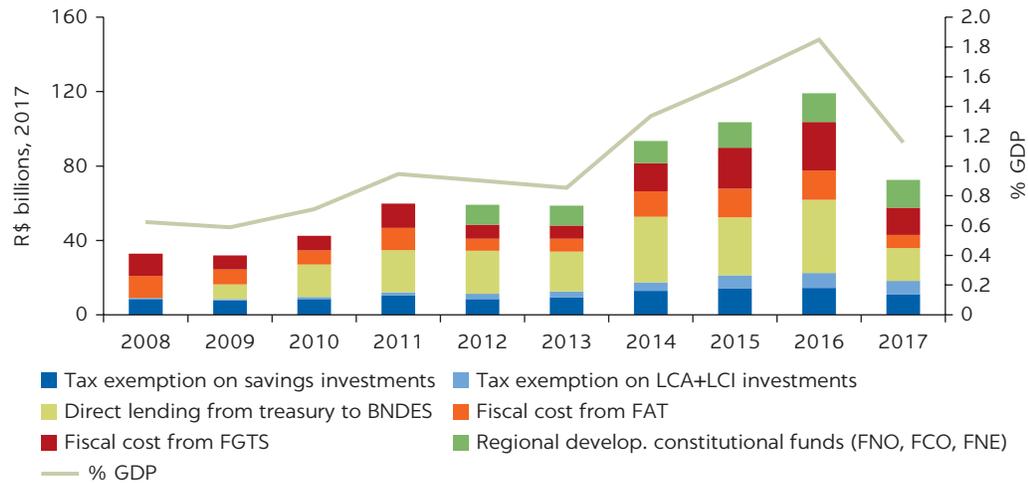
has been based on another regulated rate, the TR (Taxa Referencial); and much of the directed agricultural credit market has been subsidized with specific rates set for different segments of the market. This has limited the effectiveness of monetary policy, which must compensate for interest rates in the directed market being both low and unresponsive to the policy rate. The policy rate and thus the costs of financial intermediation in the free market have been more volatile and often higher than they otherwise would have been.

The earmarked credit system has entailed high costs for the Brazilian society. The costs are mostly borne by the fiscal sector, but under-remuneration of certain deposits and forced savings have also created a burden for some depositors and workers. Subsidized earmarked credit is the second largest fiscal spending category for business support policies at the federal level, with the subsidy element accounting for over 27 percent of total spending on these policies and 1.3 percent of GDP in 2015—which was the peak year for fiscal subsidies in earmarked credit. The fiscal costs include direct subsidies on specific programs as well as financing provided to BNDES. Overall, spending on subsidized credit grew from R\$24.8 to R\$73.14 billion between 2008 and 2015, at a CAGR of 16.7 percent (figure 4.5). Even after clawing back a significant amount of government support, subsidized credit is expected to cost the budget 48 billion Reais (0.4 percent of GDP) on loans still outstanding in 2017. The implicit subsidies have also declined since 2015 largely due to reduced monetary policy rates and thus a convergence between the free market and the regulated interest rates.

The main subsidized credit programs with significant fiscal impact over the past years include:

- Programa de Sustentação do Investimento (PSI). Initiated in mid-2009, the stated goal of the PSI was “to increase production, sale and export of capital goods and innovation.” PSI was introduced as a countercyclical policy tool to

FIGURE 4.5
Costs of earmarked credit by type



Source: BNDES, National Treasury.

Note: Values in R\$ MM 2015 base year. FNO, FCO, and FNE refer to Constitutional Financing Funds of the North Region, Midwest Region, and Northeast Region, respectively. FGTS is the Severance Indemnity Fund for Employees. FAT is the Brazil Worker Protection Fund. BNDES is the Brazilian Development Bank, the National Bank for Economic and Social Development.

reverse the sharp fall in aggregate investment following the global financial crisis, based on policymakers' expectations that firms would be credit-constrained. However, the program expanded during the ensuing recovery and continued until end-2015. Under-remunerated Treasury lending to BNDES cost the equivalent of 0.49 percent of GDP, representing long-lasting contractual fiscal commitments by the government converging to zero only by 2060.

- Programa de Fortalecimento da Agricultura Familiar (PRONAF). The National Program for the Strengthening of Family Agriculture was designed to stimulate income generation and improve the use of family labor through the financing of rural agricultural and non-agricultural activities and services. PRONAF had an explicit fiscal cost from interest rate equalization of R\$8.3 billion in 2015, as it offered agricultural loans at interest rates as low as 0.5–5.5 percent, well below the SELIC market rate and inflation. In 2014 and 2015, largely driven by an increase in PRONAF and related agricultural rural credit, PRONAF grew at a faster speed than other subsidized credit spending with a CAGR of 38 percent from R\$38.4 billion in 2013 to R\$73.1 billion in 2015.
- Other programs. BNDES is responsible for many other programs to support firms with specific objectives. Examples include BNDES FINEM (*Financiamento a empreendimentos*, or Financing for Enterprises) to finance investments in fixed assets in the manufacturing, infrastructure, commerce, services and agriculture sectors; and BNDES EXIM, a program to support exports of national goods and services. Traditionally, BNDES has relied on the Workers Support Fund (FAT) to fund these activities, but after 2011 BNDES funding expanded dramatically using direct fiscal support from the Treasury. There are also six regional development banks in Brazil, which like BNDES have the statutory objective to provide long and medium-term earmarked financing for social development projects. These banks have a more limited focus of action, either in regions (banks of the Northeast, Amazon and South) or states (Minas Gerais, Espirito Santo and Rio Grande do Sul).

Their combined lending is only about 9 percent of BNDES lending, though some have accounted for a sizable share of long-term lending in their region. A regional bank with a significant lending volume is the Banco do Nordeste do Brasil (BNB) which lent R\$24 billion in 2015 and is very active in microfinance operations through its *CrediAmigo* and *AgroAmigo* programs. The regional development banks generally rely on Constitutional Funds for most of their funding and receive no direct Treasury support.

Despite the high fiscal costs involved, there is no compelling evidence that the earmarked credit system has had a positive impact on productivity growth. Given the relative importance of BNDES in the subsidized credit architecture, most of the existing evidence focuses on BNDES impact. Here, two main findings stand out, both pointing to potential allocative efficiency issues. First, BNDES tends to target large, established firms that would probably be able to borrow from private sources. As such, BNDES financing may simply have replaced more expensive sources of financing, boosting profits and distribution of dividends of such firms, but doing little to encourage investment or growth.³ Although financing for small businesses has been growing recently, large firms still represent the major share of BNDES financing. Second, there are studies suggesting that in some cases non-financial considerations may have played a role in credit allocation. There is evidence that Brazilian firms that donated to winning political candidates were more likely to receive funding from BNDES. Moreover, firms in regions governed by politicians allied with the federal government appear to have received more funding from BNDES—not necessarily the most productive firms.⁴

BNDES credit has increased output distortions, possibly contributing to poor aggregate productivity growth. An analysis of FINAME loans over the period 2003–14 finds that BNDES credit increased capital and labor distortions for manufacturing firms, the largest recipient of earmarked credit over this period (Calice et al. 2018). Directed credit policies may thus have contributed to the growing misallocation of capital reported in chapter 2, inadvertently playing a role in Brazil's productivity slump. None of this implies that BNDES did not follow strict credit risk allocation criteria in making investment decisions, as reflected in a historically low share of problem loans. However, the allocation of many subsidies appears to have been based not on criteria of potential benefits to the economy as whole, and tended to favor incumbents with strong balance sheets and political connections over potentially more competitive new entrants.

The BNDES pricing reform from the heavily subsidized TJLP to a new more market-based rate is expected to improve the allocation of capital. The September 2017 adoption of a new market-based *Taxa de Longo Prazo* (TLP) applicable to the great majority of BNDES lending is a critical reform to disconnect subsidies from earmarked lending and to focus lending where credit gaps exist. The TLP replaces the historically highly subsidized TJLP over a 5-year transition period.⁵ The new TLP sends clear market signals to investors and can thus lead to better projects and higher returns on investment, potentially increasing productivity and economic growth. The government can still choose to subsidize investments, but will have to do so transparently through the budget. By aligning the TLP with market rates, the segmentation of credit markets is reduced and the effectiveness of monetary policy is increased. As a result, Brazil may see a reduction in the volatility of interest rates, which, in turn, is expected to favor long term investment. Finally, the shift in funding to a market-based index will facilitate the issuing of bonds on the capital markets, thereby contributing to

diversifying the range of low risk instruments while developing a more sustainable funding source. Whereas the TLP applies to the majority of earmarked credit for enterprises, similar reforms could be pursued for other directed credit market segments including the housing and agriculture sectors.

The TLP reform could be complemented by other interventions aimed at crowding-in private finance. This may involve re-thinking the role of BNDES in long-term finance markets, shifting it from a *provider* of funds to an *enabler* of private capital. BNDES' new operational policies, adopted in March 2017, emphasize the role of the bank in mobilizing commercial funding for infrastructure, including through the capital markets. New risk sharing and mitigation instruments are under consideration. BNDES has started to play a catalyzing role in the corporate debt market. However, the realization of BNDES' potential as a catalyst for project finance will require it to increase its tolerance for project risk, and its staff to be incentivized accordingly. BNDES' new operational policies also create an opportunity to review public credit policies towards the private sector generally, including entrepreneurial firms, market-creating innovators, and projects commanding large externalities in agriculture, manufacturing and services.

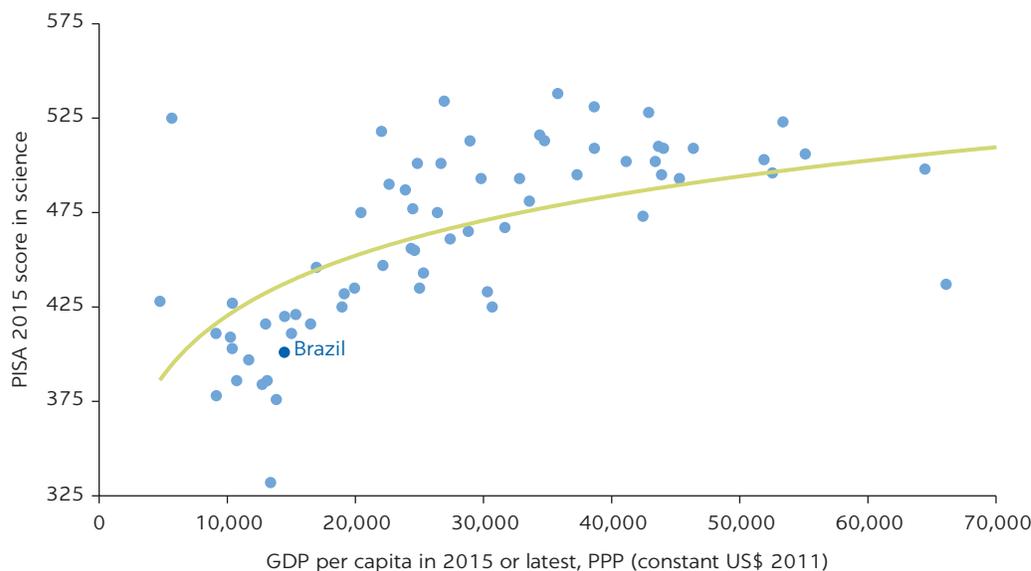
More generally, allocative efficiency can be improved by revising the design criteria for credit policies of public banks, and strengthening accountability. Deliberation councils, investment advisory councils, investment boards and similar mechanisms are typical examples of public-private partnerships that can help shape effective credit policy. Moreover, market discipline should bear on incentive programs. Conditionality, sunset clauses, built-in program monitoring and reviews are all desirable features of incentive programs. For example, tighter ceilings for BNDES participation on each project's financing envelope or syndications and other forms of co-financing can bring in the discipline of markets by allowing screening between firms that are willing to risk their capital and those that are not.

HUMAN CAPITAL AND LABOR MARKET DISTORTIONS

Despite a substantial expansion in access to education and hence in Brazil's human capital stock, the quality of the education and professional training system remains relatively low thereby reducing Brazil's productivity. Brazil has invested considerably in education but at the aggregate level is getting very little return. This is in part because labor is misallocated and—more importantly—because capital is misallocated and hence human capital is not put to its best use. But it is also because the quality of education investment has been low: despite increases in investment per student, the quality of Brazil's education outcomes remains disappointingly low (figure 4.6). An overloaded focus on memorization of academic subjects, reduced school hours and instruction time, and a perceived lack of relevance of the *Ensino Medio* curriculum are some of the main shortcomings of the current basic education system. Moreover the current system may also contribute to persistent economic inequality: public school students find it difficult to progress to tertiary education, as they must compete with better-prepared private school students, especially for admission in free public universities.

Reforms to secondary education were recently introduced that target improvements in educational outcomes. In 2017, the Federal Government passed a reform of the upper secondary education system including the introduction of a competence-based curriculum (*Novo Ensino Medio Reform*) and the extension of the full-time school model (FTS program). The new *Ensino Medio* curriculum is a long overdue and promising reform to reduce dropouts while supporting

FIGURE 4.6
Higher quality is required from Brazil's education investments



Source: OECD 2018.

Note: PISA = Program for International Student Assessment; GDP = gross domestic product; PPP = purchasing power parity.

learning among adolescents. Drawing from the experiences in Mexico and other OECD countries such as Portugal and Poland to add flexibility to a new competence-based curriculum can be an important step to increase student motivation and engagement.

Technical and vocational education and training has also been inadequate, though recent initiatives seeking business input are promising. Technical education, in the last years of high school, could play an increasingly important role in building the human capital that Brazil needs to raise its productivity. With this foundation set at the high school level, a particularly effective approach to further skills development entails giving business the leading role in ensuring that the workforce has the skills that firms demand. This is confirmed by the positive results of the industry-administered *Sistema S* and the PRONATEC-MDIC sub-program that explicitly considered inputs from firms on skill content and design of courses—although the cost effectiveness of these programs remains to be more fully evaluated.⁶ Other training providers as well as other branches of the PRONATEC initiative that do not have the same demand-informed features have had disappointing results.

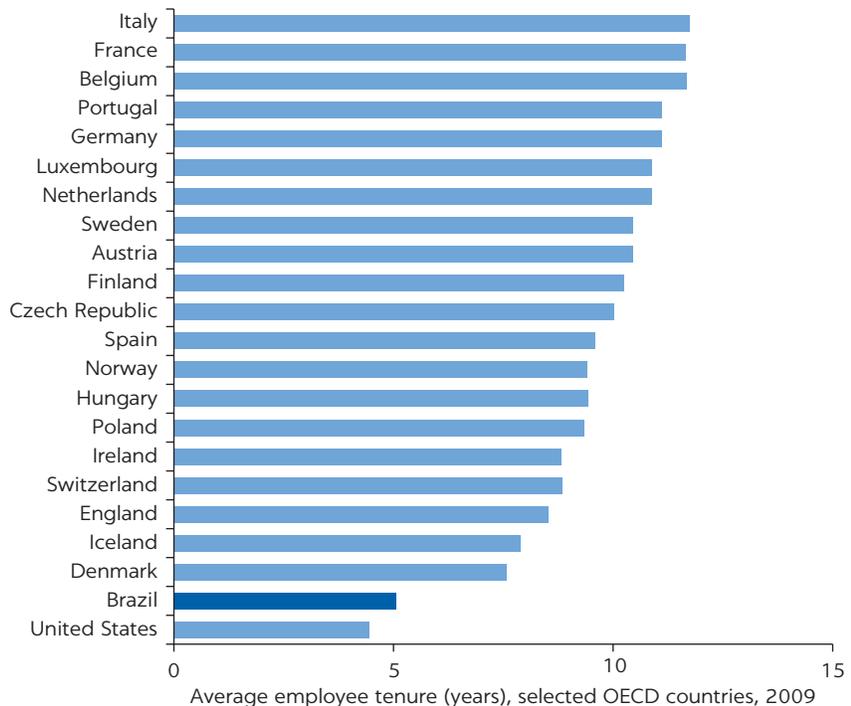
Labor market policies, both passive and active, are not sufficiently supportive of productivity growth. Brazil spends about 1.1 percent of GDP (in 2015) on federal labor market programs, but their effects on labor allocation are largely counterproductive. Spending on labor programs intended to assist people who are unemployed or looking for new jobs is a substantial segment of Brazil's federal budget, although it is dwarfed by spending on old-age, survivor and disability pensions (11.1 percent of GDP in 2015), and is less than spending on social assistance targeted to the poorest (1.5 percent of GDP in 2015). Compared to neighbors, peers and members of the OECD, Brazil is characterized by relatively high spending on passive labor market policies (83 percent of the total) and only limited investment in active policies, especially labor market intermediation and job-search support. Furthermore, this structural bias toward income

support over job-search assistance interventions benefits incumbents rather than new entrants, as workers have to hold a formal job and vest to qualify for benefits.

Brazil's income support programs for people who lose formal jobs are uncoordinated and overlapping, arguably encouraging excessive turnover, which hurts productivity by constraining on-the-job learning. Like other countries, Brazil has several policy instruments to help working people smooth consumption when they lose employment and transition to new jobs. These include mandated individual savings (the FGTS accounts, accessible upon unemployment), fines paid by employers for involuntary dismissals (an additional 40 percent of the amount saved in FGTS during the terminated employment spell), and a risk-pooling unemployment insurance scheme (*seguro desemprego*). However, unlike other countries, these instruments are duplicative and uncoordinated. A formal employee who is dismissed “without just cause” (“sem justa causa”) can access all of these benefits at once, presenting a potential cash bonanza that for a large segment of the working population is a strong, perverse incentive. Even on its own, the *seguro desemprego* has several features that encourage high rotation rates: the benefit received is high when compared to similar programs in other countries (at 68–80 percent of the previous wage), the benefit amount does not decline over the payout period, and job search obligations and requirements to accept offers are fairly new (since 2015) and poorly enforced. Formal sector employees also have a relatively short vesting period for these rights. The perverse incentives created by this unemployment bonanza have led to one of the highest levels of formal worker turnover in the world, with an average tenure of less than five years (figure 4.7). Importantly, firms where turnover is lower and

FIGURE 4.7

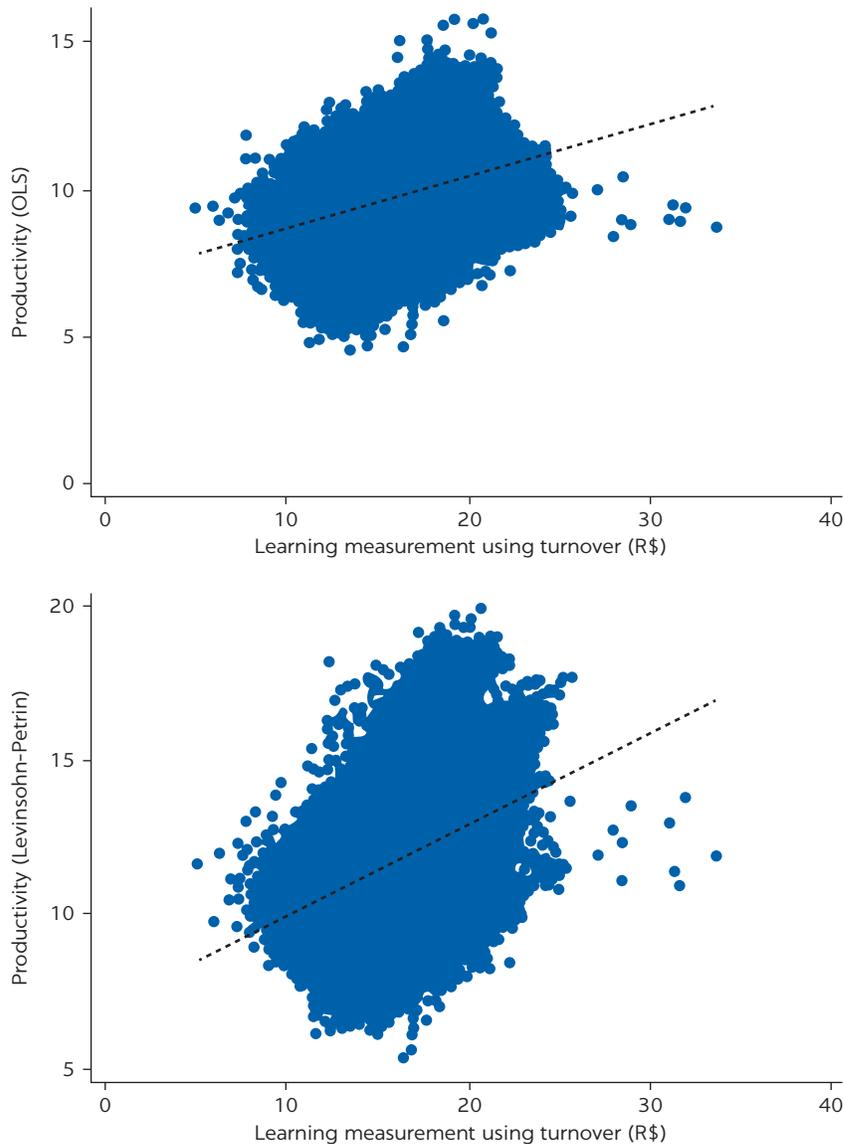
Short average tenure is a feature of Brazil's labor market...



Source: Silva, Almeida, and Strokova 2015.

FIGURE 4.8

...foregoing the higher levels of productivity by learning through longer tenure^a



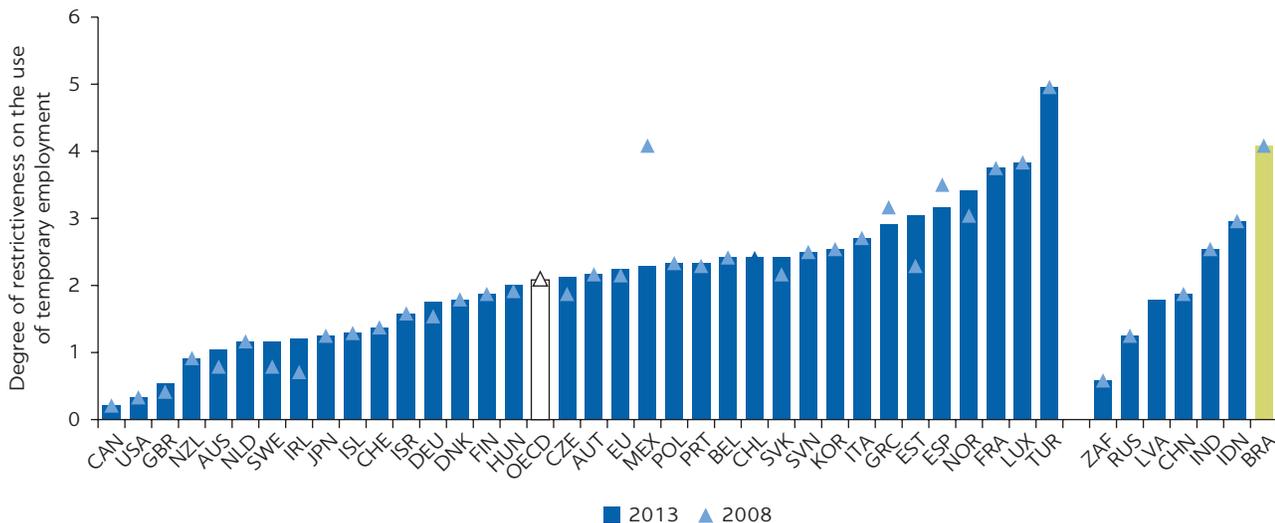
Source: Da Rocha, Pero, and Corseuil 2017 for this report, using RAIS (MTE) and PIA (IBGE) data. Note: Da Rocha, Pero, and Corseuil 2017 find that TFP is higher in firms where turnover is lower and the average employment duration spells are longer—based on matched employer and worker data from administrative registries (RAIS and PIA) analyzed for this report.

average employment duration spells are longer have substantially higher productivity as they develop more firm-specific skills through learning by working (figure 4.8).

Detailed labor code restrictions on firms and a high and rising minimum wage are also likely to limit formal job opportunities—particularly for younger job-seekers. Employers in Brazil have been much more restricted than employers in other countries regarding the use of outsourcing, fixed term and temporary forms of employment (figure 4.9). This makes it difficult for firms to experiment with new technologies and adjust labor and skill inputs to fast-shifting market demands, depriving them of productivity upgrading opportunities.² High, binding statutory

FIGURE 4.9

Brazil has had some of the most stringent restrictions on flexible forms of hiring



Source: OECD 2016.

Note: 0 = no restrictions, 6 = high restrictiveness.

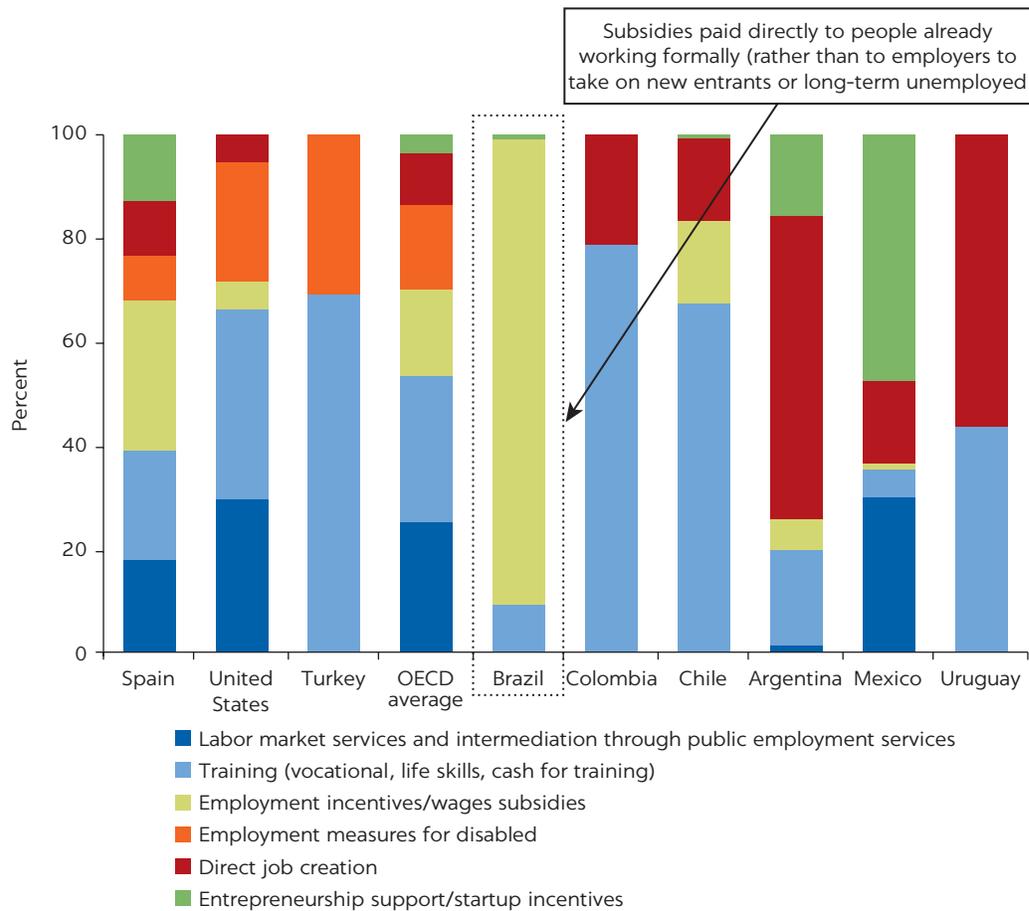
minimum wages raise the costs of lower skilled workers, encouraging the substitution of labor with labor saving technologies, or forcing workers into informality. It is important to note that during Brazil's recent phase of rapid employment creation, the rise in the real minimum wage went hand in hand with increased formalization. This has led some to dismiss concerns that a high minimum wage could encourage informality. However, since the recession of 2015–16, employment creation has been predominantly informal. The pattern of rapid growth in demand for low skilled workers during the 2000s may not be repeated as the sources of growth shift away from non-tradables and consumption. Hence a review of minimum wage policies may be indicated. With respect to labor regulations, recent World Bank research shows that in Brazilian municipalities with more stringent de facto enforcement of such regulations, low-skilled workers in routine and manual tasks are hurt when firms adopt new digital technologies, while higher-skilled workers performing non-routine and cognitive tasks benefit (Almeida, Corseuil, and Poole 2017). In other words, regulations that were meant to protect workers against the effects of competition and technology upgrading have ended up hurting the low-skilled, aggravating resulting inequalities (see also Almeida and Packard 2018).

Finally, the largest portion of Brazil's spending that is classified as "active labor market programs" supports formal job incumbents rather than on-the-job learning by new entrants and the long-term unemployed. Brazil's current active labor market policies are overwhelmingly in the form of wage supplements (*abono salarial*) paid to existing, longer-term formal workers (requiring a five-year history of formal employment for eligibility).⁸ Active programs to assist entry-level workers and the long-term unemployed with job search and initial on-the-job learning experiences are relatively poorly funded—in contrast to most OECD countries that provide significant intermediation services (figure 4.10).

Over the past year, Brazil has started to address the shortcomings of its labor market policies. In 2017, Brazil adopted important changes to its labor code.⁹ The government expects these changes together with a new law broadening the scope for outsourcing and temporary labor contracts to significantly increase the

FIGURE 4.10

The bulk of active labor market policies are as wage subsidies to the long-term employed



Source: World Bank 2018.

flexibility of contractual arrangements between employers and workers, encouraging the creation of new jobs and opportunities for on-the-job learning. The changes are also designed to increase the scope for collective bargaining at the firm level, and make unions more responsive and accountable by abolishing mandatory trade union contributions.

The reforms are expected to facilitate firm level adjustments and may create new opportunities particularly for the less-skilled by offering alternative formal employment options. The reforms are also expected to make work-place relations less adversarial and reign in the abusive use of labor tribunals by limiting the scope of their jurisdiction and assigning costs to discourage frivolous or opportunistic cases. The need to compete for worker contributions may make trade unions more responsive to worker needs. Over time, better matches and more cooperative workplace relations should lead to longer employment spells and lower the high rate of labor turnover, raising on-the-job learning and productivity growth. Whether Brazil's education and labor market reforms enacted in 2017 are sufficient to help the country confront the challenges resulting from accelerated technical change, and mitigate the potential negative effects of external and domestic market integration on specific groups of workers, is not clear however. The next chapter examines some of these risks, and offers additional policy suggestions based on the emerging international evidence.

NOTES

1. The authorities are working on draft legislation to address the division of responsibilities. Improving bank competition may have beneficial effects for the efficiency of financial intermediation. However, by affecting risk incentives, bank competition may also have important implications for financial stability. Therefore, further work may be needed to ascertain the tradeoff between efficiency and stability arising from potential structural and contestability reforms. Equally important, an assessment of the institutional framework for the conduct of competition policy in the financial sector vis-à-vis international best practices may help shed light on potential unintended shortcomings of the current system.
2. Banco do Brasil has 63-percent market share in agriculture finance among households and an 18-percent market share among firms as of end-2016.
3. See Pazarbasioglu et al. (2017) and Bonomo, Brito, and Martins (2015) on the allocation of BNDES resources. Ribeiro and Nucifora (forthcoming) find that the suppliers that used the PSI/FINAME program did not increase labor productivity, and there is evidence suggesting that TFP in these firms declined.
4. See Sztutman and Aldrighi (2014) and Lazzarini et al. (2014) on the links between BNDES funding and donations to winning political candidates. See Carvalho (2014) on the links to regions governed by politicians allied with the federal government, which contributed to shift employment to politically attractive regions.
5. This transition has been accelerated with the convergence of TLP to TJLP as policy rates come down.
6. O'Connell et al. (2017) investigate why vocational training programs are often ineffective and how to enhance effectiveness by comparing PRONATEC-MDIC (a demand-driven program) with the remainder of PRONATEC (non demand-driven). They show that the former had a larger causal effect on employment and earnings (over 8 percent increase in the year following the course) while the latter had no effect. The key difference was course composition: the former offered skill training in occupations that matched higher job demand growth over the subsequent period while the latter had a complete mismatch between courses offered and future business needs.
7. Across Latin American and OECD countries, a more restrictive regulatory framework on firms' human resource decisions, including more cumbersome procedures to dismiss workers, is strongly associated with lower use of digital technologies (see Packard and Montenegro 2017).
8. It is paid to workers earning up to 2 minimum wages (i.e., R\$1,874), and ranges from R\$78 to R\$937 (it is paid on a pro-rata basis, depending on the number of months worked), involving over 24 million workers in 2016, at an estimated cost of R\$16.5 billion, a non-trivial amount.
9. Law No. 13.429 on Outsourcing ("Lei da terceirização") in March; Law No. 13.446 ("Rentabilidade de contas FGTS") in May; Law No. 13.456 ("Programa Seguro-Emprego prazo de vigência") in June; and Law No. 13.467 to the labor code ("Reforma trabalhista") in July.

REFERENCES

- Almeida, Rita, Carlos Corseuil, and Jennifer Poole. 2017. "The Impact of Digital Technologies on Routine Tasks: Do Labor Policies Matter?" Policy Research Working Paper 8187, Washington, DC: World Bank.
- Almeida, Rita, and Truman Packard. 2018. *Competências e Empregos: uma Agenda para a Juventude*. Washington, DC: World Bank.
- Bonomo, Marco, Ricardo Brito, and Bruno Martins. 2015. "The after Crisis Government-Driven Credit Expansion in Brazil: A Firm Level Analysis." *Journal of International Money and Finance* 55: 111–34.
- Carvalho, Daniel. 2014. "The Real Effects of Government-Owned Banks: Evidence from an Emerging Market." *The Journal of Finance* 69 (2): 577–609.
- da Rocha, Pereira L., V. Lucia Pero, and C. Corseuil. 2017. "Turnover, Learning by Doing and the Dynamics of Productivity in Brazil." IPEA mimeo, background paper commissioned for World Bank flagship report on productivity in Brazil, Rio de Janeiro.

- Lazzarini, Sergio G., Aldo Musacchio, Rodrigo Bandeira-de-Mello, and Rosilene Marcon. 2014. "What Do State-Owned Development Banks Do? Evidence from BNDES, 2002–09." *World Development* 66: 237–53.
- O’Connell, Stephen D., Lucas Ferreira Mation, Joao Bevilaqua T. Basto, and Mark A. Dutz. 2017. "Mismatch in Worker Training Programs." Mimeo. http://www.stephenoconnell.org/academic/files/OConnell_JMP2018_WorkerTraining.pdf.
- OECD. 2016. *Going for Growth*. Paris: OECD Press.
- . 2018. *PISA 2015 Results in Focus*. Paris: OECD Press.
- Packard, Truman, and Claudio Montenegro. 2017. "Labor Regulation and Digital Technology Use: Indicative Evidence from Cross-Country Correlations." Policy Research Working Paper 8221, Washington, DC: World Bank.
- Pazarbasioglu, Ceyla, Steen Byskov, Marco Bonomo, Igor Carneiro, Bruno Martins, and Adriana Perez. 2017. "Brazil—Financial Intermediation Costs and Credit Allocation." Discussion paper for workshop, Washington, DC: World Bank.
- Silva, J., R. Almeida, and V. Strokova. 2015. *Sustaining Employment and Wage Gains in Brazil: A Skills and Jobs Agenda*. Directions in Development. Washington, DC: World Bank.
- Sztutman, A. M., and D. M. Aldrighi. 2014. "Financiamento das campanhas eleitorais de 2006 por grupos econômicos e empréstimos do BNDES." Proceedings of the 40th Brazilian Economics Meetings, pp. 1–19, Brazilian Association of Graduate Programs in Economics, Rio de Janeiro.
- World Bank. 2018. *Um Ajuste Justo: Análise da eficiência e equidade do gasto público no Brasil*. Brasilia: World Bank.

5 Productivity Growth with Inclusion

The economic crisis exposed the structural weaknesses of micro-entrepreneur Anismary de Oliveira's business in the favela of Paraisópolis, in the south zone of São Paulo. The default of her customers forced her to leave and open a smaller store. "I do not have the money to open the store anywhere else, nor can I close the company," says Anismary. "The accountant asks me for R\$3,000 to close the company, and I do not have that money."

The story of the Bistrô Estação R&R, from Complexo do Alemão, in the northern part of Rio de Janeiro, is quite different. Even without external financing, owners Marcelo Ramos and Gabriela Romualdo were able to start the first pub offering craft beers in their community, and to expand the business with an affiliate and a franchise. In addition, they started offering their own-branded beer labels: Complexo do Alemão, Nova Brasília and Fazendinha. The location created difficulties in the beginning: "as there is a lot of prejudice, it was difficult initially to buy the beers from the providers. They thought that we would not have a public to appreciate craft beers in the favela," tells Marcelo. The people from the community supported the idea and spreading fame attracted tourists.

These examples show that there is enormous entrepreneurial potential in Brazil. Policies and incentive reforms that reduce the costs of doing business in Brazil and investments in skills and management upgrading can result in increased productivity with a positive impact on the income of the poorest.

ABSTRACT The size of Brazil's productivity gap, given its existing physical and human capital assets, is such that measures to reduce resource misallocation and to increase firm efficiency are expected to generate gains for all Brazilians. However, the reallocation of capital and labor is rarely without

friction, and thus the benefits of increased competition and efficiency are not equally distributed. Poorer workers will gain from lower prices, as they did during Brazil's 1990s trade liberalization. However, some may lose if they are employed in firms or industries that are forced into decline by growing import competition or the adoption of new technologies by leading firms. Simulations for this report suggest that a new round of trade liberalization and increased competition would raise real incomes for the bottom 40 percent on average for each percentile of the income distribution, with almost 6 million people getting out of poverty. Simulations from a complementary study find that all tariffs being reduced to zero would increase the purchasing power of the poorest people by 15 percent. However, there may still be negative individual effects at regional and industry levels, particularly for specific low-skilled workers, even though the overall benefits are large. Policies to boost productivity thus need to be complemented with measures to help firms and workers adjust. Such policies include: (a) measures to facilitate firm entry and expansion (particularly in low skill-intensive industries, including increasing domestic spillovers of FDI through programs supporting local suppliers and prioritizing competition law enforcement to increase production of goods and services relatively more consumed by poor people); (b) increased investment in skills-training and job-search support; and (c) targeted social safety nets. Brazil's policy mix already contains instruments in all three areas, but these are ineffectively deployed. Fixing these policy instruments can ensure that productivity growth becomes the motor for sustained poverty reduction and shared prosperity in Brazil.

Brazil's substantial socioeconomic gains over the past decade, with falling poverty and inequality, are at risk unless it changes its development model. Between 2001 and 2015, Brazil's poverty rate fell from 46 to 22 percent (based on US\$5.50 a day, at 2011 purchasing power parity) and labor income inequality was reduced—although Brazil remains one of the most unequal countries in the world. Labor markets drove shared prosperity, combining rapid job creation and decreased informality with a considerable compression of the wage distribution. Policy also played a role, with transfers helping reduce extreme poverty, wider access to education increasing the supply of skills and thus helping lower the skills premium, and minimum wage increases shifting up incomes. However, as argued in chapter 2, these gains were based on temporary factors most of which are unlikely to persist. As commodity prices have slumped, the economy went into a deep recession, unemployment increased, and the declines in poverty and income inequality have started to be partially reversed.¹ It has become clear that sustaining gains in real income and social inclusion is not possible with a model of consumption based growth, fueled by the commodity price cycle. Productivity growth is key to ensure shared prosperity over time (box 5.1; figures B5.1.1 and B5.1.2).

This chapter first examines how the key drivers of greater productivity—competition and innovation—may also contribute to shared prosperity. It then examines policy options to support those who could be negatively affected by competition and technology upgrading.

INNOVATION, INTEGRATION, AND SHARED PROSPERITY

Many around the world are concerned that recent technological advances may reduce rather than increase economic opportunities for the poor and vulnerable. Innovation is accelerating globally, with some technological changes now taking place at an exponential rather than linear pace and yielding new opportunities from industry 4.0 trends such as artificial intelligence (AI), the internet of things, autonomous vehicles, 3D printing and other advances. These technological shifts may displace unskilled workers, change the patterns of trade, and thus create risks for the poor and vulnerable (Hallward-Driemeier and Nayyar 2017).

BOX 5.1

Across the world, productivity growth offers the opportunity to reduce poverty, foster shared prosperity, and enhance social mobility

Without productivity growth, income growth for less well-off people would be entirely reliant on redistributing resources from rich to poor people.^a No country has succeeded in sustainably eliminating poverty this way. However, it is also true that average growth in productivity and incomes is not always associated with reductions in poverty. Whether this happens depends on whether economic opportunities are broadly shared. There is no necessary tradeoff between productivity and inclusion, nor automatic trickle down. Policy changes that aim to create new opportunities thus need to be analyzed not just from the perspective of their impact on the average worker and household but also on those who may be negatively affected by competition or excluded from new economic opportunities. When losses to specific groups occur, complementary inclusive policies may be needed.

Globally, higher productivity growth has been associated with a greater increase in shared prosperity. Between 2004 and 2014, the income of the bottom

40 percent of the population increased faster in countries with more rapid productivity growth (figure B5.1.1).^b As emphasized by Milanovic (2016) among others, the process of globalization has been extraordinarily beneficial for the world's poor. Innovation has also been a driver of some measures of social mobility in various OECD countries, including in Finland and the United States (Aghion et al. 2016, 2017). Across the globe, the cohort of people born in the 1980s experienced greater social mobility in economies that had higher patent applications per million inhabitants, controlling for GDP per capita in constant 2010 US dollars (figure B5.1.2).^c An increase of 10 percent in country patent applications per million inhabitants is associated with a 0.42 percent higher social mobility. Brazil, too, experienced rapid poverty reduction, but this was achieved despite slow productivity growth and started to revert once favorable external conditions receded.

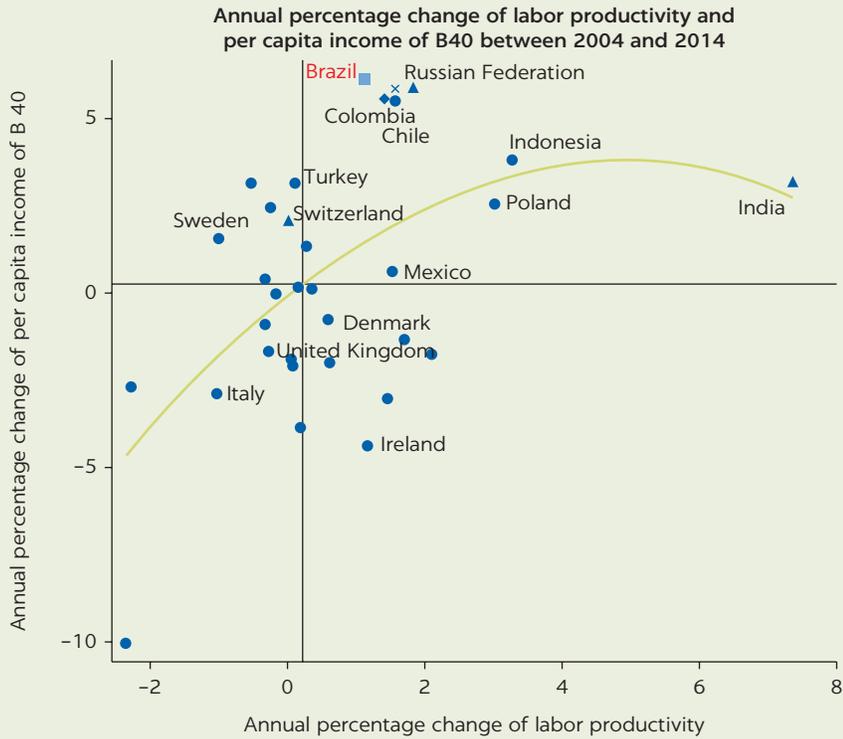
Despite the above evidence, there have been recent concerns that globalization may have

continued

BOX 5.1, continued

FIGURE B5.1.1

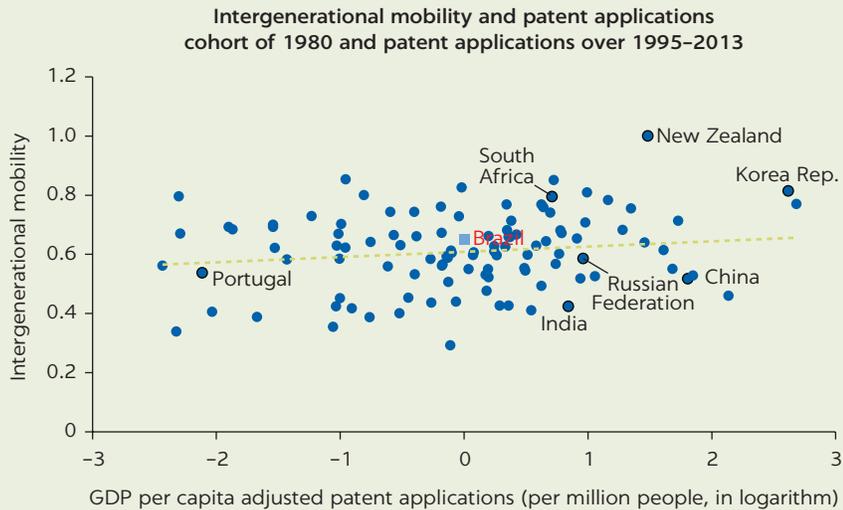
Countries with higher labor productivity growth have greater increases in shared prosperity



Source: Vijil et al. 2018.
 Note: Data are for 2004-14.

FIGURE B5.1.2

Countries with higher patent applications have greater social mobility



Source: Vijil et al. 2018.
 Note: IGE (inter-generational mobility) is the extent to which education of a generation is independent of the education of its parents.

BOX 5.1, continued

contributed to rising inequality (Rodrik 2017). Should Brazil plan for the downsides of opening up and surf on the wave of global technological change while still capturing the substantial up-side? The answer is yes. Is there a necessary trade-off between

productivity gains and shared prosperity? The answer is no, but compensatory inclusion policies are needed to balance aggregate gains and help losers adjust. Brazil can learn from the omissions of others in this regard.

a. Productivity growth, including through improvements in the capabilities of workers and managers, is the only sustainable way to generate more output relative to inputs, namely to have a bigger national economic pie with more output for all people (rather than just increasing the number of machines and the number of other inputs in line with the rate of population growth, which would result in the same amount of output per person). Investing at a higher rate in physical capital than the growth rate in population will increase labor productivity but will quickly face diminishing returns without productivity growth. See also box 1.1.

b. Due to data availability constraints on the income per capita for the bottom 40 percent of the population, there is country heterogeneity in the periods covered by figure B5.1.1.

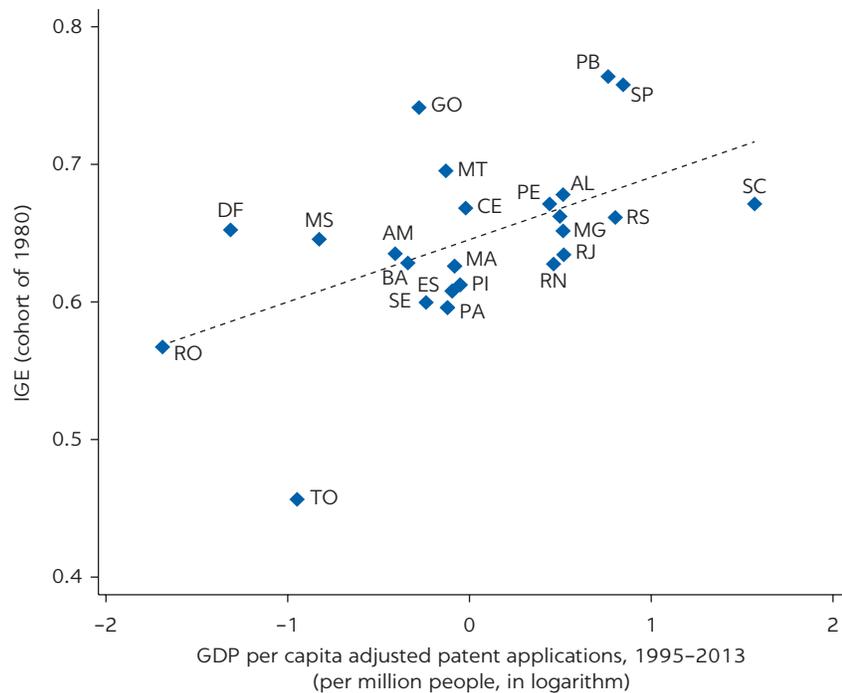
c. Following the forthcoming “Fair progress? Educational mobility around the World” World Bank report, social mobility or intergenerational mobility (IGE) is measured by the extent to which the education of a generation is independent of the education of their parents, using the coefficient from regressions of children’s years of education on the education of their parents. To facilitate interpretation, figures B5.1.2 and 5.1 use the inverse of the indicator, so that an increase can be interpreted as an improvement in social mobility. These social mobility-innovation correlations control for GDP per capita, usually the best predictor of many social-economic indicators such as education levels; and patents is here a proxy for business environments that spur more innovation (and that lead entrepreneurs to allocate their talent to innovative activities rather than rent seeking).

However, these concerns may be less relevant for Brazil than for advanced economies. Brazil’s distance to the productivity frontier is sufficiently large that the effects of technology adoption on enterprise competitiveness and through this on output and demand for workers likely offset any negative impacts on employment from relative price effects and substitution away from lower-skilled workers.^{2,3} In other words, Brazil still has plenty of opportunities to lift all boats through catching-up as has occurred in many emerging markets over the past three decades (Milanovic 2016).

There is also evidence that greater innovation is directly associated with improved opportunities for social mobility. For example, the cohort of Brazilians born in the 1980s living in states with higher patent applications per million inhabitants (controlling for state GDP per capita, constant PPP 2010) experienced higher social mobility; an increase of 10 percent in state patent applications per million inhabitants is associated with a 0.73 percent higher social mobility (figure 5.1). A similar positive association with greater social mobility exists for Brazilians who live in states with relatively higher access to the internet. Assuming that entrepreneurial talent is evenly distributed across the population, innovation opens the door for some less well-off individuals to move from low to high-income within one generation.⁴ A business environment that spurs innovation by new entrants (instead of protecting incumbents) is among the potential drivers of this positive relationship.

The reforms needed to benefit from the new opportunities created by technological advances are the same as those needed to boost domestic integration and global competitiveness. Focusing on the impact of new technologies and shifting patterns of globalization on manufacturing-led job development in developing countries, Hallward-Driemeier and Nayyar (2017) emphasize that manufacturing can remain an important part of a successful development

FIGURE 5.1
Brazilians from states with higher patent applications had higher social mobility



Source: Vijil et al. 2018.

Note: Inter-generational mobility is the extent to which education of a generation is independent of the education of their parents.

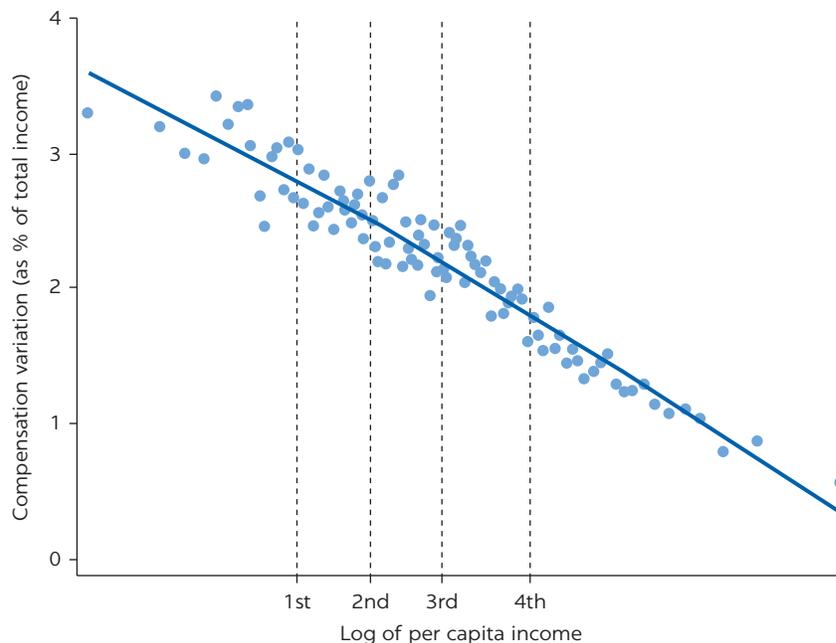
strategy, but the dual benefits of productivity gains and job creation for unskilled workers may come in somewhat different combinations. Services enhanced by digital technologies also will likely provide new opportunities, both tradable services on their own such as financial, ICT and business services as well as services embedded and bundled with manufacturing goods (or “servicification”), such as in pre-production R&D and design and in post-production advertising and marketing, apps on electronic devices and after-sales consulting. Yet these productivity-enhancing products may generate fewer low-skilled jobs at given output levels than less-digitized manufacturing processes.⁵ Hallward-Driemeier and Nayyar (2017) make the case that these challenges require countries to emphasize with even greater urgency the competitiveness of their business environment, the capabilities of their workers and firms, and their country’s connectedness to global markets.

For Brazil, this means that reforms lowering the costs of doing business and supporting adoption of new technologies, including building absorptive capacity through education and management upgrading are urgent. Opportunities risk shifting to other countries. The lack of connectedness and lower levels of capabilities of workers and managers are particular challenges in Brazil that if left unaddressed could jeopardize the realization of these opportunities in both services and “servicified” manufacturing. As discussed in a previous chapter, Brazil is one of the countries with the highest cost of adopting digital technologies. Removing tariffs and special taxes on ICT goods and services could lower prices and increase business and end-user demand. Education and training

policies will need to adapt to exploit ongoing global technological change. The changes in the skills demanded by Brazilian employers require prioritizing innovation policies, changes in education and training policies, more flexible labor markets and increased investments by firms to allow Brazilian companies to take full advantage of new opportunities.

Trade liberalization is another key channel in the link between productivity and inclusion: it increases productivity and can directly reduce poverty through lower prices and expanded output, as shown by Brazil's experience in the 1990s. New findings for this report show that the decrease in tariffs from 30.5 to 12.8 percent between 1990 and 1995 in Brazil benefited all households on average across the income distribution.⁶ Productivity growth induced by trade liberalization was pro-poor through both the labor income and consumption channels. Real income benefits for households in the lowest quintile of the income distribution reached almost 4 percent of total household per capita income while benefits for the highest quintile reached only 2 percent (figure 5.2). This was due to trade opening creating jobs and raising labor incomes proportionately more for lower-skilled, less well-off workers (wages of skilled workers fell relatively to those of less-skilled workers due to a greater reduction in protection for skill-intensive sectors such as electronics, contributing to a decline in the skill premium). Trade opening also lowered prices for tradable goods that were relatively more consumed by the poor (households in the lowest quintile allocated a larger share of their budget to tradables such as food and clothing compared to the higher quintiles spending more on non-tradable services).

FIGURE 5.2
Brazil's tariff liberalization net effect was pro-poor and inclusive on average



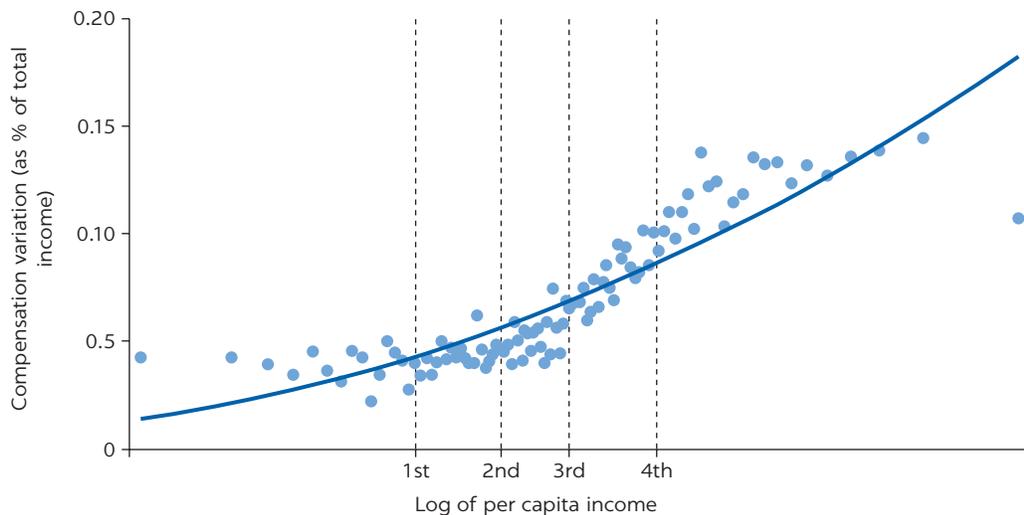
Source: Vijil et al. 2018.

Note: Consumption and wage effects by quintile of per capita income (total).

Further trade liberalization would also benefit the poor on average but less than the better off. If Brazil were to implement a trade reform at the Mercosul level (reducing tariffs by 50 percent with respects to non-Mercosul countries and streamlining NTMs among Mercosul parties), all Brazilian households would benefit on average across the income distribution. The poverty rate could fall by 3.2 percentage points (based on US\$5.50 a day at 2011 purchasing power parity) lifting almost 6 million people out of poverty.⁷ And simulations from a complementary study find that all tariffs being reduced to zero would increase the purchasing power of people in the lowest income decile by 15 percent compared to an average household income increase of 8 percent (Arnold, Bueno, and Pandiella 2017). However, the total gains would benefit relatively better-off people and those in Southern states twice as much as poor people in the rest of Brazil, as the labor market effects affecting the better-off are likely to dominate the consumption effects benefitting the poor. While the poor benefited significantly from tariff reductions on food and beverages in the 1990s, tariffs for these products are already low, and so consumption gains among the poor are more limited. More importantly, tariff reductions on low-skill intensive goods such as clothing and footwear would negatively affect earnings of poor workers in these industries, partially offsetting the average gains from lower prices (figure 5.3 and map 5.1).⁸ Some communities with preponderant employment in declining industries may see increased levels of poverty due to job losses. More economically diversified communities might see simultaneously high employment creation and destruction (Goes, Messa, and Leoni 2017; SAE 2018). Hence it is important to address these risks head-on with complementary policies to facilitate labor mobility, re-training, and job creation including in the most negatively affected regions.

FIGURE 5.3

Further tariff liberalization would benefit all, but benefit the rich more than the poor

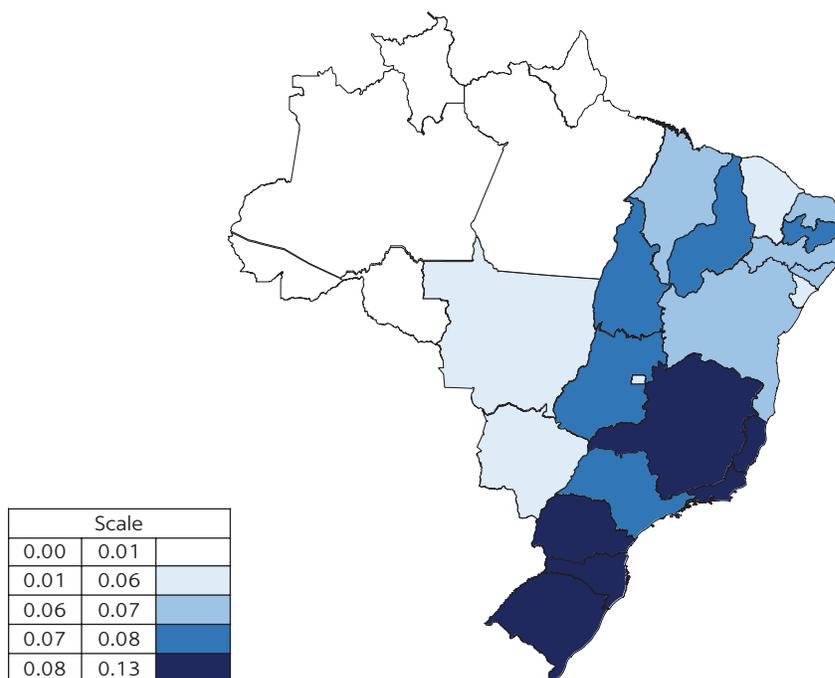


Source: Vijil et al. 2018.

Note: Consumption and wage effects by quintile of per capita income.

MAP 5.1

...and benefit southern states more than the rest of Brazil



Source: Vijil et al. 2018.

Note: The scale is the compensating variation, as a share of total income.

POLICIES TO MITIGATE ADVERSE EFFECTS OF COMPETITION AND TECHNOLOGY SHOCKS

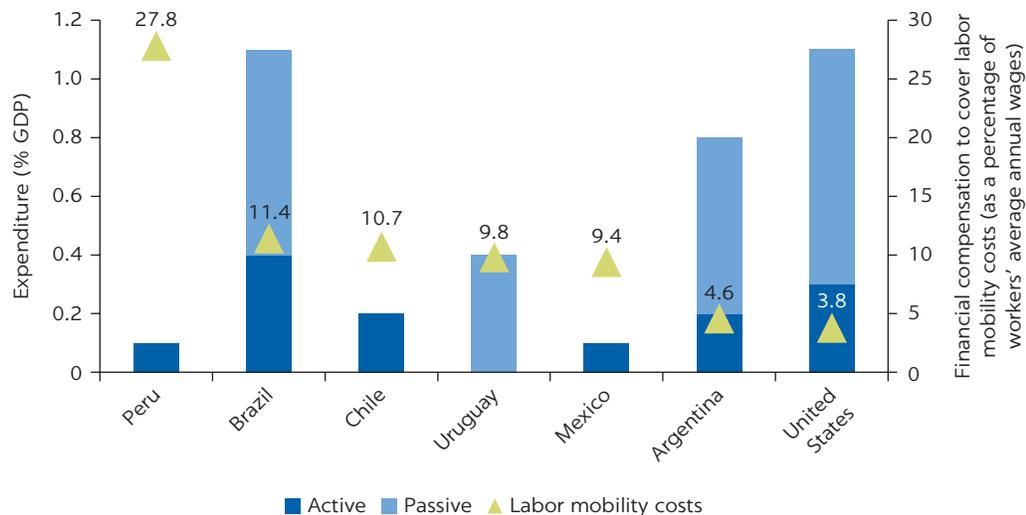
Barriers to labor mobility and limited internal market integration can exacerbate losses and reduce gains from market opening. When workers are impeded from moving to another part of the country to find employment, they and their communities are far more vulnerable to negative shocks associated with changes in relative prices or increased competition. Following the 1990s' trade liberalization, while on average households experienced net gains within each percentile of the income distribution, workers in some regions suffered earnings declines that were three times larger twenty years later than 10 years after.² On the consumption side, barriers to domestic integration and local competition (such as insufficient connectivity infrastructure, differences in state- and municipality-level indirect taxes, and market power in transport, wholesale and retail distribution networks) result in lower costs not being sufficiently passed through to local households in the form of lower prices. The positive impact of trade liberalization in the 1990s on poverty reduction could have been stronger had domestic markets been better integrated: on average only 27 percent of the border tariff reductions were transmitted to local consumption prices across metropolitan areas between 1991 and 1999.

Redesigning passive labor market policies and Brazil's wage supplements for formal workers could help lower-skilled workers adjust to the demands of the market. As discussed in the previous chapter, Brazil has a diverse set of labor market programs, predominantly passive but also active policies. However, these policies are largely targeted towards incumbent job holders in existing jobs,

rather than supporting new job entrants and the reallocation of workers from one firm, sector or region to another. Indeed, high labor mobility costs as a share of average annual wages (figure 5.4) and higher employability constraints faced by the poor impede their full participation in the labor market. Tailoring active labor market programs to the needs of local labor markets could facilitate adjustment of displaced workers, by fostering re-skilling and reinsertion into economically viable jobs. Intermediation services and job-search support is also key, as less educated-workers in Brazil tend to rely more on informal networks to find salaried jobs; and technological advances could augment the efficiency of such services.¹⁰ In addition, allocating more public resources to workers likely to experience higher spells of unemployment, more rapidly activating the link between job-search and training, and introducing performance-based contracts for providers of job-search and training services could benefit the most vulnerable workers. Compensation of moving expenses to workers showing proof of relocation could also be effective in promoting geographical mobility and increasing employment probability and wages.¹¹

Additional resources and programs may be needed for older working people who may be displaced by structural changes. Workers who have been made redundant because of structural changes in the wake of greater regional and global economic integration, or because of the advance of technology and automation, require more assistance than the current set of programs is designed to provide. Workers displaced by structural changes need to upgrade their skills or learn new skill sets. They also can require support to change geography, and active encouragement and coaching to learn about and take advantage of opportunities for redeployment and reinsertion into work. Helping them take advantage of new opportunities in growing industries is more effective than protecting them in uncompetitive jobs (box 5.2). International evidence also suggests the importance of cooperative worker-employer relations in ensuring the benefits of productivity growth in incumbent firms are shared. The competition advocacy authorities may have a role to play to ensure that employers in regions affected by high unemployment do not abuse their resulting monopsony power, although

FIGURE 5.4
Brazil has the necessary institutions to address labor adjustment



Sources: Expenditure data for Brazil (BOOST and WBG calculations); other Latin-American countries (ASPIRE) and USA (SOCX); labor mobility cost data from Cruz et al. (2017).

BOX 5.2

International evidence on programs for people adjusting to structural changes

International evidence suggests that well-targeted labor adjustment assistance programs that create appropriate incentives can minimize mobility costs and accelerate employment transitions. Supporting workers suffering a permanent (systemic or structural) negative change from being formally employed to being unemployed requires a comprehensive package relative to those facing more transient job disruptions. Support in the case of permanent changes typically includes a combination of different types of programs such as job-search assistance, re-skilling, geographical mobility assistance, wages subsidy and income support. Complementary policies and reforms in other markets such as housing, credit and infrastructure also play a crucial role in facilitating adjustment.

Comprehensive labor market programs: The United States Trade-Adjustment Assistance program is a federal program that helps workers through job-search assistance, training, wage subsidies to prospective new employers, health insurance for the unemployed, and reallocation allowances. The program helps workers who have been displaced due to firm relocation to another country or trade liberalization (for workers in the import-competing industry as well as for those employed by downstream or upstream producers). Evaluations show mixed results, including limited effectiveness in helping trade-affected workers obtain reemployment at a suitable wage (Schochet et al. 2012). Critics of the program emphasize that the best reskilling is delivered on the job and have proposed the alternative of “wage insurance”—time-bound payments made directly to workers to reduce the difference between what they earned in the job just lost and the salary in the new job, up to a ceiling. Wage subsidies instead of class-training could encourage workers to be reemployed rapidly while improving their access to on-the-job learning. Another program that implements a comprehensive package of assistance is the Austrian Steel Foundation that helps displaced workers find new work since the privatization of the steel industry, by offering a wide range of services, including vocational orientation programs, small business start-up assistance, extensive training and retraining, formal education, and job-search assistance. The foundation is financed by all participants: the trainees themselves,

the firms, local government through unemployment benefits, and the remaining workers in the steel industry who pay a solidarity share of their gross wages to the foundation. The program has been successful by increasing the probability of participants being employed (Winter-Ebmer 2001).

Mobility assistance: The German moving subsidy for unemployed job-seekers has been effective in promoting labor mobility, with beneficiaries receiving higher wages and finding more stable jobs mainly due to an improvement in the job match (Caliendo, Kunn, and Mahlstedt 2017). Similarly, Romania’s program of reimbursement to unemployed individuals of expenses associated with migration has been effective in improving labor market outcomes (Rodríguez-Planas and Benus 2010). Likewise, the Moving to Opportunity experiment in the United States, which offered randomly selected families housing vouchers to move from high- to low-poverty neighborhoods, increased college attendance and earnings, and reduced single-parenthood rates, provided that the families moved when the children were still young (Chetty, Hendren, and Katz 2016).

Targeted programs that subsequently become larger safety net institutions: Mexico’s PROCAMPO program was established in 1993–94 to compensate crop producers expected to see prices decline after initiation of the North American Free Trade Agreement. It is now the largest agricultural program in Mexico, providing farmers with per-hectare cash transfers that are decoupled from land use. Cord and Wodon (2001) found that PROCAMPO had a positive effect on poverty reduction and a multiplier effect on household income.

Sharing the gains from productivity increases: The Swedish mining industry illustrates how increased productivity following disruptive innovations or international competition can lead to better working conditions (i.e., safety and wages) for people that remain employed in shrinking industries. Unions embrace automation as a competitive advantage that increases efficiency and makes jobs more secure. However, this requires strong union bargaining power for gains from productivity growth to be shared between workers and capital owners, and labor compensation embedded in a larger social welfare system.^a

a. <https://mobile.nytimes.com/2017/12/27/business/the-robots-are-coming-and-sweden-is-fine.html?action=click&module=Top%20Stories&pgtype=Homepage>.

in Brazil's case the high minimum wage already provides a significant level of protection to formal workers.¹²

In addition to supporting workers directly through active labor market policies, competition policy, access to finance, and measures to facilitate the establishment and growth of new firms can considerably ease the adjustment burden and create new opportunities. Competition policy has an important role to play to ensure that consumers benefit from lower prices as a result of market integration. For instance, the Brazilian competition authority (CADE) has recently investigated potential anti-competitive practices in the markets for cement, LPG, retail fuel and salt—all products directly consumed proportionally more by poorer workers or indirectly affecting relatively more the poor.¹³ More generally, policies to reduce barriers to entry and growth of new firms and to cut the operating costs for all businesses can boost the net employment gains from increased competition by allowing high performance companies to rapidly expand output and create more jobs. Overcoming market failures such as information barriers could have a particular positive impact on more innovative companies. The redesign of business support policies along these lines in discussed is the next chapter.

Policies to facilitate access to finance for low-income talented entrepreneurs could bring additional pro-poor gains. Brazil is among the best performers in terms of financial inclusion for households. However, access to finance for firms, farms and entrepreneurs is limited even by low regional standards. SMEs also have more difficulty than larger firms to secure financing. For young and low-income entrepreneurs without a track-record or collateral to post, access to finance is even more challenging. Enhancing financial literacy, together with access to finance policies supporting low-income entrepreneurs could improve the ability of talented poor people to participate in productivity upgrading as capital owners. These will need to be complemented with measures to reduce entry barriers and training in management skills.

Additional measures to improve the insolvency resolution mechanism would also benefit disproportionately the less well-off. Ongoing efforts to reform the insolvency framework, as discussed in chapter 3, would create a more predictable system for lenders and be inclusive by lowering the cost of failure, which disproportionately affects less well-off entrepreneurs. Insolvency reform, with the objective of preserving viable enterprises under temporary distress could also support workers and reduce unnecessary frictional unemployment.

A reduction in trade costs could significantly increase new job opportunities as a result of increased international integration. Recent evidence for Brazil supports this idea, as higher export opportunities at the regional level have led to higher local wages, better employment prospects, decreased labor informality and have incentivized internal labor migration (especially for lower-educated workers) (Aguayo-Tellez et al. 2010; Hering and Pallacar 2015). A significant fall in fixed and variable trade costs for Brazilian exporters is also expected to reduce wage inequality (Helpman et al. 2017). In particular, online trade could contribute towards this goal by leveling the playing field between small and large firms in terms of access to international markets—as exporters pay higher wages and small firms tend to hire disproportionately more lower-skilled workers.¹⁴ Internet access has also been inducing positive jobs and wage effects in medium-skill and high-skill occupations in Brazil's manufacturing sector, and aggregate employment has shifted from sectors with limited expansion opportunities (wholesale and retail trade, public administration, and publicly owned utilities) to sectors with more output

expansion opportunities (such as manufacturing, transport, and finance and insurance) (Dutz et al. 2017). As two-thirds of Brazilian wage inequality arises within industry-occupations for workers with similar observable characteristics, policies that narrow the productivity gap are likely to be associated with lower wage inequality (Helpman et al. 2017).

New technologies, and government support for technological upgrading, can preserve jobs by increasing competitiveness even in industries facing potentially higher competition from abroad. In principle, there are opportunities for upgrading firm capabilities in all industries, including those that have traditionally been viewed as having low technological content. The evolution of *Compania Hering*, a large textile and garment company, contradicts the image of this industry as being static, relatively backward and only surviving behind a high protective tariff wall (box 5.3). It illustrates how support entities like SENAI could promote innovation even in industries where technological development is assumed to play a limited role. SENAI may wish to consider adapting its existing high-tech spaces (*Institutos SENAI de Inovação* or *ISIs*) so that they can promote productivity upgrading in all industries, including traditional industries such as textile and garments. SENAI may also wish to consider broadening the education of manpower in a way that would enable graduates to move into other industries if and when industries such as textile and garments decline (Piore and Ferreira Cardoso 2017).

In considering such options, however, Brazilian policy makers should remain aware of the pitfalls of past attempts. Thanks to the lack of clear objectives, the failure to monitor and evaluate impact, and the lack of coordination across government agencies, business support policies such as those targeting different types of innovation including technological upgrading

BOX 5.3

Policy lessons from *compania hering's* innovations

Compania Hering is one of the 100 largest companies in Brazil, with 7,000 employees, a retail network of 821 stores and a market value of US\$1.25 billion. The company was founded in 1880 in the state of Santa Catarina. The company has historically focused on the production of textiles and garments. To survive the acute economic crisis and trade liberalization of the 1990s, it implemented an innovative production strategy based on the decentralization of production through subcontracting to small firms, a strategy that the garment industry uses throughout the world. Drawing on the outsourcing experience of branded garment manufacturing in the developed world, it adapted that experience through a much greater control exerted over its subcontractors—creating a new model of division of labor in which it kept its core capabilities while promoting spillovers

through the creation of more productive *Facções* (new subcontractors that began as spinoffs led by their own employees to whom *Cia. Hering* provided financing and machinery)—opening up new production facilities in lower-cost Goiás in 1997 and even lower-cost Rio Grande do Norte in 2000.

SENAI supported *Cia. Hering* in new ways, helping upgrade the education of textile engineers and managers, and organizing customized training sessions on both hard and soft skills. For smaller companies, SENAI provided consulting services in areas such as production optimization and business management. With its nearly 70 years of experience, strong regional base and ability to create *ad hoc* programs tailored to the specific needs of local business, SENAI is well-suited to support different types of innovation not only in advanced but in these more traditional sectors.

Source: Piore and Ferreira Cardoso 2017.

have had limited impact and instead have generated new rents that are proving difficult to dismantle. The next chapter considers these pitfalls and offers suggestions for a fundamental re-design of business support policies to complement the efforts at greater competition and market integration advocated in the preceding chapters.

NOTES

1. The Gini and Theil inequality indices do not show a reversal in the income inequality trend by end-2015.
2. See Dutz, Almeida and Packard (2018) and the literature review therein on the impacts of technology adoption on jobs and tasks. In particular, the insights of Bessen (2017) are relevant here: he interprets instances of rapid joint productivity and job increases through a model of heterogeneous final demand, in which price declines in the initial stages of productivity growth make formerly prohibitively expensive products affordable for mass consumption, yielding a large positive demand response. Brazil may be in this early stage for many goods and services that could benefit from both productivity increases and significant price reductions spurred by more competition.
3. Cirera and Sabetti (2018) show for a large sample of firms in developing countries and emerging markets that when innovation implies the successful introduction of products, new or upgraded, employment within firms grows at a similar rate as sales.
4. Aghion et al. (2016) find that an increase in the number of patents per inhabitants in US cross-community zones by 10 percent is associated with a 0.7 percent higher probability for a person to belong to the fifth quintile when parents belonged to the first quintile of the income distribution; and this relationship is mainly driven by innovation from new entrants (instead of incumbents). Likewise, Aghion et al. (2017) find that becoming an inventor enhances both intragenerational and social mobility in Finland.
5. Internet access induced positive jobs and wage effects in medium-skill and high-skill occupations in Brazil's manufacturing sector (Dutz et al. 2017). In Mexico, a 10 percent increase in the share of labor using the internet was associated with a 6 percent, 11 percent and 0.6 percent increase in the number of blue-collar workers in manufacturing, services and commerce, respectively, due to output expansion effects (Iacovone and Pereira-López 2018). Acemoglu and Restrepo (2018) provide a framework for the study of the implications of AI and automation on jobs. They emphasize that, beyond the productivity (output expansion) and displacement (substitution) effects, the creation of new labor-intensive tasks (such as engineering, back-office, management, finance, advertising and customer relations) is a powerful additional countervailing force against the job displacement effect of automation. In conclusion, they emphasize the urgency of better understanding the distributional implications of these new technologies, the political economy reactions to them, and the design of new and improved institutions for creating more broadly shared gains from these technologies.
6. Results are derived from estimations that control for regional, product and year fixed effects to account for unobservable features specific to these dimensions. Therefore, the estimations control for the effects of the economic stabilization plan that are not related to tariff liberalization, such as measures to tackle hyper-inflation.
7. Measures to improve the price transmission implemented in parallel could lift an additional 2.7 million people out of poverty.
8. These results are based on a general equilibrium framework looking at the skill intensities of employment and relative price and wage changes across industries. Arnold et al. (2017) use exogenous exchange rate movements as proxies for changes in trade protection and intensity of competition. They find that only a very few sectors would likely reduce their activities in Brazil as trade barriers fall, namely textiles and shoes. However, these studies do not account for the possibility of improvements in productivity through learning and capabilities upgrading as a result of increased competition discipline if public policies supported such upgrading, which in principle could then result in output expansion and increased sales.

9. This was driven by imperfect labor mobility and declining labor demand (Dix-Carneiro and Kovak 2017a, 2017b). Slow inter-regional labor mobility was due to entrepreneurs waiting that their capital investments depreciate fully before closing their firms, and due to negative regional agglomerations effects that amplified the fall of labor income in regions adversely affected by import-competition relative to other regions.
10. Cruz et al. (2017a) illustrate how mobility costs in Brazil tend to be smaller for workers with relatively better access to online technologies, based on workers' internet intensity use by industry as a proxy for access to information.
11. These policies are based on successful international evidence (Hollweg et al. 2014; Silva, Almeida, and Strokova 2015; Caliendo et al. 2017).
12. Emerging evidence in this area suggests that competition enforcement has an important role to play in impeding monopsony behavior in localities affected by structural change (see US Council of Economic Advisory 2016).
13. Anti-competitive practices in cement and retail fuel markets affect relatively more the poor through higher consumer prices for goods transported by road, higher public transportation prices or more expensive public housing policies for the poorest (OECD 2013). Similar effects on the poor from lack of competition have been found in other countries (Argent and Begazo Gomez 2015; World Bank 2016b).
14. The inclusion benefits from universal, high quality, high speed cost-competitive broadband especially outside of the Southeast and the better-off metropolitan regions could be significant. Cruz, Milet, and Olarreaga (2017b), based on a cross-country study, find that a 1 percent increase in the share of online exports leads to a 0.01 percent decline in the wage skill premium, reducing wage inequality—with this relationship driven by countries that have a large share of employment in small firms.

REFERENCES

- Acemoglu, Daron, and Pascual Restrepo. 2018. "Artificial Intelligence, Automation and Work." National Bureau of Economic Research Working Paper 24196, January, Cambridge, MA.
- Aghion, P., U. Akcigit, A. Hyytinen, and O. Toivanen. 2017. "Leaving the American Dream in Finland: The Social Mobility of Inventors." Mimeo, Cambridge, MA.
- Aguayo-Tellez E., M.A. Muendler, and J. Poole. 2010. "Globalization and Formal Sector Migration in Brazil," *World Development*, 38(6): 840–56.
- Almeida, Mansueto, Renato Lima-de-Oliveira, and Ben Ross Schneider. 2014. "Política Industrial e Empresas Estatais no Brasil: BNDES e Petrobras." Texto para discussão, IPEA, Brasília.
- Argent, J. T., and T. P. Begazo Gomez. 2015. "Competition in Kenyan Markets and Its Impact on Income and Poverty: A Case Study on Sugar and Maize." Policy Research Working Paper 7179, Washington, DC: World Bank.
- Arnold, J., M. Bueno, and A. González Pandiella. 2017. "Much to Gain and Little Pain: Evaluating Economic Effects of a Stronger Integration into the Global Economy in Brazil." OECD Economics Department Working Paper, Paris: OECD.
- Bessen, James. 2017. "Automation and Jobs: When Technology Boosts Employment." Boston University Law and Economics Working Paper 17-09, Boston, MA: Boston University.
- Caliendo, M., S. Kunn, and R. Mahlstedt. 2017. "Mobility Assistance Programmes for Unemployed Workers, Job Search Behavior and Labor Market Outcomes." IZA Discussion Paper Series 11169, Bonn: The Institute for the Study of Labor.
- Chetty, R., N. Hendren, and L. Katz. 2016. "The Effects of Exposure to Better Neighborhoods on Children: New Evidence from the Moving to Opportunity Experiment." *American Economic Review* 106 (4): 855–902.
- Cirera, Xavier, and Leonard Sabetti. 2018. "The Effects of Innovation on Employment in Developing Countries: Evidence from Enterprise Surveys." *Journal of Industrial and Corporate Change*.
- Cruz, M., E. Milet, and M. Olarreaga. 2017a. "Labor Adjustment Costs across Sectors and Regions." Policy Research Working Paper 8233, Washington, DC: World Bank.

- Cruz, Marcio, Emmanuel Milet, and Marcelo Olarreaga. 2017b. "Online Exports and the Wage Gap." Policy Research Working Paper 8160, Washington, DC: World Bank.
- Cord, L., and Q. Wodon. 2001. "Do Mexico's Agricultural Programs Alleviate Poverty? Evidence from the Ejido Sector." *Cuadernos de Economía* 38 (114): 239–56.
- Dix-Carneiro R., and B. Kovak. 2017a. "Trade Liberalization and Regional Dynamics." *American Economic Review* 107 (10): 2908–46.
- . 2017b. "Margins of Labor Market Adjustment to Trade." Mimeo, Duke University, Durham, NC.
- Dutz, Mark, Rita Almeida, and Truman Packard. 2018. *The Jobs of Tomorrow: Technology, Productivity and Prosperity in Latin America and the Caribbean*. Directions in Development. Washington, DC: World Bank.
- Dutz, Mark, Lucas Ferreira Mation, Stephen D. O'Connell, and Robert D. Willig. 2017. "Economy-Wide and Sectoral Impacts on Workers of Brazil's Internet Rollout." *Forum for Social Economics* 46 (2): 160–77.
- Goes, C., A. Messa, and E. Leoni. 2017. "Análise prospectiva dos efeitos heterogêneos de uma liberalização comercial sobre o mercado de trabalho." Mimeo, Brasília.
- Hallward-Driemeier, M., and G. Nayyar. 2017. *Trouble in the Making? The Future of Manufacturing-Led Development*. Washington, DC: World Bank.
- Helpman, E., O. Itskhoki, M. Muendler, and S. Redding. 2017. "Trade and Inequality: From Theory to Estimation." *Review of Economic Studies* 84: 357–405.
- Hering, L., and R. Paillacar. 2015. "Does Access to Foreign Markets Shape Internal Migration? Evidence from Brazil." *The World Bank Economic Review* 30 (1): 78–103.
- Hollweg, C., D. Lederman, D. Rojas, and E. Ruppert Bulmer. 2014. *Sticky Feet: How Labor Market Frictions Shape the Impact of International Trade on Jobs and Wages*. Directions in Development. Washington, DC: World Bank.
- Iacovone, L., and M. Pereira-Lopez. 2018. "ICT Adoption and Wage Inequality: Evidence from Mexican Firms." Policy Research Working Paper 8298, Washington, DC: World Bank.
- Milanovic, Branko. 2016. *Global Inequality: A New Approach for the Age of Globalization*. Belknap Press, Cambridge, MA.
- OECD (Organisation for Economic Co-operation and Development). 2013. "Competition and Poverty Reduction: Contributions from Brazil to the Global Forum on Competition." Directorate for Financial and Enterprise Affairs Competition Committee, OECD, Paris.
- Piore, M., and C. Ferreira Cardoso. 2017. "SENAI + ISIs: The Silicon Valley Consensus Meets Organizational Challenges in Brazil." MIT-IPC Working Paper 17-005, MIT, Cambridge, MA.
- Rodriguez-Planas, N., and J. Benus. 2010. "Evaluating Active Labor Market Programs in Romania." *Empirical Economics* 38: 65–84.
- Rodrik, Dani. 2017. *Straight Talk on Trade: Ideas for a Sane World Economy*. Princeton, NJ: Princeton University Press.
- SAE. 2018. "Abertura Comercial para o Desenvolvimento Econômico." *Relatório de Conjuntura* No. 3, March, SAE, Brasília.
- Schochet, P. Z., R. D'Amico, J. Berk, S. Dolfen, and N. Wozny. 2012. *Estimated Impacts for Participants in the Trade Adjustment Assistance (TAA) Program under the 2002 Amendments*. Princeton, NJ: Mathematica Policy Research.
- Silva, J., R. Almeida, and V. Strokova. 2015. *Sustaining Employment and Wage Gains in Brazil: A Skills and Jobs Agenda*. Directions in Development. Washington, DC: World Bank.
- United States Council of Economic Advisory. 2016. "Labor market Monopsony: Trends, Consequences and Policy Responses." October Issue Brief, Washington, DC: USCEA.
- Vijil, M., V. Amorim, M. Dutz, and P. Olinto. 2018. "Productivity, Competition and Shared Prosperity." Mimeo, Washington, DC: World Bank.
- Winter-Ebmer, R. 2001. "Evaluation of an Innovative Redundancy-Retraining Project: The Austrian Steel Foundation." IZA Discussion Paper Series 277. Bonn: The Institute for the Study of Labor.

- World Bank. 2016a. *Retaking the Path to Inclusion, Growth and Sustainability*. Report 101431-BR, Brazil Systematic Country Diagnostic. Washington, DC: World Bank.
- . 2016b. *South Africa Economic Update: Promoting Faster Growth and Poverty Alleviation through Competition*. 8th edn, Washington, DC: World Bank.
- . 2016c. “Restrições Regulatórias Relacionadas à Concorrência em Serviços de Engenharia no Brasil.” Mimeo. Washington, DC: World Bank.
- . 2016d. “Uma Breve Análise das Restrições Regulatórias Relacionadas à Concorrência em Serviços de Advocacia, Contabilidade e Arquitetura no Brasil com base nos Indicadores de Regulação do Mercado de Produtos da OCDE.” Mimeo. Washington, DC: World Bank.

6 Principles and Institutional Arrangements for Better Policy Design

Created in 1964, the electronics manufacturer Gradiente benefited for decades from state subsidies in the Manaus Free Trade Zone and from the protection of a closed market, in which imports of electronics were prohibited. By 2007, it had become one of the 100 most valuable brands in Brazil. However, the opening of the market in the 1990s and the end of some parts of the Informatics Law brought price and quality competition to Brazil from foreign competitors. Unable to keep up with the modernization of the global electronics industry, the company sought judicial recovery in 2010 after 46 years of activity. In addition, plans to reopen the factory in the Manaus Free Trade Zone in 2015 were canceled.

ABSTRACT If past policies to boost productivity have been persistently ineffective and have been so costly, what explains the failure to change them? This chapter explores several factors that explain the persistence of distorted policies. The first key factor is linked to the historic interventionist role that the state has had in economic development in Brazil, which has interacted with a fragmented structure of decision making. As a result, policy-making institutions have not been able to adopt cross-cutting reforms for the common good; instead, policies in the public interest have been substituted by transactions that ended up securing privileged benefits undermining competition and reinforcing rent seeking. A second important factor is the lack of clear objectives. Even though the overall objective of growth is a nationally shared aspiration, individual policy interventions have rarely had clear objectives. As a result, impact is seldom measured in relation to stated objectives and effectiveness is often unknown. This has favored a proliferation of business support policies as there is no evidence to rationalize them. A third key factor is lack of coordination, primarily driven by a multitude of institutions that have fragmented

the policy space, often in the pursuit of their own narrow agenda. Overcoming this mutually reinforcing vicious circle requires a broad institutional and policy revision—based on addressing market failures and supported by new institutional arrangements that generate policies with greater transparency, contestability linked to evidence of impact, and better coordination. These institutional features are needed to minimize rent seeking and support the policy shift required to realize Brazil’s productivity promise.

WHY BUSINESS SUPPORT POLICIES DO NOT INCREASE PRODUCTIVITY IN BRAZIL

Business support policies in Brazil have been dominated by an activist state-led approach with deep historical roots. Since the 1930s, when in the context of rising global protectionism Brazil adopted import substitution, policy makers have followed a state-led and interventionist model of development.¹ Between the 1940s and the 1980s, this generated one of the highest growth rates in the world as the economy was undergoing the early stages of structural transformation—which mainly involved the transfer of resources from subsistence agriculture to manufacturing and services. However, the structure of Brazil’s economy and the pace of global technological dynamism have changed dramatically since then, with most of the labor force already in services and firms now requiring the spur of market competition to innovate, generate within-firm productivity growth and pull the rest of the economy along with them.² While the 1990s saw a partial opening of trade and a greater role for the private sector, many of the state-led interventions were not removed and were intensified since 2003. After the global financial crisis, a need to support global demand provided the justification for an increasing array of state interventions through directed credit, price controls, and state-owned enterprises. The global commodity price boom provided the resources and back-drop to the expansion of state intervention in the second half of the past decade. Yet, the failure of this approach to sustainably boost growth and increase productivity is now evident as is the institutional damage created by a transaction-based approach to policies in which businesses narrowly seek firm or industry-specific privileges. Once privileges are granted, it becomes enormously difficult to wean businesses off government support, and attempts to increase competition are regularly countered by calls for additional subsidies.

The distortions created by these business support policies have thus become an integral component of a higher *Custo Brasil*. Brazil’s business support policies are not a compensation to businesses that is unrelated to *Custo Brasil*, as some lobby groups claim, but a large component of it. Brazil faces the paradox that the private sector remains uncompetitive despite generous government support and healthy profit margins, while the growing fiscal costs of business support policies (more than 4.5 percent of GDP in 2015) represent an increasing burden on Brazil’s economy (including through the high tax rates needed to finance an expansive state).

Apart from their ineffectiveness and fiscal cost, business support policies have also undermined the entire policy-making framework. Over recent years, business support policies evolved from attempts to stimulate business, often with little evidence or performance indicators, into a transactional marketplace

in which policies and support were often bought and sold for political contributions.³ The evidence from the *Lava-Jato* investigation provides extensive documentation of the workings of the system that involved the direct purchase of public policy decisions in the form of laws and decrees: payments from oil and other rents were used to influence executive decrees and legislation, obtain tax breaks, and circumvent regulatory oversight such as CADE decisions unfavorable to specific firms (Lima-de-Oliveira 2017a). An important cost of this approach is that policy-making institutions in Brazil have been hollowed out. It is the reconstitution of these institutions that will be essential for the formulation and implementation of effective business support policies.

ADDRESSING INSTITUTIONAL FAILURES

The main weaknesses of the current institutional policy-making system are three-fold: (a) lack of transparency in the stated policy objectives and the market failure that the policy seeks to address; (b) lack of proper evaluation of each program; and (c) insufficient coordination. Brazil business support policies have been designed to benefit particular firms and industries. Few of these policies seem to have had the explicit objective of promoting productivity growth although some shifts have recently occurred in this direction.⁴ It also appears that most of these policies were designed without an explicit and adequate logical framework, without stating the identification of market failures that the policy seeks to address or the expected impacts, and without considering a projection of expected benefits relative to costs.

The absence of a transparent and clear objective for each policy, in turn, has impeded an effective evaluation of most policies. This means that the public does not know whether policies work and how much they cost, undermining reallocation of budget resources to more effective business support policies or towards other priorities such as public investments or inclusion programs. Evaluations should ideally be included in the program design before it is launched. However, no recent government program aimed at businesses has benefited from such an *ex ante*-designed evaluation.⁵ There is virtually no analysis, for instance, of the impact of the large and long-standing Zona Franca de Manaus tax exemption program. No set of programs has benefited from a competitive allocation of resources over time to the most effective and cost-efficient programs, and away from less effective programs. And no program has a sunset clause for terminating it absent rigorous evidence of cost-effective positive impact, a common practice in several OECD countries. Finally, there is very little available analysis of the income incidence of the various programs, key to understand if these programs benefit poor people.

Fragmentation of policy making and administration across multiple ministries and agencies further undermine the effectiveness and efficiency of business support policies. No centralized agency exists to coordinate Brazil's business support policies. The bias in favor of state intervention has spawned a whole alphabet soup of special agencies all responsible for a small and often overlapping part of business support. Services and support programs to businesses, primarily manufacturing, are planned, funded, coordinated and/or provided by entities including MDIC, CAMEX, APEX, MCTIC and MEC, BNDES, FINEP, EMBRAPII and sectoral funds (FNDTC), ABDI, inter-ministerial councils, MEI, FIOCRUZ, CNPEM, IPT, CENPES/Petrobras and

INPI, and SEBRAE, SENAI, RENAI, ANPEI, IEL ANPROTEC, in addition to other line Ministries and state governments.⁶ This translates into a myriad of initiatives that often compete for beneficiaries and overlap in terms of objectives. Only for supporting innovation, CNI (2017) mapped 53 different instruments from different agencies either public or private with public funding.

This multiplicity of agencies with overlapping objectives means that each pursues a narrow agenda, unlinked to the economy-wide development objectives of the country and with limited coordination. Ineffective instruments crowd out potentially more effective instruments. Agencies often compete for resources and beneficiaries, with unclear targeting. The low impact is exacerbated by the lack of an appropriate productivity strategy that can mobilize, coordinate and align different policy instruments.

DESIGNING EFFECTIVE PRODUCTIVITY POLICIES AND INSTITUTIONS

International experience suggests that virtually no country has achieved high income levels without effective business support policies, but this requires functioning institutions that minimize rent seeking. Thus, dismantling the existing policy framework in Brazil should not mean the elimination of all state support. Instead, the focus of reform should be on changing institutional frameworks to ensure the design and implementation of policies that promote competition, facilitate economic and social adjustment—and avoid rent-seeking. The current political conjuncture represents a unique opportunity in the history of Brazil to rewrite the rules for business support policies.

Designing a new generation of effective business support policies demands a new institutional framework and the rationalization of existing policy-making institutions. These new institutional arrangements need to be based on three key principles: (a) greater transparency in policy design and implementation, identifying the market failure that policies seek to address and minimizing the risks of government failure; (b) greater contestability of policies based on rigorous evidence of impact; and, (c) effective coordination, both within and between government departments, and between government and business.

Transparency

A first principle for new institutional arrangements is the need for transparency to be built into policy design and implementation. Making explicit and transparent the objective and market failure that the policy seeks to address disciplines the use of policy instruments and facilitates the evaluation of these programs. Policymakers should ask why the specific intervention is required and spell out the channels through which it can effectively address the existing market failures and achieve impact. This necessary transparency and accountability is key to minimize the capture of policies and institutions by politicians and businesses.

Transparency also implies minimizing the risk of government failure. The identification of the market failure is a necessary but not sufficient rationale for government intervention. It is also important to ensure that the benefits to

the economy from any intervention outweigh the associated costs including the costs of any government failures in the design and implementation of the intervention—linked among others to imperfect information by government of productivity-related firm needs, government capture and the creation of rents as well as outright corruption (Hevia et al. 2017). Policy agencies need to seriously consider this risk of government failure if the capabilities for implementation are limited, and the programs are not well designed. This requires enhanced implementation capacity via active training and good talent management of technical staff managing such policies, in addition to good design, learning and evaluation processes.

Most importantly, this transparency will undermine the use of compensatory policies that benefit specific firms and industries over others—which has become the norm more than the exception in recent years. The problem with some of the existing distortionary policies is not the choice between economy-wide (horizontal) versus industry-specific (vertical) policies; some innovation or export policies, for example, can be industry-specific by nature (such as supporting export pioneers, digital startup programs or technological frontier R&D programs, among others). The problem lies in using policies to support specific companies or industries without any notion of the underlying market failure and the potential of the firm or industry to become more productive and grow as a result of government support. The lack of clear objectives makes government policy particularly vulnerable to lobbying and rent-seeking. Addressing this institutional failure requires, in addition to greater transparency, a new institutional framework for government-business dialogue that helps to identify the real obstacles and market failures faced by firms. This new framework would provide for a coordinated reduction of industry- and firm-specific benefits and their replacement by coherent evidence-based, time bound policies conditioned on performance.⁷

Evidence-based and contestable policies

A second principle is a shift towards contestable policies based on rigorous evidence. No agent, including the state, has sufficient knowledge to make choices on sectoral priorities or national champions. This lack of knowledge implies that all policies and programs of support, even when evidence-based, require mechanisms to ensure that they are working in line with their stated objective, to adjust them initially if they are not, and to close them if they fail to deliver adequate results. In this sense, business support policies are a learning process, and not one of predetermined recipes. Effective policies require strong design and implementation processes, with embedded learning mechanisms to facilitate continuous improvement of existing programs in the light of evidence.

This implies that existing policies need to be revised according to whether the policy had a positive impact and was cost-efficient relative to possible lower-cost alternatives. Using this evidence effectively requires the design of institutional frameworks and processes, such as mid-term evaluation reviews, that could be conducted periodically by the Comitê de Monitoramento e Avaliação de Políticas Públicas Federais (CMAP), as well as the creation of specialized evaluation departments in line Ministries with the mandate of evaluating their portfolio of instruments. More importantly, it requires the use of the information of existing evaluations to shape the design of the policy when these

exist (see for example extensive evaluation of innovation policies in Turchi and de Morais (2017)) and end them when ineffective.

Effective business support policies need to employ market-compatible incentives whenever possible. In cases where public policy is required to redress a market failure, for instance regarding firm upgrading or training schemes, employing market-compatible incentives is likely to lead to better allocation of resources. For example, it is important to make sure that although subsidized, the marginal costs of training or extension policies should be paid by the beneficiaries, so costs fall on the beneficiaries if they do not subscribe. As shown in the case of the training program PRONATEC-MDIC (O'Connell et al. 2017), when the private sector is involved in designing the training priorities, the program shows better outcomes.

Coordination

A third principle is the creation of effective coordination mechanisms, both within government across departments and between government and business—including the need for an effective public-private dialogue mechanism to solve productivity-related bottlenecks. A key measure to remove fragmentation and enhance coordination within government is the rationalization of business development agencies to reduce and better determine the roles of the multiplicity of line ministries and existing institutions such as BNDES, EMBRAPA, FINEP, ABDI, and EMBRAPIL. This needs to be complemented by a clear institutional focus on evaluating policy interventions, with a mandate to review and pronounce upon all executive and legislative measures to support productive enterprises. The goal of these changes is to be able to embed the principles of transparency and accountability, policy contestability and coordination into policy-making institutions.

A key measure to enhance coordination is a more structured institutionalization of productivity policies. In several countries, institutions to support productivity growth have been developed to ensure coherent and effective development policies. Perhaps the most well-known and longest established example is the Australian Productivity Commission.⁸ Any new institution or adaptation of existing institutions along these lines should be endowed with the mandate and resources to monitor and evaluate productivity-related policy proposals and policies in the process of implementation.² Such an institution would act as a technical body with deep understanding of productive sectors and with the capacity for unbiased analysis. This will minimize the risk that ineffective policies are launched and then become permanent, not only failing to solve the problems that they were intended to solve, but also providing incentives for entrepreneurs to dedicate their most valuable and creative resources into seeking support and protection rather than investing in innovation.

More effective government-business coordination, in turn, requires a new institutional framework for government-business dialogue that facilitates the solution of coordination failures linked to the provision of public goods. This new framework is necessary to transform the existing government-business dialogue from transactions and compensation to identifying key bottlenecks that constrain productivity growth. Efficient production by firms often requires highly specific public inputs, such as supportive laws and regulations, phytosanitary permits, quality standards and accreditation, transport and other

infrastructure specific to a particular location and to the needs of individual industries. Such public inputs are a form of coordination externality, benefiting all firms in the specific industry. They are typically under-provided in private markets absent government intervention in the broader public interest (Sabel et al. 2012). Their absence can prevent productivity growth, while their presence can enhance it (see box 6.1).¹⁰

Lasting success in developing effective business support policies will also depend on wider institutional changes taking place within Brazil's political system. The most important measure to strengthen Brazil's development prospects and to ensure sustained productivity growth and shared prosperity will be the generation of the political consensus to support a reform program and the establishment of institutional mechanisms to ensure that future policy choices are subject to scrutiny for effectiveness and abandoned if found wanting. The political crisis generated by the *Lava-Jato* investigation and the urgent need for long-term structural reforms makes it possible that such changes will be forthcoming. The current crisis is thus an opportunity to build new institutional arrangements, reduce the privileges and protection granted to a select few, and thereby to build a new Brazil.

BOX 6.1

Solving public-private coordination problems: The cautionary tale of Brazil nuts, and the persuasive case of Peru's mesas ejecutivas

Brazilian firms used to dominate the Brazil nut market—to such an extent that the product still carries the country's name. In July 1998, EU authorities decided as of 1999, they would enforce tighter sanitary standards, including permissible levels of aflatoxins (a carcinogenic substance produced by certain molds living on edible nuts). To retain access, Brazilian producers would have to upgrade their capabilities; however, they have been unable to work cooperatively and lost access to the EU market entirely. In contrast, Bolivian producers prevailed because they joined forces to revamp their manufacturing practices and meet EU sanitary standards—with firms and government working together to mandate that all outgoing shipments be tested for aflatoxin, and acquiring a lab to fulfill testing requirements. By 2010, 77 percent (in value) of all Brazil nuts consumed worldwide were processed and exported from Bolivia.

In the period between December 2014 and May 2016, the Ministry of Production of Peru created eight Mesas Ejecutivas (MEs, or Executive Working Groups): six industry-specific or vertical (forestry, aquaculture, creative industries, textile, gastronomical and agroexports) and two cross-industry or horizontal (logistics

and high-impact entrepreneurship). MEs are public-private working groups to identify and remove specific bottlenecks and add missing public inputs. Government helps address specific identified public inputs such as reduction of red tape, help to comply with technical requirements for new export markets, invest in specific public infrastructure or help design an industry-specific training program—but does not provide tax exemptions or subsidized credit. As an example, the forestry ME obtained coordination between different public entities across line ministries and different levels of government to solve specific jointly identified public good-type bottlenecks. Achievements include a new law and regulation recognizing plantation trees as crops, removing the requirement of a permit to extract wood from plantations, and reducing registration of plantation properties from up to one year to 3 days. A new protocol with the same timber resource standard at national, regional and local government levels has been passed. Investors and reforestation companies have started a process to establish, for the first time, a business association that represents their interest. And some of the largest global forest funds have started to invest in Peru.

Sources: Coslovsky 2014, and Ghezzi and Uttervulghé 2017.

NOTES

1. Cuadros (2016) argues that the historical roots of State capitalism go much further back: when José da Silva Lisboa, the Viscount of Cairú, wrote *Princípios de Economia Política* in 1804, which was supposed to be an adaptation of Adam Smith's *The Wealth of Nations*, he replaced the concept of the invisible hand with: "The sovereign of each nation must be considered the chief or head of a vast family, and thus care for all those therein like his children, cooperating for the greater good."
2. Schumpeterian growth theory may explain why policies that seemed to work in the 1940-80s have failed in more recent times: in this framework, technical progress is driven by creative destruction, whereby new innovations spurred by market competition replace older technologies (for a compelling framework linking market competition to growth through creative destruction, see Aghion, Akcigit and Howitt 2014). However, the effect of competition is ambiguous: when existing firms are very far away from the technology frontier, increasing competition could discourage them from innovating because they don't feel they have a chance to win and survive. For firms that are closer to the frontier, the effect is the opposite: only thanks to competition will these firms innovate. Failure to subject such firms to competitive pressures may lead them to get complacent, or indeed spend resources on lobbying government to keep their protected status intact. This phenomenon was observed not just in Brazil but in much of Europe and several other emerging markets, many of which engineered a policy shift over the past three decades to regain economic growth and continue converge towards high income.
3. Limoeiro and Schneider (2017) argue that two features of Brazilian politics were especially consequential for the growth in illegal business-government transactional relations: appointive bureaucracy (the number of appointive positions of the executive branch increased from 18,212 to 22,961 between 2003 and 2013, versus about 5,000 positions filled in the United States by political appointment and only several dozen in most European governments) and coalitional presidentialism (a majoritarian electoral system for the president and a proportional system for congress which fragments parties, leaving even the most popular president without majority support from his/her party in congress and requiring distribution of pork and patronage to build coalitions). The dynamics between these two features and illegal business-government relations became aggravated with the significant increase in available resources because of the discovery of pre-salt oil in 2007 (Lima 2017).
4. Some policies have been recently introduced with the direct objective of increasing productivity, such as *Brasil Mais Produtivo* at MDIC, a relatively low-cost, rapid intervention program launched in 2016 with the objective of improving productivity in specific production processes of selected enterprises based on lean manufacturing practices. Other similar interventions are implemented by SEBRAE, SENAI or ABDI, often with the objective of increasing productivity via innovation. However, the relative budget of these interventions in relation to total business support is very small.
5. Even those programs that have benefited from impact evaluations such as SIMPLES (Piza 2016; Corseuil and Moura 2017), *Lei do bem* (Zucoloto et al. 2017) or *Lei de Informática* (Kannebley and Porto 2012) were evaluated *ex post*; and none of the findings influenced a redesign of the policies to increase effectiveness.
6. See the illustrative table of innovation institutions by type of function in Limoeiro and Schneider (2017). They emphasize high levels of fragmentation and little overall coordination as a key feature of Brazil's institutions and policies, with state actors also not well connected to business and university research. However, they also argue that fragmentation and decentralization may at times yield effective outcomes, as in the United States, provided that it is combined with other factors including a longer-term, mission-driven focus that is sheltered from the negative aspects of coalition presidentialism; and they cite a few "islands of excellence" that have occurred in Brazil, such as Embraer, flex-fuel autos allowing flexible ethanol use, deep water oil exploration and exploitation, and the production of soybeans in tropical, semi-arid areas.
7. This framework should include representatives of business (agricultural, manufacturing and services), labor, consumer and government. They would first agree on a new set of principles to underlie all business policies supporting productivity, and

- second provide a forum for the identification of issues and problems impeding development for analysis and recommendations by an evidence-based productivity institution.
8. The APC was established in 1998 as a public entity with a remit to provide evidence on policies and issues related to productivity, in a transparent and independent manner. Although an advisory body, its findings carry weight with the Government, because of its independence and expertise. Policies derived from its recommendations are also more likely to attract a consensus, as they will not be seen to favor any specific interest group. Similar institutions have also been established in countries such as Chile, Denmark, Mexico, New Zealand and Norway, although much more recently. See Banks (2015) and Renda and Dougherty (2017).
 9. The new institutionalization of a Secretariat for Promotion of Productivity and Competition Advocacy in the Ministry of Finance in Decree No. 9.266 of January 15, 2018, with a Subsecretariat specifically focused on innovation, appears to be a positive step in this direction.
 10. An interesting example of government-business coordination in Brazil is the National Trade Facilitation Committee. The Committee brings the participation of many different private stakeholders, which reportedly has helped to coordinate ministries and governmental agencies to promote trade facilitation reforms.

REFERENCES

- Aghion, Philippe, Ufuk Akcigit, and Peter Howitt. 2014. "What Do We Learn from Schumpeterian Growth Theory?" In *Handbook of Economic Growth*, edited by Philippe Aghion and Steven N. Durlauf, vol. 2, 515–63. Cambridge, MA: Elsevier.
- Banks, Gary. 2015. "Institutions to Promote Pro-Productivity Policies: Logic and Lessons." In *OECD Global Dialogue on the Future of Productivity*. Mexico City: OECD Publishing. http://www.oecd.org/eco/growth/Institutions_to_Promote_Pro_Productivity_Policies_Logic_and_Lessons_revised_Banks.pdf.
- CNI. 2017. *mei tools: Ferramentas para promover a inovação nas empresas*. Brasília: CNI publishing.
- Corseuil, Carlos Henrique L., and Rodrigo Leandro Moura. 2017. "O Impacto do Simples no Nível de Emprego da Indústria Brasileira." Mimeo. IPEA, Rio.
- Coslovsky, Salo V. 2014. "Economic Development without Pre-Requisites: How Bolivian Producers Met Strict Food Safety Standards and Dominated the Global Brazil-Nut Market." *World Development* 54: 32–45.
- Cuadros, Alex. 2016. *Brazillionaires: Wealth, Power, Decadence, and Hope in an American Country*. Chicago: Spiegel & Grau.
- Ghezzi, Piero Eduardo, and Steve Utterwulghe. 2017. "Public-Private Dialogue for Modern Industrial Policies: Towards a Solutions-Oriented Framework." Washington, DC: World Bank. <http://documents.worldbank.org/curated/en/222441504197210483/pdf/P162579-07-06-2017-1499370465883.pdf>.
- Hevia, Constantino, Norman Loayza, and Claudia Maria Meza Cuadra Balcazar. 2017. "Industrial Policies vs Public Goods under Asymmetric Information." Policy Research Working Paper Series 8052, Washington, DC: World Bank.
- Kannebley, Sérgio, Jr., and Geciane Porto. 2012. "Incentivos Fiscais à Pesquisa, Desenvolvimento e Inovação no Brasil: Uma avaliação das políticas recentes." Washington, DC: Discussion Paper 236, Inter-American Development Bank.
- Lima-de-Oliveira, Renato. 2017a. "The Carwash Pandora's Box: Business-Government Relationship in Brazil." Background paper for Productivity Flagship for Brazil, Washington, DC: World Bank.
- . 2017b. *The New Politics of Oil: Industrial and Technology Policy in Brazil, Mexico, and Malaysia*. PhD dissertation, Cambridge, MA: MIT Press.
- Limoeiro, Danilo, and Ben Ross Schneider. 2017. "State-Led Innovation: SOEs, Institutional Fragmentation, and Policy Making in Brazil." MIT-IPC Working Paper 17 (4). Cambridge, MA: MIT Press.

- O'Connell, Stephen D., Lucas Ferreira Mation, Joao Bevilaqua T. Basto, and Mark A. Dutz. 2017. "Mismatch in Worker Training Programs." Mimeo. http://www.stephenoconnell.org/academic/files/OConnell_JMP2018_WorkerTraining.pdf.
- Piza, Caio. 2016. "Revisiting the Impact of the Brazilian SIMPLES Program on Firms' Formalization Rates." Policy Research Working Paper 7605, Washington, DC: World Bank. <http://documents.worldbank.org/curated/en/901421467995383598/Revisiting-the-impact-of-the-Brazilian-SIMPLES-program-on-firms-formalization-rates>.
- Renda, Andrea, and Sean Dougherty. 2017. "Pro-Productivity Institutions: Learning from National Experience." *OECD Productivity Working Papers* 2017 (7): 1–44.
- Sabel, Charles, Eduardo Fernández-Arias, Ricardo Hausmann, Andrés Rodríguez-Clare, and Ernesto Stein, eds. 2012. *Export Pioneers in Latin America*. Washington, DC: Inter-American Development Bank.
- Turchi, Lenita Maria, and José Mauro de Moraes, eds. 2017. *Políticas de Apoio à Inovação Tecnológica no Brasil: Avanços Recentes, Limitações e Propostas de Ações*. Brasília: IPEA.
- Zucoloto, Graziela, Ferrero, Bruna Goussain Santana, Leandro Justino Pereira Veloso, and Sérgio Kannebley Jr. 2017. "Lei do bem e produtividade das firmas industriais brasileiras". In *Políticas de Apoio à Inovação Tecnológica no Brasil*, edited by Lenita Maria Turchi and José Mauro de Moraes, pp. 295–332, Brasília: IPEA.

7 Realizing Brazil's Productivity Promise

A PRIORITIZED SET OF OPTIONS

Accelerating productivity gains to allow inclusive economic growth requires significant changes in policies and institutions. This report has shown that there is little prospect of sustained income gains in Brazil without enhancing competition and tackling the vast policy-induced barriers to productivity growth. This requires a significant change in public policies across a range of areas, reorienting state intervention and creating greater space for Brazilian firms to compete in domestic and international markets. In addition, policies to support the necessary adjustment of workers and firms and shelter those unable to benefit immediately from new opportunities are needed as a complement.

The necessary reforms are ambitious and their implementation needs to be gradual, persistent, and properly sequenced—and supported by credible policy commitments. A fast and complete reform process is neither realistic nor advisable. It is not realistic due to political economy considerations, institutional fragmentation and limited government capacity to implement. It is not advisable since policy-induced distortions and the high costs of doing business have created uncompetitive groups of firms, most of which cannot immediately adjust successfully. However, gradual and sequenced reform programs face their own challenges. Political resistance can concentrate on individual steps, potentially sapping scarce political capital. When reforms get stuck or risk being reversed, even steps already taken may have limited impact as economic actors prefer to wait and see. Credible policy commitments are thus needed to provide an anchor to the required policy shift and allow support for the new policy framework to build on the basis of results achieved over time, while reducing the risk of policy reversals.

Regional and preferential trade agreements offer one possible anchor for the policy shift advocated here, supported additionally by Brazil's recently enacted fiscal rule. The shifting political landscape in both North and South America has created new momentum for a review of Brazil's trade policy framework in the context of Mercosul and its—so far limited—participation in preferential trade agreements. A commitment to a gradual, coordinated trade reform at the Mercosul level, apart from generating significant welfare gains as discussed in chapters 3 and 5, would create a predictable market context,

allowing businesses to prepare for an increase in external competition and workers to adjust and upgrade their skills. Additionally, Brazil's constitutional rule, freezing spending in real terms over a 20-year period, will necessitate a careful review of all public spending (World Bank 2017b). A review of Brazil's extensive but poorly targeted business support policies would simultaneously help level the playing field and encourage new entrants, as well as provide the opportunity to create new market-compatible support mechanisms. The fiscal anchor makes a careful evaluation of trade-offs a necessity. This in turn could reduce resistance and encourage businesses to adjust more rapidly and to gain first-mover advantages.

At the heart of the changes advocated in this report is a different relationship between businesses and the state. Addressing the lack of competitiveness of many enterprises, in addition to creating adequate incentives and a competitive environment, requires a rethinking and rebalancing of existing business support policies. Policies need to shift from transaction and compensation to addressing the key constraints to competitiveness—including strengthening firm capabilities for innovation and competitiveness, prioritizing technology adoption and diffusion, while facilitating the adjustment of uncompetitive incumbents. This requires rebalancing public initiatives from their current sectoral focus to broad innovation support—including management upgrading programs, programs that strengthen linkages from local suppliers to Global Value Chains (GVCs) and large enterprises, and that facilitate technology adoption. It also requires moving from generic R&D tax incentives, which are costly and ineffective, to target potentially innovative ventures with evidence-based policy instruments. The reform proposals summarized below need to be seen in the light of this underlying change in the relationship between businesses and the state. Only if augmented by a different set of business support mechanisms will the changes in economic incentives resulting from the removal of policy-induced distortions achieve their full effect.

This report concludes with a set of short and medium-term suggestions that could set the basis for an inclusive productivity agenda for Brazil. These suggestions are based on international experiences and the evidence presented in this report, but do not constitute a comprehensive policy map. Some measures are already being implemented or under preparation, others are presented as initial contributions to the policy debate. In line with the structure of the report, the policy suggestions are grouped into three broad areas:

- External and domestic market integration and other product market competition policies
- Financial and labor market reforms
- Institutional reforms.

EXTERNAL MARKET INTEGRATION

There are several short-term opportunities to reduce trade costs and thus facilitate the greater integration of Brazil into the global economy. As outlined in chapter 3, Brazil imposes several nontariff related costs on importers and exporters because of cumbersome and poorly coordinated border control procedures. The *Portal Único de Comércio Exterior* attempts to unify border clearance procedures under one online portal. Its extension to 100 percent of export transactions and subsequent inclusion of import transactions would considerably

reduce the cost of trade for Brazilian companies.¹ The Authorized Economic Operator system additionally introduces a risk-based “green” export and import channel for low risk transactions. Again, its expansion would be a relatively simple but effective way to reduce the costs of trade. In addition, Brazil currently imposes local content requirements on several industries, in some cases directly hurting their international competitiveness. As demonstrated by the recent successful tenders of new oil exploration and production licenses where such requirements were significantly relaxed, they can reduce the investment attractiveness of Brazil and keep the country below potential.

Brazil's trade policy reform needs to be coordinated within Mercosul, but even current rules provide some flexibility for unilateral reduction of tariffs. Brazil's obligations under Mercosul provide some room for reduction of tariffs on specific product lines including all information and communication technology (ICT) and capital goods, which the country could use to signal commitment to trade liberalization and reduce distortions in specific product markets while stimulating investment and innovation.² Beyond the short-term, Brazil's trade policy agenda needs to be coordinated with Mercosul partners. This concerns both the reduction of nontariff barriers within Mercosul and the collective reduction of tariff barriers with third parties. Specifically, the reduction of tariff rates in the context of new Preferential Trade Agreements or unilaterally under WTO provisions would generate significant welfare gains and stimulate efficiency improvements among domestic producers. Brazil should take advantage of the shifting global trade policy landscape and consolidate and increase ongoing efforts for new trade agreements such as those between Mercosul and the European Union, the European Free Trade Association, Canada and India, among other partners. In preparation for gaining greater market access in global markets, Brazil should strengthen its domestic quality assurance system (e.g. INPI & INMETRO). The recent meat scandal and resulting temporary export bans for Brazilian meat producers highlight the importance of such measures to secure market access including in areas where Brazil already demonstrates a strong competitive advantage.

DOMESTIC MARKET INTEGRATION

Brazil has announced a series of microeconomic reforms aimed at reducing the cost of doing business and thereby facilitate domestic market integration. These reforms include a federal system for simplifying and unifying business registration requirements (REDESIM), following the recent example of some Brazilian cities such as São Paulo. This could reduce entry barriers and encourage the creation of new businesses to provide opportunities for Brazil's youth (Almeida and Packard 2018) as well as for those who have lost their jobs in the recent recession or may see their occupations under threat because of trade opening and technological changes. The simplification and unification of tax filing requirements would similarly reduce operations costs for businesses (measures in this regard are already under way, such as the unified tax declaration system SPED, the expansion of e-social for all social security and payroll tax obligations, and the introduction of electronic tax invoices for services). Neither reform creates any evident losers and thus may represent a potential quick-win.

A lot more could be done to improve the competitive environment in Brazil's domestic market, but the required reforms are complex and require

careful preparation. Among the most important measures to ease the cost of doing business is a comprehensive tax reform. Various proposals are under discussion, but the most important principle underlying such reform should be the simplification and unification of tax rules across territorial jurisdictions and the elimination of the manifold exemptions (including reforming the largely ineffective SIMPLES as discussed in chapter 3). This will need to be combined with a review of inter-governmental fiscal relations to establish clear tax sharing rules that create appropriate incentives for local governments to collect revenues and provide resources commensurate with expenditure assignments. Additionally, business regulations that impede competition particularly in the provision of professional services could be reviewed and approximated to OECD best practices. The enforcement of anti-trust action could also be strengthened.

Measures to improve connectivity are critical to facilitate both external and domestic integration. Past initiatives in this area have failed to achieve the desired results because of weaknesses in planning, project selection and appraisal, sector regulations, procurement, and contract management among others. The creation of the PPI under the President's administration is a step towards better coordination and has already led to some notable successes in recent international tenders in both the transport and electricity sectors. A draft law on strengthening the autonomy of regulatory agencies under review in Congress would mark a significant additional step forward, as would the review of procurement and environmental licensing rules (see World Bank 2017a for details). As argued in chapters 3 and 5, Brazil's comparatively high costs for ICT are a further obstacle and could be reduced through a review of sector regulations (such as interconnection charges), tariffs on imports, and a concerted effort to improve the country's backbone infrastructure. The upcoming completion of existing telecom license agreements provides an opportunity to update the policy framework.

FINANCIAL MARKET REFORMS

Brazil has taken significant steps to reduce credit market distortions in the past couple of years. As outlined in chapter 4, the introduction of the Taxa de Longo Prazo (TLP) marks a major step forward in creating a more level playing field in access to credit. Combined with the sharp fall in Brazil's policy interest rate since early 2017, this has increased competition among financial institutions for attractive and credit-worthy borrowers and should over time improve access to credit for Brazilian companies.

The principles of the TLP's design could be easily extended beyond the FAT, as well as to the agricultural and housing finance markets, where directed credit policies persist on a sectoral basis without regard for the ability of borrowers to access credit at market conditions. A more targeted credit policy, for instance to support the shift to low carbon agriculture or to finance pasture restoration or reforestation activities that are not viable at market rates, could save money and provide incentives to accelerate the move to more sustainable agricultural practices. In this way, it would help Brazil maintain its competitive advantage in agriculture even considering increasing constraints in water and land resources and Brazil's international climate commitments. In the housing market, too, a transition towards market-based financing for better-off

households and for commercial real estate is feasible, allowing state support to be focused on social housing.

Refocusing corporate finance provided by BNDES towards SMEs, start-ups and innovators could help overcome imperfections in the credit market related to information asymmetries and risk aversion by commercial banks. There are good examples from other state development banks that have refocused their support on innovation and small and medium enterprise (SME) finance with considerable success (Frischtak et al. 2017). Additional support could be targeted towards low-income entrepreneurs and towards households in areas affected by negative economic shocks (including to encourage mobility). Complementing access to finance with management training could facilitate the adoption of new business practices critical for enhanced efficiency, as outlined in chapter 3. In the area of infrastructure finance, the public banks should increasingly play the role of catalysts in enabling project finance, including by leveraging Brazil's considerable domestic capital market assets.

LABOR MARKET REFORMS

Labor market reform has been at the center of policy debate in Brazil this past year. The government's reform of the labor code marks a significant departure from a set of rules largely dating from the 1930s. As outlined in chapter 4 and the companion piece to this report focusing on job opportunities for youth (Almeida and Packard 2018), the expected impact of this reform is positive. However, a lot more could be done to help labor markets adjust more quickly to the expected shifts in economic opportunities resulting from greater external and domestic market integration, and to ensure Brazil makes best use of the final wave of its demographic transition. Key reforms in this regard include: (a) a review of wage subsidies (*Abono Salarial* and *Salario Família*) to refocus them, respectively, on the activation of young job seekers and the long-term unemployed, and very low earners (in close coordination with *Bolsa Família*); (b) a reform of the FGTS and *Seguro Desemprego* to reduce incentives for excessive worker turnover while providing adequate assistance for those temporarily unemployed (combined with stringent job search requirements); and (c) accruing 100 percent of the fines for dismissals without just cause to the FAT to reduce incentives for collusion between workers and employers and increase the resources available for active labor market policies.

In addition to the above policy measures, Brazil's training and job placement system could be significantly strengthened. Following the encouraging example of the PRONATEC/MDIC training program, all government supported training and re-skilling programs should have much closer coordination and cooperation with business to ensure labor market relevance. A change in incentives for job and training centers, including potentially outsourcing such services, has been demonstrated to be effective in increasing job placements in a number of OECD countries. To assist those affected by negative economic or technological shocks, training and activation support should be carefully focused with most resources concentrated on those suffering from longer spells of unemployment, including potentially the provision of mobility support for workers in locations suffering structural decline.

Improvements in the quality of Brazil's education system are a key component of the productivity agenda. Chapter 4 demonstrates how despite significant investments and dramatic improvements in access, education outcomes in Brazil still lag most of its peers. Almeida and Packard (2018) provide a more in-depth analysis of youth disengagement, highlighting how the low quality of education or limited perceived relevance can lead youth to lose interest and underinvest in learning even though expected returns are high. More broadly, if there is one consensus about the implication of the latest wave of global technological change it is that it provides far more opportunities for the better skilled. Any medium-term reform strategy to boost productivity thus must include further efforts to improve education outcomes, building on the fundamental reform of the *Ensino Medio* adopted in late 2016.

INSTITUTIONAL REFORMS

The reform agenda outlined above is complex and challenging. While some quick wins are possible, the necessary deeper reforms to trade policies, domestic goods and services, capital and labor markets, and inclusion policies will require careful design and take time to implement. It is thus critical that such reforms are embedded in an appropriate institutional framework as outlined in chapter 6.

In the short-run, three priorities for institutional changes stand out. First, it is important to reduce the current fragmentation of policy making across multiple agencies with overlapping mandates. There should be one agency responsible for export promotion, one for innovation, one for technological extension services, etc. Second, the government should consider adopting productivity growth as a central policy objective and explaining its importance to all citizens. This is critical to overcome misconceptions, such as the fear that productivity growth may mean the rationalization of jobs when in fact it mostly means the creation of new and more sustainable employment opportunities. Third, the government should consider placing an early priority on the evaluation of all existing business support policies. This would include an inventory of all such policies, the elimination of policies known to be ineffective, the establishment of clear criteria for any new business support measures, and corresponding monitoring and evaluation systems. Any business support measures should be based on an assessment of the underlying market failure and incentives provided should ideally be market compatible (e.g. providing matching grants instead of straight transfers, or credit enhancement instead of interest rate subsidies).

Over the medium-term, Brazil may wish to consider some institutional innovations that have helped other countries provide a focal point for a coherent productivity agenda. Among the experiences reviewed in chapter 6 which Brazil could consider are the establishment of a productivity commission (such as Australia's), the creation of an institutionalized public-private sector dialogue mechanism to overcome coordination failures (such as the *Mesas Ejecutivas* in Peru), or the creation of a policy lab that encourages experimentation in business support policies. The establishment of a central coordinating unit for the productivity agenda would appear to be particularly important to ensure the formulation of clear objectives, the insistence on rigorous evaluation of all policies in partnership with third parties such as academia, and the dissemination of good practices. Indeed, such a unit with a strong mandate could be the center-piece of the advocated change in the relationship between business and the state.

Managing such an ambitious reform process requires a clear game-plan and strong political ownership to ensure the necessary coordination among different agencies and stakeholders. The various institutional reform options reviewed here can help overcome coordination problems but they are no substitute for political leadership. What this report has tried to do is to show why Brazil's productivity agenda is both urgent and promising. It belongs to Brazil's political leaders to put this challenging reform agenda into practice. Brazil's future shared prosperity may well depend on it.

NOTES

1. Ferraz (2014) estimates significant benefits arising from full implementation of Portal Único, such as an annual increase of 6–7 percent in trade flows and an increase of 10 percent in Brazilian exports of manufactured goods.
2. CAMEX has recently reduced import tariffs from 2 percent to 0 percent for ICT and capital goods without national production.

REFERENCES

- Almeida, Rita, and Truman Packard. 2018. *Competências e Empregos: uma Agenda para a Juventude*. Washington, DC: World Bank.
- Ferraz, Lucas. 2014. *Impactos da Facilitação do Comércio sobre a Indústria de Transformação no Brasil*. Rio de Janeiro: Fundação Getúlio Vargas.
- Frischtak, Claudio, Ceyla Pazarbasioglu, Steen Byskov, Adriana Hernandez Perez, and Igor Andre Carneiro. 2017. "Towards a More Effective BNDES". Finance and Global Markets Report No. 117304. Washington, DC: World Bank.
- World Bank. 2017a. *Back to Planning: How to Close Brazil's Infrastructure Gap in Times of Austerity (English)*. Washington, DC: World Bank. <http://documents.worldbank.org/curated/en/386151499876913758/Back-to-planning-how-to-close-Brazils-infrastructure-gap-in-times-of-austerity>.
- . 2017b. *Um ajuste justo: análise da eficiência e equidade do gasto público no Brasil: Volume I: síntese (Portuguese)*. Washington, DC: World Bank. <http://documents.worldbank.org/curated/en/884871511196609355/Volume-I-síntese>.

Appendix A

Analytical Background Papers

The following studies were developed specifically for this report:

- “Brazil’s Productivity Dynamics,” Rong Qian, Jorge Thompson Araujo, and Antonio Nucifora
- “Brazil’s Globalization and Integration of Output Markets Agenda,” José Guilherme Reis, Mariana Iooty, José Signoret, Tanja Goodwin, Martha Licetti, Alice Duhaut, and Somik Lall
- “Agriculture Productivity Growth in Brazil: Recent Trends and Future Prospects,” Diego Arias, Pedro Abel Vieira, Elisio Contini, Barbara Farinelli, and Michael Morris
- “Efficient Financial Allocation and Productivity Growth in Brazil,” Pietro Calice, Steen Byskov, and Eduardo Pontual Ribeiro
- “Skills, Labor Markets and Productivity in Brazil,” Truman Packard
- “Productivity, Competition and Shared Prosperity,” Mariana Vijil, Vivian Amorim, Mark Dutz, and Pedro Olinto
- “New Institutional Arrangements for New Policies in Brazil,” Roland Clarke

These studies are available here: <http://documents.worldbank.org/curated/en/docsearch/projects/P162670>.

ECO-AUDIT

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Brazil's economic growth has been disappointing over the last three decades, because of a productivity breakdown. This book is the most comprehensive and rigorous diagnosis of the reasons behind the productivity breakdown. The authors dig deep into the market and, more importantly, government failures in capital, credit, and labor allocation that explain why misallocation of resources has hampered growth. Excessive intervention in factor markets, and lack of competition in input and product markets, are the reasons for the productivity breakdown. The book goes the extra mile and outlines an evidence-based policy strategy that will boost inclusive growth. It is essential reading for all interested in the Brazilian economy, especially policy makers.

João Manoel Pinho de Mello

*Secretary for the Promotion of Productivity and Competition,
Brazil Ministry of Finance*

The timely and judicious work of the World Bank demonstrates the ineffectiveness of Brazilian public policies, especially those of subsidies and financial and tax incentives, to raise the average per capita income between 1990 and 2016, based on the United States. This result, unacceptable, becomes even more dramatic when compared to the trajectory of countries with similar and even lower income profiles. For Brazil to grow again in a sustained manner, and achieve the goal of being a country with high per capita income and lower social inequality, we need to reverse the recent trajectory of stagnation and even decreased productivity of production factors, which has been extensively analyzed in the report. We need to act without delay and the agenda of changes necessarily goes through the search for the improvement of the business environment in the country. The work of the World Bank details a number of initiatives, including ending inefficient policies of incentives and allocating these resources to innovation and support for workers, reducing external and internal barriers to competition, expanding and improving infrastructure, and simplifying the tax system.

María Silvia Bastos Marques

*Former President, BNDES (Brazil's National Bank
for Economic and Social Development)*

This World Bank book about productivity is a must-read for all who care about this crucial theme for improving the well-being of the Brazilian population. In addition to providing new evidence about productivity, it offers a conceptual framework for interpreting existing facts, based on the diagnosis that the lack of internal and external competition distorts factor allocation and reduces efficiency. The policy recommendations combine technical rigor with special attention to implementation details and social consequences.

Fernando Veloso

*Researcher, Brazilian Institute of Economics/
Getulio Vargas Foundation*