Public Disclosure Authorized

The Brazil of the Future

Towards Productivity, Inclusion, and Sustainability

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Acknowledgments

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1. Darlene Damm (2022) Future Trends and Their Likely Impact on Brazil.

2. Fernando Veloso and Gabriel Zaourak (2023) Brazil 2042: productivity and growth in Brazil.

3. João Marcelo Borges and Breno Salomon Reis (2022) Education and Skills in Brazil.

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7. Ioannis Kospentaris and Gabriel Zaourak (2022) Labor Market Effects of a Generous Public Sector.

8. Martijn J. Burger, Martijn Hendriks, and Elena I. Ianchovichina (2022) A Tale of Growing Discontent and Polarization: Analysis of Brazil's Subjective Well-Being in the 2010s.

9. Daniel Bonatto Seco, Gabriella Gontijo, Ignacio García, Isabella Lins, Javier Bundio, and Vinicius Buso (2022) Digitally Mapping Social Contract Networks in Brazil. (Report prepared by Tree Intelligence)

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11. Marta Arretche (2022) The Path to 2022—Brazil's Socio-economic Development in a Historical Perspective.

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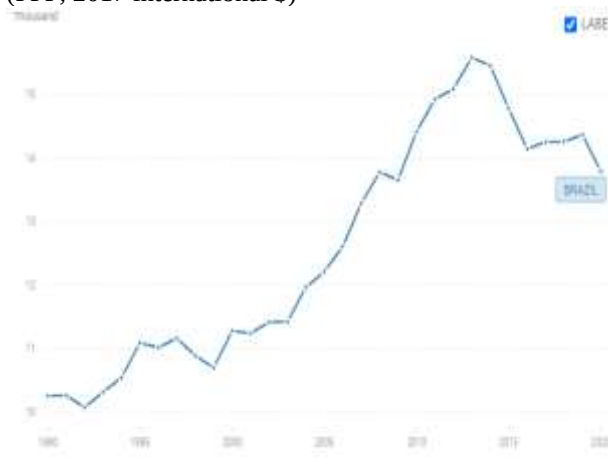
Chapter 1 A virtuous cycle for a more inclusive and prosperous society

In 2022, Brazil marked its 200th independence anniversary. Looking back, there is much to celebrate. In 1988, democracy took hold, increasingly broadening social opportunities. In the 1990s, Brazil started transitioning toward more flexible and inclusive markets through liberalization, while strengthening macroeconomic stability through the Real Plan. In the 2000s, Brazil benefited from the commodity price supercycle and progress accelerated—including a buoyant economy, falling wage inequality, further expansions of social protection, and a significant progress in preserving the Amazon Basin, 60 percent of which is in Brazil. Between 2001 and 2013, nearly 25 million Brazilians escaped poverty and Brazil's formal employment peaked. Brazil is now the world's ninth largest economy, a major global food supplier, and a regional powerhouse in MERCOSUR and in South America. With a gross domestic product (GDP) per capita of US$7,519 in 2021, it is an upper middle-income country.

What will Brazil celebrate 20 years out, in 2042? Ambitions are high—Brazil aims to become an OECD country in this period. Yet it is still only 11 percent as rich as, say, the United States, in GDP per capita terms. And the momentum for income convergence with OECD countries is weak, with its fortunes having already turned since the end of the commodity supercycle in 2014/15. Since then, it had two recessions (2014/15 and 2020) and become poorer (figure 1.1). The labor market remains weak—and has been weaker after each crisis.[1] Gains in reducing poverty (including learning poverty) have reversed or risk reversing (figure 1.2), while inequality is increasing.[2] Fiscal buffers have shrunk and debt is high (figure 1.3). And deforestation in the Legal Amazon has again accelerated (figure 1.4). Projecting the recent past makes the future look unpromising, calling for decisive changes.

Figure 1.1 Gross national income per capita (1990-2020) - declining with two recent recessions

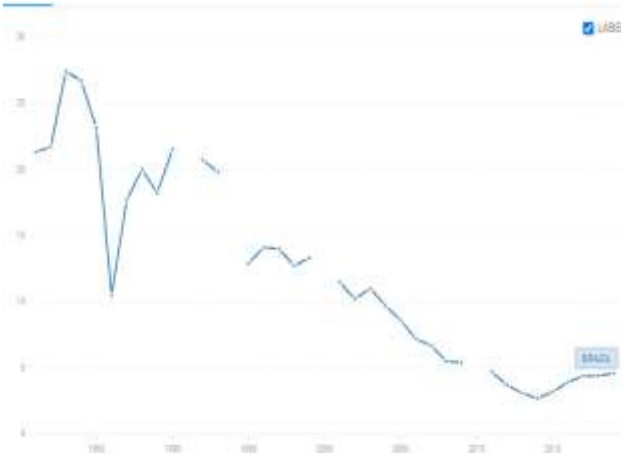
(PPP, 2017 international $)



Source: World Bank.

Figure 1.2 Poverty—reversing gains

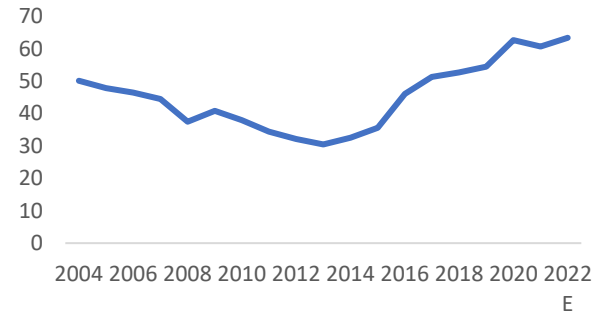
(% of population at US$1.90)



Source: World Bank.

Figure 1.3 Public debt is high, implying limited fiscal buffers

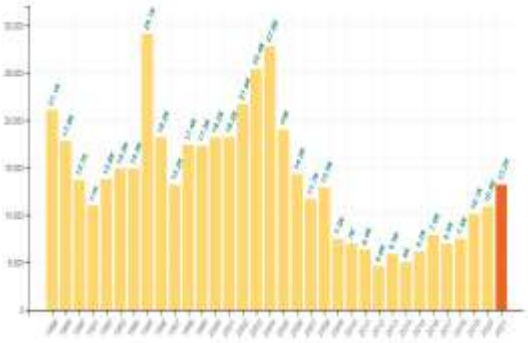
(% of GDP, net terms)



Source: IMF.

Figure 1.4 Deforestation in the Legal Amazon is accelerating

(km^2)



Source: INPE: PRODES.

Mobilizing all Brazilians

This report argues that for Brazil's development agenda to regain steam it will need to better mobilize all Brazilians. Indeed, a more inclusive Brazil will mean a more prosperous Brazil—the virtuous cycle. This requires overcoming the country's historical legacy of exclusion (box 1.1), rooted in Brazil's early development model, including a long experience with slavery. For historical reasons, there are still several Brazils. At one extreme is an upper class predominantly white, formalized, well educated, urban, and southern or southeastern. At the other are those in the bottom 30 percent (below the Cadastro Unico poverty line), predominantly of color, informal or in subsistence agriculture, uneducated poor, rural, and northern or northeastern (table 1.1). Brazil also developed an important urban middle and upper middle class, which is more heterogenous racially, more often formally employed but seldom highly educated, and vulnerable to falling back into poverty.

Box 1.1 Defining inclusion and exclusion

Social inclusion is the process of improving the terms for individuals and groups to take part in society,[1] irrespective of their identity (gender, age, disability, race, ethnicity, religion, citizenship, sexual preferences, among others) or socioeconomic background. Social exclusion refers to the terms that keep or prevent some individuals to fully participate in society and benefit from opportunities.

Gacitua and Woolcock (2008), in a study for Brazil, define social exclusion as the processes that increase the exposure to risks and vulnerability of certain social groups by creating barriers that prevent them (mostly vulnerable groups) from accessing assets and productive resources and from participating in the market and in social, cultural, and political institutions. Exclusion mechanisms can be built in the functioning of institutions (processes and regulations), can operate through prejudices and preconceptions that may result in the refusal by society to grant rights to some groups or in granting rights of lower quality—and through differentiated access to the material benefits of society.

1. World Bank 2013; Das and Espinoza, 2020.
Source: World Bank 2013; Das and Espinoza 2020; Gacitúa and Woolcock 2008.

Exclusion remains strong in Brazilian society and can harm Brazil's future. Development will be hindered if only 61 percent of Brazilians participate in the economy—13 percent of them unemployed and many more employed in precarious conditions in the informal sector. Development will also be hindered if product markets are dominated by few large players, shielded from domestic and external competition. It will also be hindered if people are prevented from

drawing on their talents due to discrimination (Box 1.2). Exclusion will also reduce the political space to enact reforms that enable future prosperity. As chapter 8 of this report argues, Brazil's social contract resulted mainly from the bargaining between the emerging middle class and elites, with the poorest, in spite of progress, still underrepresented. But almost half of all Brazil's future generation, today's children, are growing up in those poorer families. Allowing more Brazilians to contribute to Brazil's economy can make Brazil a more prosperous and inclusive society in the next 20 years.

Table 1.1 "Many Brazils" at a glance

	Population	Poor (bottom 30%)	Vulnerable middle class (30%–59%)	Upper middle class (60%–89%)	Rich (top 10%)
Race	White (% adults)	24.7	37.3	52	69.8
Family composition	Number of adults 18+	2.39	2.34	2.21	2.02
	Number of children 0–17	1.91	1.07	0.61	0.52
	Number of elderly 65+	0.12	0.29	0.33	0.33
	Dependency ratio	1.01	0.67	0.48	0.44
Location	South/Southeast (%)	36	57	71	73
	North/Northeast (%)	59	35	20	18
Labor market inclusion and social protection	Adults out of labor force (%)	38	25	18	16
	Adults unemployed (%)	27	11	5	3
	Adults working formally (%)	11	35	55	63
	Working informally (%)	70	44	29	22
Human capital	Tertiary education 25+ (%)	2	6	18	58
	Secondary education 25+ (%)	27	35	40	29
Income	Total household income (per capita BRL)	276	736	1,561	5,848

Note: Income percentiles obtained from SEDLAC data. Formal refers to workers with *carteira assinada*, or *militar/servidor estatutario*, or employer/self-employed who report contributing to *previdencia*. Education among individuals 25+.
Source: World Bank staff based on PNAD Continua 2020.

Box 1.2 The nature of discrimination in Brazil

Discrimination is one form of exclusion. Despite endeavors to limit forms of discrimination in Brazil, most notably in the 1988 Constitution, various forms of discrimination persist.

Race

Brazil has the largest Afro-descendant population in the world outside Africa. The Afro-Brazilian population is estimated at 51 percent of the Brazilian population. They are twice as likely to be poor as white Brazilians and have fewer chances for social mobility. They account for three-quarters of the poor and, holding all else constant, are three times more likely to be chronically poor.

Afro-Brazilians have educational attainment rates about half the rate of the rest of the population. Such poor levels of completion limit their prospects of social mobility and career development. Brazil lags considerably behind the other Latin-America countries in primary school completion for Afro-descendant children, and the gap between Afro-Brazilians and white Brazilians is the widest in the region. The chances of Afro-Brazilian children to complete primary and secondary education are 7 percent and 14 percent lower than their white peers. One in seven Afro-Brazilians attend private schools, compared with one in three white Brazilians, and one in 10 attend private secondary institutions, against one in four white Brazilians. Data from 2017 show that learning poverty (that is, children in schooling age who are unable to read and understand a short age-appropriate text by age 10) affects nearly 35 percent and 46 percent of the Afro-Brazilian girls and boys, respectively, against 28 percent and 39 percent of the non-Afro-Brazilian girls and boys. About one in three Afro-Brazilian students have access to computers at home, while more than half of white students do. The most recent national survey by the Brazilian Institute of Geography and Statistics (IBGE), which focused on education, found that, in 2018, 71 percent of the 10 million youths ages 14 to 29 that were not attending school or had dropped without completing basic education were Afro-descendant. Most of them said the main reason for leaving school was the need to start working.

Afro-Brazilians constitute more than half the labor force of the country and earn on average less than 80 percent than what white Brazilians make for the same types of jobs, despite having the same qualifications and socioeconomic characteristics (same location, similar family income, gender). The wage gap increases considerably for individuals with higher degrees: among workers with primary education, an Afro-Brazilian earns 21 percent less than a white Brazilian with the same socio-economic background, and type of job, and among workers with tertiary education, an Afro-Brazilian earns 32 percent less than a white Brazilian, holding all else constant. Afro-descendant women tend to receive the lowest wages after controlling for other factors. They earn less on average than white men and women, but also less than Afro-descendant men, despite having better education outcomes overall. Afro-descendant women with a tertiary degree earn about 32 percent less than other women with the same level of education.

Gender

Gender gaps are still relevant in access to and participation and earnings in the Brazilian job market. Women spend almost twice the hours of men in domestic and family care activities (21.4 and 11.0 hours per week, respectively) and account for almost twice the workers engaged in part-time jobs (29.6 percent of the female workers against 15.6 percent of the male workers). Brazilian women devote a substantial amount of time and energy to caring for others, including children, the elderly, and persons with disabilities, this labor almost always goes unpaid. The burden of unpaid care work falls more heavily on girls and women, especially for those who are married, have low educational levels, live in rural areas, or are mothers of children below school age. The economic value of unpaid care work in the region ranges between 16 percent and 25 percent of GDP for different countries. Women contribute nearly 75 percent of this value.

Women continue to be overrepresented among the workers in low remunerated sectors and positions and face barriers to career promotions and representation in the highest job positions. Covid-19 reduced women's and men's participation in the labor market, but the gender gap has remained. Thus, in 2020, the

female and male participation rates in the labor market declined to 45.8 percent and 65.7 percent respectively in 2020. The pandemics has increased the gender income gap. In 2019, the average gender income gap equaled 28.7 percent (R$ 595) and after the pandemics it increased to R$ 611. Following record losses on the sector of domestic services (–26.5 percent) and food and accommodation services (–29.9 percent) during the pandemics, the unemployment rate reached 16.8 percent among women and 12.8 percent among men.

LGBTQIA+

Globally, Brazil stands out for the absolute number of complaints and reported cases of violations of the rights of people who are LGBTIQIA+. In 2018, there were 420 recorded cases of violent deaths stemming from prejudice and discrimination against LGBTIQIA+ people. The official records of Dial 100 register an annual average of 1,895 cases of violence, 366 cases of physical aggression, and 82 murders and attempted murders against LGBTQIA+ people between 2011 and 2018, with the murders and attempts of murders peaking in the last two years of the time series—giving Brazil the sad title of world champion in homicides of transsexuals and transvestites in 2019. LGBTQIA+ political representation seems to be on the rise. In 2020, 585 candidates associated with the LGBTQIA+ agenda ran in the municipal elections (against 256 in 2016)—a growth rate of 86 percent. They received 450,864 votes and 93 were elected to Municipal Houses of Representatives.

Indigenous peoples

Exclusion of indigenous peoples is still considerable. Close to one million individuals were defined as indigenous people, according to the last census. In studies that followed the publication of the Census data,[1] 58 percent lived in indigenous lands and 42 percent outside them. More than a third of the indigenous population lived in urban areas. Most of the indigenous people live in the poorest North and Northeast regions (62.4 percent of them) and only 21.1 percent in the most developed Southeast and South regions. Most of them live on indigenous lands (58 percent) and in rural areas (64 percent). Indigenous peoples are overrepresented among the extremely poor population. In 2010, the probability of being extremely poor was more than two times larger among them than among the total population of the country. Indigenous peoples living in cities were also overrepresented among the bottom 40 percent and the population living in poorly serviced slums.

People with disabilities

More than 45 million people in Brazil live with disabilities, 23.9 percent of the population. Nearly half of households (49.3 percent) have a person with a disability (PwD). In 2010, nearly one third (32.7 percent) of PwDs had no income and other 27.7 percent held monthly earnings of up to one minimum wage. On average, PwDs are 24 percent less likely to complete primary education, 23 percent less likely to finish secondary, and 11 percent, tertiary schools. Among PwDs from an ethnic-racial minority, these gaps on likelihood to finish primary, secondary and tertiary schools rise to 33 percent, 35 percent, and 17 percent, respectively. The leading causes of disability are chronic health conditions (especially cardiovascular and congenital issues), population aging, and injuries from violence, traffic- and work-related accidents, and natural disasters.

Source: Gomes Costa (2022).

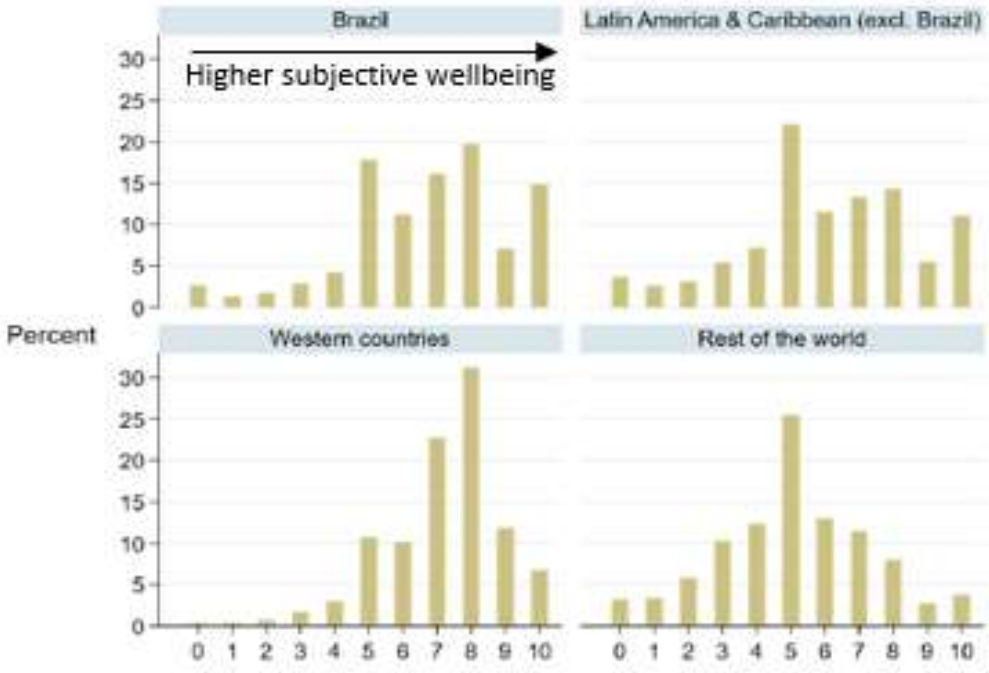
How Brazilians look to the future

A better future with higher wellbeing

A desirable future is one that promises higher levels of wellbeing. Wellbeing is a self-assessed measure of life satisfaction as a proxy for an individual's "experienced welfare." Unlike traditional objective measures (like, say, income or GDP), which reflect the livability of the environment or the presence of opportunities to live a good life, subjective well-being offers a fairly agnostic way of thinking about people's utility function.[3] It does not assume what matters for Brazilians, but it does factor in all objective and subjective conditions that make them *feel* better or worse off.

By global standards, and like other countries in Latin America, Brazilians experience unusually high levels of well-being (figure 1.5). This Latin American phenomenon is partly explained by the "strength of human relations and the underlying role of relational values or social interactions" in the region.[4] So, some factors that matter to the "experienced welfare" of Brazilians, like family, friends, and community, lie beyond the economic realm.

Figure 1.5 Subjective well-being in Brazil and the world

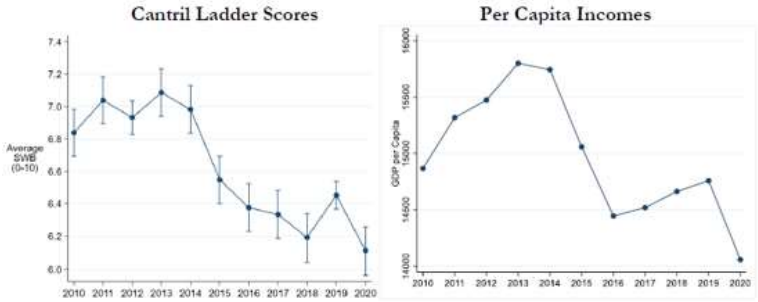


Source: Burger, Hendriks, and Ianchovichina (2021), based on Gallup World Poll (2010–20).
Note: This chart shows distribution of respondents rating their subjective well-being (SWB) on a scale from 1 to 10, with 10 being highest subjective well-being, which is based on the Cantril Ladder, measuring the degree to which an individual judges the overall quality of one's own "life-as-a-whole" favorably.

Even so, the economy, political trust, and individual economic circumstances play a major role in Brazilian's well-being. Changes in traditional welfare measures, such as aggregate GDP per capita, mimic closely those in Brazilian average subjective well-being (figure 1.6). This effect at the macro level conceals a more nuanced story at the individual level, however. The plunge in subjective well-being after 2014 is primarily associated with a deterioration in average economic optimism (the future), individual and local economic circumstances (the present), and trust in the country's leadership and institutions (figure 1.7).

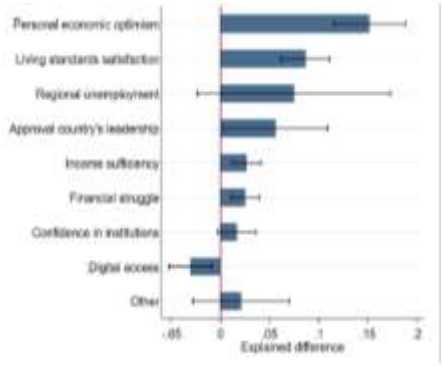
Incomes and jobs matter for individual subjective well-being through their effect on other individual outcomes. For instance, unemployed individuals have lower subjective well-being because they are more likely to struggle financially or to report having "insufficient income.[5] This has at least three implications. First, income and employment matter for subjective well-being, mostly by enabling people to meet their own consumption needs and achieve a standard of living consistent with their expectations. Second, having a job enhances subjective well-being because it reduces the probability that a person would struggle financially and feel pessimistic about her own economic situation. Third, the richer Brazil experiences higher well-being than the poorer Brazil.

Figure 1.6 Subjective well-being and per capita income in Brazil (2010–20)



Source: Burger, Hendriks, Ianchovichina (2021) based on Gallup World Poll (2010–20).

Figure 1.7 Factors explaining the decline in subjective well-being



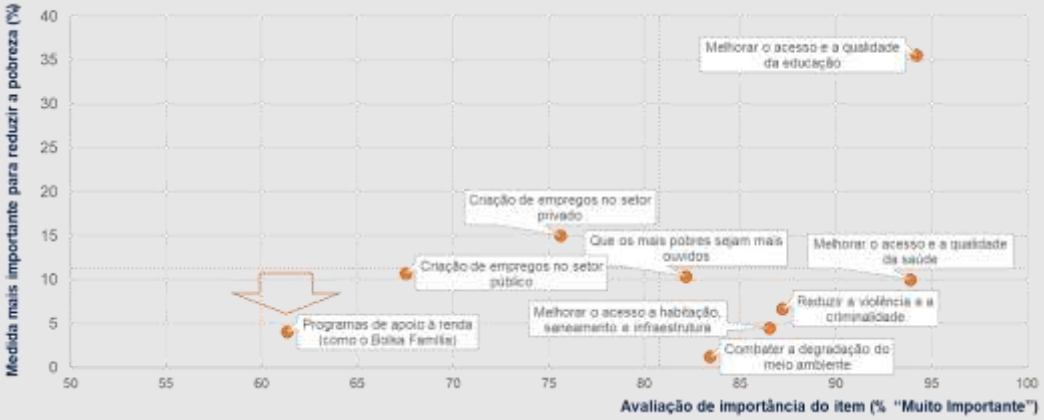
Source: Burger, Hendriks, Ianchovichina (2021) based on Gallup World Poll (2010–20).
Note: The figure shows the Blinder-Oaxaca decomposition of factors explaining the plunge in subjective well-being after 2014. These factors explain more than 62 percent of the decline in subjective well-being.

Education underpins the experienced welfare of individuals and the Brazilian development narrative. More educated Brazilians are richer and experience higher subjective well-being, and tertiary education matters relatively more for the subjective well-being of the bottom 40 percent of Brazilians.[6] In fact, returns to education in Brazil, though falling, remain high by global standards. These findings are consistent with those from an IPSOS survey for this study in 2021 (see annex A1). When asked about the most important interventions to reduce poverty and inequality, Brazilians primarily think of education. But important differences across income groups show that education itself may not be sufficient to guarantee a better future (box 1.3)—access to education makes people better off only when it comes with the opportunity to make use of it.

Box 1.3 The importance of education in Brazil and different views across Brazilian society

Education is seen as key to Brazil's development. Brazilians with higher levels of education also experience higher levels of subjective well-being, both because education unlocks income opportunities and in its own right (Brazilians with higher educational attainment experience higher subjective well-being controlling for economic factors).[1] It is thus not surprising that, across Brazilian society, education is also considered the most important intervention to reduce poverty (box figure1).

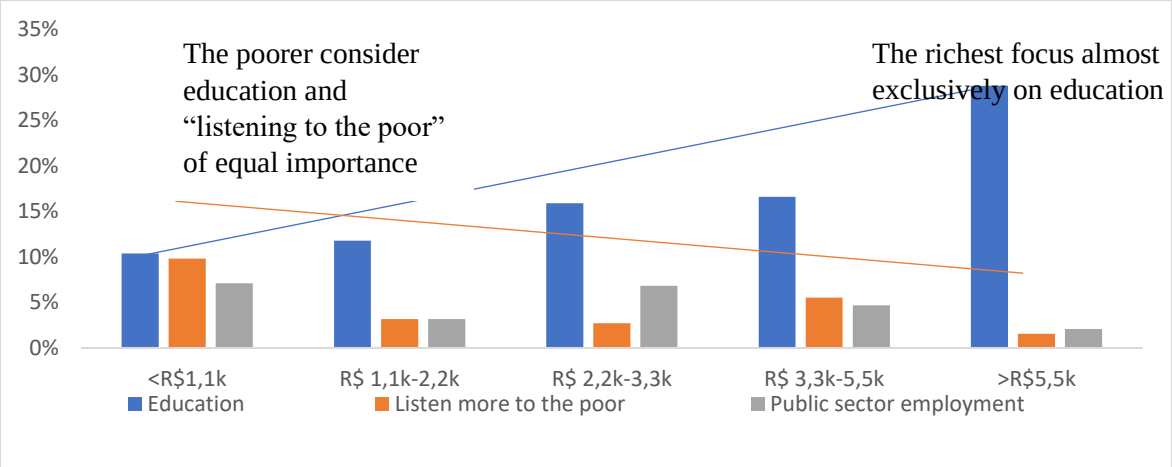
Box figure 1 What matters for poverty reduction



Source: IPSOS and World Bank staff.

Yet for poorer Brazilians, "being heard" is about as important as education (box figure 2)**.** Education is only as useful as the opportunities it unlocks. Brazil's poor recognize the importance of education but equally value opportunities, as reflected in a preference for "listening to the poor," which is important to shape institutions that provide them with opportunities. It is also reflected in a high preference for public employment which may reflect the desire for a stable income but may also derive from a recognition that even a job will be difficult to obtain without government intervention. The richest Brazilians do not identify "listening to the poor" as a critical part of poverty reduction and mostly identify poverty as a supply-side "technical" issue linked to poor education.

Box figure 2 What is most important for reducing poverty?



Source: IPSOS and World Bank staff.
Note: The lowest income group displayed here covers the poorest 50 percent.
Note:
1. Burger et al. 2021.

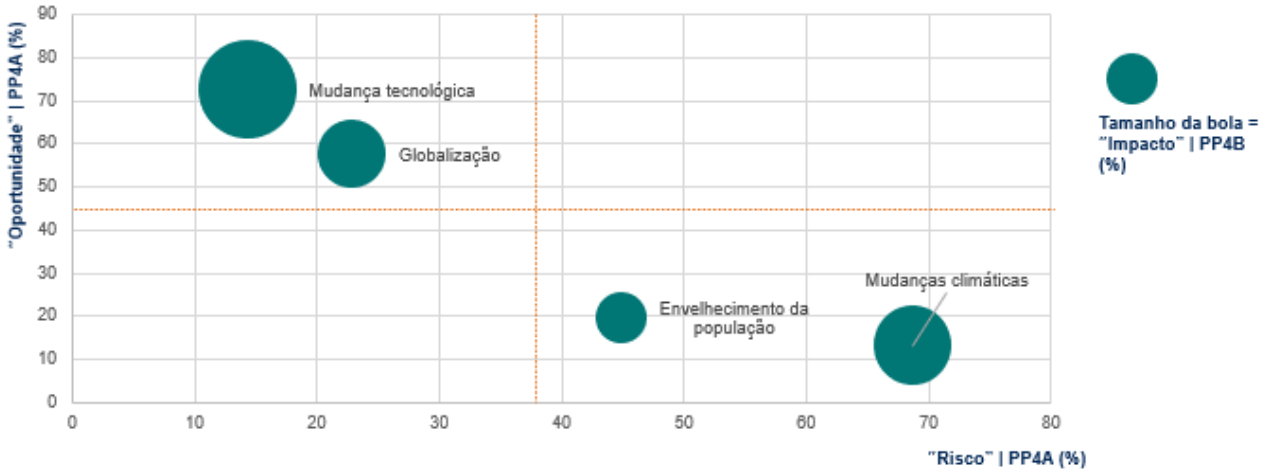
This report explores a range of factors that matter for a better future, judging by these key drivers of wellbeing**.** They include education (chapter 4), income security (through jobs and social protection) (chapters 5 to 7), and political participation and trust (chapter 8).

Expectations for the future

Especially the more affluent tend to feel positive about the future. A survey conducted in mid-2021 (see annex A1) showed that Covid-19 weighed on Brazilians' optimism. Yet looking into the longer-term future (5–10 years), 65 percent of Brazilians felt somewhat or very optimistic about the future (figure 1.8). This is especially true for those earning more than 2–3 minimum wages. The income divide was also reflected across Brazil's regions, with the northeast, one of the poorest regions being least optimistic and the south/southeast and also the center-west being more optimistic (interestingly, optimism was also fairly high in the north, a relatively poor region). Younger Brazilians (between 18 and 34 years) were among the least optimistic, not surprising since they tend to be in more precarious employment with fewer benefits (such as generous pensions). Despite a generally high optimism, the survey revealed that most Brazilians felt the country was not moving in the right direction—and this was something the rich and poor seemed to generally agree on.

Brazilians see climate change as a big risk, and technological change and globalization as significant opportunities—with significant differences across income groups. These factors are expected to have among the biggest impacts on shaping Brazil's future (figure 1.8). These overall trends conceal some important differences which are strongest across income and in relation to technology and globalization. Generally, poorer Brazilians are much more apprehensive about the opportunities from technological change and globalization: while 84 percent of the richest (more than 5 minimum wages) see it as an opportunity, only 65 percent of the poorest (less than 1 minimum wage) do. For globalization the equivalent numbers are 70 percent and 45 percent. This clearly reflects the concern of poorer Brazilians about losing out to job automation and international competition. Brazilians also recognize the role of ageing as a megatrend—and consider it more of a risk than an opportunity—but they do not believe it to have an impact on Brazil as sizable as technological change, climate change or globalization. Chapter 3 in this report discusses three of the four megatrends in figure 1.10 (technological change, climate change, and aging), while globalization (with a focus on trade) is discussed in chapter 6. Chapters 4 to 7 deals intro the implications of these megatrends.

Figure 1.8 Perception of risks and opportunities from global megatrends



Source: IPSOS.

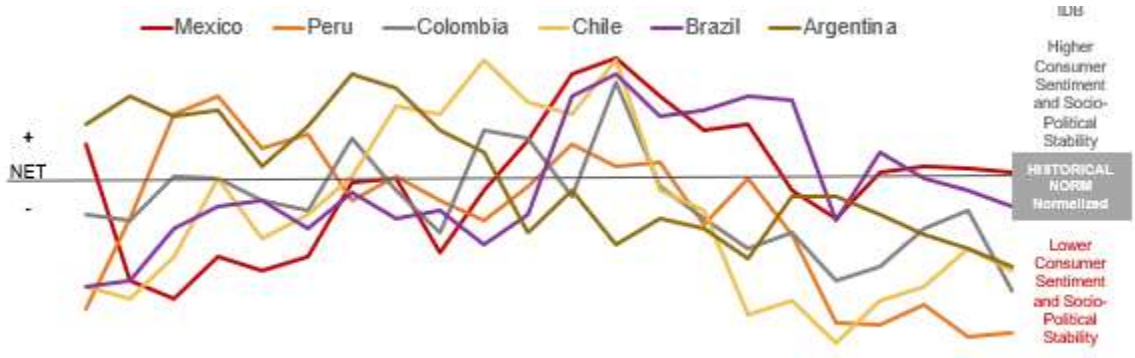
The social glue to build a common future

The "many Brazils" are moving apart, putting strain on the social contract, which is the focus of chapter 8 of this report**.** Defined as the set of dynamic agreements between state and society on their mutual roles and responsibilities, the social contract determines what each group contributes to and receives from the state. It thus shapes social cohesion and poverty, inequality, and growth outcomes. Social cohesion has come under strain in recent years. The recovery from the 2015/16 recession was uneven, and particularly weak for poorer Brazilians. The impacts of the Covid-19 pandemic were also disproportionately borne by poorer Brazilians.[7] Progress in reducing inequality has stalled or even reverted.

A weakened social contract is evident in deteriorating perception of social cohesion in Brazil, even by regional standards. Comparable data are only available for late 2020 and early 2021—that is, in the middle of the Covid-19 crisis, which hit Brazil particularly hard. During this period, social cohesion declined in Brazil and was the lowest among South American countries.

Perceptions about economic and sociopolitical stability have also declined in Brazil but are still relatively positive by Latin American standards (figure 1.9). After the end of the commodity supercycle, Brazil fell into recession (2015/6), accompanied by an institutional crisis around the "Lava Jato" corruption affair. Perceptions about stability in Brazil were low then, even by LAC standards. The last general elections changed this dramatically, making Brazil one of the LAC countries with the highest perceptions of stability. As in other parts of LAC, sentiment turned sour in subsequent years, not least with the onset of the Covid-19 pandemic.

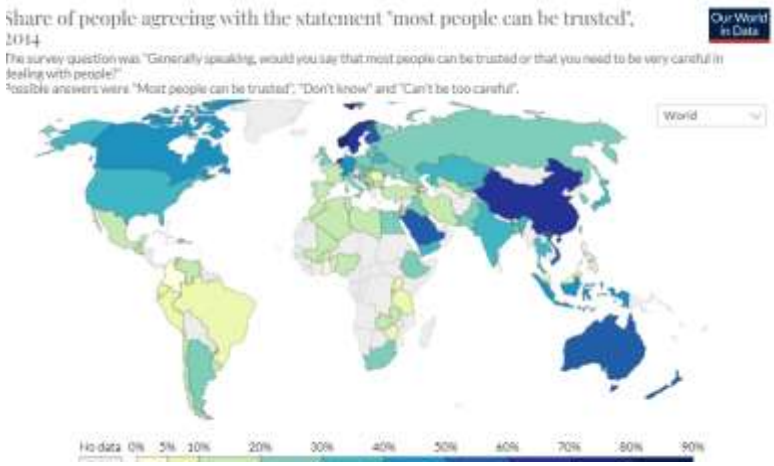
Figure 1.9 Perceptions of economic and sociopolitical stability in selected LAC countries



Source: IPSOS.

Low social cohesion can also be linked to low trust—a structural problem in Brazil. The LAC region stands out as a relatively low trust region (figure 1.10). Between 1984 and 2014, Brazil ranked among countries with the lowest trust globally. In 2014, the latest year with data, Brazil ranked at the bottom of countries on trust—that is, the social contract implicit in Brazil's democratic Constitution of 1988 did not seem to have achieved a more trusting society. Trust in other people was lower only in a few other countries with data, such as Colombia, Ghana, and the Philippines. A 2021 IPSOS survey conducted showed that Brazilians most trusted their family members but least trusted, in descending order, neighbors, other Brazilians and foreigners.

Figure 1.10 Trust globally and in Brazil (2014)



Source: Our World in Data.

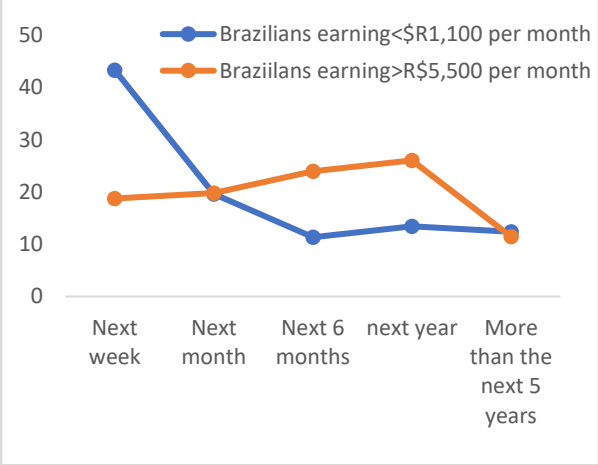
While there is some agreement on what will make for a better Brazil of the future, there are also significant disagreements that will need to be managed. Settling disagreements is difficult when social cohesion is low. While Brazilians tend to be relatively optimistic about their future, they are concerned about the direction their country is taking. Brazilians tend to agree that climate change is a major risk for the country, and ageing a moderate risk, but there is disagreement over the extent to which technological change and globalization are an opportunity or a risk for the country. While Brazilians agree that education will need to play a key role in allowing more Brazilians to have a stake in the economy, there is disagreement across income groups about how important education is relative to other factors, such as political voice. Building a future as a nation

requires finding common solutions, and this is difficult to do when social cohesion is low. It can either result in deadlock or in excluding those whose views differ from the political mainstream —and these tend to be the poor. In chapter 8, this report explores ways for Brazil to find inclusive solutions while strengthening social cohesion and economic inclusion, allowing the "many Brazils" to eventually converge toward a united Brazil (box 1.4).

Box 1.4 Discounting the future—A long view? Or very short?

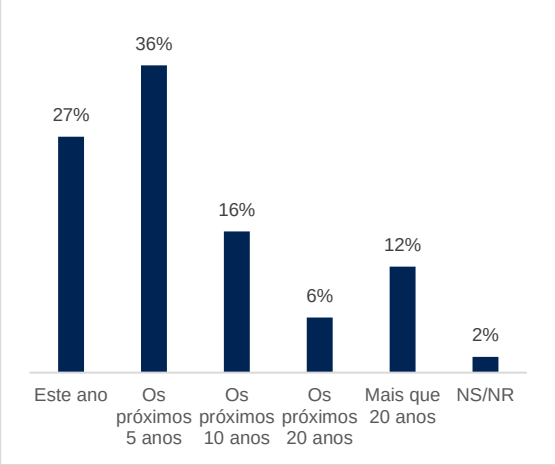
The future is now: 2042 is the distant future for most Brazilians. This is reflected both in personal choices and in views on public planning horizons. For example, nearly 90 percent of Brazilians plan their personal finances for a maximum of one year, with nearly a third planning only for the present week (box figure 1). This is far removed from Modigliani's Life Cycle Theory or Friedman's Permanent Income Hypothesis where households aim to smooth their consumption over their life cycle: only 2 percent of Brazilians plan their finances for more than 20 years. It also poses conflicts with longer term investments, from education to pensions, handing over many of these decisions to the public system. Yet even for government, Brazilians do not consider a long-term planning horizon, with a majority considering five years the most appropriate (box figure 2). Conversely, only 18 percent of Brazilians believe that the government should plan for a time period that goes as far as 2042, the focus of this report.

Box figure 1 Few Brazilians plan their personal finances beyond 5 years—and richer Brazilians tend to be less focused on the short-term, %



Source: IPSOS and World Bank.

Box figure 2 Most Brazilians believe that the adequate planning horizon for governments is 5 years or less (%)



Source: IPSOS and World Bank.

Discount rates measure how much individuals or societies value the future. The Ramsey formula for the social discount rate, $\delta+\gamma gt$, includes the rate of time preference δ, where larger values indicate a lower preference for the future; higher expected growth, *gt*, also raises the discount rate due to an expectation of being better off in future, raising the relative value of today's consumption—this is further magnified by the marginal utility of consumption, γ. In other words, high discount rates can suggest that people value the future less, that they expect to be better off in the future, or that they place a high value of consumption. When discount rates are high, people or societies are 'impatient' and reluctant to save for the investments that would raise future well-being.

Discount rates probably are relatively high in Brazil, meaning that little weight is placed on the future, and one potential reason is that many Brazilians are relatively poor. Some posit unusually high discount rates, consistent with box figures 1 and 2, which point to a focus on the present relative to the future, both for individuals and for policymakers. Discount rates may be high because of an intrinsically low time preference δ, either reflecting a truly innate personal preference or external influences: for

example, poverty may focus the mind on the present due to pressing needs related to survival. Indeed, Brazilians with higher income seem to have a longer planning horizon (Box figure 1).[1] Poverty may also result in high discount rates because the associated low consumption will imply a high marginal utility of consumption (reflected in γ) under a standard concave utility function (this is likely to apply only to extreme poverty or subsistence consumption[2]).

Another possible reason for high discount rates is the memory of high inflation. Before the Real Plan in 1994, high inflation was common in Brazil. Although this period is now more than a generation ago, the memory may persist, making some Brazilians place a higher value on today's consumption in the expectation that inflation will erode future consumption. Although inflation appeared to be tamed in the developed world and most emerging markets, like Brazil, supply chain disruptions and expansionary monetary and fiscal policy have raised inflation globally and in Brazil. The big question for 2022 will be whether it remains transitory or whether it will become more entrenched again.

High discount rates could also be linked to Brazilians' optimism about the future and to the nature of the social contract. If optimism reflects an expectation of higher future income (g_t) this will raise discount rates—Brazilian's high level of optimism (despite their concern about the future of the country) could also translate into high discount rates. Finally, the nature of the social contract itself can affect discount rates: whether people are willing to save and invest depends on whether they expect the rest of society "to do the right thing."[3] When social cohesion is low, there may be limited willingness of individuals to join forces to invest in the future of the country. Especially the poor, who tend to be most excluded, place limited value on the role of public policy. In the IPSOS survey for this report, 76 percent of the poorest Brazilians believe that public policy is important for the economic development of the country, while 90 percent of the richest Brazilians do.

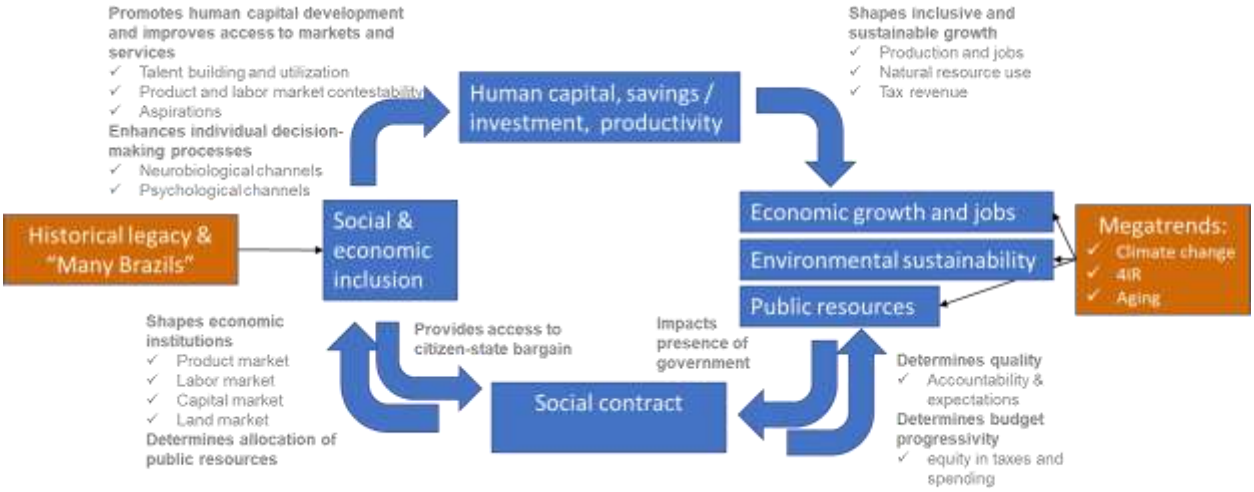
Social discount rates may then be low because of Brazil's large number of poor people, high optimism, or low social cohesion. They do not necessarily condemn Brazil to low economic growth. In principle, a high social discount rate reflects a society's preference for the present and a limited willingness to invest in the future. In this sense, low economic growth is a choice: more is consumed today than invested in the future. Yet there is a contradiction: higher income increases Brazilians' subjective well-being. Thus, Brazil's social discount rate may reflect circumstance more than preference. For example, reducing poverty could lower discount rates through behavior channels or marginal utility. Strengthening social cohesion could also lower discount rates. Optimism can be a double-edged sword: Overoptimism is bound eventually to be disappointed, and this can reduce subjective well-being and put pressure on the social contract, if blame for failure is attributed to other groups or the government.

Notes:
1. Vostruknutov 2021.
2. Kraay and Raddatz 2005.
3. Sen 1967.

A virtuous cycle: toward a more inclusive and prosperous Brazil

Tackling social and economic exclusion can set in motion a virtuous cycle for a more prosperous Brazil.[8] Relative intergenerational mobility, which measures the degree to which the socio-economic conditions of the family one is born determines the socioeconomic position for the rest of one's life, is stubbornly low. And Brazil will likely stagnate economically and socially, stuck in a *vicious* circle between exclusion and a weak and unstainable economy, unless efforts succeed in giving Brazil a new direction. But greater social and economic inclusion can set in motion a *virtuous* circle that can promote both inclusive and sustainable economic growth (Figure 1.11).

Figure 1.11 A virtuous circle



Source: World Bank.

Several forces will shape Brazil's trajectory: initial conditions (endowments and institutions) and domestic and global megatrends. To a considerable extent, exclusion in Brazil—reflected in the many Brazils—is a historical legacy and manifests itself in the size and distribution of assets (human and financial capital and land) and the structure of the institutions that govern the use of these assets in factor and product markets.[9] The megatrends are climate, demographic transformation, and accelerated technological change . They scan present significant opportunities for Brazil but also endanger its medium-term development trajectory and reverse social and economic gains—if it does not adapt. The historical legacy and megatrends, the exogenous forces shaping the future, are reflected in the orange boxes in Figure 1.11.

Beyond exogenous forces, the virtuous cycle is endogenous and can be influenced by policy across the cycle's components. Figure 1.13 shows that policy has direct and indirect effects and this report will investigate how such impacts can propel the virtuous circle that can generate a more inclusive and prosperious Brazil by 2042. The remainder of the discussion focuses on the blue boxes in Figure 1.13 and their interrelationships.

Social & economic inclusion → Savings / investment, human capital, productivity

Inclusion can unleash human capital development. The Human Capital Index, which highlights how current health and education outcomes shape the productivity of the next generation of workers, suggests that a child in Brazil is expected on average to attain only 55 percent of her potential productivity. Income, race and gender are associated with HCI levels in Brazil.[10] Growing up in conditions of poverty has long-lasting impact on brain development, and through that on cognitive and socio-emotional skills.[11] Toxic stress, unhealthy living conditions and little early stimulation impair brain development.[12] Similarly, malnutrition in early childhood is associated with deficits in cognitive development, greater risk of infant and child mortality and morbidity, as well as worse health status and lower earnings during adulthood.[13] Negative shocks affecting a child's growth trajectory early will impact their human capital accumulation and through that, lower productivity and wages.[14] Equally important, the poor and excluded tend to receive less and lower quality health and education services. All these factors result in lower levels of human capital.

It can facilitate efficient allocations of resources and the use of talent. Any form of discrimination can keep talent undiscovered and undeveloped, thus limiting productive potential in the labor force and reducing aggregate productivity.[15] As some individuals and groups are excluded based on their characteristics and identities—racial, ethnic, gender, and others—the stereotypes, prejudices, and different values assigned to these individuals permeate all areas of society. Social exclusionary practices reflected in formal and informal institutions can be formalized in labor market decisions (who to hire), financial markets (who can borrow), and social policies (who is eligible) in a cycle that ends up shaping the terms for different members of society to access and use opportunities.[16] Inefficient allocation of labor is also evident in societies with low intergenerational mobility.[17]

It can improve decision-making: Poverty and social exclusion trigger psychological and cognitive processes that affect decision-making and behavior, in many cases in ways detrimental for welfare and well-being.[18] For example, people in poverty need to deal with many issues—finding clean water, paying bills in person, walking to work—leading them to put more weight on solving these daily problems than on making strategic investment and saving decisions about their future.

It can increase savings and investment. Social and economic exclusion also affect individual aspirations and mindsets, beliefs about oneself and one's potential. The poor have higher discount rates, that is, it is more costly to sacrifice immediate income in favor of higher future revenues. Those in poverty are thus less able to take risks and reap their rewards, because they lack a fallback option in case of failure. Brazil's population displays several of the values associated with lower saving behavior, but saving propensity plummets among the poor.[19] Low-income individuals are also less prone to adopt new technologies and invest in decisions with long-term outcomes, which could help them and their children escape poverty.[20]

It can improve access to factor markets and public services. Even when preferences and aspirations express demand for education, it will be critical that there is supply and that the supply is of high quality. Yet there is still a significant difference in access to the education system, with some Brazilians having access to quality education, while others not. These differences in quality in particular tend to overlap with micro-place of residence, income, race and other factors associated with the separation of the "many Brazils".[21]

In contrast, high levels of inequality and social exclusion are usually accompanied by high concentrations of productive and political capital. In product and capital markets, anticompetitive practices will limit market contestation, leaving little room for better and cheaper products and services to raise the efficiency of the economy and raise the welfare of consumers. And political connections can influence market power and business dynamism through their impact on entry deterrence, factor reallocation, creative destruction, and firm dynamics, hence hampering growth.[22] In land markets, tenure insecurity can result in the inefficient use of land because it cannot be used as collateral, because it cannot be sold to more productive farmers, or because investing in its productive use yields uncertain future benefits.

Savings / investment, human capital, productivity → Economic growth and jobs, environmental sustainabilty, and public resources

Higher financial and human capital investment and greater productivity are needed to promote inclusive and sustainable growth in Brazil. Brazil's current development model is unsustainable. Brazil has low levels of national savings and thus low investment. Allowing a

greater portion of Brazilian individuals to save, and creating the conditions to reap predictable returns, would translate into higher levels of investment. This is urgently needed as the capital stock, including infrastructure, is deteriorating because new investments barely suffice to replace depreciating capital. Yet even with higher investment, Brazil is at a level of development where it needs to switch to higher productivity,[23] but it struggles to do so in sectors beyond agriculture. Investing in human capital is thus essential to achieve stable and positive long-term growth.[24] Greater inclusion will raise human capital levels and promote productivity, both of which are critical components of Brazil's development model for the future. Higher growth will also generate demand for jobs and raise wages.

A switch to a productivity-led growth model can also improve environmental sustainability. Its current model based on factor accumulation puts Brazil's natural resources at risk, notably through deforestation as forests are converted into agricultural land.[25] Resource extraction is not limited to deforestation as Brazil increasingly unlocks offshore oil and gas reserves. A productivity-led model focused on diversifying sources of growth beyond commodities would be more sustainable because it would reduce pressures on the exploitation of forests and mineral deposits.

Faster economic growth would also increase the budget envelope and expand the policy space for government. With limited fiscal policy space, future social gains will depend more on the composition of the budget rather than the overall size, requiring difficult choices over entrenched privileges and the efficiency of spending. For example, Brazil already raises more revenue than any other Latin American countries and on par with OECD, but it redistributes less than most OECD countries. And the two-tier social protection system results in unequal and regressive protection and, in some areas, harms productivity.[26] Institutional gaps remain significant, and "islands of excellence" coexist with regressive policies and inadequate institutions Segmentation occurs in markets (labor markets, product markets, credit), services (quality and access to education and health, utilities and housing), distortive taxation of incomes and profits, regressive pensions, and pressures on natural resources.

Economic growth and jobs, environmental sustainabilty, and public resources <-> social contract

A society's social contract is at the heart of the relationship between state and citizens and thus has a strong influence on social and economic outcomes. Together, the state's capacity to mobilize resources and deploy them efficiently—and citizens' capability to influence the state's policies and to hold the state accountable—determine the inclusiveness and thickness of the social contract (the quantity and quality of public services received). The social contract is thus shaped by citizens' aspirations but also sets the contours for citizens to pursue these aspirations.

Economic growth sets boundaries on the inclusiveness and thickness[27] of the social contract directly and indirectly, by affecting government revenues and employment creation. Strong sustained economic growth enables the government to boost spending and deliver more and higher quality services to its citizens. However, without proper accountability mechanisms and prudent fiscal management, these new resources could be wasted or captured by elites. Research prepared for this report using perception survey data confirms that employment and income are critical enablers of citizens' well-being and satisfaction with the performance of the state. Trust in the political system can be linked to both governance and economic conditions, so a deterioration in either one of these conditions may put a strain on the social contract.[28] There is evidence that

Brazil's social contract is increasingly strained, with strong feedback loops between the social contract, sociopolitical conditions, and economic outcomes.

Brazil's fragmented social fabric hampers an inclusive development process. Unlike many OECD countries, Brazil did not undergo a great leveling in the 20th century, linked to the world wars and subsequent fundamental restructurings of the welfare state. Exclusion persisted socially, economically, and politically (by making voting conditional on literacy) through most of the 20th century. Only in 1988, with the new Constitution that consolidated the transition from dictatorship to democracy, did Brazil introduce the universal franchise. The Constitution also extended access to welfare benefits—previously generally available to those in formal employment—to the large mass of rural and urban poor voters who remain outside the formal labor market. But the quality of public services lags significantly behind that of the private services used by wealthier Brazilians.[29]

The welfare state thus remains segmented, notably between formal and informal workers. In addition, through generous tax exemptions, the rich can opt out of the public system over private provision of services, while firms and workers are over-taxed (by regional benchmarks). So, most of the financing of Brazil's budget falls to the middle class and the poor. Special regimes intended to aid the formalization of microentrepreneurs are more commonly used as a tax loophole by professionals. Relatively regressive taxation and spending thus reflect the setup of Brazil's social contract. Public debts with high real interest rates (an alternative to higher taxes) provide generous rents to those who can afford to save, but also crowd out private investments.[30]

Brazil's social contract also includes a fairly strong presence of government in the economy. This could be due to Brazil's historical choice of "developmentalism" as a model introduced in the second half of the 20th century.[31] The model requires an active state and explains the preponderance of industrial policy, with implications for the budget (subsidies) and regulatory measures (credit earmarking). This helps explain a part of Brazil's regressive expenditure, as spending is not necessarily targeted to the poor. It also explains certain inefficiencies that shape market, and can lock in exclusion. For example, even though there is evidence that public financing support to small companies tends to be more effective, most public credit still goes to large state-owned companies. In this setting, forging a better future does not necessarily require greater fiscal expenditure, but it does require political capital to overcome vested interests so that spending can be reoriented to address social segmentation.

Social contract* <-> *social and economic inclusion

The citizen-state interface shapes social and economic inclusion through the impact on policies and reforms. This can help explain the nexus between high inequality, low social capital, and low economic growth in Brazil. The citizen-state bargain conditions policy decisions, be they regulations (affecting the institutions governing factor and product markets) or budget allocations (such as the share of pro-poor spending). For instance, between the late 1990s and the 2010s, the real value of the minimum wage has been augmented regularly due in part to fierce political competition for the votes of the working class (through wages) and the poor (who benefit from minimum-wage–linked benefits).[32] The policy also reduced inequality and poverty.[33]

But broadening the welfare state without structural reform also resulted in layered entitlements, stratified society, and unsustainable budgetary commitments. The minimum wage, when reaching excessive levels, increases segmentation at the expense of outsiders, such as youth, and informal workers. Over time, inclusion-without-reform becomes economically

unsustainable, making it increasingly difficult to fulfill what Brazilian citizens expect from the state. As access to political power varies across the many Brazils, under tight tradeoffs and low trust, it becomes also more challenging to achieve inclusive outcomes.

Low trust is one weakness in Brazil's social contract, and this can undermine the ability of society to invest in the future. It reduces the degree to which the in-group is willing to provide public goods from which the out-group would benefit,[34] thus fostering exclusion. Low trust among the different stakeholders in the economy—workers, employers, citizens, consumers, and central and subnational governments—increases the demand for regulation.[35] This is visible in many domains of Brazilian society (business regulations, the over-specified labor code, the overly detailed "constitutionalization" of social benefits for the middle class). Low trust can also lead to inefficient policies, such as the intricate system of indirect taxes and the overuse of budgetary earmarking. And it can foster clientelism, which opposes the provision of public good.[36]

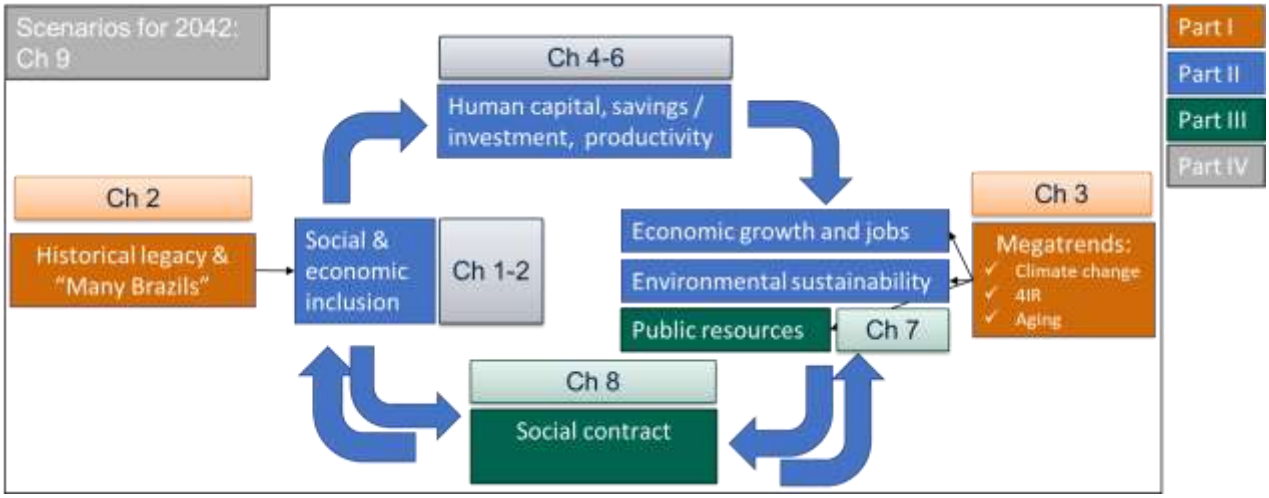
Trust also conditions how individuals plan for their own future and expect society to deal with the future. Trust not only affects the credibility of promises to deliver public goods—it also shapes citizen's demand for a longer-term planning horizon in public policies. Both when discussing their personal finances and when thinking about whether the government should focus on the present or in the future, Brazilians who have lower levels of social trust in general, and those who do not trust those outside their immediate social groups are more likely to focus on the present. This can harm growth,[37] making the argument for building social capital to foster trust.

The virtuous circle can thus unlock inclusive and sustainable growth through various interlocking channels. It can give Brazilians a greater stake in their society and their future—and thus will make them more willing and able to individually and collectively invest in the future.

The structure of this report

This report follows the structure of a virtuous circle which eventually informs scenarios for 2042. Figure 1.12 how the virtuous circle discussed earlier informs the chapters in this report. Part I focuses on the current trajectory Brazil is on and the exogenous factors shaping the future: the historical legacy and megatrends. Part II focuses on key intervention areas for policy to shape the future (human capital, savings / investment, and productivity), followed by a discussion in Part III of the budget and social contract that determine Brazil's room to maneuver, both fiscally and politically. Drawing on the logic of Figures 1.11/12, Part IV, featuring the concluding chapter, focuses on the two key themes emerging from this report, inclusion and productivity, to construct scenarios for Brazil in 2042.

Figure 1.12: Chapter logic based on a virtuous circle for 2042



Source: World Bank.

Today's reforms hold the key to building tomorrow. Table 1.2 summarizes some of the key reform areas that this report identifies across the chapters.

Table 1.2: Policies and reforms this report hold as priorities to build a virtuous circle

Theme	Goal	Priority
Social & economic inclusion	Increase efficiency and progressiveness of social transfers	• Making Bolsa Familia more progressive and affordable
		• Optimizing payouts from unemployment insurance schemes
		• Optimizing (non-public sector) pension schemes
	More efficient and progressive taxation	• Harmonizing income taxation across different tax bases and removing exemptions for dividends and pension incomes
		• Eliminating regressive and inefficient tax exemptions
Human capital, savings/investment, productivity	Place learning and skills back on the right track	• Recovering learning losses
		• Reducing dropout rates
		• Increasing the quality of education through higher quality teaching and a more skill focused curriculum
	Strengthen policies for economic inclusion.	• Improving labor market outcomes through active labor market programs

		• Revamping the Sistema Nacional de Emprego (SINE)
		• Improving workers protection through reforms of unemployment insurance and labor benefits
		• Increasing the private sector's contribution to economic inclusion through more robust diversity and inclusion policies in corporate governance structures
Economic growth and jobs	Develop a credible fiscal framework	• Reestablishing a credible fiscal anchor
	Accelerate productivity, growth and job creation	• Advancing regional integration and trade negotiations with the EU and other economies
		• Reducing barriers to trade and investment in services
		• Improving the business climate and promoting innovation and technological adoption
		• Reforming consumption taxation
Environmental sustainability	Curb illegal deforestation	• Preventing land-grabbing
		• Strengthening land and forest governance
		• Promoting sustainable forest livelihoods
	Resilient and climate-smart agriculture, industries, and cities	• Scaling-up climate-smart agriculture
		• Decarbonizing the energy sector
		• Greening cities and their transport systems
	Economy-wide interventions	• Adopting a national emissions trading system
		• Considering the introduction of a carbon tax and initiating a phaseout of subsidies to emission-intensive activities
		• Supporting households in managing the climate transition
Public resources	Better management of public sector pay and pensions	• Increasing the number of subnational entities that have adopted comprehensive pension reforms

		• Adopting an administrative reform to narrow the wage premium and modernize the public sector's human resource management practices
	Accelerate productivity, growth and job creation	• Revamping underperforming innovation policies
		• Increasing the volume of financing for infrastructure to close the investment
		• Modernizing infrastructure and its management
Social contract	Increase people's trust in the state capacity to deliver its promises	• Implement governance mechanisms to improve accountability and transparency
		• Implement mechanisms that reduce incentives for corruption
	Increase people's trust in the state capacity to keep them safe	• Limit access to firearms and ammunition
		• Reduce environmental and individual risk factors for violence
		• Implement cross-section community interventions that enables conflict resolution through negotiation and nonviolent procedures
	Reduce social fragmentation	• Reduce the spread of narratives build upon misinformation and fake news
		• Advance reforms that build trust, citizenship and inclusion

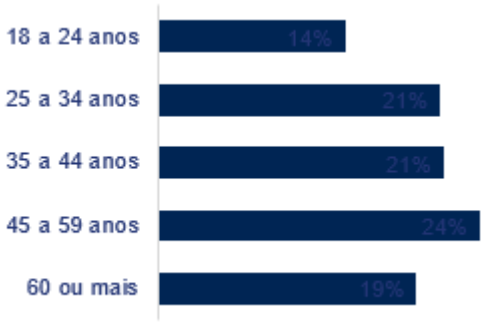
Annex A1: The IPSOS survey for this report

In partnership with market research firm IPSOS, the World Bank conducted a survey for this report. IPSOS is the third largest market research company in the world. The survey consisted of telephonic interviews of 1,200 people, conducted in Portuguese and undertaken between 16 and 28 June 2021. It is nationally representative. It focused on (i) public policy and perspectives, (ii) government planning, (iii) personal planning, (iv) poverty reduction, (v) racial equity, (vi) education, (vii) climate change, and (viii) social capital and trust.

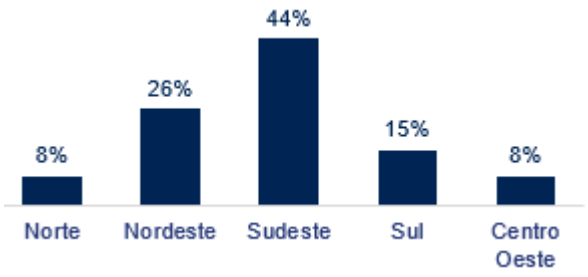
Figure A1: Sample characteristics of the IPSOS survey

a) By gender

b) By age

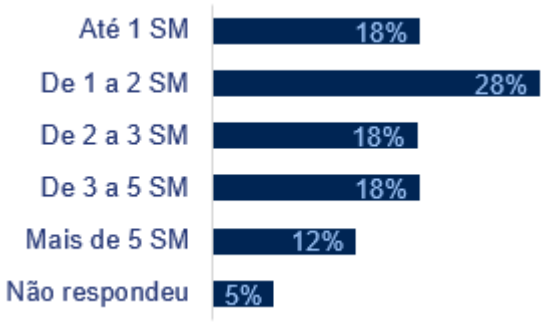


c) By region

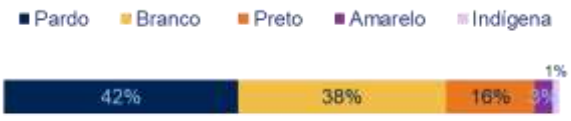


d) By educational attainment

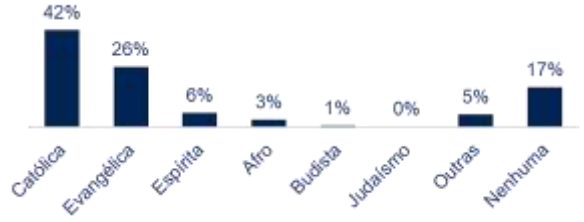
e) By income (in minimum salaries)



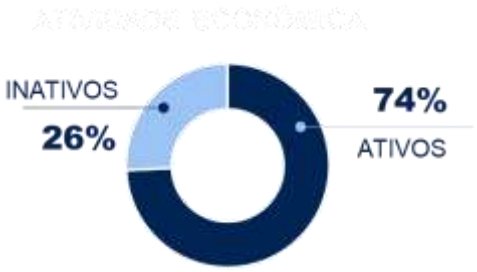
f) By race



g) By religion



h) By labor market status



Source: IPSOS.

Annex A2: Selected economic indicators and benchmarking of Brazil and peers

Figure 1: Current account Balances

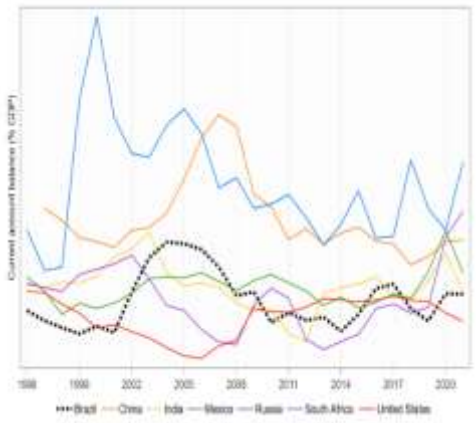
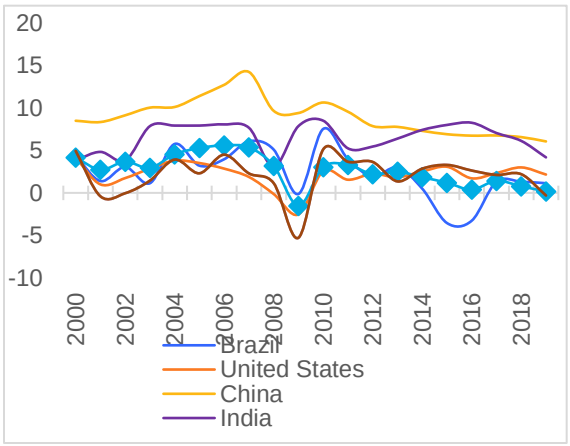


Figure 2: GDP growth rate



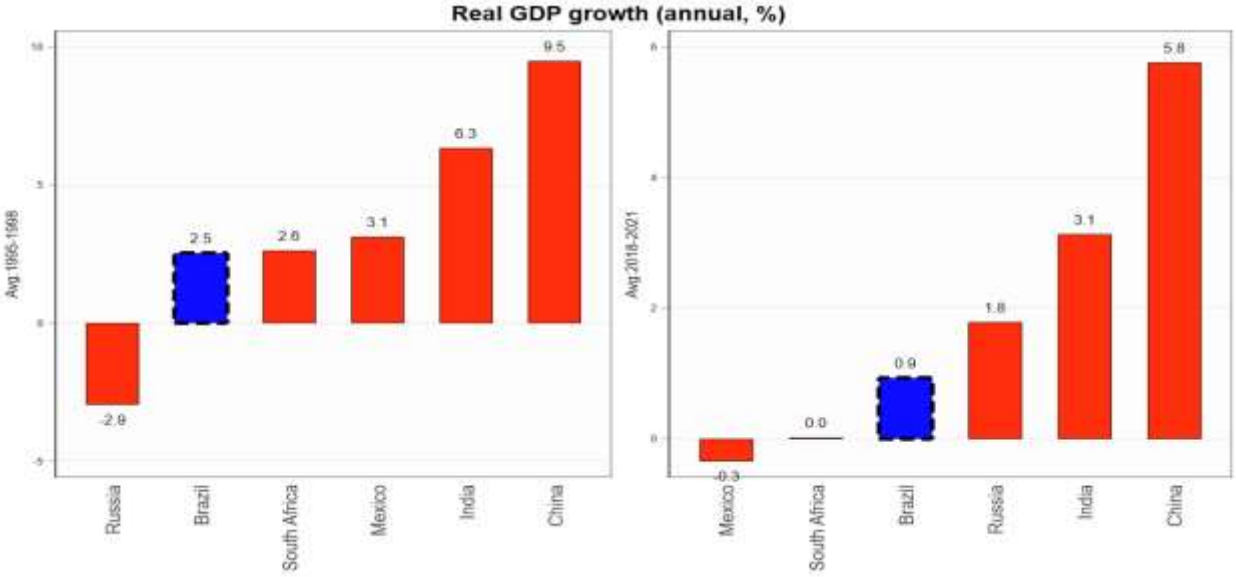


Figure 5: Contribution to Total GDP Growth, 2015 – 2019

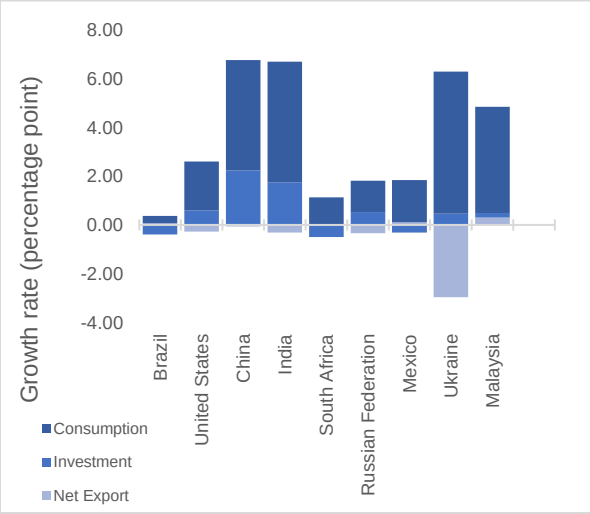


Figure 6: Contributions to Growth

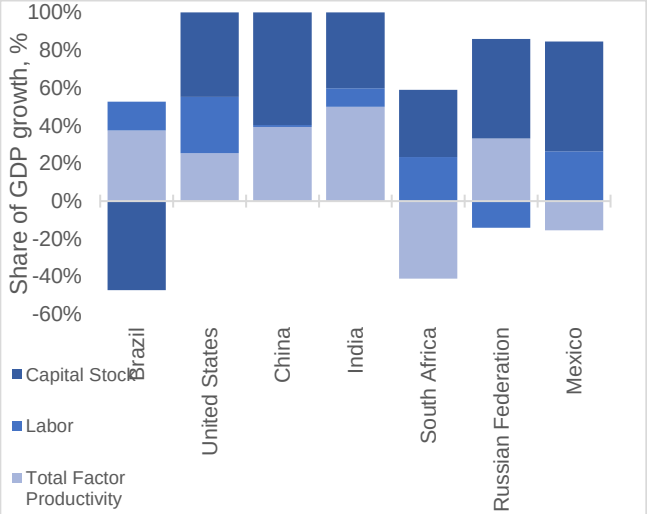


Figure 7: Real Effective Exchange Rate Index

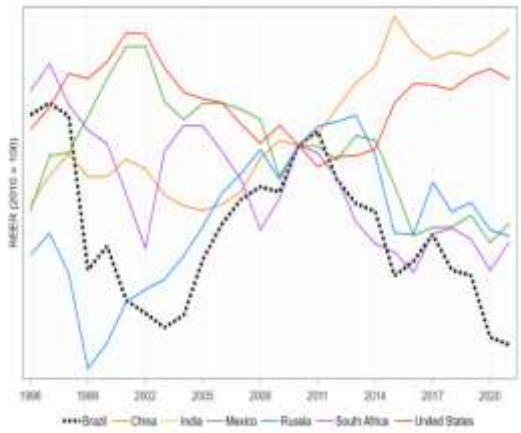


Figure 8: Govertment Debt (Brazil vs. Comparators)

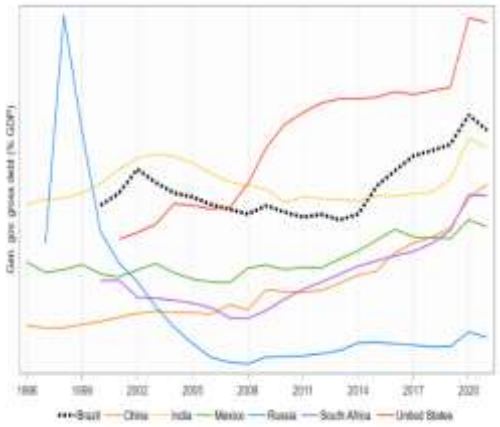


Figure 9: Total Investments (% of GDP)

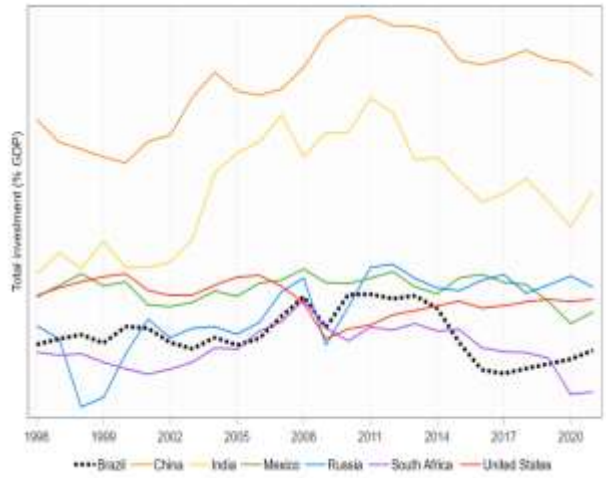


Figure 10: Government Expenditure (% of GDP)

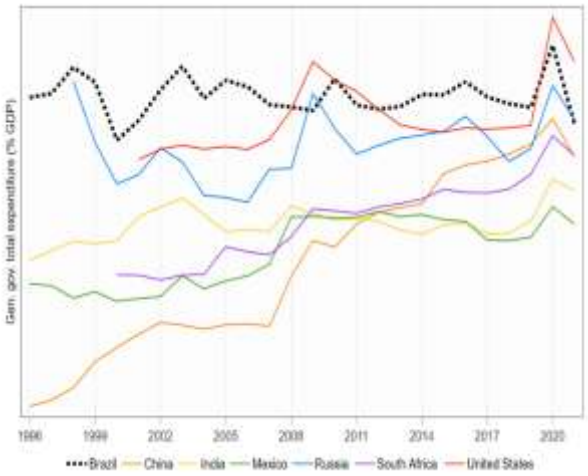


Figure 11: Real GDP per Capita Growth

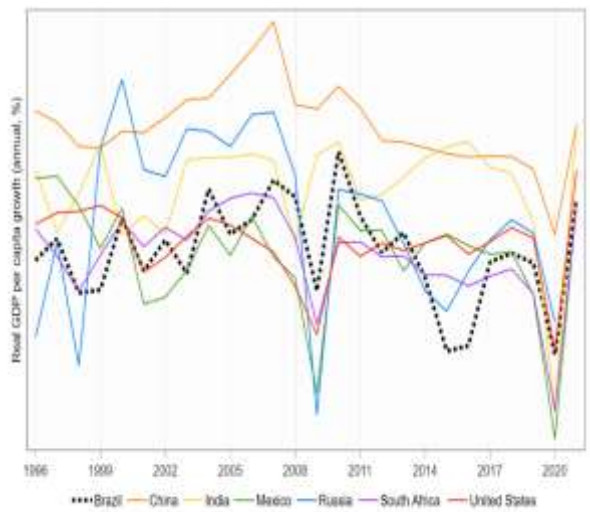


Figure 12: Government Primary balances (% of GDP)

Figure 13: Employment by Major Sector

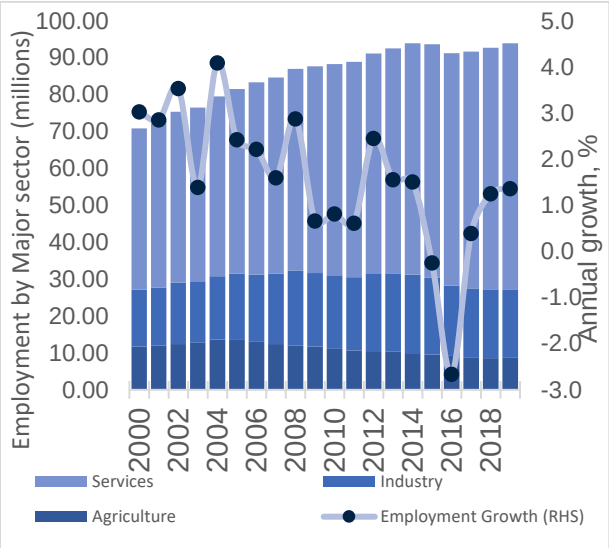


Figure 14: Value Added per Worker

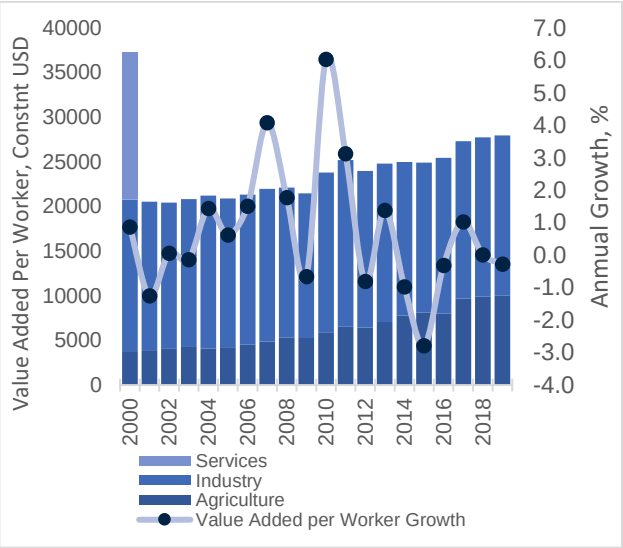


Figure 15: Monetary Sector in Brazil

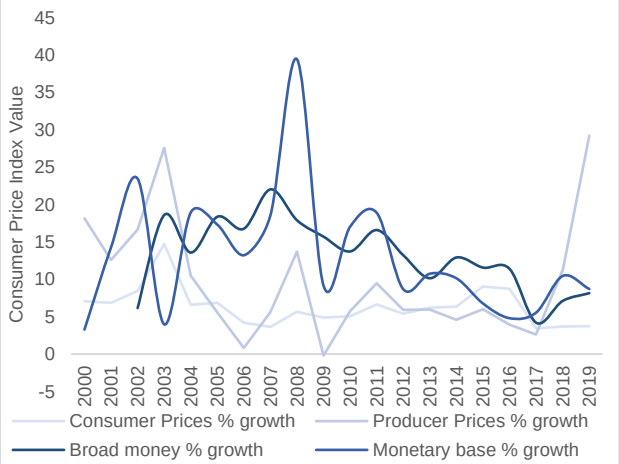


Figure 16: Fiscal Sector in Brazil

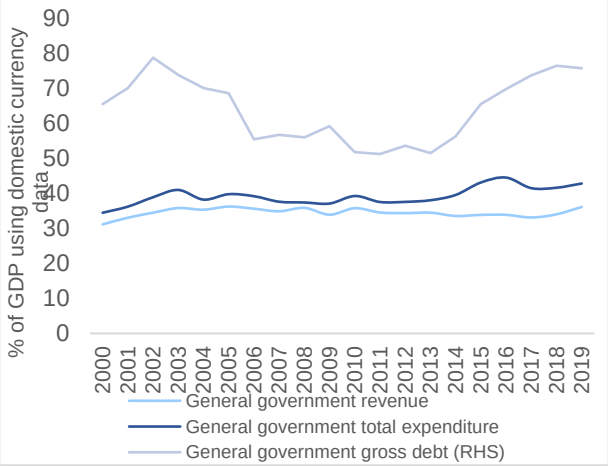


Figure 17: Brazil's Fiscal Balances

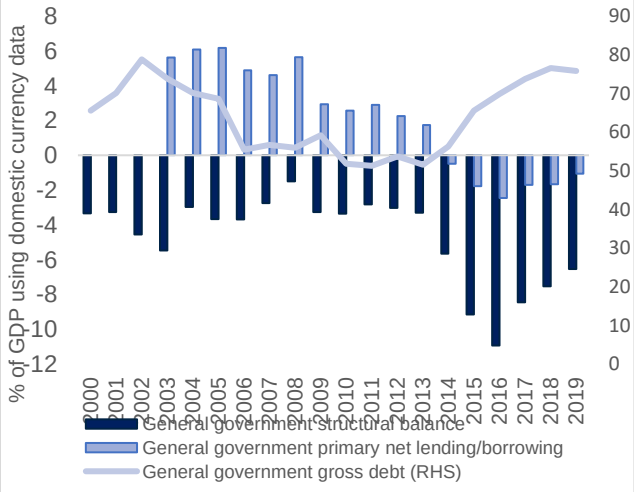


Figure 18: Aggregate Decomposition of Per Capita Value Added

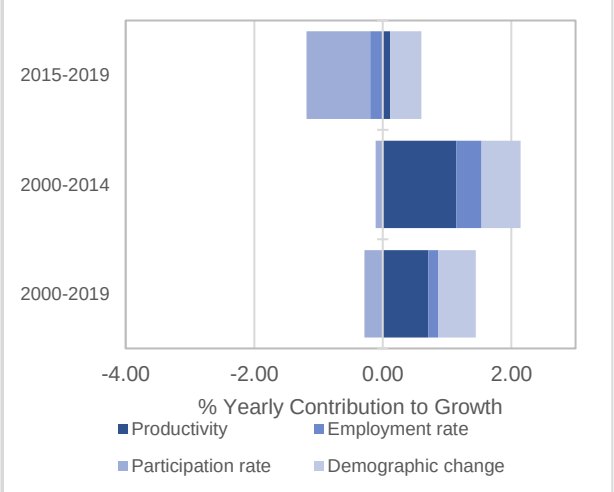


Figure 19: Productivity Change Decomposition (2015 – 2019).

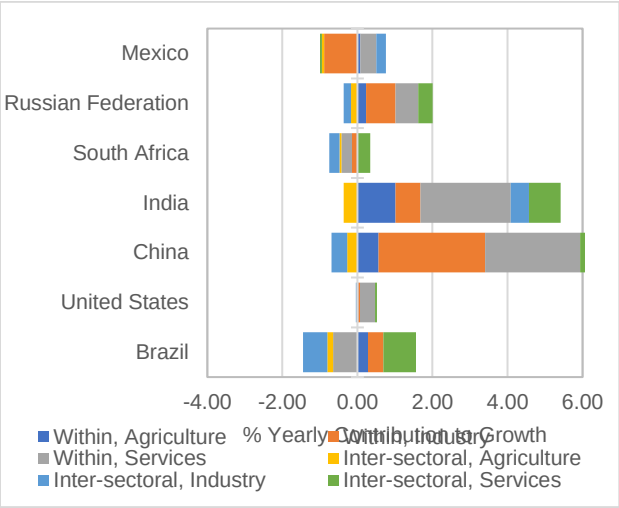
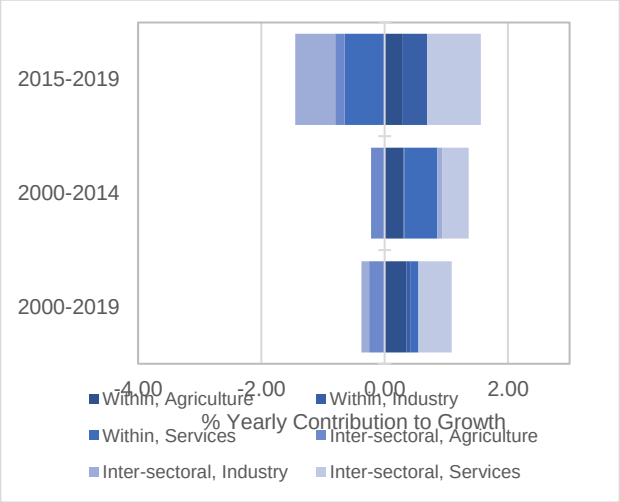


Figure 20: Productivity Change Decomposition in Brazil



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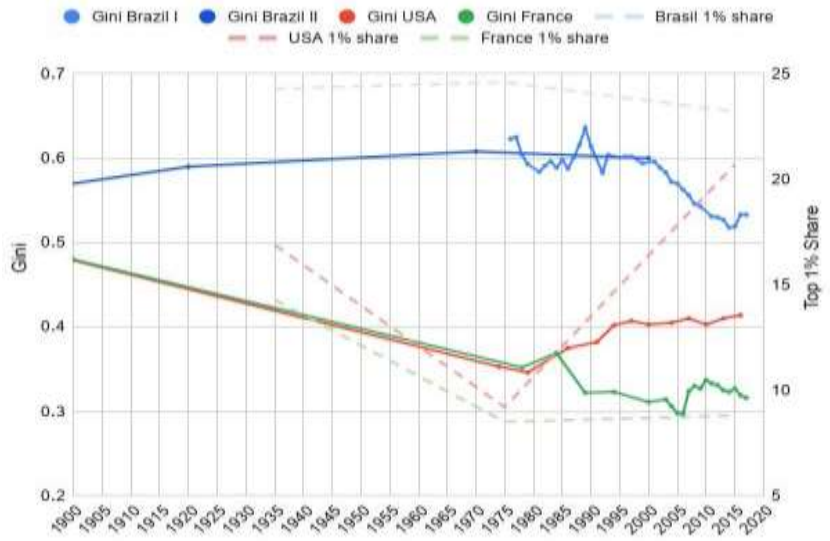
Part I. The trajectory for 2042:
Historical legacy and megatrends

Chapter 2 A legacy of inequality and exclusion

Brazil remains among the world's most unequal countries. Its Gini coefficient of inequality, high throughout the 20th century, increased even more during the military regime (figure 2.1). Although poverty rates declined during this period because of economic growth and industrialization, income concentration remained high. The institutions that have shaped these outcomes over centuries are likely to continue doing so. Their endowments are the initial conditions that generate a degree of path dependency in shaping Brazil's trajectory to 2042.

Figure 2.1 Income Gini for Brazil, France, and the United States, 1900–2018



Source: Fandiño et al. (2022), using on data from: Gini (left axis): Brazil I (IPEA 2020; World Bank 2020); Brazil II (Bertola et al. 2012); United States (Milanovic 2013; World Bank 2020); France (Morrisson and Snyder 2000; World Bank 2020). Top 1 percent share (right axis): (average share held by the richest 1 percent in 1930–1935, 1970–1975, and 2010–2015) (Souza 2016; WID 2020).

High inequality today is linked to the early forms of historical exclusion (box 2.1) and the limited success in overcoming them. Scholars have two main explanations for the persistent inequality in Brazil. One strand of analysis says persistence is due to institutions intentionally built in colonial times to extract income and wealth from one subset of society to benefit a different one.[38] Slavery was only formally abolished in 1888, with Brazil a global laggard. Precarious employment, including but not limited to slavery, as well as land and asset concentrations were an economic outcome of extractive political institutions. Their legacies remain to present days, with substantial effort to reduce income inequalities only after the mid-1990s.[39] Second, partly complementary, interpretation argues that inequality in Brazil and other Latin American countries became higher than elsewhere only from the early 1910s on, because political and economic elites were successful in maintaining restrictive political participation to preserve extractive economic institutions in the 20th century. Most consolidated democracies ended up setting comprehensive welfare states after the two world wars.[40]

Box 2.1 A time lapse of inclusion in Brazil

From the colonial period to the end of the 19th century, Brazil's fundamentally agrarian economy was based on slavery, large landholdings, and export trade of primary commodities.[1] The formation of the country on this basis can hardly be disassociated from the preservation of land concentration, racism, and the paths of subsequent economic development. From the 1930s onwards, Brazil went through a continuous industrialization process, initially concentrated in the southeast region. In the 1960s and 1970s, this process, characterized by import-substitution policies and a relative closure to international trade, intensified.[2] The impressive economic growth in that period did not occur without fiscal and inflationary problems that would lead the 1980s to be known as the "lost decade."[3] Only in the 1990s did the country manage to reduce state interventionism, open its economy to the international market, control inflation, and promote long-awaited fiscal and monetary reforms.[4] This process, as noted below, is also associated with an increase in inequalities.

An extensive demographic transformation was concomitant with economic changes. From the end of the 19th century to the first decades of the 20th century, the country received a large number of European immigrant workers. It is estimated that, between 1889 and 1930, more than 3.5 million foreigners entered the country.[41] Among other reasons, rural landowners and the political elite sought to replace slave labor on farms and to promote the "whitening" of the population.[42] Former slaves were completely abandoned by the state.[43]

Later, along with the industrialization process, there was a radical increase in the size of cities. The rate of urbanization, less than 40 percent in the 1950s, exceeded 80 percent at the turn of that century. In absolute numbers, the urban population increased from 31 million to 137 million between 1960 and 2000.[44] Workers left the countryside in search of better living conditions, higher wages, and (some) labor rights offered by the industrial sector.[45] These changes are directly linked to the problems of informality, low access to housing and the disorderly growth of peripheries and slums in large cities. The significant decrease in the fertility rate and the continued insertion of women in the labor market also need to be mentioned.[46]

Strong economic growth promoted social advances but was not accompanied by a reduction in income inequality until recently. Brazil was one of the countries whose economy grew most in the middle of the 20th century.[47] Economic prosperity is directly associated with the significant reduction in poverty since the 1960s.[48] It can also be related to the improvement of certain social indicators (such as illiteracy and child mortality) and the expansion of access to some services (e.g. electricity and basic sanitation)—although this occurred unevenly across regions of the country.[49] But the history of Brazil in the last century shows that economic growth, alone, may not have distributional effects; in fact, it can be accompanied by a concentration of income. The Brazilian state generally did not play a redistributive role that, in other countries, was often associated with democratic governments.

Democracy in Brazil occupied an incipient and discontinuous place, between authoritarian governments, in the 20th century. In addition to severely repressing political opponents and social movements, the last military government (1964–85) adopted economic policies that may have contributed to increasing income concentration.[5] Moreover, interventionist measures in the period may have been detrimental to the competitiveness and free functioning of the markets. The government continued with the welfare state model adopted in Brazil since the 1930s, which produced a big divide between insiders (workers in the formal job market) and outsiders (those in the informal sector). Given the size of the informal sector, such a model produced wage inequality. This welfare state model was compatible with import substitution industrialization; the social protection of industrial workers was funded by the consumption of informal (unprotected) workers. The configuration of social security granted different social rights (to pensions and access to health, for example) to (formal) workers according to their professional categories.[6] "Many Brazils" were reflected in the elite, the formal working class, and a large group of vulnerable Brazilians, largely excluded from political voice and economic opportunity.

After the return of democracy, the most vulnerable sectors of society began to be heard. With the 1988 Constitution, a welfare state focused on the distributional issue—though still mainly as a promise of rights. Among other advances promoted by the Constitution, suffrage became universal,[7] the right to retirement was standardized, and access to health services, a duty of the state, became a right of all citizens.[8] Public social spending in relation to GDP doubled in the two decades following 1988.[9]

Partly thanks to the new Constitution, public policies started to focus on the inclusion of the poorest population, and previous progress was expanded. For example, access to elementary school and electricity became almost universal, and labor income inequality has decreased significantly, in perhaps unprecedented figures—boosted by the economic growth during the 2000s.[10] The continuing growth of the real minimum wage, which after 1988 became the minimum value for constitutional benefits (as for the elderly and people with disabilities), is one of the factors in this decrease.[11] Agrarian reform and the progressivity of the tax system, however, were left out by the Constitution. Despite the widespread consensus that the country's extreme inequalities had to be reduced, an important interest of the elites prevailed in the 1988 Constitution: the increase in social spending was accepted as long as the new expenditures were not borne (progressively) by people with more resources.[12]

1. Dean 1971; Prado Jr. 1961.
2. Bielschowsky and Mussi 2005.
3. Reis et al. 1998.
4. Abreu 2014.
5. Gandra 2004.
6. Fleury 1994; Santos 1979. This welfare state regime based on belonging to professional categories, which was also observed in other Latin American countries, is associated with the Bismarckian model by some authors (Huber et al. 2008).
7. The right to vote was extended to the illiterate (Brasil 2020).
8. Kerstenetzky 2012.
9. Kerstenetzky 2012.
10. Kerstenetzky 2012, 2017; Morgan 2018.
11. Brito, Foguel, and Kerstenetzky 2017; Firpo and Reis 2007; Saboia et al. 2017.
12. Bresser-Pereira 2012; Fandiño and Kerstenetzky 2019; Kerstenetzky 2017.

One important source of inequality links to human capital. Despite improvements during the last two decades, gaps in health and education outcomes by region, sex and race remain glaring. The World Bank Human Capital Index is a synthetic indicator to measure the potential productivity of a child when reaching adult age (World Bank 2022a). The index score ranges from zero to one, and measures the productivity as a future worker of a child born today (relative to the benchmark of full health and complete secondary education). It can be decomposed into three main dimensions: survival, education, and health. Brazil's overall HCI improved from 0.53 in 2007 to 0.55 in 2019 (figure 2.2), most remarkably in total years of schooling.[50] The education subindex saw the most progress in the decade between 2007 and 2017, especially among nonwhite children. Disparities around race, region, and gender, however, remain strong. Girls overall tend to have higher human capital than boys, and white children score significantly higher in the index than nonwhites (figure 2.3). Nonwhite women experienced the steadiest progress in human capital accumulation in the last decade, while nonwhite boys remain increasingly behind due to dropouts, lower learning, and shorter life expectancy.

Figure 2.2 Brazil Human Capital Index, 2007–19

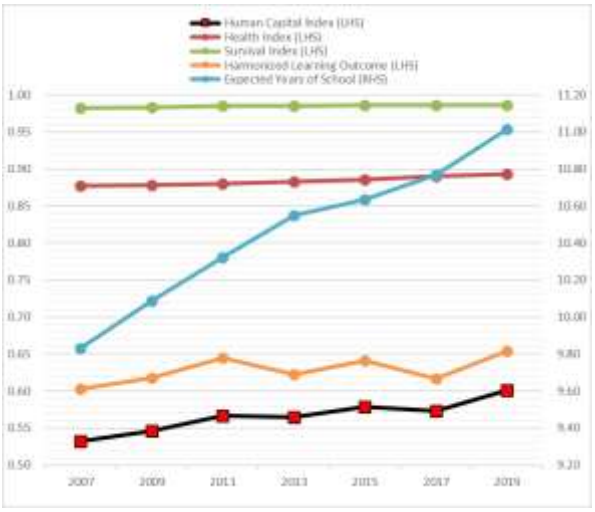
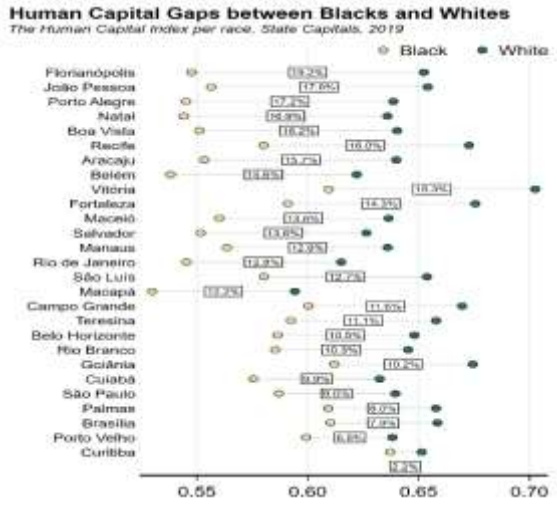


Figure 2.3 Human Capital Index gaps between nonwhites and whites, by state



Source: World Bank 2022.

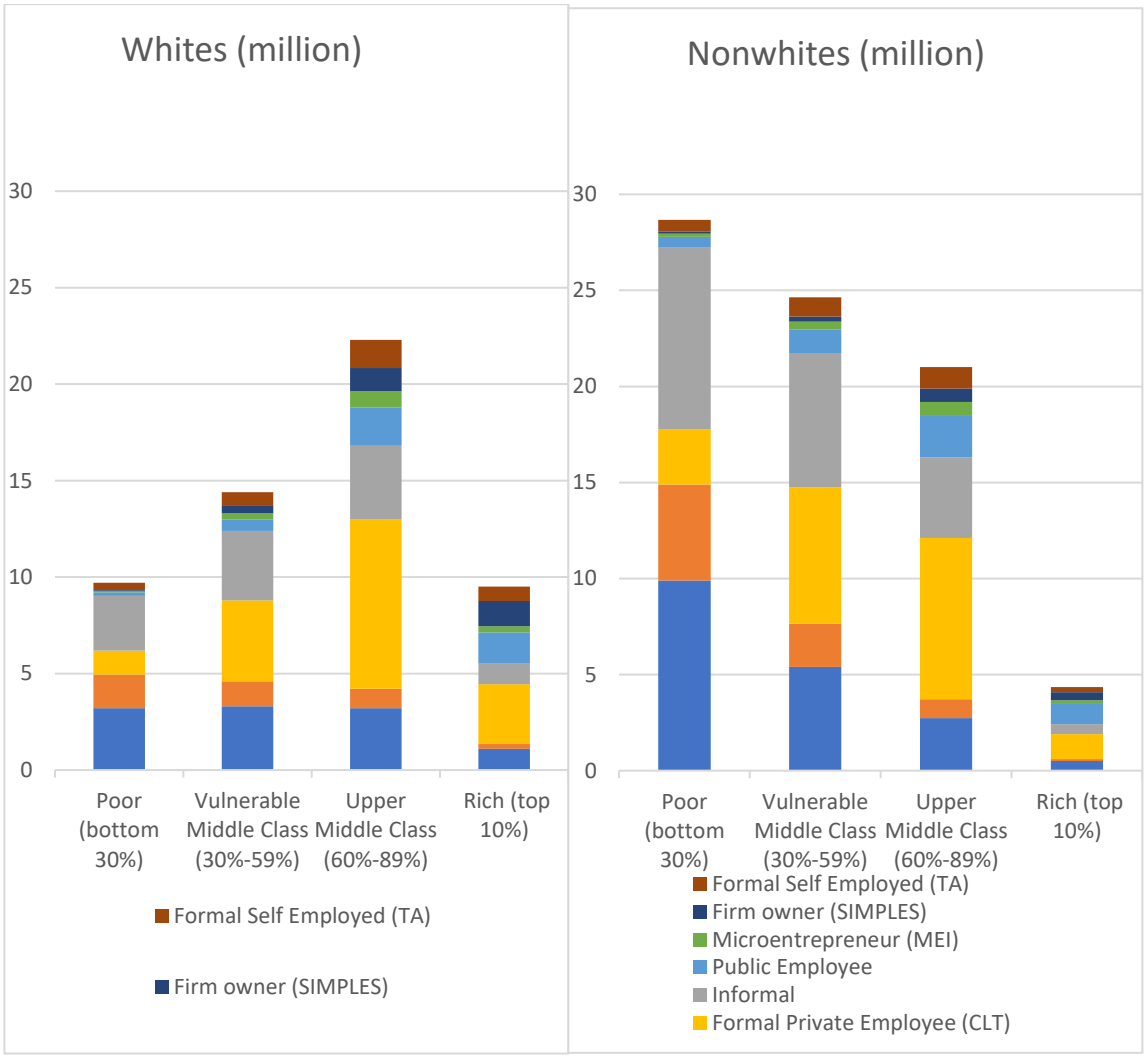
Disparities in human capital and access to opportunities translate into large differences in employment and job quality. Inequality of opportunity in human capital accumulation further translates into low quality of employment and unstable earnings. Low participation in the paid labor force, unemployment and informality dominates the activities of the two poorest quantiles (figure 2.4).

Despite girls having higher level of human capital than boys, most of Brazil's jobless are women in the bottom half of the income distribution. Women are disproportionately represented among the out of labor force along the entire distribution, and most prominently up to the fifth decile of income distribution. The gender gap in labor force participation is as high as 20 percentage points among the poorest, with poor women largely out of the labor force due to home and caring duties. It is also evident that very few people among the poor "do not want to work." Among male "discouraged" unemployed, the main barrier is the lack of available jobs locally, followed by the lack of suitable skills.[51]

Race and gender discrimination further reduce the returns to human capital for women and afro-descendants. Recent qualitative work conducted as background to this report highlights rampant discrimination that afro-descendent youth, with varying level of education, experience when approaching employers in search for a first opportunity due to their physical appearance.[52] Such accounts are consistent with several recent estimates of labor market discrimination. Afro-descendant women earn about 30 percent less than white males.[53] And even when controlling for education, location, and sector of employment, women and afro-descendants are paid less. Such discrimination in turn hampers the opportunity to realize a return to hard-gained education, and reduces the perception that education opens new opportunities. Compared with white men, the return for an additional year of education is 0.5 percent lower for white women, 2.5 percent lower for afro-descendant men, and about 2.9 percent lower for afro-descendant women. Gender discrimination intersects with race to hit afro-descendant women in particular. About 22 percent of the difference between women's and men's salaries is due to factors unobservable in available labor data, which is discrimination in the labor market.[54] Once the differences in the workforce distribution across sectors of employment are accounted for, the wage gap between women and

men was about 11.9 percent in Brazil in 2016, among the highest in Latin America and the Caribbean.[55]

Figure 2.4 Labor status of white adults (left) adults of color (right) (millions), according to per capita income deciles in 2019



Note: Occupational status of adults age 18–64 and not enrolled in school.
Source: World Bank, based on BraSIM 2019 microsimulation tool.

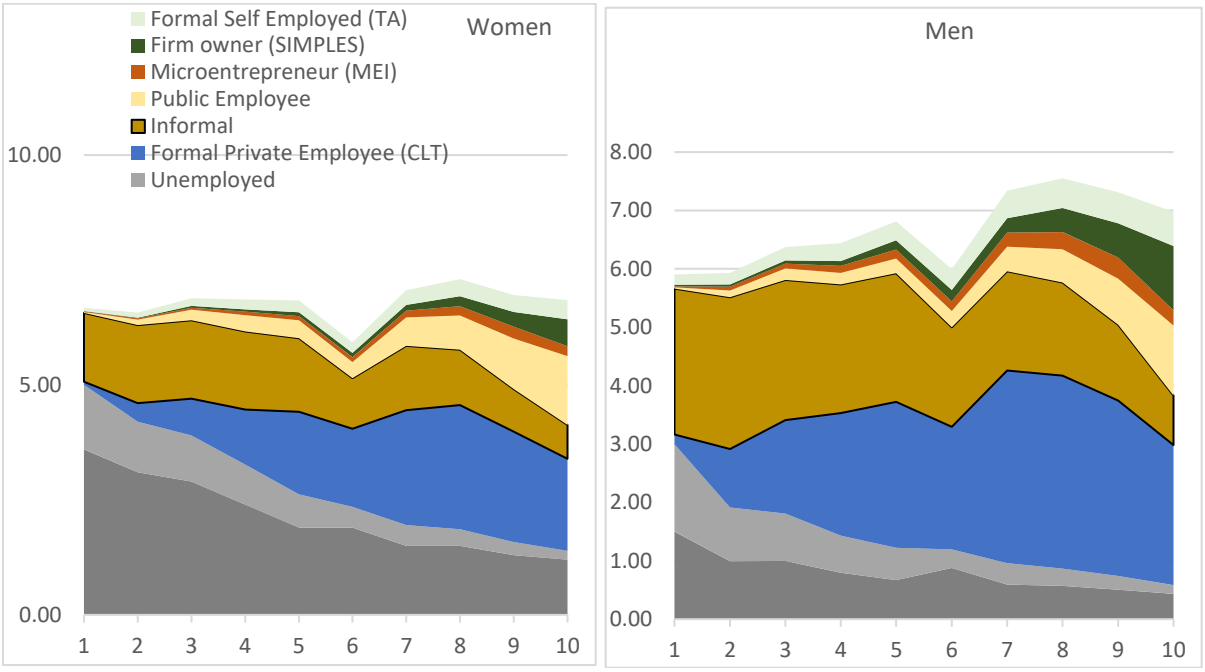
Poverty and household income distribution: Long-term view

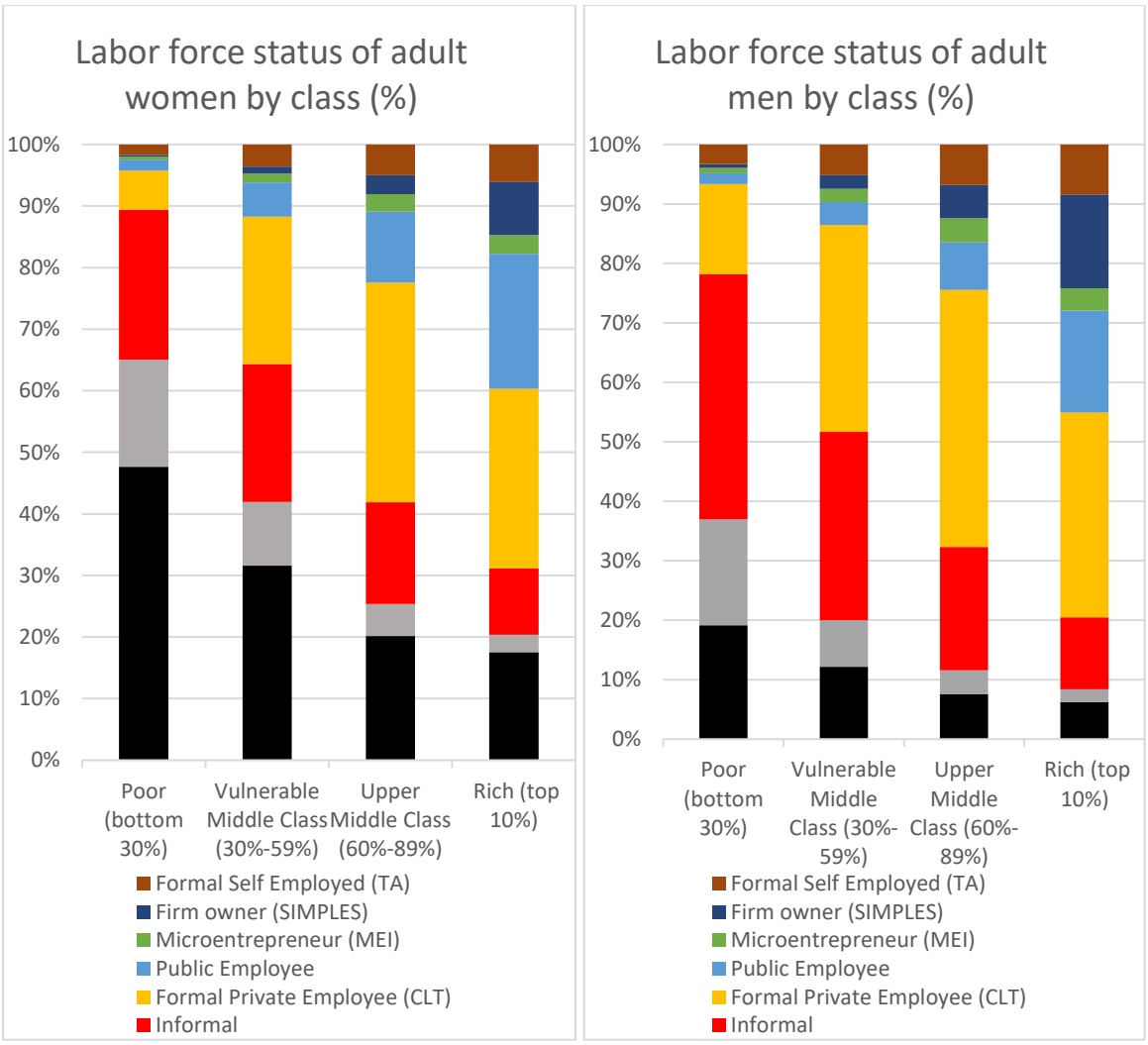
Brazilian history in the 20th century points toward a tight association between restrictive political institutions and income concentration. The share of the top 1 percent in total income was nearly 25 percent under the restrictive political institutions—episodes of dictatorship—from the early 1930s up to Brazil's democratization, anchored in its 1988 Constitutions (see figure 2.1). The share of the richest 1 percent was around 20 percent in the mid-1920s and climbed to more than 30 percent in the two following decades.[56] Income concentration increased under the military regime installed in 1964 (see figure 2.1), interrupting a leveling path for Brazil to become more egalitarian.[57] Income concentration on the top 1 percent is one dimension of this inequality, though how the gains from growth are appropriated by the remaining 90 percent or 99 percent also matters.[58] Even in periods of growth, the poorest received a small portion of total income.[59]

With democratization, Brazil started a course of poverty reduction and mild reduction in wage inequality that did not alter the position of the wealthiest. Democratization in Brazil entailed a long-term cycle of declining poverty and indigence, and some redistribution of total income and pro-poor growth, since the Gini coefficient also declined steadily (see figure 2.1). However, the concentration of income by the richest 1 percent did not decline at the same pace, with intergenerational persistence guaranteed through inheritance. Instead, the income redistribution that accompanied the transition to inclusive political institutions was at the expenses of the middle class,[60] leaving top income earners unaffected. This could occur thanks to a regressive tax system that draws relatively more on consumption than on income and wealth.[61] Thus, the poor carry a larger burden of indirect taxes.[62] Moreover, democracy and the ensuing social policies and economic growth reduced income inequality,[63] but not wealth inequality.[64]

Poverty and extreme poverty declined consistently in Brazil from the mid-1990s to the mid-2010s, due to a strong labor market and effective social protection programs. Poverty and extreme poverty rates dropped from around 40 percent and 15 percent, respectively, in 1993 (under high inflation) to 15 percent and 5 percent in 2013, when GDP per capita reached its peak before the onset of the economic crisis (figure 2.5). Between 1999 and 2012, an estimated 27 million Brazilians escaped poverty, representing half the reduction in poverty in the LAC region.[65] The success of the Real Plan in the mid-1990s, and the commodity boom in the mid-2000s contributed to increasing employment and wages. In addition, Bolsa Família Program, launched in 2004, contributed to halving extreme poverty between 2003 and 2008. Much of that inequality reduction was explained by the reduction of wage inequality,[66] with the real value of the minimum wage contributing to declining poverty of those groups whose salaries or social protection benefits were pegged to it.[67] Brazil also weathered the 2008 global financial crisis, but at the cost of growing economic imbalances, rising fiscal deficits, and increasing inflation.

Figure 2.5 Labor force status of adult women (left) and men (right) by per capita income deciles





Note: Figure shows employment according to attributed formal and informal labor market status. TA= formal self-employed; MEI= Micro Entrepreneur Firm; SIMPLES=Small Firm proprietor; CLT= formal wage employee.
Source: Team based on BraSIM 2019 micro simulation tool.

Poverty remains concentrated geographically and among specific groups

Most of the chronic poor are nonwhite people in the northern part of the country. They live in households with more members than the country's average, with significantly more minors, and with the head having little formal education.[68] Compared with states in the south, northern states have poverty rates 2.7 times as high and incomes per capita about 52 percent lower. The rural poor are the most vulnerable, with 5.7 schooling years, lower than other rural residents (7.3) and the urban poor (7.5). Three-quarters of all children in rural areas are considered poor. The urban poor reside close to economic centers but are not fully integrated to them, and almost 32 percent of adults are unemployed. Many of them live in the periphery, where access to most of the available jobs and amenities requires long and usually expensive trips.

Since the deep recession of 2014–16, poverty reduction has been elusive. GDP per capita receded 9 percent.[69] The capacity of the economy to respond to the 2014 crisis was very different from that in 2008. Many of the causes were associated with structural factors: low productivity growth, rising unit labor costs, demand reliant on consumption rather than investment, and a steady

expansion of government current spending.[70] More than 4.6 million Brazilians fell into extreme poverty between 2014 and 2017. In 2014–2019, the slow job creation and limited expansion of the country's safety net likely contributed to 5.7 million individuals falling into poverty, and 4.2 million into extreme poverty. Two years later, the poverty rate was 19.6 percent (higher than in 2013), and that of extreme poverty was 4.6 percent higher than in 2012.[71]

When Covid-19 hit, incomes of the bottom half of the distribution were still not back to pre-2014 crisis levels. In 2020, the country saw its worst recession in history: a sharp fall in GDP of 4.1 percent. The labor market saw the largest outflow in history as well. Labor force participation fell from 62.6 percent to 57 percent in 2020, with more than 10 million jobs lost at some point during 2020. By the end of 2020, there were still 4 million fewer individuals employed in the Brazilian workforce.

Covid-19 triggered a major response from the government that largely mitigated the impact on household incomes. To contain the income effects of the double crises, the Brazilian Government launched the massive emergency cash transfer program Auxílio Emergencial (AE). By reaching 66 million individuals with a maximum of R$4,200 over nine months,[72] the government prevented an increase in (monetary) poverty. Simulations suggest that poverty could have increased to close to 25 percent in 2020 (table 2.1). But the large transfers of Auxílio Emergencial—along with other measures such as the expansion of Bolsa Família, the already rolled out Seguro-Desemprego, and Programa Emergencial de Manutenção do Emprego e da Renda—more than compensated for the decline in labor incomes. Poverty rates using the $5.50 line are expected to be closer to 13 percent in 2020, and inequality may have come down. A weak recovery of the labor market in 2021 left many poor Brazilians vulnerable but the labor market recovery accelerated markedly in 2022.

Extreme poverty has also proven very hard to eliminate. In 2014, at the end of Brazil's long-run economic growth, the share of the population living with less than R$178 per capita was 5.6 percent, and hovering around this level since. This group includes the most vulnerable people in the Brazilian population and lacks consistent income-generating capacity. Such hard-to-reach pockets of poverty are likely to be receiving too little support to escape poverty, and require a coordinated array of interventions to improve capabilities, incomes, and assets.

The rise of Brazil's welfare state

Access to social protection traditionally depended on having formal wage employment. Despite a few legislative changes throughout the 20th century, after the landmark consolidation of the Brazil's Labor Code in 1943, the regulation of the labor market changed relatively little. Labor regulations, in turn, served as gateway to access most traditional risk-management instruments, even if only some of the benefits of formal employees were actually financed by employers and workers. While on average informal workers display lower productivity at the margin, the entry barrier imposed by the minimum formal labor package resulted in a very stark divide in outcomes and rights between those who could access a formal contract—the growing Brazilian middle class—and those who could not. An inclusive agenda for the labor market needs to address the drivers of informal employment.

In the last quarter of the 20th century Brazil created the foundations for today's welfare state, marked by universal access to healthcare and pensions. The "truncated welfare state"[73] emerged in the early 1930s. Social rights protected insiders (workers in the formal job market) but excluded most informal/low skilled workers.[74] This was maintained by the military regime despite

a massive expansion of outlays and beneficiaries.[75] The paradigmatic change by the 1988 Constitution included "outsiders" by universally opening the right to healthcare and some level of old-age pensions, regardless of affiliation with social security.[76] Since then, formal insertion into the job market ceased to be a requirement for some key social rights. As a result, nearly half of the Brazilian workforce became entitled to health care and pensions, with formal workers at around 40 percent of the workforce in the late 1980s.[77]

"Outsiders" were included by creating a new layer of noncontributory social entitlements alongside the legacy programs. Noncontributory pensions, rural pensions, universal health care, a smaller in-kind program eventually consolidated under the Bolsa Familia Program were superimposed on the pre-existing social security model reserved to formal workers. This layering did not touch the entitlements of the incumbent classes, and in this way allowed inclusion while avoiding political confrontation. A similar mechanism was used to create the unified health system, which led to public, free, and universal healthcare, while maintaining previous fiscal arrangements with private insurance plans and contractual arrangements with the medical profession.[78] Because of inclusion by layering, new sources of social stratification emerged**.** In particular, the closure in many coverage gaps in the access of basic services and programs was often marked by differences in the quality of services or generosity of benefits.

The unified health system (SUS) greatly reduced inequality in access to basic health care due to key institutional innovations but faced systematic underfunding challenges. Its creation included around half of the Brazilian population, one of the few examples in Latin America of a successful transition from a fragmented model (depending on employment status) to a universal and free healthcare system.[79] The inequality-reducing results of this reform made Brazil a showcase. But, since inception, the system has faced budget constraints, and Brazil will have to find the means to fund its future operations.

Important gains were also made to close the basic education coverage gaps in the 1990s, though this did not necessarily translate in equitable improvements in learning. Net enrollment rates for secondary education had been as low as 20 percent,[80] so nearly half of the Brazilian workforce was illiterate in 1980.[81] The first phase of primary and secondary enrollment expansion was largely limited to the southern regions. Only by the end of the 2010s did Brazil decouple basic education enrollment rates from geographic concentrations of poverty. Socioeconomic and racial gaps in basic education completion, and especially in learning outcomes, remain pronounced, however (chapter 4).

A few institutional innovations underpin these outcomes. Among the most important ones are those to provide information to policymakers and to coordinate policies whose implementation relies upon subnational governments marked by sharp inequality in both funding and state capacities. The North-South divide implies poor concentration in the North-Northeast regions along with lower revenue-collection capacity. It also implies that the decentralized distribution of competencies in these key policies – welfare, health, and education – would also produce similar inequality in policy provision if it were not for place-inequality-reduction policies on the revenue side. Besides, in the early 1990s, Brazilian states and municipalities displayed very weak state capacities, given the legacy of service provision that was both limited (due to the truncated welfare state) and centralized (due to the authoritarian regime). States and municipalities simply were not equipped to provide basic health care, fundamental education, and welfare on a universal scale. The Cadastro Unico, created in 2001, Brazil's social registry of low-income families, greatly contributed to good targeting of Bolsa Família Program and more than 20 other federal programs.

The Datasus, created in 1991, is a digital databank which provides detailed information for the planning, operation, and control of health actions. And although the INEP and the school censuses were launched in the late 1930s, their role as sources of information to education planning and operation were greatly enhanced from the early 1990s on.

Access to factor markets

Land markets have long been highly concentrated in Brazil, a persistent trait of Brazilian inequality. The high concentration of land in Brazil, as measured by the Gini coefficient, has remained relatively stable, with increasing trends, since the beginning of the 20th century. The Gini of landholdings was 0.78 in 1920, 0.787 in 1960, and 0.802 in 1985. Close political ties between rural and political elites explain the enactment of legislation favoring the concentration of land or the inaction in implementing deconcentrating policies[82]. Gini index for land ownership in agricultural establishments was 0.867 in 2017, the highest in the historical series started in 1995. While 50 percent of landholdings with less than 10 hectares occupy nearly 3 percent of the rural areas, 1 percent of those having 1,000 or more hectares occupy almost half of these areas.

Lower income groups did not benefit from access to credit policies before the 21st century, and those introduced later benefited mainly formal sector workers and pensioners. Before 2004, only civil servants at the state-level were beneficiaries of credit policies. Providing credit to small-scale entrepreneurs and financing consumption under “Credito consignado”took off after 2004 because it allowed garnisheeing wages or pensions as guarantees, but this approach did not support credit for informal workers. In the 2010s, progressive policies required banks to set aside a part of deposits to finance "productive oriented microcredit” to help fund small-scale economic initiatives (Chaise 2019, 2020). In practice, only a small part of this institutionally regulated microcredit benefited low-income borrowers in Cadastro Unico, while low-income households more often rely on family and more expensive forms of credit (World Bank, 2021; BCB 2018).

Unlike those for land and credit and land, policies for housing received much more attention, though their impact has been rather limited. The creation of the National Housing Bank (BNH) in 1964 charged state and municipal enterprises with administering policies for housing, water supply, and sewage collection. BNH policies led to a significant increase in coverage, but they were highly selective, with considerable subsidies benefiting the middle class at the expense of the poor.[83] Only one-third of units funded by the BNH between 1964 and 1986 reached low-income beneficiaries.[84] This outcome was a byproduct of a policy providing new units through long-term housing loans, which the poor could not afford.

Inclusion in the housing market slowed further following the closing of BNH in 1986. Only in 2003 was the public-driven supply of housing, particularly to the poor, boosted by the creation of the Ministry of Cities in 2003,[85] when subsidies and priorities for renovating houses increased the inclusion of the poor in the housing market.[86] Minha Casa, Minha Vida, a federal-led policy to provide new houses to the poor starting in 2009, allowed for a strong uptick in housing investments.[87] Despite these efforts, the housing deficit in 2015 was estimated at 6.3 million units, when nearly 8 million houses were in good conditions but unoccupied.[88]

The big divides in the labor market are byproducts of long-term processes. These include the concentration of industrialization in the South/Southeast and of low productivity work in the North/Northeast, the separation of insiders and outsiders in the labor market, resulting in persistently high informality, and the variations in minimum wage policies**.**

Access to infrastructure and utilities

As access to electric power and water became nearly universal, sewage collection and internet access lagged behind. In 1970, urban infrastructure was nearly absent. Even in the most affluent regions, the rule of thumb was that less than half of the population obtained access to electricity. In the North and Northeast regions, there was almost a complete lack of access to electricity, except for a few cities along the coast. Scarcity was even more pronounced regarding water supply and sewage collection. Supply was heavily concentrated in the Southeast and some cities in the South, but even there it did not exceed more than half the population. In the North, Northeast and Central-West regions, however, there was an almost absolute lack of access to water supply and sewage collection. The policies of the military regime (1964-1985) mostly benefited the South and Southeast regions while municipalities in the North, Northeast and Central-West regions have not experienced similar rates of improvement (World Bank 2022b). Besides, rural areas displayed very high levels of exclusion to infrastructure services although, given how urbanized Brazil is, most people lacking adequate infrastructure services live in cities.

From the late 1970s on, coverage incrementally expanded but at very different pace for the different infrastructure areas. In 2019, access to electricity was nearly universal (figure 2.XX). The Luz para Todos (LPT) program was officially launched in 2003. Its goal was to end the exclusion from electricity in the most impoverished areas of Brazil. The program was coordinated by the Ministry of Mines and Energy and executed by state-level electric power companies and rural electrification cooperatives in 24 of the 26 Brazilian states. The LPT beneficiaries were entitled to the Electric Power Social Tariff, a discount on electric power granted to residential clients registered in the Federal Government's Social Programs database (Cadastro Unico). In some cases, the deduction could reach 100 percent, if household consumption was limited to 50 kWh/month. From 2004 to 2015, more than 3.2 million households, health facilities, and public schools were connected to the electrical grid through the LPT program. The Northeast region received higher investments over the period.

Figure 2.6 Evolution of access to basic services (% families), Brazil, 1978-2019

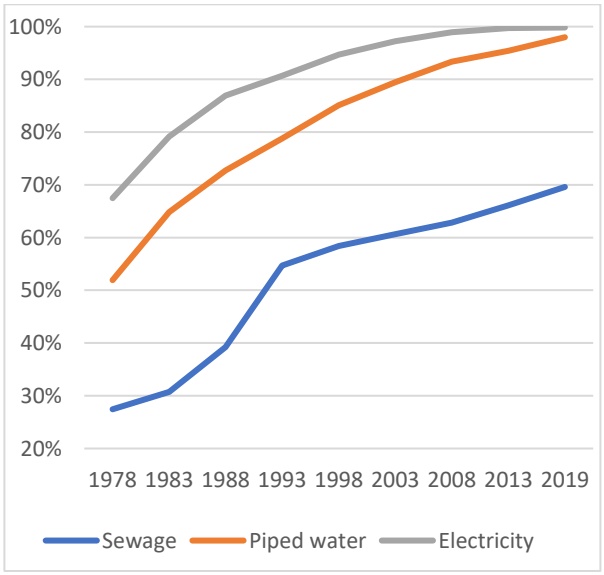
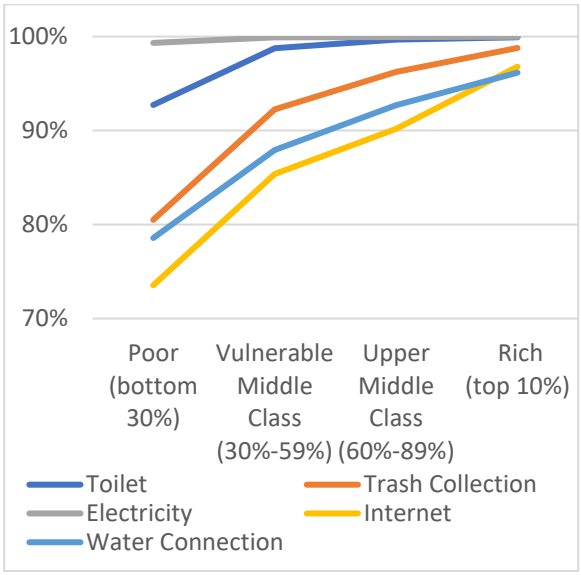


Figure 2.7 Access to basic services by income group (2019)



Source: Palomo et al (2020). Elaboration based on PNADs data from 1978 to 2013 and PNADC for 2018 and 2019[89]

Access to water remains far from universal, and coverage increased at slower pace than electrification. The major challenge to inclusion in this policy area was the costs of extending networks to rural and poorer areas as well as to small towns. That is why the inclusion of the poorer resulted from a change in the concept of access to water through which having piped water in one's property turned out to be considered as a positive observation of access The program *One Million Cisterns*, launched in 2003, was responsible for that leap in coverage since it indeed surpassed its numerical goals. Even so, cross-region inequality in coverage remains: while the South (89.7 percent), Southeast (91.3 percent), and Center-west (90.1 percent) regions displayed nearly universal coverage in 2017, the North (57.5 percent) and Northeast (73.3 percent) regions lag behind.[90]

Access to sanitation lags most in coverage. Off rural poor people, 21 percent still practice open defecation, and 22 percent have no private bathrooms, compared with 5 percent and 5 percent, respectively, of the nonpoor rural population. Policy-specific production costs help explaining why these infrastructure policies display such different speeds regarding expansion in services. Once large investments in electric power plants are made, distribution costs turn out to be much lower.[91] The provision of sewage collection, however, requires substantial installation costs any time a new area needs to be served, a technical factor that, along with deadlock arising out of disputes regarding which level of government has the authority to grant services, explains why this policy lags behind. The new legal framework of sewage collection, approved in 2020, is expected to overcome these institutional challenges and bring private investments to this policy area.

Access to the internet increased, with ongoing disparities depending on schooling and income. The internet started operating in Brazil on a commercial basis in the mid-1990s. Since then, use has systematically increased, though access remains stratified by level of schooling and earnings. Overall, 77 percent of households were using internet in 2019. In the same year, 90 percent of adults with upper secondary education had access, thus closing the gap with holders of tertiary degrees.[92] But internet use remained below 60 percent for families in the two bottom income quintiles and for adults without a high school diploma. The consequences of an unequal access to internet are profound, given its role in mediating access to labor and product markets, and in the exercise of political voice. Moreover, the expansion of the internet among Brazilian was also segmented according to technological equipment, with lower income users relying disproportionately on mobiles phones, dial lines and access through public equipment. The costs of such disparity became even more glaring during the pandemic, when the internet became essential for children to continue schooling, and to gain access to some of the emergency social protection programs like AE, BEm, and unemployment insurance (for some time).

Inclusion came at the cost of a wider fiscal gap

As the social obligations of the Brazilian state increased, public spending also grew. The increase in the size of the public sector over the last three decades is largely due to the growth in the number of local public employees, largely explained by their increasing role as providers of social services. Indeed, the share of the federal employees in total public occupation has declined and the share of states has fallen sharply. And wages are very unequal by branch and level of government. Local wages are the lowest particularly those at the executive level—that is, those in charge of the provision of services. Federal public employees ended up obtaining higher real gains than subnational public employees.

Several social policies enacted to protect the poor since the 1990s were not accompanied by sufficient financing strategies, leading to a growing fiscal gap. As inflation and indebtedness turned out to be less feasible as alternatives to fund government outlays, suboptimal strategies to raise revenues became dominant, such as increasing the taxation of economic activity, which operates against the creation of formal jobs, or increasing the reach and rates of indirect taxes, which makes the tax system even more regressive. On the spending side, the dominant strategy turned out to be the earmarking the budget and indexing expenditures. As a result, the public budgets—of all government levels—became increasingly squeezed, removing the room for new policies and investments.[93]

"Inclusive democratization" in Brazil was restricted to the expenditure side, **while taxation became more regressive in the democratic period**.[94] The maximum marginal income tax rate fell from 50 percent in 1988 to 25 percent in the following year.[95] And the already low marginal tax rates have been hollowed out by exemptions and deductions, including those for spending on private health and education.[96] Horizontal inequality between taxpayers with similar incomes is the norm, benefitting mostly high and medium earning self-employed and capital owners. Dividends transferred to shareholders ceased to be taxed after 1995 (although Brazil's corporate taxes are relatively high). The emerging picture is a welfare state that overtaxes formal workers and poor consumers,[97] leaving taxation of land and inheritance extremely low, with the top 1 percent paying much less of their earnings in income taxes than general taxpayers. So even after the 1988 Constitution, the tax system contributed to concentrating income—not to reducing inequalities.

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Chapter 3 Megatrends shaping the road to 2042

Major forces shaping the future

Megatrends drive change and set the parameters for social and economic processes to respond. Technological progress, climate change, and population aging are among the global megatrends shaping Brazil's future.[98] Whether domestic or external, megatrends tend to be inescapable, meaning that societies are forced to adapt to them. The focus of this is to understand how these secular changes may affect the future well-being of different types of households, individuals, and firms and how institutions and public policies should adapt as a result. Where possible, these megatrends are formally incorporated in analytical scenarios.

Together, path dependency and megatrends provide a basis for projecting Brazil's economy into 2042 (box 3.1). While path dependency, as discussed in chapter 2, tends to be a gradual projection of the past into the future, megatrends can be more dynamic—both technological progress and climate change, for example, can be associated with exponential growth. Consider how Tesla, after initial teething problems, revolutionized the global car market within a few years, becoming more valued by investors than all other car manufacturers combined. Climate change, by contrast, is associated with dramatic tipping points, including species extinction and loss of ecosystem services, if global warming is not held to an increase of 2 degrees or less compared with the latter part of the 19th century. This chapter lays out some of the key characteristics of the three megatrends considered in this report: technological progress, climate change, and demographic change (aging).

Box 3.1 Projecting Brazil's economy to 2042 based on path dependency and megatrends

To project Brazil's economy to 2042, this report used a computable general equilibrium model with state-level disaggregation and detailed extensions for land use (including deforestation) and greenhouse gas emissions.[1] The baseline, determined by a combination of path dependency and megatrends, is dynamically projected based on capital accumulation and assumptions on total factor productivity (TFP). The model was calibrated to be consistent with World Bank global economic projections.

Path dependency determines the investment rate and TFP. The amount of savings determines the annual resources available to invest in maintaining the capital stock and in new investments. Brazil's low savings rate (chapter 1) and a fixed amount of foreign capital inflows imply relatively low total investment in the projection period. TFP is to a considerable extent a reflection of institutions: markets determine the efficiency with which factors of production are allocated and the implicit incentives for firms to efficiently produce products, for example, by improving their management practices or fostering product innovation. The model assumes TFP growth close to zero which is consistent both with Brazil's longer-term experience and its experience over the past five years (chapter 6).

Megatrends affect population growth and commodity prices—as well as TFP. Brazil is an ageing society, and having fewer children eventually translates into declining population growth. The population baseline is consistent with population projections by the Brazilian Institute of Geography and Statistics. Commodity prices reflect dynamics in global commodity markets and are thus affected by multiple factors. Climate change is an important megatrend as it can affect global crop yields directly; it can also change consumer preferences and international trade policy. For example, global decarbonization reduces demand for fossil fuels like coal and oil while consumer preferences for a less meat-based diet will affect food markets. Governments may also attempt to impose their standards on trading partners, for example, through border adjustment mechanisms.

The baseline for Brazil 2042 is broadly a middle of the road scenario of global temperature rises between 2° and 3° C—meaning that additional adjustment will be needed to limit global warming to the 1.5° C increase called for in the 2021 United Nations Climate Change Conference (COP26). In the baseline, Brazil's emissions rise to 1.7 gigatons of carbon dioxide equivalent by 2030, about 40 percent higher than targeted under the Nationally Determined Contribution (NDC). In the scenarios presented later in this report, technological progress is projected as path dependent but has significant potential to change the economic outlook.

In the baseline, Brazil grows slowly and its economic structure barely changes. Path dependency and the megatrends combine to slow growth to an average 1.4 percent a year. This is only 0.5 percentage points above projected population growth, because new investments barely replace depreciating capital stock, productivity is low, and global commodity prices generate only weak tailwinds. This means that Brazilians become barely more prosperous on average in the next 20 years. Stagnation also means that Brazil's economic structure hardly changes: it remains an economy focused on agricultural and mineral exports. Brazil may also become more unequal as wages rise somewhat faster for the richest segment of the population than the poorest and the labor force remains relatively unskilled and informal. Deforestation accelerates as global food demand continues unabated and Brazil does not diversify beyond agriculture—this is one of the main reasons why Brazil misses its NDC.

Note:
1. The model is housed in the University of São Paulo.

Technological change

Global technological change has been profound, and the Fourth Industrial Revolution is the latest wave of global technological disruption. Klaus Schwab of the World Economic Forum coined the term "Fourth Industrial Revolution" (also known as Industry 4.0), arguing that the world has gone through three revolutions, starting with the agricultural revolution and followed by the industrial revolution and the digital revolution, each of which fundamentally altered societies and economies.[99] He posits that at the turn of the 21st century, the Fourth Industrial Revolution commenced that is distinguishable from the digital revolution, which by 2000 had reached a point of sophistication and integration that was profoundly affecting society and the economy. Technologies under Industry 4.0 are situated at the intersection of the internet of things (IoT) and biology and include autonomous vehicles, 3D printing, advanced robotics, distributed ledger technologies (such as blockchain; see box 3.2), new—often more resource-efficient—materials (such as synthetic meat), and artificial intelligence/data science.

Box 3.2 Digital finance and currencies

The issuance of digital currencies by central banks has gained prominence among market participants and policymakers as a way to promote financial inclusion through innovations in payment services. Central Bank Digital Currencies (CBDCs) would add to the available array of digital financial services, amplify innovation and contestability in core financial services, and mitigate the risk of loss of monetary sovereignty from privately issued digital currencies. However, CBDCs pose risks, including cyber risks, potential for money laundering, financial disintermediation, and increased risk of bank runs, unwanted capital outflows, and exchange rate volatility. Institutions such as the Bank for International Settlements, the International Monetary Fund, and the World Bank have issued guidelines and recommendations on CBDC design for mitigating these risks.[1]

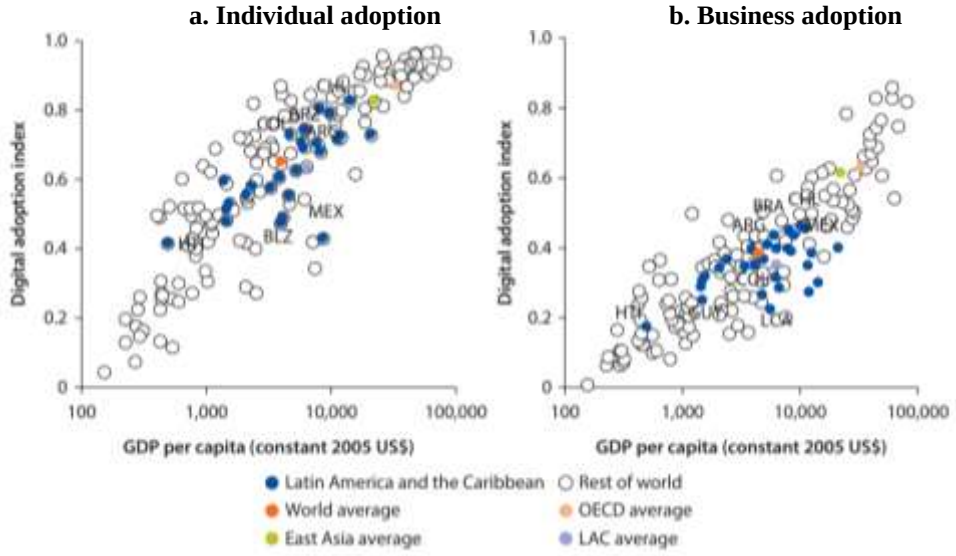
The Central Bank of Brazil has already engaged with the private sector and international peers in preparation for launching a CBDC. Most payments in Brazil are already digitally enabled, and fast payment systems (FPS) have started to replace cash, notably benefiting from a Central Bank–sponsored FPS initiative (PiX).[100] In such contexts, a CBDC would ensure continuing access to Central Bank money,

improving the resilience and safety of payment systems and promoting openness and competition among private payment providers. Based on consultations with stakeholders, the Central Bank in May 2021 released general guidelines for a digital real, with a plan to launch by 2024.[2] A CBDC would add to the collection of financial instruments and help develop the market for new financial services, with positive spillovers on financial inclusion.

Notes:
1. Alfonso, Kamin, and Zampolli 2022.
[2]. PiX dominates small-value transactions, with more than 70 percent of the total number of digital transactions, substantially surpassing traditional bank transfers (Alfonso, Kamin, and Zampolli 2022).

The many Brazils are reflected in differential rates of technology adoption across households and firms. When Schwab published his book in 2017, he noted that one part of the world was entering the Fourth Industrial Revolution, while 17 percent of the world had not experienced the Second Industrial Revolution (no access to electricity) and half the world's population had missed out on the Third Industrial Revolution (no access to the internet). Under these definitions, only about 0.1 percent of Brazilians have not experienced the second industrial revolution but 23 percent have yet to experience the third industrial revolution (see chapter 2). Adoption of Industry 4.0 technology is generally low in Brazil, at about 4 percent compared with about 20 percent based on international benchmarks.[101] Recent evidence for the state of Ceará (a poor state) points to a technological divide across companies: in addition to the low adoption of technology for the Third and Fourth Industrial Revolutions, there are large gaps across firms, with smaller firms lagging in particular.[102] At the aggregate level, digital adoption in Brazil, for individuals and businesses, is consistent with its level of development (figure 3.1)—meaning that higher levels of development will require a faster closing of digital gaps, both with more advanced economies and across the country.

Figure 3.1 Digital adoption by individuals and businesses, 2015



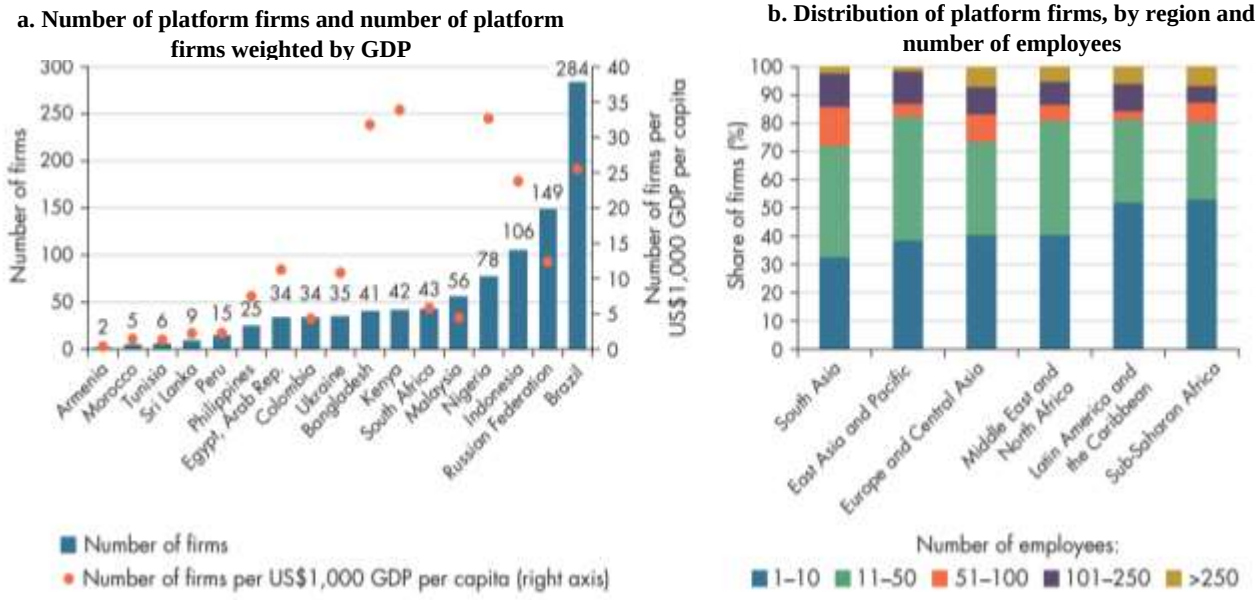
Source: World Bank 2016.
Note: The Digital Adoption Index was compiled for World Bank (2016) and is described in detail in chapter 6.
LAC = Latin America and the Caribbean; OECD = Organisation for Economic Co-operation and Development.

Today's technology allows firms to harvest, store, and quickly generate value from data, and this data collection and use on a massive scale will increase in coming years. By using data to

improve decision making, firms can achieve results that were not possible before. A 2011 study of 179 large US firms found that firms using data-driven decision making achieved a 5–6 percent increase in productivity relative to expected productivity given their other investments and use of information technology.[103] Collecting and analyzing detailed information on individuals and business processes and outcomes at high frequency can enhance the economic efficiency of firms, spurring innovation in products and services and reducing transaction costs. Ultimately, this translates into economic growth.

The advent of digital platforms is providing new ways for firms to grow. Digital platforms provide new opportunities for smaller companies to trade goods and services. The nature of digital platforms—operating globally and existing principally in the cloud—changes which markets can be accessed and how firms relate to each other. Improved connectivity enables firms to outsource technical expertise through online platforms and sell to new customers.[104] Digital platforms may find fertile soil in Brazil, where digital adoption by businesses and individuals is among the highest in Latin America and the Caribbean (LAC) region (see figure 3.1). Also, compared with low-income countries and other middle-income countries, Brazil has the largest number of platform firms and the fourth largest number when GDP per capita is considered (figure 3.2 panel a)

Figure 3.2 Number of firms and platform firms weighted by GDP per capita and distribution of platform firms, by region and number of employees, 2019



Source: Nyman and Stinshoff forthcoming.
Note: Panel a shows the number of platform firms and platform firms weighted by GDP per capita in selected low- and middle-income countries. The total sample of platform firms is 959. Per capita GDP is in 2010 US dollars for 2019.

The expansion of remote work opportunities and platforms will also enable individual skilled workers in Brazil to tap into global value chains in services. Alongside growth in remote work opportunities, digital platforms represent an alternative and more important gateway to global labor markets for workers with higher-order cognitive skills, particularly those in countries with lower wages. The total freelancer population, estimated at less than 3 percent of the global labor force and about 1 percent in LAC,[105] is still small, but platforms also enable the sale of goods and services in the local and national economy. Covid-19 lockdowns led to a 50 percent increase in

the use of delivery platforms in LAC in March 2020, and downloads of microtasks and freelance platforms increased 30 percent in the region in the first quarter of 2020. Adoption of information and communication technologies (ICT) is associated with a reduction in the wage gap with the rest of the world. At the same time, the convergence of wages will be an increasing challenge for local firms in search of talent and may impede the local introduction of innovations. Finally, platform work is likely to close gender wage differentials in local labor markets, as observed by a study of delivery services in Brazil.[106]

Service companies will be able to achieve economies of scale more easily with technology. Service companies are more likely to incorporate ICT in their business processes than goods producers, allowing the most efficient to grow in new markets through the internet.[107] This will lead to new trade patterns. Digital technologies also facilitate adopting cost-effective processes, because they reduce the need for proximity to input providers.

Production processes for manufactured goods will be especially affected by developments in IoT, advanced robotics and artificial intelligence (AI), and 3-D printing. IoT can be seen as an extension of ICT technologies. Newer ICT technologies in the IoT space, such as big data and cloud computing, can reduce the costs of coordinating globally fragmented production by making it easier to track and monitor components as they move through the supply chain. Advanced robotics can reduce labor-intensive manufacturing and potentially move production closer to the final consumer. Alongside other new process technologies, 3-D printing can meet the demand for customized, quickly delivered goods and even the construction of new buildings, with minimal input of manual labor. And IA can increase capital productivity and results in labor market impacts that differ by skill level and economic activity (box 3.3)

Box 3.3 The economic impacts of artificial intelligence

The application of artificial intelligence (AI) will increase capital productivity through the impacts of increased automation on production and through the more efficient use of big data to improve product quality and tailor products to consumers. Moreover, the combination of these capital productivity improvements and skill-biased technological change—where skilled jobs benefit from more capital and unskilled jobs are more easily replaced by new technologies, including AI—will also result in differentiated labor market effects by skill level and economic activity.

To get a sense of what this could mean for the Brazilian economy, a scenario was created using capital productivity shocks estimated by PricewaterhouseCoopers (PwC) in a computable general equilibrium model.[1] The productivity elasticity of AI capital per worker was estimated for a broad set of economic activities and countries. AI capital per worker is estimated as a combination of the labor share in the economy and the share of AI capital uptake relative to new capital. For developed countries, estimated productivity elasticities (0.55 on average) and new AI capital uptake (one-third of all new capital) were large and yielded annual capital productivity improvements of around 0.2 percent. In the case of Latin America, estimated productivity elasticities (0.12 on average) and AI capital uptake (one-sixth of all new capital) were lower, resulting in annual capital productivity gains of around 0.02 percent—10 times lower than for developed countries.

The scenario for Brazil applies these two capital productivity shocks for three broad economic sectors (energy, utilities, and mining; manufacturing; and private and public services). The results suggest modest increases across economic aggregates, including GDP, government revenue, and investment (see table). Higher growth also raises greenhouse gas emissions. Both poorer and richer states benefit. Roraima, a poor state in the Amazon, experiences the largest economic gain in this simulation due to the high prevalence of services affected by the AI shock. States with significant manufacturing sectors, like São Paulo, other

southeastern states, and Amazonas, also experience large gains. States in the northeast and—as no agricultural shock was simulated—Brazil's agricultural powerhouse states, Mato Grosso and Mato Grosso do Sul, experience the smallest gains in this simulation.

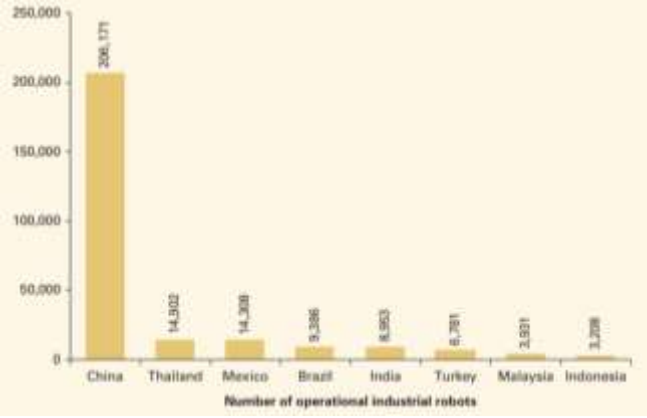
As expected from AI, which is a complement to skilled labor, wage gains tend to be stronger for skilled workers. This suggests that although all states would benefit from AI in the aggregate, additional government revenue associated with economic growth should be invested in measures to reduce inequality, including skills training and fiscal redistribution.

Note:
1. PwC 2018.

The incorporation of Industry 4.0 technologies by firms will change the geography of global manufacturing activity. The use of 3-D printing could reduce the need to trade manufactured goods over long distances and thereby shorten supply chains. The combination of investments in transport infrastructure and widespread adoption of digital technologies is likely to lower logistics and coordination costs. Although empirical evidence is limited, it is estimated that new logistics technologies could reduce shipping and customs processing times by 16–28 percent.[108] This could lead to greater participation in global value chains by countries with high costs and large impediments to trade.[109]

Besides high-income countries and China, several large emerging market economies, including Brazil, have already accumulated a stock of industrial robots. Although China has by far the highest number of operational industrial robots, Brazil is not behind other middle-income countries (figure 3.3).

Figure 3.3 Operational stock of industrial robots, selected countries and regions, 2015



Source: Hallward-Driemeier and Nayyar 2017, p. 99.

Factors that determine a location's attractiveness for production will increasingly include the ability to use new technologies, **while labor-cost arbitrage could become less relevant.** This requires consistent access to internet connections and reliable electricity.[110] Therefore, the emerging Industry 4.0 technologies could contribute to changes in the relative efficiency of countries in producing goods. Alongside expected falling costs in trade, these changes can have implications for the comparative advantage of countries, and thus for patterns of globalization.

Technological change will require updating regulations relating to digital access, protection of users and consumers, and competition in concentrated markets, among others. Technological change could accelerate inclusion if digital access becomes universal and data are

affordable. For consumers, this could result in digital leveling, as there would be many digital substitutes for more expensive real goods and services (box 3.4). At the same time, some recent digital advances bring considerable risks, including mental health issues and political control. For firms, recent technological change increases competition by creating better ways of competing and spurring innovation and productivity. In contrast, when digital firms experience near-zero marginal cost, that can stifle competition, resulting in multinational monopolies or oligopolies with very limited oversight from national authorities. Ensuring that technology benefits society remains the role of governments, so regulation and through international cooperation, will assume an ever more important role.

Box 3.4 How will virtual reality shape the future?

Reality will be increasingly virtual. A parallel world will provide opportunities for entirely new virtual experiences. The rise of social media has connected people globally. Facebook has 1.8 billion members and Instagram 1 billion. Social media have in some ways brought countries closer together. In other ways, however, social media have increased polarization and resulted in psychological damage. Studies point to the adverse psychological effects of social media platforms on teenagers. For example, US adolescents who spend more than three hours a day on social media are at heightened risk of mental health problems.[1]

Digital spaces are likely to become more encompassing, increasingly influencing perceived realities. The metaverse that is being developed by Facebook's parent company, Meta, will allow people to interact in digital spaces as digital representations of themselves (avatars). Other companies are already creating digital worlds, especially through video games (such as Sony, through its PlayStation) and augmented reality experiences (such as Pokémon Go by Niantic and Nintendo). This will mean that the cost of reducing physical distance will move toward zero as more and more experiences can be shared virtually. It will also mean that human desires can be fulfilled at a much lower price, which will essentially be governed by the sunk cost of the hardware to access digital worlds and the current cost associated with virtual services. As with most digital inventions, the cost of digital experiences is likely to fall dramatically relative to their physical equivalents, making them increasingly competitive and affordable.[2]

Depending on how companies price those digital experiences, this could result in a great "virtual leveling," where the low cost of virtual goods and services boosts subjective welfare. In principle, this could have similar subjective welfare impacts as consuming goods and services in the real world and, given the greater potential affordability, this could be inclusive as more poor people could obtain access to similar, albeit virtual, experiences as those available to richer people in the real world.

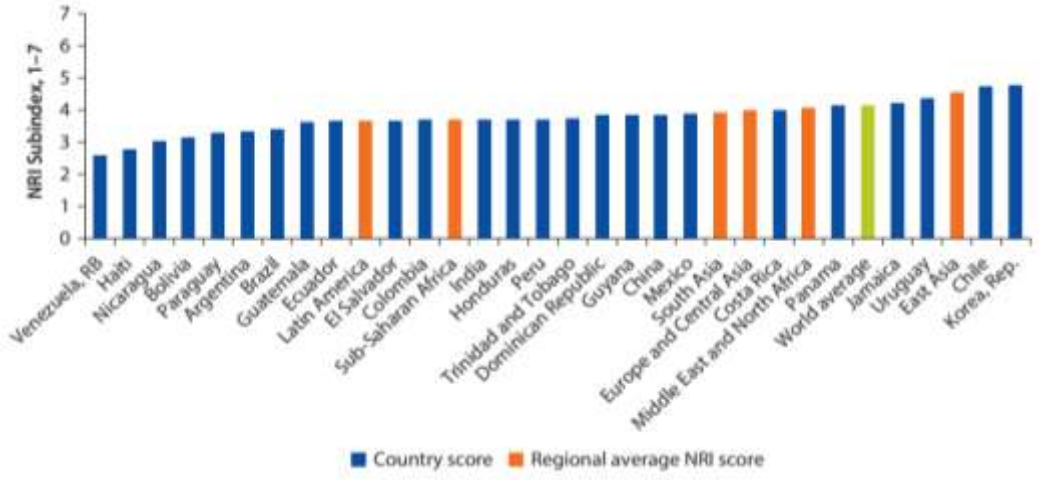
Greater well-being and welfare are often measured and correlated with increased access to resources and consumption, but in a virtual world, access to virtual goods may improve well-being and welfare in some cases while creating mental health challenges, disrupting communities, and isolating and polarizing people in other cases. In principle, this could mean the increasing detachment of well-being and traditional welfare concepts, which tend to be linked to consumption, as the value of consumption will be increasingly difficult to measure.

Such virtual worlds will place enormous power in the hands of individual companies. The providers of digital worlds will have the ability to shape people's experiences, their well-being, their political views, and thus, eventually, their behavior in the real world. The next 20 years will therefore likely be shaped by fundamental debates about how to govern virtual realities and how to keep corporate power in check. It will be critical for governments to regulate digital worlds that reflect a social consensus,.[3]

Notes:
1. Riehm et al. 2019.
2. Damm 2021.
3. World Bank 2016.

Several constraints in Brazil may hold back changes brought by Industry 4.0. Despite great opportunities, the use of new technologies is likely to differ substantially across countries because of variations in skills and infrastructure and barriers to competition and market entry. In particular, countries in LAC have some of the worst business environments related to digital technologies (figure 3.4). For Brazil, some factors may slow change or even prevent it from happening access to low-wage workers (or low labor costs), high cost of electricity or difficulty accessing a low-cost electrical grid, and the dependence of new technologies on 5G networks being fully implemented and economically viable. Given the relevance of digital technologies in enabling firms to achieve scale and innovation, easing these bottlenecks will be key to reaping the full benefits of Industry 4.0.

Figure 3.4 Business environment related to digital technologies (country scores), 2017



Source: WEF 2017.
NRI = Networked Readiness Index.

Enabling both producers and consumers to fully benefit from the possibilities generated by the new waves of technology requires adjusting the regulatory framework. Harnessing the full growth potential of digital technology is predicated not just on investments in skills and infrastructure but also on reforming regulatory barriers. Concerns are growing about excessive data collection, insufficient governance of data held by private firms, and inadequate protection of personal data. Brazil has taken initial steps to deal with some of these issues by establishing the Central Data Governance Committee in 2019. This federal institution is responsible for promoting data sharing among federal agencies and integrating citizens' information in a single platform (the Citizen Base Register). Other concerns include market concentration. However, traditional policy solutions to promote competition may not be adequate since incumbents control other firms' access to technologies that directly affect their revenue stream and competitive competencies.[111] Therefore, new regulations may be needed on what data can be collected, how it can be used, and how different firms can grant and provide access to certain technologies.

Technology and the new world of work

Operational technologies combining data with automation, such as smart robots, 3-D printing, and the IoT, will affect the nature of work.[112] The automation of some human-performed tasks has been going on for two centuries.[113] Brazil will need to accelerate its adoption of these technologies if Brazilians are to catch up with other parts of the world in living standard

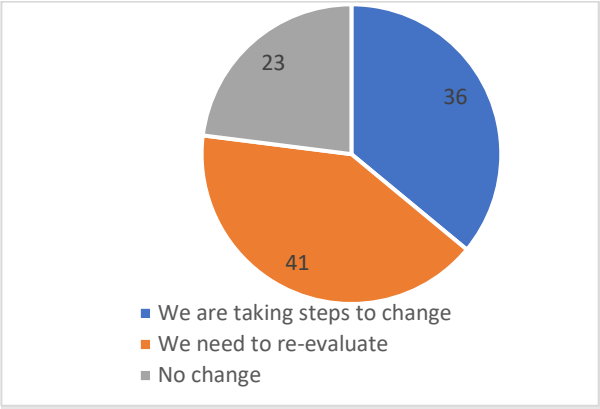
and if Brazil is to become more competitive in international markets. At the same time, the global literature is replete with warnings on the effects of automation on employment and wage inequality,[114] a particular concern in Brazil because of the low skills composition of its labor force. Survey data reveal that Brazilians perceive automation as both a risk and an opportunity, with much more negative perceptions among those with lower education levels.[115]

Over the last two decades in developed countries, employment and wages fell markedly in occupations with a high content of routine tasks, likely due to technological substitution. This trend was first observed for the United States and then confirmed for other OECD countries such as Germany, Japan, Portugal, and United Kingdom.[116] In contrast, the literature identified wage growth in low-skilled nonroutine tasks and cognitive-intensive occupations. The resulting job polarization between high and low earners is considered the result of technology adoption, with middle-level and middle-wage routine jobs being the most susceptible to automation.[117] New stages of job automation, extending to cognitive- and skill-intensive jobs, could occur with the introduction of advanced technologies such as AI and 3-D printing.[118]

An important concern is that automation will exacerbate income inequality and harm institutions. It is possible that intensive digitalization and automation will exclude workers without the appropriate skills from markets and, at the same time, induce labor-intensive companies to compete by exploiting vulnerable workers.[119] Some observers argue that the competitive advantage of firms (and their shareholders) holding the technology may generate social and political harms beyond greater income and wealth inequality, such as the eventual failure of inclusive institutions, which create incentives and opportunities for the majority of the population.[120]

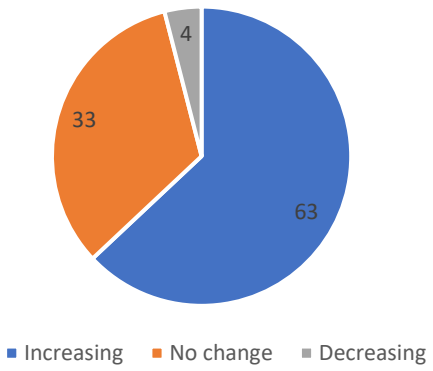
Covid-19 accelerated the automation of work, especially for white collar jobs. For instance**,** 80 percent of executives surveyed by the World Economic Forum in 2020 reported an expansion of remote work due to Covid-19.[121] This change in the organization of work may have lasting consequences, as firms are now better equipped to tap into the skilled workforce in lower cost labor markets. Moreover, many employers responded to worker shortages by accelerating the adoption of labor-saving technologies (figure 3.5), and such capital and process investments are likely to remain in place after the pandemic. More than half of major company executives interviewed in 2020 planned to accelerate the automation of jobs in coming years (figure 3.6). Surveyed executives estimate an overall negative employment balance following this transformation, with obsolete occupations outnumbering new hires.

Figure 3.5 How would Covid-19 affect your decision to adopt automation?



Source: EY Global Capital Confidence Barometer 2020. Note: The report surveyed more than 2,900 executives in 46 countries and 14 sectors between 2/4/2020 and 26/3/2020.

Figure 3.6 How did Covid-19 affect investment in digital transformation?

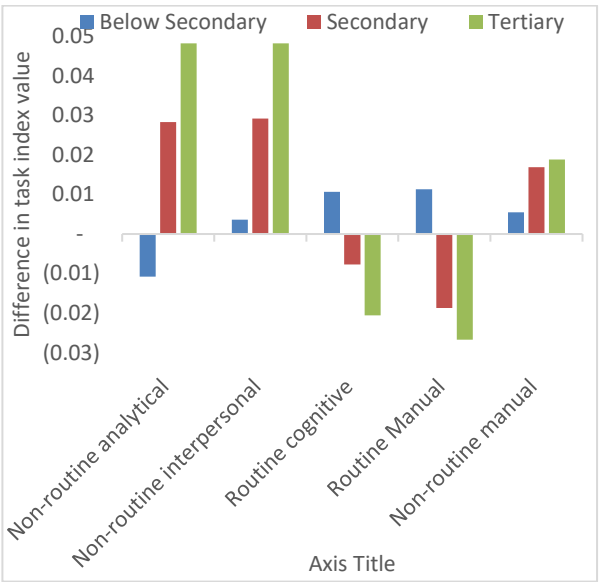


Source: EY Global Capital Confidence Barometer 2021. Note: The report surveyed more than 2,400 executives in 52 countries and 14 sectors between 11/2020 and 1/21.

In Brazil, occupations with a higher content of routine and manual tasks have been declining over the last decade. Recent analyses based on skill surveys in developing countries suggest that occupations with a higher content of routine cognitive and manual tasks have been shrinking over the last decade in Brazil by a few percentage points.[122] This corresponds to fewer elementary occupations,[123] technicians, and machine operators. In contrast, the share of jobs more intensely using nonroutine tasks, such as professional and service workers, increased. These transformations occurred during a period of intense job churning after the 2014–2015 economic crisis.

Such transformations increased the concentration of better educated workers in the occupations more likely to grow in the future and exposed the vulnerability of less educated workers. Between 2012 and 2020, workers with secondary and especially higher education increased their share in occupations with a high content of nonroutine analytical and interpersonal tasks (figure 3.7). Those with less than a secondary education increased their concentration in occupations with a high content of manual and routine tasks. Because these jobs were most in decline during the decade, employment rates among low-educated workers recovered least after the 2015 crisis.[124]

Figure 3.7 Changes in average task content of occupations, by education level between 2012 and 2020

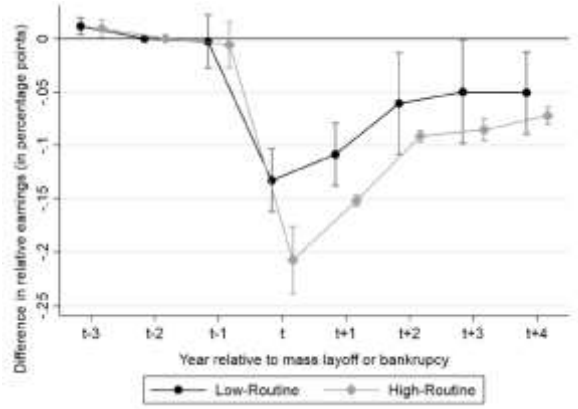


Source:

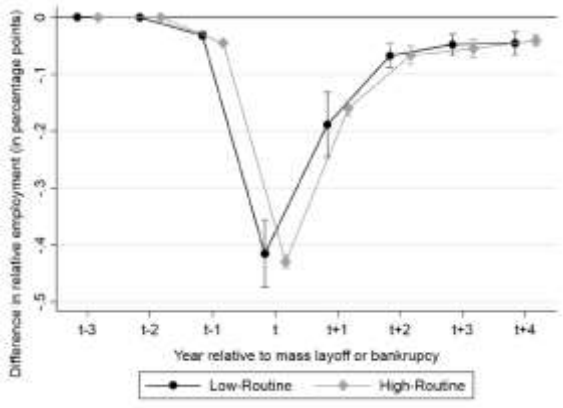
Workers performing routine tasks in Brazil are more likely to be engaged in lower-paid jobs. Recent causal evidence shows that, even after education and age are controlled for, workers employed in occupations with mostly routine tasks are more vulnerable to long-term wage loss and higher unemployment spells after a company closure than workers performing nonroutine tasks (figure 3.8).

Figure 3.8 Effect of job displacement on future earnings and employment for workers in low-routine versus high-routine jobs

a. Future earnings



b. Future employment spells



Source: Martins-Neto 2021, based on RAIS administrative data for Brazil.
Note: Figures show the estimates of time-to-event dummy variables interacted with a displacement indicator from a regression including individual, region, sector, time-to-event dummy variables, and year x education effects. The dependent variables are relative wages and relative employment.

Studies on the effects of digital technology adoption in Brazil also point to heterogeneous impacts on employment. These impacts occur through various pathways: through the additional jobs created by expansion of firms that benefit from digital technologies, through lower fixed costs

of exporting using online trading platforms, and through internet-enabled worker–firm job matches. However, digital technologies can also substitute for workers. There is evidence in Argentina, Brazil, and Mexico of a decline in employment in industries that are more exposed to robot adoption, especially in the middle of the wage distribution.[125] ICT adoption by firms is associated with increases in total employment in Argentina, Chile, Colombia, and Mexico (including both white- and blue-collar jobs), but not in Brazil.[126]

A reduction in routine and manual occupations is also occurring in other countries in LAC but is not necessarily leading to job polarization. The prevalence of routine jobs has decreased slightly in LAC economies over the last two decades.[127] A recent survey of countries in the LAC region shows increases in occupations with analytical and interpersonal tasks.[128] A study using census data found that routine jobs were not declining in most LAC countries but that Brazil and Mexico were exceptions.[129] However, contrary to findings for developed economies, none of these studies found evidence that these trends are leading to job polarization in the overall labor market.[130]

The slower pace of technology adoption in Brazil suggests that the great automation transformation has yet to occur. Recent analyses of adult skills indicate that occupations in developing countries use routine and manual tasks more intensively.[131] Lower labor costs reduce the savings from introducing automation, and the specialized skills needed to automate work are relatively expensive in developing countries. Moreover, some developing countries have imported routine-intensive occupations from developed countries through offshoring.[132] Thus, because the starting situation was different, developing countries have not yet adopted labor-substituting technologies on a large scale.[133] This could change rapidly, however, should the cost of technology adoption fall in developing countries.

Most important, the future impact of technology on work also depends on policy choices. Cross-country evidence suggests that policies and the business environment affect the impact of technology adoption on employment and wages. One of the most studied examples of technology adoption is the use of ICT and internet penetration, as ICT provides more export channels for services and goods but also allows sourcing labor more easily outside the firm. In five LAC countries, but not in Brazil, ICT adoption by firms is associated with increases in total employment, as well as substitution in favor of more skilled workers in most cases.[134] In Brazil, however, internet penetration led to lower employment for low-skilled workers performing manual tasks.[135] The policy environment can affect such outcomes: labor regulations or wage rigidities can prevent firm restructuring to achieve a new optimal technology-worker mix. Similarly, digital adoption is associated with a decrease in the share of self-employed in the economy in countries where barriers to entry of new firms are lower.[136]

Technology, when coupled with distortive tax and regulatory frameworks, enables the further casualization of work relationships in the formal labor market. In the last decade, nondependent and autonomous forms of work have been rising in developed countries (the gig economy), in association with the increased ability of individuals to sell skills and services on digital marketplaces and with firms' preferences to source workers through these means, particularly in the service sector. In parallel, the share of informal self-employment in most developing countries has remained stable, with a few exceptions in East Asia.[137] For these reasons, a World Bank white paper recently argued that a rising segment of the labor market in high income countries is becoming more similar to the labor market in developing countries.[138] The rise of the gig economy is only one factor explaining the growth of independent work in formal labor markets,

as the labor and tax frameworks also distort firms' decisions to source skills from the market as services instead of hiring dependent employees.[139]

There is thus concern of a downward convergence in job quality between formal self-employment and informal work, with risks born more by individuals than by firms or the state. Self-employed workers are subject to more income volatility than wage employees, including in Brazil,[140] and even in OECD countries, self-employed workers earn less on average than permanent wage employees,[141] though more than temporary workers. With "clients" instead of "employers," these workers are unable to access social protection instruments in most countries, such as unemployment insurance and employer-funded health and pension contribution schemes. In addition, a large share of self-employed workers are in this condition not by choice but because of a lack of wage work opportunities.[142]

Climate change

Brazil is vulnerable to climate change and affects climate change as a top 10 greenhouse gas (GHG) emitter globally (World Bank 2022)**.** One in five Brazilians are vulnerable to shocks related to climate change and costs to the economy are considerable. At the same time, Brazil is also a significant contributor to climate change, accounting for about 2.9 percent of global net GHG emissions (2018 data).

Brazil has been losing an estimated R$1 billion a month (approximately US$175 million) for years as a result of some 30,000 disaster events a year.[143] Brazilian firms lose US$22 billion (1.3 percent of GDP) as a result of infrastructure disruptions, most of them due to disturbances in transport and power linked to climate-related extreme flooding events. Moreover, rising sea levels are expected to greatly increase the number of people, industrial settlements, and tourism-related infrastructure exposed to coastal flooding.

Brazil suffers mainly from two types of disasters: hydrologic and meteorologic. Drought events are common in the north and northeast, while recurrent floods and landslides due to heavy rain plague the south and southeast. Some projections of the impact of changes in temperature and precipitation on agriculture identify a decrease in area suitable for some crops.[144] Some 13 percent of Brazil's semi-arid region (northeast and north of Minas Gerais) is considered to be at an advanced stage of desertification, while 94 percent of the region is susceptible to desertification. The southeastern Legal Amazon faces the greatest risk of climate-related changes (including Mato Grosso, a center of soy production in Brazil), with rainfall projected to decline by nearly 20 percent and temperature increases projected to be the most severe in the area.

World Bank's 2021 climate risk profile for Brazil indicates that climate change is expected to increase the risk and intensity of water scarcity and drought across the country.[145] **This requires significant adaptation efforts.** The main exception is Brazil's south-central tip, from São Paulo south (Brazil's primary agricultural zone), which is expected to experience increased precipitation. Competing demands for water use are growing with increased urbanization and growth in agriculture and other sectors, which is likely to production, infrastructure and livelihoods. The projected increase in precipitation and changes in seasonal rainfall patterns (including the greater frequency of intense precipitation events) are expected to translate into increased riverine and flash flooding. Climate change requires Brazil to take various adaptation measures, from more climate resilient infrastructure to more climate-attuned social protection systems. World Bank (2022) shows that given Brazil's infrastructure gap the additional cost

associated with adaptation is relatively small. At the same time, Brazil's well developed social protection systems are solid foundation to strengthen the climate resilience of households.

Agriculture and power are the most vulnerable sectors to climate change, with important interlinkages between climate change adaptation and mitigation. Hydropower accounts for about 63 percent of the Brazilian power sector. More frequent and intense droughts thus threaten the national power supply, especially since Brazil's hydro stations are relatively old (55 years on average) and maintenance has in some cases been lagging considerably, further increasing the vulnerability to climate change. This vulnerability has been tempting policymakers to invest in additional thermal capacity, which in turn contributes to global warming, even though there are green power alternative, such as wind and solar (World Bank, 2022). Agriculture, one of Brazil's main drivers of economic growth (chapter 6) is also majorly impacted by climate change although there is considerable variability across Brazil's landmass of continental dimensions (box 3.5). Especially if markets and policy succeed in enabling farmers to adapt to changing conditions, overall impacts on agricultural production across Brazil may be limited. In agriculture, too, there are important linkages between climate change adaptation and mitigation: deforestation is ultimately to a considerable degree linked to extensive agriculture. Yet as the agricultural frontier advances into the highly sensitive Amazon biome, risks of tipping points emerge that could change precipitation patterns and hurt agricultural producers across Latin America.

Box 3.5 The vulnerability of the Brazilian economy to climate change—a focus on agriculture

As an agricultural powerhouse, Brazil is particularly exposed to impacts from climate change. The country's continental proportions mean that these impacts will not be uniform, as shown by estimates from a computable general equilibrium model of the implications of different climate change scenarios for the Brazilian economy through the impacts on agricultural production.[1]

Climate change impacts on agriculture will reduce Brazilian GDP, but impacts differ across crops and regions. Under an intermediate climate change scenario, agricultural suitability falls across the country on average, resulting in lower GDP. These impacts may be small for the country overall (the simulations suggest just a 0.15 percent reduction in Brazil's GDP by 2042 relative to the baseline) because the lower suitability for some crops is partly offset by higher suitability for others. Thus, there is substitution across crops, as changing weather patterns impact the suitability of different crops and this mitigates the overall economic impacts. For example, while soy and rice tend to be adversely affected by climate change in the intermediate scenario, sugarcane tends to benefit in the aggregate.

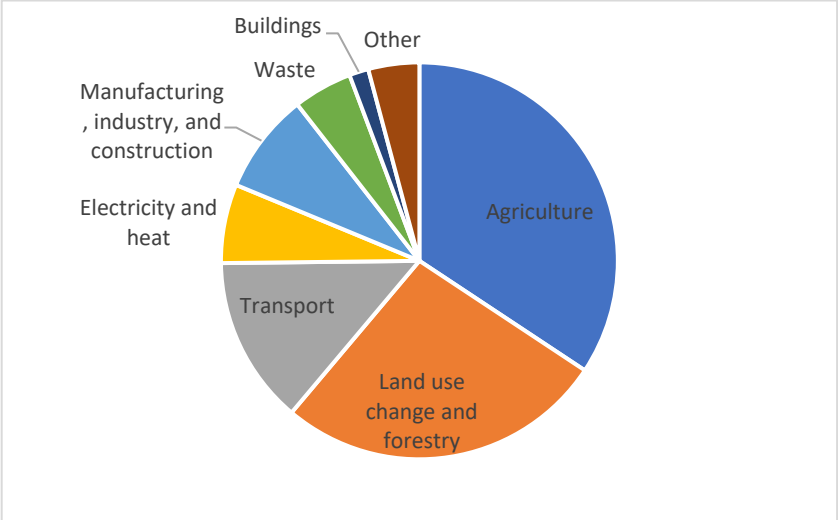
In these simulations, the economies of Brazil's largest soy producers, Mato Grosso and Mato Grosso do Sul, are affected most adversely, and Mato Grosso do Sul would experience the greatest loss in GDP, of about 1 percent by 2042 relative to the baseline. The net gain is positive for sugarcane, but there are important regional variations as crop suitability tends to move south. Thus, states in the poor northeast, like Bahia, tend to experience losses, while more affluent southern states like São Paulo, Paraná, Santa Catarina, and Rio Grande do Sul would see higher sugarcane production. The different economic impacts across states would result in internal migration, with states like Mato Grosso do Sul and Bahia experiencing outmigration and São Paulo and Rio Grande do Sul experiencing immigration. Thus, climate change will require significant adaptation measures, for the agricultural sector, for workers, and for governments in the most affected states.

Note:
1. The computable general equilibrium model, building on World Bank (2022) and dos Santos, de Oliveira, and de Souza Ferreira Filho (2022), enabled exploring the implications of different climate change scenarios (expressed in representative concentration pathways, or RCPs) for the Brazilian economy through impacts on agricultural production. The model uses information on weather patterns (notably changing temperatures and precipitation) and

carbon dioxide concentrations associated with different RCPs at a spatially disaggregated level. This climate information, drawn from the 5th Assessment Report of the International Panel on Climate Change (IPCC 2014) was then turned into agricultural suitability measures at the municipal level, using models provided by Embrapa.

Agriculture and land use change are Brazil's key contributors to climate change (figure 3.9). Emissions growth in Brazil have been associated primarily with land use, land use change, and the forestry sector. Brazilian gross GHG emissions amounted to just over 2 gigatons of carbon dioxide equivalent (GtCO2e) in 2016 and its net GHG emissions to just over 1.3 GtCO2e.

Figure 3.9 Brazilian greenhouse gas emissions per sector, 2019



Source: Climate Analysis Indicators Tool (CAIT).

Controlling deforestation plays a particularly important role for Brazil's climate narrative. This is because it matters both for mitigation (reducing emissions from land use change) and adaptation (reducing risks from Amazon dieback impacting precipitation patterns). World Bank (2022) argues that to curb deforestation, Brazil requires a shift in growth models, from one based on natural resource extraction to productivity, complemented by efforts to further strengthen and enforce Brazil's already advanced forest governance systems. During COP 26 Brazil committed to net zero emissions by 2050 and to stopping all illegal deforestation by 2028 as one critical part of this. Such complementary interventions focused on shifting Brazil's growth model (further discussed in chapter 6) and strengthening its natural capital governance can break a potential vicious cycle that accelerates climate change and raises vulnerability to it. Box 3.6 explores how inclusion could help preserve Brazil's natural forests while Box 3.7 discusses how technological change may further affect the relationship between food production and climate change in Brazil.

Box 3.7 An inclusive society conserving its natural wealth

Inclusion can matter for Brazil's forests in various ways. First, strengthening livelihoods of the poor can generate incentives for more sustainable behaviors. Brazil has a strong tradition of promoting sustainable rural development, including in the states of the Legal Amazon which are threatened by large-scale deforestation. This includes support to help small producers unlock the value of the standing forest, the bioeconomy (also see chapter 6). It also includes programs that reward forest communities for their sustainable livelihoods through targeted cash transfer

programs, such as Bolsa Verde (which has been discontinued) or Bolsa Floresta in the State of Amazonas (World Bank 2022a).

A more inclusive society is also more likely to protect its public goods—including its natural forests. Chapter 1 argued that unequal societies can exhibit high discount rates because a relatively large number of poor people means that the median voter has a stronger preference for the present. More inclusive societies may have lower discount rates because collective investments are expected to eventually pay off for the individual. Protecting Brazil's forests is a collective investment, and one with increasing long-term returns as climate change intensifies. Arcand et al. (2008) show that lower discount rates are associated with lower deforestation. In this case, promoting inclusion could also help preserve Brazil's natural forests.

Sources: World Bank (2022a) and Arcand et al. (2008).

In other respects, Brazil is already a very green country, which could become a major boon for its future development. With energy and industry only the third and fourth largest gross emitters in Brazil, its emissions profile differs from that of developed countries. This is because Brazil's energy matrix has a significant percentage of renewables, including hydropower: Brazil has one of the most decarbonized energy sectors in the world, with renewables accounting for over 45 percent of the Brazilian energy matrix and over 80 percent of its power matrix[146], compared to world averages of approximately 15 percent and 27 percent, respectively[147]. However, the penetration of higher carbon-intensity fuels has been increasing. World Bank (2022) shows that if Brazil consolidates and further advances its decarbonization achievements this would be low-cost while also generating significant opportunities in green exports in areas such as wind turbines, electric vehicle batteries, and green hydrogen—and also climate action minerals. It also lowers Brazil's potential costs from global decarbonization efforts. If Brazil manages build on its green asset base (including green power and sustainable forest use), it can expect a considerable relative increase in its competitiveness in global trading systems.

Box 3.7 Megatrend interactions between climate change and technological change

Meat consumption may become less resource-intensive and better for the climate. Companies today are developing lab-grown steaks, chicken, pork, shrimp, and fish as well as eggs, cheese, honey, and more. In 2019, AT Kearny predicted that 60 percent of meat would be grown in a lab by 2042.[1] In 2020, a researcher studying the race to produce lab-grown, estimated that lab grown meat cost around $50 a pound.[2] As of March 2021, a meal of lab-grown chicken cost about $17 in Singapore.[3]

This technology is about to roll out in Brazil. In March 2021, BRF and Aleph Farms (an Israeli company producing lab-grown chicken in Israel) sign=- for BRF to use the Israeli technology to develop lab-grown meat.[4] Addressing climate change is one of the main goals of the partnership. Brazilian regulators still need to approve the meat. Lab-grown meat has both benefits and risks.

Benefits

- If the technology becomes mainstream, humans will no longer need to raise livestock for food or over-fish the oceans. The impacts on deforestation, methane emissions, overuse of antibiotics, and other forms of environmental degradation could be significant.
- Meat can be customized to a person's health needs. Vitamins can be added, cholesterol removed, and other adjustments made.
- Bioreactors can be set up anywhere. A factory of bioreactors could be set up in an urban area, or, possibly, every kitchen could have its own bioreactor one day. This could reduce transportation emissions as well as address food supply shortages in communities in remote or inaccessible areas.

- The price will continue to fall. Raising an animal will always have a minimum cost and time and space requirements, as well as external costs to the environment that are not currently accounted for in the price. Lab-grown meat is produced by a technology that can be mass produced and scaled.

Risks

- Regulators are still approving lab-grown meat in many countries. The long-term health consequences of lab-grown meat are unknown.
- The new high-tech meat industry could displace the legacy meat industry, aggravating unemployment and economic disparity
- Currently, the growing cells must be fed nutrients (including sugar), and the bioreactors require energy. It will be important to feed the cells with sustainably grown nutrients and to power the devices with renewable energy. This should be of interest to Brazil, which has advantages in both renewable energy and sugar.

Notes:
1. Carrington 2019.
2. Purdy 2020.
3. Gilchrist 2021.
4. Starostinetskaya 2021.

Even though its domestic economy can be very green, Brazil is likely to become an increasingly important exporter of oil and gas. This should not distract from efforts to become more prosperous by moving up the value chain. Brazil has among the world's largest offshore oil and gas reserves ("pre-salt)" and the sector experiences major investment. Production volumes are likely to double over the decades, making it a producer comparable to the United States, Russia, or Saudi Arabia. Since production costs are relatively low compared to other countries, Brazil is likely to remain competitive in oil and gas even in a relatively ambitious global decarbonization scenario, reducing the risk for stranded assets (World Bank 2022). The challenge for Brazil will be to not fall into the development traps associated with natural resources, such as Dutch Disease (mineral sectors crowding out manufacturing sectors) or the Natural Resource Curse (mineral resource rents undermining the quality of institutions). The availability of natural resources is also not a strong economic reason to compromise a green power matrix for greater investments in thermal power, especially considering the competitiveness of green energy in Brazil. Moving up the value chain requires Brazil to diversify the economy from natural resource sectors (like agriculture and mining) to higher value-added sectors (like manufacturing and certain services). Chapter 6 elaborates further how this can strengthen both inclusive and sustainable growth in Brazil over the next decades.

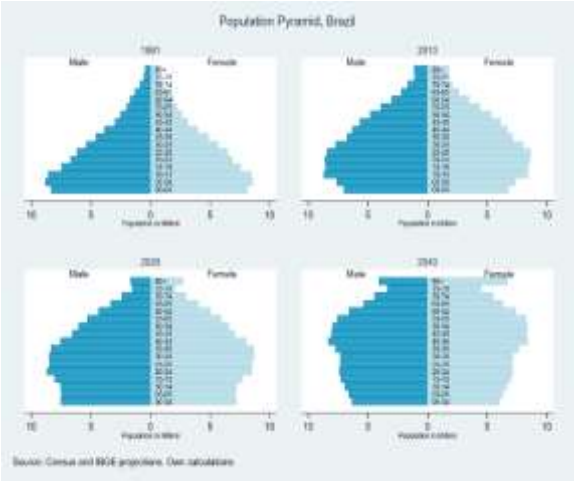
Effective carbon pricing can support Brazil's green economic transition further. There is already momentum in Congress for Brazil to create a carbon market and an Emissions Trading System. Such an instrument could be applied especially to the industrial sector. Implementation challenges mean that agriculture and land use, land use change, and forestry are currently not good contenders for direct inclusion but could indirectly be included through forest offsets, promoting structural transformation of industry and the land use sector simultaneously. Brazil could also consider introducing a carbon tax as part of a broader effort to simply its byzantine tax system.[148]

Demographic change

Brazil's demographic profile has passed from a youth bulge to a prime age bulge. The youth bulge phase refers to the stage of development when a country has reduced infant mortality but

fertility rates are still high. Usually, it occurs when the proportion of the population ages 15–24 exceeds 20 percent of the total population. In Brazil, the share of the young population has been below 20 percent since 1991, with a sharper decrease since 2010 (figure 3.11). Population projections show the young cohort share declining to around 12 percent in 2042 and the prime age cohort (ages 25–54) growing to close to 34 percent.

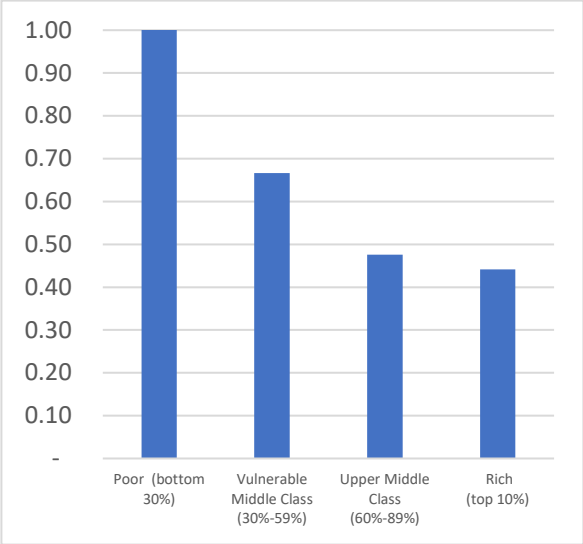
Figure 3.11 Brazil's population pyramid, 1991–2042



Source:

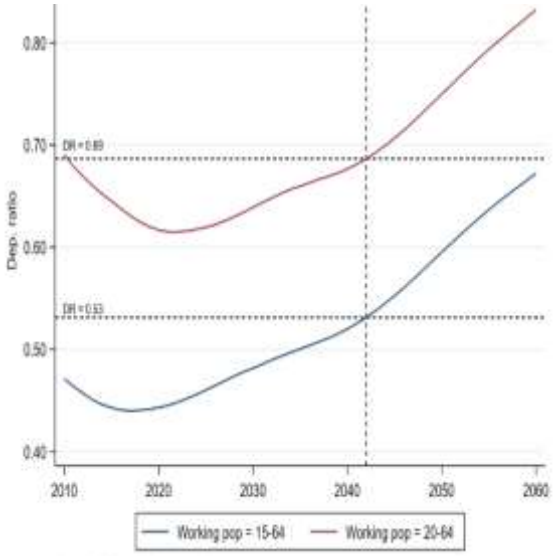
As Brazil's population profile develops a prime age bulge, dependency ratios will increase, putting increasing pressure on caretakers, especially in poor households. Dependency ratios refer to the ratio of the population not usually in the labor force (ages 0–14 and 65 and older) to those of working age. Higher dependency ratios may result in labor shortages for firms and put women and caretakers under more pressure. Dependency ratios in Brazil disproportionately affect poor households today (figure 3.12), because of the larger average number of children, while in the future the elderly are projected to make up a greater share of dependents (figure 3.13). Increasing the supply of early childhood development and education programs is already part of the policy agenda, but going forward, the need will be for more care homes for the elderly. In 2042, the dependency ratio in Brazil is expected to be around 53 percent, but could be as high as 69 percent if a larger share of population delays entrance to the labor market in order to accumulate more human capital through more years of schooling.

Figure 3.12 Dependency ratio in Brazil by income group, 2019



Source: Authors based on PNADC 2019.

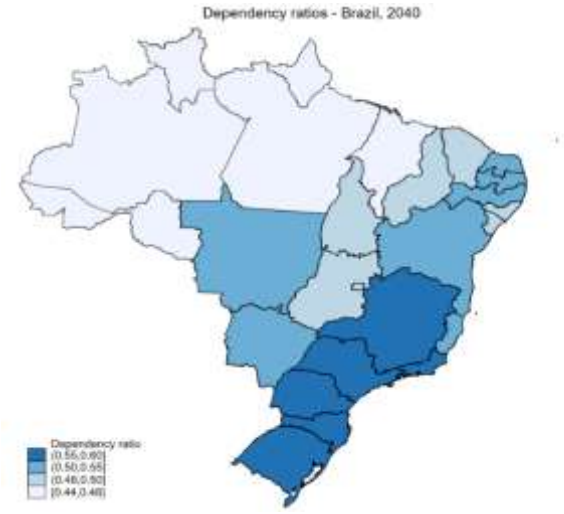
Figure 3.13 Projected evolution of dependency ratio in Brazil, 2010–2060



Source: IBGE population projections.

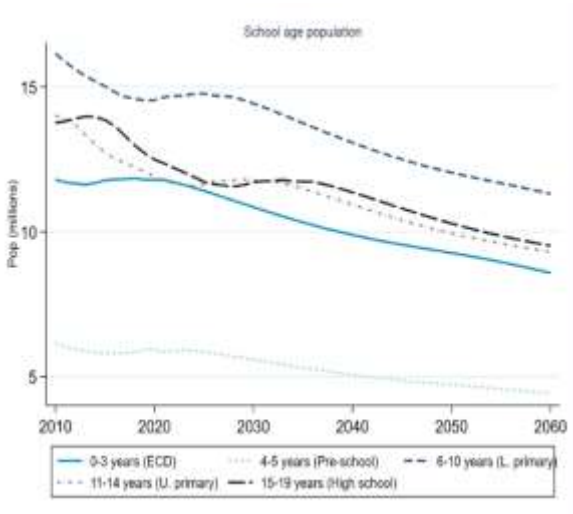
Because of demographic differences across states, policymakers at the subnational level may need to consider different policy options. States in the south and southeast, in line with their development processes and income status, are expected to experience higher dependency ratios than other states (figure 3.14). Dependency ratios are expected to be lowest in states in the north. Thus, while states in the north are likely to still need to increase the supply of early childhood development and education facilities for the next few decades, states in the south and southeast will also need to introduce elderly oriented policies, such care homes.

Figure 3.15 Projected dependency ratio in Brazil by state in 2042



Source: World Bank.

Figure 3.16 School age population in Brazil, 2010–2060



Source: World Bank.

Aging will also put increasing pressure on pensions and spur efforts to renegotiate old-age entitlements in the service of greater efficiency, equity, and productivity. As the population gets older and more people retire, tax revenues will decline unless labor productivity grows enough to offset the smaller labor force, which appears unlikely. Government spending on pensions and the provision of public services is expected to increase (see chapter 6). The result is greater pressure on the fiscal sustainability of public accounts. The aging of the population will inevitably lead to the need to renegotiate the current package of benefits in the elderly-biased expenditure envelope, so that the next generation is also able to enjoy old age protections.[149] Box 3.7 discusses how technological change can help alleviate some of the economic pressures associated with aging.

The school age population, in contrast, will decline, though not necessarily the number of students. This demographic change presents important opportunities for expenditure reallocation within the education sector to close critical coverage gaps. The population ages 0–3 years old, now close to 12 million, is projected to fall below 10 million by 2042 (figure 3.15). However, this trend does not necessarily imply a falling number of students across all age groups. For instance, large gaps remain in coverage of early childhood education and childcare compared to the National Education Plan target of achieving 50 percent coverage. Gaps in secondary education coverage and enrollment in post-secondary education or training also need to be closed.

Although a rapidly aging population brings challenges, it is not associated with slower per capita income growth. Brazil has one of the fastest aging populations. An older society faces multiple challenges. For one, occupations that are more dependent on younger workers will experience tighter supply. For another, as the retired population grows, savings and investment may fall, creating pressures for lower growth. However, analyses of economies with aging populations do not find a slowdown in growth (they find no significant relationship between rapid population aging and GDP per capita growth).[1150] The reason is that fast-aging societies have adopted automation.

Automation, by increasing productivity, counters the slower accumulation of labor as societies age, but it increases inequality. There is a casual (and robust) relationship between aging and automation: the faster the aging, the higher the adoption of automation.[2151] Automation increase productivity and the accumulation of capital, countering the effects of the lower accumulation of labor and thus avoiding growth stagnation. However, the unbalanced adoption of new technologies can also lead to wage losses and greater inequality. Evidence for the United States and other OECD countries suggests that as technology adoption has grown since the 1990s, wage growth has slowed.[3152] Technology adoption and sluggish labor demand have also been associated with a steady decline in the share of national income going to labor (a 10 percentage point drop in the last 20 years) and with rising wage inequality (with gains going to highly skilled workers). This process is driven by an unbalanced adoption of technology that tends to displace workers.

The broad expansion of automation, by increasing inequality, makes redistribution policies vital in modern societies. The labor market is where people access opportunities. If labor market opportunities shrink deeply and rapidly, the outcome will be a two-tier society where opportunities are available only to those with higher education and skills. That is why inclusion policies must be central to modern societies, especially for building an educational system that promotes creativity, flexible skills, and the skills that underpin Industry 4.0 technologies.

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Part II. Shaping the future:
Preparing people and the economy

Chapter 4 Preparing Brazil's future workforce

Human capital policies for greater inclusion and preparedness for the future

Brazil's prosperity hinges on the restoration of total factor productivity growth, which is the result of better deployment of all factors of production, including human capital.[153] Brazil's demographic profile will start to resemble that of higher income countries by 2042, although at a lower level of economic development and human capital stock. The number of working-age adults will peak in 2042 and then start to decline: higher levels of human capital will be needed to replace falling numbers of workers to sustain wage and income growth. This chapter discusses how to adapt human capital policies—from early childhood to higher education and lifelong learning—to prepare Brazil's future workforce.

The transformation of labor demand, technological progress, and demographic change will require restructuring the education and training systems in Brazil, without altering the overarching need for higher quality foundational learning. As the number of school-age individuals is projected to fall by 2042, there is an opportunity for Brazil to realign education expenditures to address educational gaps, despite constrained budgets. Moreover, while structural transformation, climate change, and technical change are altering the type of skills that students need to learn today to prepare for the jobs of tomorrow, solid foundations in core competencies will remain central to building higher order skills for the future. Last, technology is affecting the way students and workers could be supported to fill skills gaps, but public policies need to be in place to harness the potential of education technology.

This chapter discusses the key transformations needed to achieve a more equal and overall higher level of human capital for Brazil's future workforce. It starts from an assessment of the main gaps in human capital development among Brazil's children today and then explores some of the leading causes of the observed gaps. It considers the main elements of a reform agenda to increase early childhood development, the quality of education, and the relevance of skills for the future workforce. The discussion of human capital formation in this chapter continues in chapter 5, which covers the role of social protection systems in protecting human capital from shocks and in accelerating opportunities for more vulnerable groups. Chapter 6 illustrates reforms to health systems needed to maintain the productivity of an ageing population.

Levels of human capital: some progress, but insufficient

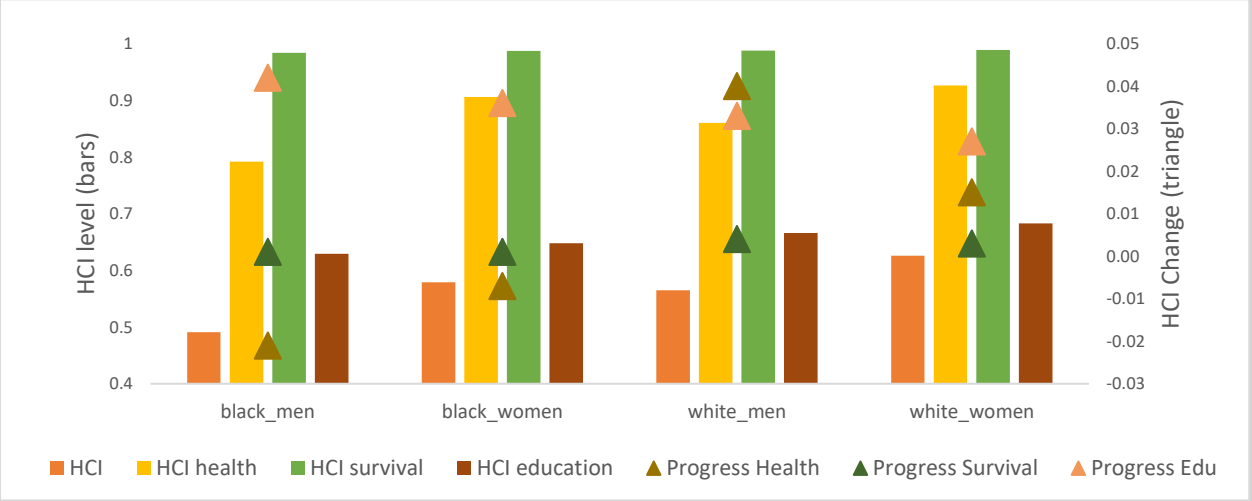
Human capital accumulation among children has improved in the last two decades, as measured by the Human Capital Index (HCI).[154] Brazil's overall HCI value improved from 0.53 in 2007 to 0.55 in 2020. The biggest improvements came in total years of schooling, which rose from below 9.8 to 11.9 in a span of 12 years. But Brazil's HCI value remains below the average for all upper middle-income countries in Latin America. Brazil's position in 2020 was below that of Argentina, Colombia, Peru, Mexico, Costa Rica, and Chile. Brazil also scored below the predicted value for its per capita GDP at the global level. The main explanatory factor for Brazil's lag is the low number of children's expected years of school (11.9), which is considerably below that of its peers. Adult survival rates are also low, due especially to premature deaths from homicides in people below age 60.[155]

The deterioration in human capital as a consequence of Covid-19 will likely take years to reverse. Preliminary HCI simulations for Brazil for 2021 dropped 5 points from 2019, equivalent

to nearly 10 years of lost progress.[156] This is largely due to education losses: Brazil is one of the countries in which schools, both public and private, have been closed the longest during the pandemic.[157] Projections estimate that learning poverty[158] in the LAC region could increase by 51–67 percent, creating an additional 10.8 million "learning poor," while dropout rates could increase by 15 percent. Other consequences that will harm learning are less well understood, such as socioemotional impacts and long-lasting effects of adopting distance learning for a long period. And the long-term health impacts of children's underuse of health services, including immunizations, are still unknown.

Disaggregating the HCI reveals inequalities in human capital accumulation across gender and race. Girls tend to have higher human capital than boys, and white children score significantly higher in HCI than nonwhites (figure 4.1). Nonwhite women experienced the steadiest progress in human capital accumulation in the last decade, especially through education: between 2007 and 2017 black girls attained nearly the same years of schooling as white boys. Black male children also improved on the education sub-index, but not enough to close the gap with other groups. Nonwhite males, however, experienced a setback in the health sub-index. This reflects, to a large extent, the higher prevalence of accidental and violent death among this group, which impacts life expectancy.

Figure 4.1 HCI levels and progress, by gender and race, 2007–17



Note: Figure shows, disaggregated by race and sex, the average HCI and the sub-indexes of Child Survival, Child Health, and Education, expressed in absolute values for 2017 (bars) and in terms of progress between 2007 and 2017 (triangles).
Source: Human Capital Index 2020.

Inequality in learning outcomes explains most of the regional variation in the HCI, which is also connected with socioeconomic status. Among all the components of the HCI, learning outcomes (measured by the Index of Development of Basic Education [IDEB] national standardized test) explain most of the variation in HCI across municipalities. In public schools whose students are mainly from wealthier families, 70 percent of students have reading skills appropriate for their age. In public schools serving children from low-income families, just 21 percent of students do. In upper secondary education the disparity is even larger, with only 18.8 percent of low-income students having reading skills appropriate for their age, against 71 percent for high-income students. In 2019, 86 percent of white students had already concluded, by the expected age, lower secondary education, but only about 69 percent of black students had.

Learning results are lower in most states of the North and Northeast than in the South and Southeast.

Such results point to the need for reforms, especially in education, that address constraints to quality service delivery. The results also indicate the need for social protection programs and integrated programs that ease the environmental factors that affect the ability to take advantage of available opportunities, such as income poverty, high vulnerability to income shocks and other life-threatening risks, and information asymmetries on returns to human capital investments.

Early childhood development and education: important advances and remaining gaps

Investments in nutrition and health, early stimulation, and child protection during the first 1,000 days of life are essential to build a strong foundation for a healthy and productive life. This is the fastest period of human growth and development.[159] Brazil's policies affecting children in the first 1,000 days are anchored in prenatal and postnatal universal primary health services, coupled with public childcare centers and targeted services for more vulnerable children. Targeted programs include conditional cash transfers to encourage health checkups and immunization (Auxílio Brasil), programs to address high risk situations (child protection services in SUAS), and programs to improve the quality of parental care (Programa Criança Feliz). As such, the array of *potential* policies to support children in Brazil is comprehensive. The combination of conditional cash transfers implemented on a wide scale and primary health care, for instance, greatly improved early childhood health outcomes.[160] But because nearly half of Brazil's children live in poor households[161], ensuring that services are available when needed is the next priority for development in Brazil. Key frontiers include improving the quality of and access to childcare, expanding parenting education, and combating malnutrition, which has been on the rise during the recent economic crisis.

Parenting education programs can be cost-effective complements to early childhood education and health interventions. Programa Criança Feliz (PCF) is a parental intervention program for socioeconomically vulnerable households with children ages 0–3 and pregnant women. The PCF consists principally of home visits, combined with coordinated actions among municipal committees to strengthen social assistance policies.[162] The program is based on evidence that parenting programs for children in the first three years of life have positive effects on parenting knowledge, practices, and parent-child interactions, and, in turn, these affect childrens' cognitive, language, motor, and socioemotional development.[163] The program's coverage is still limited, and adjustments are needed for the program to realize its full potential (see box 4.1).

Box 4.1 Scaling up Programa Criança Feliz

In 2021, the coverage of Programa Criança Feliz (PCF) was just 12 percent of its potential coverage (or 19 percent when considering only the 2,644 municipalities that had visits in July 2021). Recent World Bank technical assistance assessed the key constraints and recommendations for the program to scale up cost-effectively (box figure 1).

The first challenge for expanding coverage is reaching families in remote areas in municipalities where PCF is already operating. This includes overcoming geographic barriers, as well as limited access due to security concerns and criminal activity in some areas. In addition, municipalities in remote areas are more likely to face financial and capacity constraints. The second challenge is cost. Funding for the program is the same for every context, R$ 75,00 per family per month, which creates implementation problems, especially in remote areas. In addition, the program faces high turnover among home visitors, increasing

costs for training and coordination and making the model unaffordable for municipalities with fewer resources.

New delivery modalities could reduce financial barriers to implementing PCF in poorer municipalities. Group meetings and the use of technology for information and interviews, for instance, can significantly reduce the number of individual visits. There is also room for improvement in the development of protocols and curriculum for the home visitors (particularly when addressing the needs for specific groups such as indigenous and quilombolas).

Box figure 1 Priorities to improve the Programa Criança Feliz early childhood development program

Source: Elaborated by Trias et al. (2022).

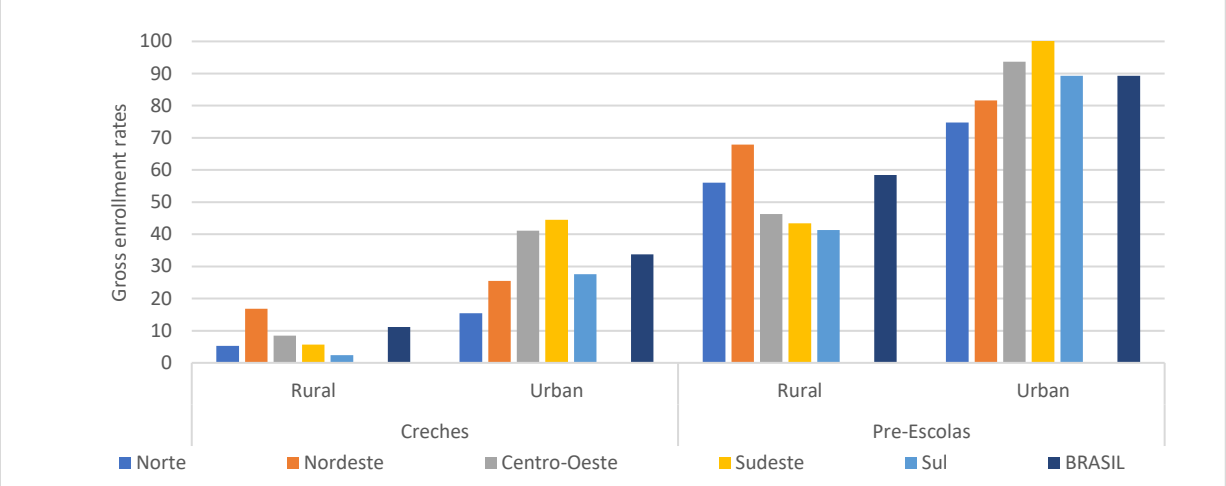
Coverage of childcare among children ages 0–3 increased, but remains very skewed across geographic areas and is low in the poorest states. Childcare coverage for children ages 3–5 saw an impressive growth, from 17.3 percent in 2004 to 37 percent in 2019. However, such growth has been highly skewed toward wealthier families. Higher enrollments were entirely in urban centers, while enrollments in crèches in rural areas grew slowly, from 7 percent to 11 percent of children ages 0–3. Richer states are already on target to achieve that goal, while fewer than 10 percent of children attend in the North box (figure 4.2). The government aims to reach 50 percent coverage by 2024.

Affordable childcare is also important to remove a binding constraint to women's labor supply and continuing education. Care responsibilities are the most important reason why women, especially women with less education, are unable to participate in the labor market.[164] The presence of young children in the household is a key factor associated with shorter job tenure in formal jobs by low-income women, but the presence of childcare in the community lessens the effect.[165] In addition, care responsibilities are a common reason reducing adolescent girls' hours of schooling.

Coverage of preschool is much higher, with most gaps now limited to rural communities. Preschool enrollment rates are now close to 90 percent in urban areas and 68 percent in rural areas. With additional efforts, near universal coverage is attainable, though special efforts may be needed in rural areas. Children attending preschool are better prepared to learn. On average, fourth graders who had some kind of kindergarten experience performed around 0.22 standard deviation above

children who did not attend either a daycare or kindergarten.[166] Children with educated parents did significantly better than other children, suggesting that the quality of the services for young children in the most vulnerable families is still insufficient to compensate for negative environmental effects.

Figure 4.2 Gross school enrollment rate in creche and daycare by urban and rural area, 2019



Source: Authors' elaboration based on INEP data.

There is considerable room for quality improvements in both preschool and childcare. An assessment of the quality of childcare services in 147 crèches and preschools in six Brazilian capitals found that surveyed crèches had, on average, "basic" level quality, which at 3.3 (out of a possible score of 10) was just above the 3.0 threshold marking inadequate care.[167] Even the best centers achieved only an average rating of 4.4. Many of these facilities lacked the basic materials necessary for child learning, such as books and pictures. Results for preschools were a little better: on average they scored 3.4, and preschools in four cities surpassed the 3.0 threshold. The most problematic aspects were program design and activities assigned to students.

Reducing learning poverty will require policies and investments to expand and improve childcare and preschool services. Municipal governments, and state governments responsible for education at this level, need to offer wider access to childcare services and should prioritize coverage for the most vulnerable. As discussed further in chapter 7, financing for early childhood education in the coming decades should be possible, but resources need to be properly prioritized. The private market alone is unlikely to narrow the coverage or quality gap alone, as the fees low-income families can afford cannot ensure quality services for children and financial sustainability for operators.[168] However, the public sector could also explore mechanisms to foster expansion of private creches capacity, via targeted voucher schemes.

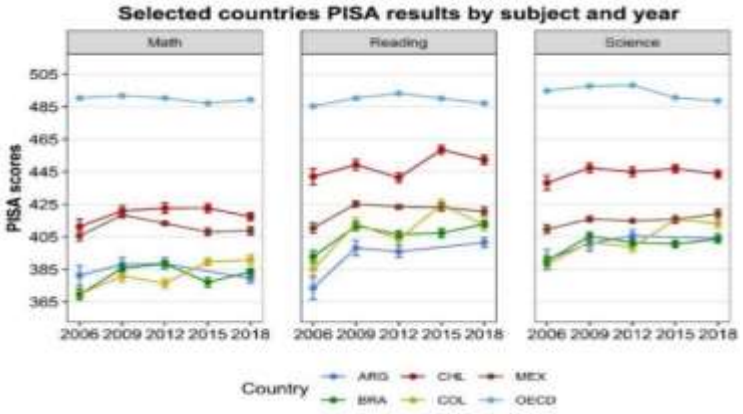
Basic education: Coverage increased, but the learning crisis remains

A major driver of the rise in Brazil's stock of human capital was improved access to basic education.[169] Between 2000 and 2019, net enrollment rates jumped from 66 percent to 94 percent in preschool (5–6 year-olds) and more than doubled in upper secondary school. As a result, average years of schooling have increased substantially in the last decades. Upper secondary school dropout rates decreased from 10.3 percent in 2010 to 4.8 percent in 2019.[170] In the same period, the number of college entrants rose from around 2.5 million to around 3.6 million.[171],[172]

Significant inequalities in learning outcomes depend on multiple factors. Prior to Covid-19, 6 in 10 19-year-olds completed upper secondary school. But this rate is greatly affected by students' socioeconomic origin: 88 percent of students from high-income households completed upper secondary school but only 51 percent of low-income students do so. As result, children in the highest quartile of the income distribution have an average of 13.6 years of education, whereas children in the poorest quartile have only 10.2 years.[173] Geography also shapes opportunities. In urban areas, 80 percent of children complete lower secondary education, but in rural areas only 67 percent do so. Many factors explain these differences: school disengagement, distance from students' houses to schools, teenage pregnancy, financial pressure, and incomplete information. For example, 25 percent of dropouts ages 15–17 report leaving school due to the need to find a job or because of a lack of interest.[174] Opinion surveys by the World Bank highlighted a severe underestimation of the returns to completing secondary education among young Brazilians.[175]

The quality of education rose more slowly than enrollment, particularly in upper secondary education; nearly all children in Brazil graduate without proficiency in math. Learning at the primary education level has risen steadily, as measured by the national education quality index (IDEB, which includes test scores in Portuguese and math). This occurred, in part, thanks to rising spending per student, particularly in the poorest areas of the country through national redistributive funds. When such progress is viewed from an international perspective, however, it is clear that further quality improvements will be essential to prepare today's children in Brazil to become proficient workers in 2042. The quality of education, as measured by international standardized learning tests, remains below that of Brazil's regional peers (figure 4.3). In the most recent Programme for International Student Assessment (PISA) tests, almost half of 10-year-old in Brazil were unable to read or understand a simple text (learning poverty). Results in language and science improved over time, but those in math stalled. In 2019, only 34 percent of students completing upper secondary education attained adequate proficiency in language and a staggeringly low 7 percent in math.[176]

Figure 4.3 Learning measured the Programme for International Student Assessment (PISA), 2006–18, Brazil and selected countries



Source: Data from OECD/PISA.

Among the factors impeding the performance of the Brazilian basic education system, three stand out. The three factors are ineffective teacher management policies, weak institutional capacity of subnational governments to align inputs with education objectives, and inefficient resource allocation.

Teaching remains an unattractive career in Brazil, and teacher training requires improvement. Between 2009 and 2019, the proportion of basic education teachers with higher education diplomas rose from 67 percent to 85 percent. However, teacher training programs are among the easiest college programs to qualify for and complete, and competition for enrollment is low. Thus, a study of the impact of this increase in teacher credentials on students' performance in math and Portuguese found no evidence of a positive effect on Portuguese language scores.[177] And although the study found gains in math scores, it found no effect from specific math training of teachers. The teachers' weak ability to influence student learning is explained by a combination of the poor quality of teacher training programs, unpleasant work conditions, and the characteristics of individuals who choose teaching as a career. Many teachers work in more than one school to supplement their income. Students in classes taught by teachers who are employed in more than one school have lower math scores (–0.0569 std dev) than students in which teachers are working in a single school.[178]

Most education systems in Brazil lack effective mechanisms for evaluating and promoting teachers based on merit. Almost 95 percent of Brazilian education systems have teacher career plans, and 37 percent include performance-based compensation schemes for teachers.[179] This innovation is encouraging but insufficiently widespread: in the rest of the country career progression is based only on formal degrees or years of experience. Moreover, Brazil has no national exam to certify graduates of teaching programs before they are cleared to teach.

Teacher selection processes do not focus on identifying the most suitable candidates. Pedagogical practices are the most important factor in the quality of teaching. In the best performing countries, teachers' wages are not always high relative to wages in other professions, but recruitment processes are competitive, focusing on selecting motivated applicants with great academic achievements and good communication skills.[180] Brazil's public recruitment tests for teachers focus only on regulatory issues and knowledge of the taught discipline. And the ensuing probationary period is a formality leading to nearly all teachers being hired and tenured. Most university courses for a teaching career are provided though distance education, a situation that the approved Guidelines for Pre-Service and In-Service Teacher Education aim at restricting.

Most school principals are politically appointees. In most Brazilian municipalities, school principals are former teachers, and most are politically appointed, with little to no background in management. Principals rarely receive support in executing their duties. A study found that Brazilian public-school students achieve higher learning results in schools whose principals are selected by community election or technical screening (including examinations and assessment), rather than political appointees.[181] These mechanisms contribute to principals staying longer in their positions and focusing more on the professional development of their staff.

Municipalities often have inadequate capacity to plan and implement education policies and programs. By law, municipalities are responsible for designing, implementing, and monitoring education policies at the primary school and pre-primary school level, and they share responsibility for lower secondary education with state governments. Robust evidence shows that higher management quality and the use of more effective management practices are strongly correlated with better teaching and learning.[182] Almost 70 percent of municipalities are small, however, with 20,000 inhabitants, and few of them can succeed in the complex task of planning and overseeing education policies without cooperation and financial assistance from state or the federal government.

The structure of federal transfers, and large inefficiencies in resource allocation, undermine the focus on learning outcomes. Budget rigidities (earmarking) and imperfect use of equalization transfers generate spatial and income inequalities. The constitutional obligation of municipal and state governments to spend 25 percent of expected tax revenues on education forces the richest municipalities to increase education spending—regardless of student need—which does not necessarily translate into more learning. The current system of intergovernmental transfers does not achieve its purpose of closing equity gaps and incentivizing efficiency. Finally, the use of education to guide policy is limited**.**

What could better prepare Brazil's basic education system for 2042?

The projected decline in the number of children entering basic education, coupled with the current education financing formula, opens a window of opportunity for Brazil to accelerate investment in its future workforce. As discussed in greater detail in chapter 7**,** Brazil expenditure scenarios would allow for a gradual increase in investments per pupil, which are still relatively low, while maintaining current aggregate spending levels. Resources could be applied to the abovementioned priorities, including a reform of teaching career paths, and a faster expansion of extended school days, which now cover only 28 percent of early childhood students, 11 percent in primary grades, and less than 12 percent in upper secondary. Expenditure simulations also show that projected education budgets should be sufficient to close gaps in early childhood education and accommodate higher participation in secondary education (with appropriate interventions to increase enrollment). Finally, budgets could be also used to provide financial support for higher education and post-secondary training. But increased per-student funding will not result in greater learning without institutional reforms.

To harness these opportunities, financing needs to follow students and needs, and governance reforms must be implemented to restore a positive relationship between education investment and learning outcomes. As enrollments in primary education fall, federal and state governments should have the flexibility to use education funds to increase equitable access in other education cycles. A focus on per-student (and per-adult) rather than per-school financing should ensure a better allocation of funds according to demographic changes and choice. This should also allow serving the large cohort of youth that will leave school in the next two decades and yet will require out-of-school training.

The governance and institutional structure of education need to converge with those in better performing countries. Achieving higher quality of learning requires, first, that decision making based on technical and institutional capacity replace politically driven decision making unrelated to educational objectives. Concrete reforms would include:

- Improve the accountability of school systems, teachers, and principals to learning outcomes, and reward schools, principals, and teachers for performance.
- Select principals on the basis of technical and ability criteria.
- Drive school's management to prioritize efforts to improve learning outcomes.

These are cornerstones of education policy effectiveness and should be aligned across education systems, as demonstrated by examples of excellence within Brazil and international evidence.

Institutional reforms should concentrate on building a national education system. Brazil lacks a governance body to coordinate the education policies of its three government levels. The 1988 Constitution requires that Congress institute a national education system, a federative governance

set of rules and procedures aimed at coordinating education policies (like the Unified Health System [SUS] that was enacted after 1988). This requirement was never met. As a consequence, teacher professional development, management systems, and even learning assessments differ across and within states. Establishing a more coherent education system, with common standards across government levels, would allow for identifying and supporting lagging schools and classes and enable greater mobility of students across schools and education cycles in the country.

Governance reforms would enable Brazil to improve cost-efficiency without necessarily increasing expenditures. In the Northeast Region, Ceará has become a role model for aligning schooling with learning (see box 4.2). Ceará leveraged financial incentives to improve learning in both municipal and state schools, using a mix of cooperation and competition.[183] Similar findings emerged from a program in the state of São Paulo that delivered management tools and training of school principals to apply a problem-driven approach to education challenges.[184] The capacity building led to an improvement in school approval rates and a reduction in repetition rates, particularly in schools with more low-income students.[185]

Making teaching an attractive profession and improving the quality of teacher training pre-service and in-service are vital to creating an effective education system. International evidence shows that successful education systems have great teachers.[186] They consistently attract high-quality candidates, use training to develop teachers' skills, focus on building teacher capacity, and establish career structures that reward good teaching. To improve the attractiveness of the teaching career, governments could diversify teacher career structures and widen career advancement opportunities. Compensation policies will become more important as financial resources available to education systems increase due to recent changes in Fundeb. But raising wages must be partly tied to performance and carefully planned so that pensions do not dominate future budgets. High-quality in-service professional development (similar to what is done by Ceará's education system) can provide continuous support and motivation to teachers.

Box 4.2 of Ceará's success in eradicating illiteracy and innumeracy at the primary education level

The state of Ceará offers a national reference point for improving primary education in Brazil in an efficient manner. Despite having the fifth lowest GDP per capita among the 26 Brazilian states, the Ceará has experienced the largest increase in the national education quality index in both primary and lower secondary education since 2005, with 10 municipalities being among the top 20 in national ranking.[1]

This result was made possible by political leadership (both legislative and executive) that prioritized education in a series of reforms. A 2007 law changed how the state government transfers a share of consumption tax revenue to municipalities by conditioning the size of the transfer on results in education. At the same time, the state government started a program focused on eradicating functional illiteracy (PAIC). PAIC was designed to achieve five interrelated program goals in the early grades of Ceará's municipal schools: promoting reading skills, supporting municipal literacy strategies, strengthening municipal management, supporting early childhood education, and providing external evaluation of learning.[2] To improve education outcomes, municipalities were given greater autonomy aligned with accountability. Schools participating in the program received literacy materials and professional development workshops to assist teachers is applying the materials in their classrooms. The workshop trainings were intensive, taking place three to five times a year in 20 regional centers throughout the state and 3 more centers in the state capital, Fortaleza. An evaluation of the program found that PAIC produced significant gains in the average Portuguese performance of fifth graders in 2007–2011 and greater gains in

math performance.[3] Similar results were found in a more recent impact evaluation of the Ceará education model.[4]

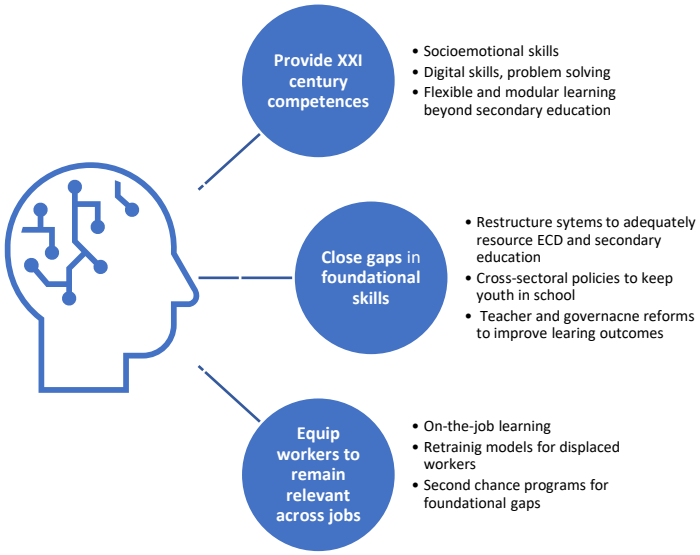
Notes
1. Loureiro et al. 2020.
2. Costa and Carnoy 2015.
3. Costa and Carnoy 2015.
4. Lautharte, Oliveira, and Loureiro 2021

The new world of work requires updating competencies and how they are taught

The destruction of routine jobs and the rise in more complex occupations result in an increasing mismatch between the requirements of new technologies and tasks and the skills of the workforce. An increase in the share of tradable service jobs as a result of new technologies will enable firms to source skills from the rest of the world if they are not locally available. The internet and artificial intelligence will enable the outsourcing of an increasing range of tasks required in the service sector, where most new jobs will be created. While presenting new opportunities for skilled Brazilian workers, these changes underscore the importance of developing the human capital of workers who will be displaced by automation. Absent a massive reskilling, the potential for mismatch is high, with resulting growth in inequality and more limited productivity gains from technology itself as needed workers become more scarce.[187]

The types of jobs that will soon become more prevalent require multidimensional skills, including cognitive, socioemotional, and technical competences. As automation displaces human labor in repetitive tasks, and structural transformation, including due to climate change, alters labor demand, workers will have to perform increasingly creative or analytical tasks in the services sector and the industrial sector (figure 4.4). Problem solving, critical and analytical thinking, use of basic software and media tools are some of the skills these jobs require. The OECD Skills for Jobs Database reports that the largest skills shortages in Brazil are the services, health, and information and communications technology (ICT) sectors.[188] Although demand for digital skills and tech-related occupations in Brazil has not yet reached the level observed in other countries, it is expected to grow in the next few years.[189] Data from LinkedIn (a web-based intermediation platform) show, for instance, that web development, digital marketing, and advertising are among the most requested skills by Brazilian employers who advertise their vacancies online.[190]

Figure 4.4 Required skills and how they are learned must change



The development of these higher-order cognitive skills depends on workers' possessing foundational cognitive skills, such as literacy and numeracy, and socioemotional competences in order to learn on the job. Education systems will need to ensure that students have solid foundational skills and that they develop the competencies to adopt new learning, often on the job. Studies of job vacancies find that employers emphasize the importance of basic writing and communication skills across occupations.[191] For many emerging professions in knowledge economies, the ability to acquire, synthetize, and apply new knowledge critically to reach business objectives is key, because many business-relevant skills have to be learned on the job and from others.[192] The demand for social skills is also on the rise, for similar reasons.[193] Thus how students learn will be as important as what they learn. Early childhood education is important to enable children to develop not only cognitive abilities but also the socioemotional skills required to thrive in this type of education system and labor market. This shift also implies a pedagogical revolution in schools and teaching approaches.

Brazil's upper secondary education reform and the new national core curriculum for basic education is an opportunity for incorporating missing cross-cutting skills. Inspired by several successful international examples, such as the education reforms in Poland and Portugal, Brazil approved new curricula for primary and secondary education in 2017 and 2018, clearly defining education system priorities. In addition, in 2017 Brazil approved the upper secondary education reform, which greatly increased the flexibility with which students could complete their upper secondary education studies and the disciplines they could pursue. The reform also lengthened the school day. Combined, these reforms offer space for schools to develop innovative programs and courses focused on socioemotional skills, technical skills, and digital skills. However, implementation has been slow. As of June of 2021, many states were still in the process of validating and approving new curriculums, which will take effect starting in school year 2022/23. Eleven states have formally approved their new curriculums through their state councils of education and have also promulgated them through their government. To fully reap the benefits made possible by the reforms, state education secretariats will need to assist schools in identifying critical skills and support them in providing them, in conjunction with local labor markets.

Technical and vocational education and training (TVET) remains a little-pursued path in Brazil, despite offering better job outcomes than traditional high school for students who do not enroll in higher education. Only 10 percent of upper secondary students are enrolled in TVET courses, four times less than the average in OECD countries. The low uptake is due to a combination of limited information and, especially, undersupply. Studies show a statistically significant positive wage premium of 9.7 percent on average for students completing technical school at the upper secondary level, compared with students attending traditional high school and then entering the labor market.[194] Brazil already allows TVET courses to be offered together with foundational disciplines in upper secondary education, such as math and language, and provide a good balance between technical and academic topics, which students more flexibility in the future.[195]

Brazil will also need to stimulate enrollment in promising fields of study for the future, including science and technology. About 18 percent of college graduates in Brazil specialized in science, engineering, and technology subjects, below the 25 percent OECD average; the share in ICT and science is particularly low. Gender gaps are substantial, with a 1 1:7 ratio of women graduates to men graduates in ICT fields in Brazil and less than 1:2 in engineering and related

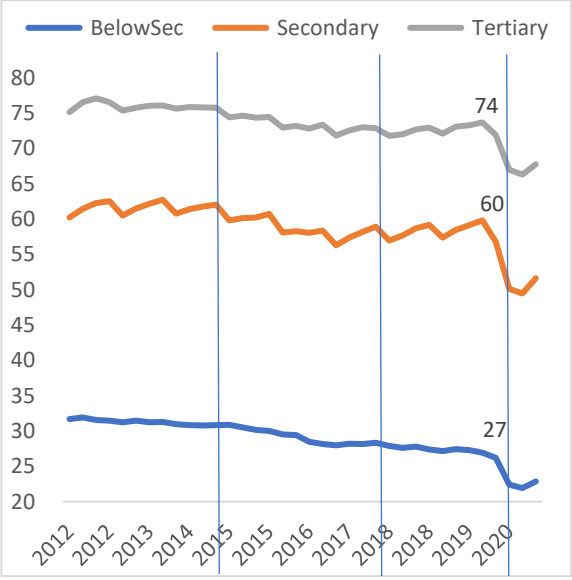
subjects. As discussed below, career counselling services are fundamental to enable a shift in education decisions.

Expanding access to and the efficiency of higher education and lifelong learning

Skills-biased inequality in employment and wages are likely to widen in the future, as demand is falling for routine manual tasks and rising for cognitive and abstract skills. In the past decade, workers' education levels have been a strong predictor of the time needed for workers to recover from labor market shocks. After mass layoffs, it takes as long as eight years for less educated workers to attain their previous wage level but less than two years for better educated workers.[196] And between the 2014–2015 economic crisis and the emergence of the Covid-19 pandemic, employment rates continued to fall for workers without a secondary education, even as employment rebounded for those with a secondary or higher education (figure 4.5).

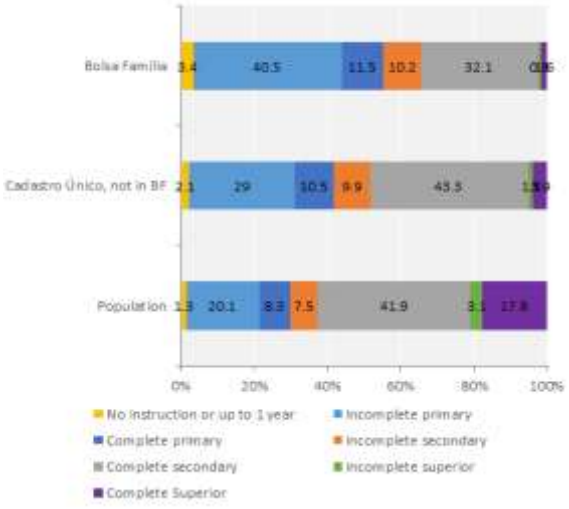
Today's young adults (ages 18–46) will constitute 70 percent of the national workforce in 2042, and almost half of them do not have secondary education. According to PNAD Continua data, nearly 40 percent of youth and young adults who are already out of school, and who will continue to be of working age in 2042, did not complete secondary education (figure 4.6). The low educational attainment is more pronounced among young adults who are poor: a third of poor young adults did not complete primary education, and more than half did not complete secondary education.[197] Data are not currently collected on the skill levels of the adult population in Brazil,[198] but the PISA results for students in past cohorts suggest that many graduated without attaining minimum levels of literacy and numeracy.

Figure 4.5 Employment rates of working-age out-of-school young adults (ages 18–46), by education level, 2012–2020



Source: PNADC 2012–20.

Figure 4.6 Education level in 2019 of the out-of-school young adults (ages 18–46, the future prime-age workforce

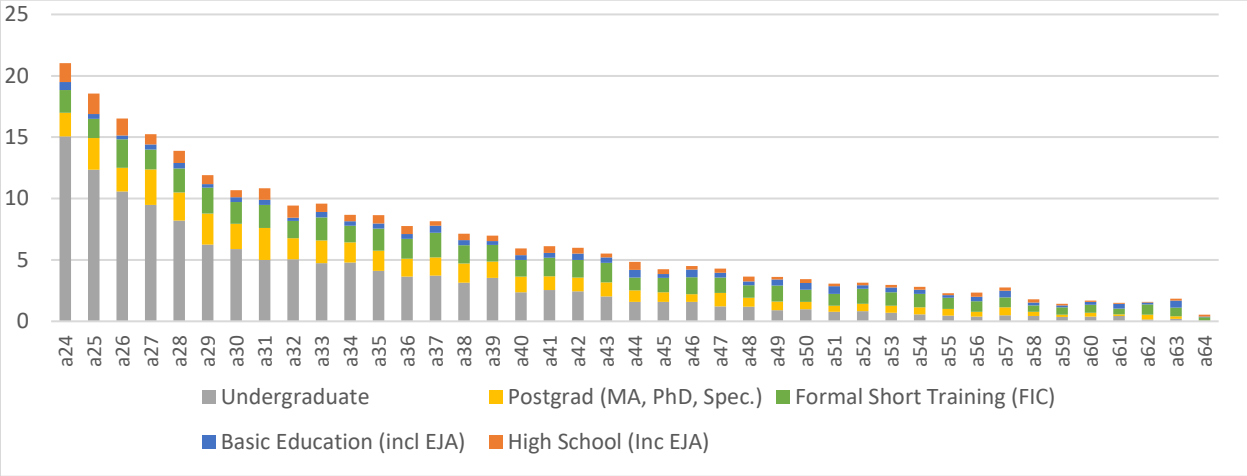


Source: PNADC 2019.

Post-secondary education in Brazil occurs largely through traditional higher education; fewer than 2 percent of adults per year engage in formal short training. Most adults enrolled in formal learning in Brazil are still pursuing an undergraduate or graduate university degree up to

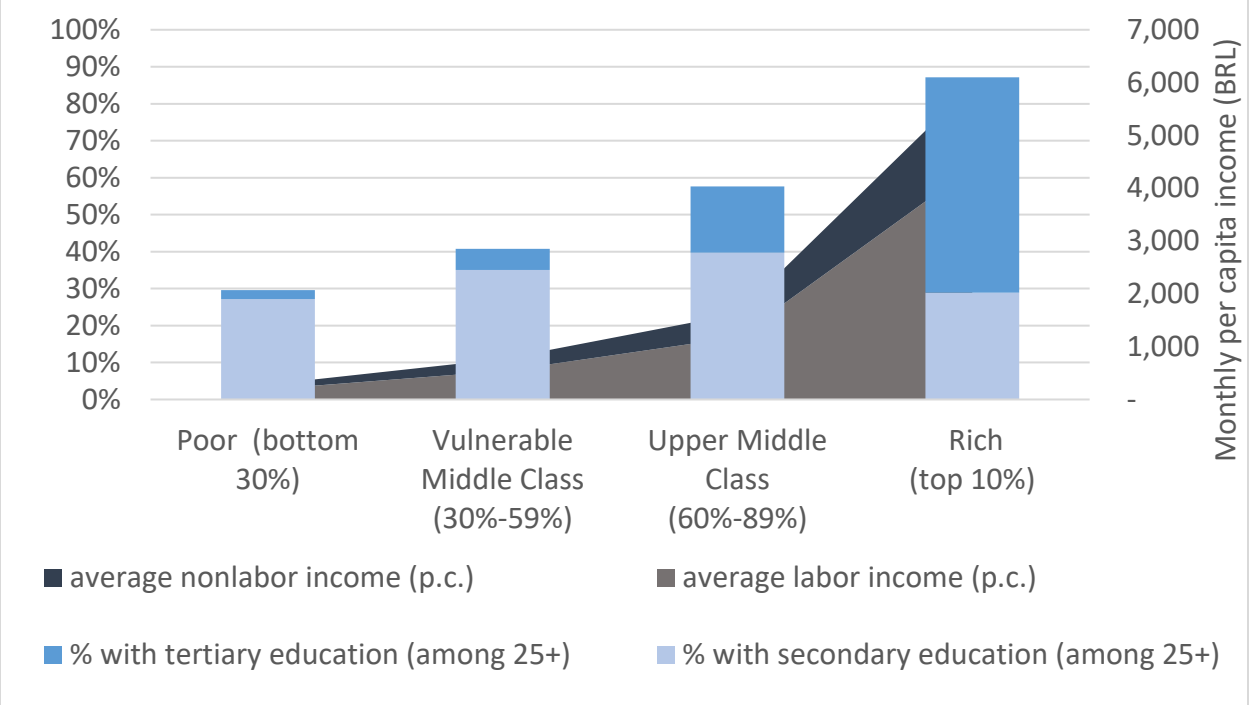
their late 40s, though attendance predictably falls with age (figure 4.7). Financial restrictions and long requirements to graduate explain such protracted university careers. Participation in formal short training is just 2 percent of working age adults. Such rates will need to increase (in OECD countries, as many as 40 percent of the adults, including 20 percent among low-skilled workers, attend some form of education or training every year).[199]

Figure 4.7 Working-age adults in education or training in 2019, by diploma pursued and age



Brazil's higher education system comprises a small number of highly selective and free public universities and a larger number of private institutions catering to a majority of students. Almost 9 million students are enrolled in higher education in Brazil, of which just over 2 million are in the public system, mainly in the federal network (1.3 million) (*Universidades* or *Institutos Federais*), Public and non-profit universities tend to be more research oriented, while for-profit institutions are more responsive to local labor market needs. Most postgraduate academic training takes place in public institutions, which enroll 85 percent of students in master's and PhD programs.[200] In general, access to public institutions is more competitive than access to private ones, so that Brazilians from higher socioeconomic strata are more likely to attend public universities (figure 4.8), making the system remarkably regressive. This pattern is not unique to Brazil and can be seen in other countries with similar systems (World Bank 2016).

Figure 4.8 Percentage of adults with upper secondary or higher education, and per capita income levels, Brazil, 2019



Source: World Bank, based on PNADC (2019).

While access to higher education in Brazil has grown in recent decades, enrollment continues to be highly dependent on family income, perpetuating intergenerational inequalities. Higher education degrees are nearly always associated with upper middle- or upper-class status in Brazil (see figure 4.8). Currently, of young people ages 18–24, almost 7 in 10 in the top income decile are enrolled in higher education, compared with 1 in 10 in the bottom 30 percent and less than 1 in 5 among the vulnerable middle class.[201] Although these enrollment rates represent an improvement in recent years, the pace of progress is likely too slow to avoid perpetuating today's stark income and class divides. Only 20 percent of the students at public institutions of higher education come from the poorest 40 percent of the population, while 65 percent come from the richest 40 percent.[202] Private institutions have expanded to meet demand from those who could not access the free but highly competitive public universities. The federal government enabled this expansion through increased credit to the FIES student loan program and tax offsets for private institutions (ProUni). Public universities have been adopting affirmative action policies, but access is still limited: in 2018, 52 percent of federal university seats (133,000) were reserved for affirmative action beneficiaries,[203] which represents a small share of new entrants to higher education (about 2 million students a year).

Returns to higher education in Brazil fell as a result of growing supply, but they remain high overall. Young adults with a higher education have on average higher chances of being employed than those with a secondary education.[204] Recent analysis shows a wage premium of 144 percent for young adults ages 25–34 with a higher education wage over those without one. In comparison, the average wage premium for a college education is 54 percent for OECD countries.[205] Considering both the costs of and returns to education, different methodologies have yielded

similar rates. One study using data for Brazil for 1981 to 2011 estimated internal rates of return to investment in education of 18.3 percent.[206]

A few Brazilian universities make it to global quality rankings. Based on teaching, research, research citations, industry links, and international integration, 12 Brazilian universities were ranked among the top 1,000 universities in the world on the Times Higher Education World University Rankings for 2019.[207] Brazilian universities that make the cut were either public (10) or nonprofit (2). Apart from such exceptions, research output and patents are relatively low in Brazil, and universities have struggled to become internationally competitive. While public universities are more research oriented than private ones, not all of them engage in high-quality, high-impact research.

Governance and financing remain key challenges to increasing quality and efficiency in Brazil's higher education system. Currently, the federal public university network is still organized around a model of control by the central Ministry of Education. With more than 300,000 employees and 1.3 million students, the federal public university network has become increasingly complex and difficult to administer. Federal public universities' funding is allocated through line-item budgets with rigid restrictions on how resources must be spent, while human resources policies remain constrained. The constraints associated with low levels of autonomy, particularly related to human resource policies and budget allocations, have made it difficult for public Brazilian universities to excel.

Increasing the human capital stock of workers in 2042 will also require accessible skill development pathways for adults of different levels of ability. Brazil's demographic profile makes it important to increase learning for those who cannot attend traditional universities**.** Lifelong learning is an essential public policy ingredient for creating a large and heterogeneous future workforce that is ready for future changes in the labor market. Adult learning needs range from basic skills development to the acquisition of technical skills in the current occupation, to more complex training to transition between sectors of the economy. Lifelong learning strategies require differentiated services but common frameworks that allow candidates to choose across a complex array of services and to understand how different learning experiences contribute to a longer-term learning plan. The range can include remedial programs to close foundational gaps, such as adult literacy programs (see box 4.3) and adult basic education; technical short courses for specific skills acquisition; and more structured short-cycle higher education programs.

Box 4.3 Adult literacy programs good practices

In 2019 more than 1 percent of young adults (who will be the prime age workers in 2042) in Brazil was illiterate, and another 21 percent did not complete primary education (based on test score results, some of them are likely functionally illiterate). A recent publication takes stock of adult literacy programs globally, a little studied but fundamental public program to enable more complex learning, including digital literacy. Most evaluated programs improved word recognition but failed to improve reading comprehension. The main reason for poor performance is the mismatch between teaching methods and students' needs and baseline ability levels.

An exception that could serve as inspiration for Brazil is Neuroalfa in Mexico. This adult literacy program offered 126 hours of training over 12 weeks and was directed to the urban poor population. The program succeeded in improving the reading comprehension of illiterate students. This and other successful programs share certain features. They set reasonable expectations, train teachers on how adults learn without spending too much time on getting the teacher profile just right, promote student and teacher motivation, offer flexibility, use information and communication technology tools as complements to

promote feedback and adaptive learning, and when possible, group participants by baseline ability. The right mix of design and diagnosis is necessary for adult learning programs to succeed. However, more evaluation studies are needed in order to accurately outline "what works" for adult literacy programs.

Source: World Bank 2019c.

Modular short training programs are particularly important to enable those with lower educational achievement to learn new skills. Completion rates are about 96 percent for formal short training in Brazil, a much higher rate than for other postsecondary programs, even though about one-third of participants have less than a completed secondary education. The average participant in formal short training courses in 2019 was 34 years old, 85 percent were employed, and about 56 percent were women. Only about a quarter of participants reported taking training offered by employers; the rest enrolled on their own initiative (see box 4.4).

Several evaluations have found that formal short training courses in Brazil, including those targeted to vulnerable youth and low-income groups, can be effective, if they have certain characteristics. One study found positive returns for participants in short-term training compared with nonparticipants in Brazil, but only for those who attended private or Sistema S institutions[208] (rather than federal public technical schools) and for those completing short-term training courses (2.2 percent on average).[209] However, results differ widely. Participants in short-term training provided exclusively by public providers had returns close to zero. Similarly, an evaluation of the PRONATEC program, one of the flagship interventions of Brazil's antipoverty strategy up to 2016, showed that design matters for outcomes.[210] When programs are designed with clear demand-driven features, such as offering training only in skills that were expressly requested by employers in the area, short training had positive impacts on employment rates of participants compared with nonparticipants, including for participants from families in the Bolsa Família program.

Box 4.4 Demand for and supply of formal short training in Brazil

In 2019, more than 1.8 million (1.7 percent) Brazilians ages 18–65 who were not full-time students in other programs took part in formal short training (FST) programs, and 17 percent of working age adults report having ever attend an FST course.

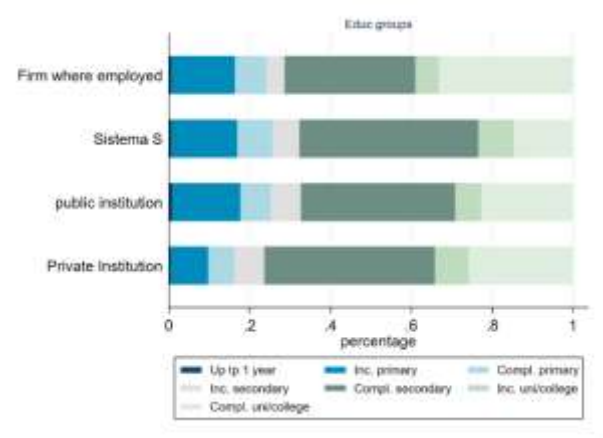
Adults who completed primary education or who did not complete secondary education report participating in an FST program almost as often as people who completed secondary school (figure). This is an important finding since this low-educated group will continue to constitute a large proportion of people in need of retraining. In addition, training uptake is higher among the employed than among the unemployed, which could be related both to individual interest and ability to pay.

On average, FST participants in private institutions and in training provided by employers are more educated, while Sistema S FST courses reach more people with less education. Only 17 percent of participants in Sistema S programs have completed college compared with 25 percent in private institutions. Similarly, the average monthly income of participants in Sistema S is below R$2,000, while FST participants in public institutions earn on average R$2,733 and those in private institutions around R$3,090. Occupations also vary considerably by type of institution: 20 percent of students in public institutions are employed in manual labor occupations such as manufacturing, construction, and vehicle repairs, compared with 40 percent in Sistema S courses. Overall, the data suggest that Sistema S plays an important role in skills training for those in the middle of the labor market.

Both enrollment and completion rates of FST increase with income and work status and depend on providers. The cost of FST includes both opportunity costs and tuition. While FST is easier to reconcile

with career and adult responsibilities, annual enrollment rates increase monotonically with household income (from 0.9 percent for adults in the bottom decile of the income distribution to 2.9 percent for those in the top). Most FST participants (56.3 percent) are enrolled in private institutions, presumably paying for the training themselves. Only 10 percent receive training through their employer (which is usually free to the worker). Additionally, 17.2 percent report receiving FST in Sistema S (which offers both free and fee-based programs), and a similar low share (16.2 percent) received FST in public federal institutions. FST participants also have higher earnings on average than nonparticipants. The probability of completing FST is higher in Sistema-S than in courses offered by other providers. Finally, regression analysis indicates that, holding all the other characteristics constant, the probability of completing FST is lowest for the unemployed and informal salary workers.

Box figure 1 Distribution of FST students by education and institutions that provide the service



Source: World Bank, based on PNAD Continua 2019.

Performance-based financing formulas that take into account key results, such as graduation rates and labor market outcomes, could improve the efficiency of the system and the value for students. Granting universities more autonomy in managing human and financial resources is key for improving efficiency. In addition, some funding could be attached to performance: funding based on number of graduates rather than on enrollment is common in financing formulas around the world. This can incentivize public universities to improve output. Additional mechanisms will be needed to ensure learning quality, so that universities focus on improving teaching methodologies and approaches. Professors' career progression could also be linked to research output and teaching quality, to better align public and private incentives.[211]

Diversifying funding sources, including means testing of tuition fees and scholarships, can make the system more equitable and improve quality. Such reforms could increase efficiency by giving students a greater role on the demand side and by allowing competition between institutions on the supply side. While public funding will remain vital, expansion of access and quality will be difficult for universities while relying on government support alone. Additional resources could be raised with means-tested tuition fees, with fee waivers directed to vulnerable and low-income students.

More financial support should be also directed to enable students from poor families to complete secondary education and continue their academic path into higher education. Improving high school completion rates, especially among those in the bottom 40 percent of the income distribution, is important for improving access to higher education for students from disadvantaged backgrounds. Among students who complete secondary school, the effect of

socioeconomic background on higher education enrollment and completion diminishes. Thus, incentivizing students from disadvantaged backgrounds to complete high school, for example through a funding scheme that supports both high school completion and university enrollment, could boost both high school completion rates and university enrollment.

Short-cycle higher education programs are a promising means of improving efficiency and widening access to postsecondary formal education, especially for time-constrained adults. The main objective of short-cycle higher education programs is to quickly train workers in order to improve their odds in the labor market,[212] for example, by easing occupation transitions. In the future, as the demand for skill diversifies, such programs will be crucial to filling small skill gaps in the education of workers. Despite their potential, many adult learning programs fail to generate expected results because they are poorly designed and implemented, not least because they fail to accommodate changes in how the brain learns at later stages of life.[213] Postsecondary technical and vocational training can also provide alternative avenues for students to specialize before entering the labor market.

Finally, to enhance life-long education, Brazilian youth, especially from more disadvantaged backgrounds, will need education counselling, supported by more open data on labor market outcomes of different careers. More than half of young people in an ad hoc survey in Brazil reported underestimating by half the returns of completing secondary education and, to a smaller degree, higher education.[214] Schools remain the best place for providing active counselling of students for the next steps in their education, while employment services can develop specific services to support out-of-school youth in vocational decisions. These programs require federal support for methods, capacity building, and readily absorbed information. While Brazil has rich labor data, restricted access to identified data on students and graduates from Brazilian universities prevents the production of career orientation portals, such as those available in countries like Chile, Italy, United Kingdom, and United States, that show how graduates from specific institutions fare in the labor market. Such portals are compatible with stringent data protection regulations. Absent fresh data and counselling, existing social norms and experience in the community inform students' education decisions, leading women, for example, to self-segregate out of more promising careers in science and technology.

Interestingly, improving education quality was singled out as the most important policy to relieve poverty in Brazil, according to a recent survey of most Brazilians (chapter. 1). The reforms discussed in this chapter all aim at making the future Brazil more inclusive, productive, and fair.

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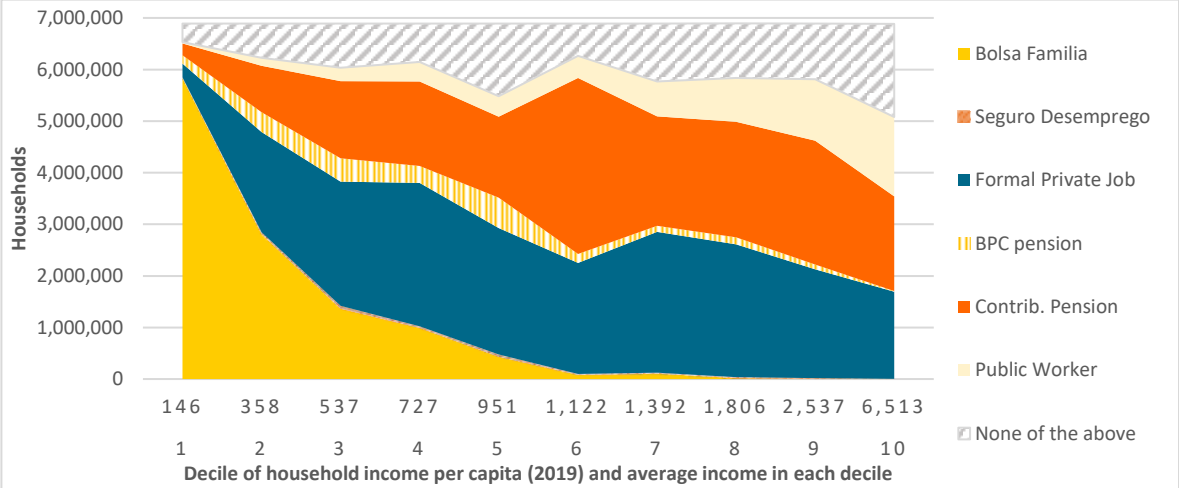
Chapter 5 Renewing Brazil's social protection policies

Social protection policies have contributed much to inclusion in Brazil. Bolsa Família, now Auxílio Brasil, became the largest conditional cash transfer program in the world and supported the universalization of access to basic education and the broadening use of preventive health services. Since 2003, Brazil has also developed Cadastro Único (Unified Registry for Social Programs), which employs a unique targeting technology for identifying Brazil's poor and vulnerable. Brazil's decentralized social assistance delivery model enabled providing complex programs to almost all 5,570 municipalities. Finally, social protection was also critical for mitigating the economic effects of Covid-19, especially through Auxílio Emergencial. In rolling out this program, Brazil developed key innovations to enroll affected individuals and pay benefits quickly and remotely.[215]

Brazil's social protection system, if perfectly implemented, can provide almost all households with some form of protected or insured income. Simulations for 2019 show that 90 percent of Brazilian households have at least one member who is theoretically eligible to receive income secured by the social protection system, either through their formal job or because of their age or low income level (figure 5.1).

Figure 5.1 Simulated access by Brazilian households to state-provided transfers, salaries, or unemployment insurance through the social protection system, 2019



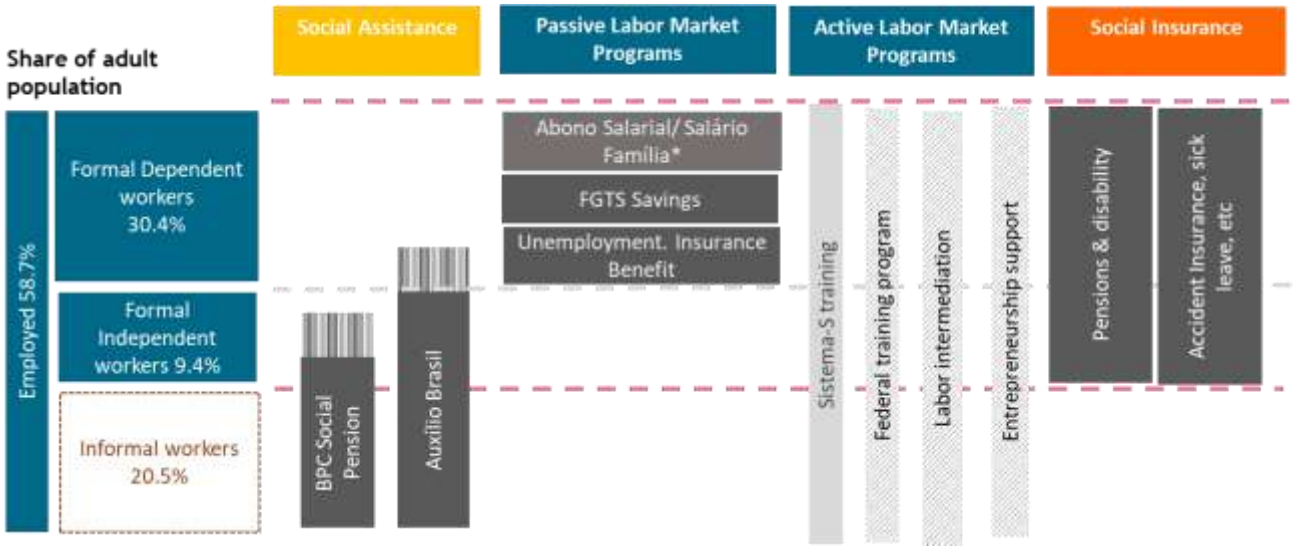
Source: Team calculations based on BraSIM 2019 microsimulation tool of the WB Poverty & Equity team.
Note: the model assumes perfect implementation of all SP transfers, and assigns to each household the most advantageous transfer or insured income, among those to which its members should be eligible.

However, the level of protection and the certainty of receiving benefits vary widely. Civil servants, overrepresented in top income deciles, have the most secure form of income (figure 5.2). Contributory benefits also are subject to constitutional guarantee in provision, and their value is tied to the minimum wage. Programs for the poor and vulnerable, such as Auxilio Brazil, active labor market policies, social services (Crianca Feliz and the Unified Social Assistance System [SUAS]) depend more on discretionary budget and policy decisions. These differences expose the unequal bargaining power of beneficiaries with respect to the social contact in social protection. Finally, families who engage in informal work or self-employment, but who are not among the extreme poor, are not typically reached by any social protection program despite their exposure to

severe income fluctuations. Many such households formed the bulk of new beneficiaries of Auxílio Emergencial during the Covid-19 pandemic.

Moreover, segmentation according to labor market status persists in the social protection system; without changes, coverage and efficacy could be further undermined in the future world of work. The ability of the poor, vulnerable, and less educated to adapt to new shocks (such as from climate change or structural change in the economy) hinges on their effective access to risk management instruments. Historically, Brazil developed several programs, such as unemployment protection, disability and accident insurance, subsidized credit, and on-the-job training, mainly for the formal working class, who as "dependent employees" are protected by the labor code. But informality remains stubbornly high. Technology-enabled transformation of work and economic crises are actually leading to fewer stable dependent work relations (chapter 2). Without reforms, the segmentation in social protection could continue to increase.

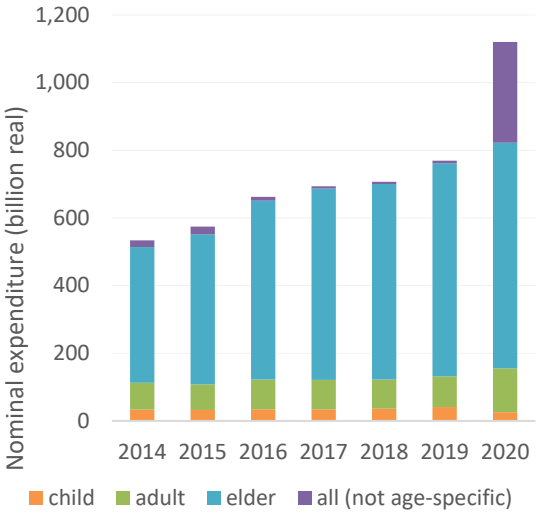
Figure 5.2 Coverage of social protection programs in Brazil by labor market engagement



Source: Authors based on PNADC 2019 and Portal da Transparência.

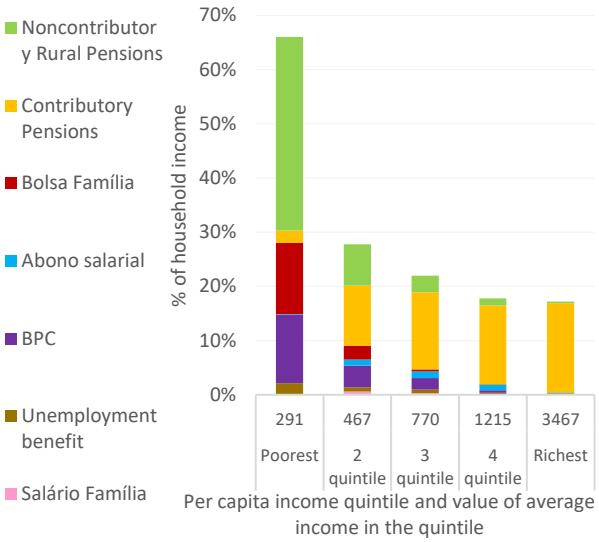
Spending imbalances that favor the elderly at the expense of children and the working poor will increase unless corrected. Through the expansion of noncontributory social assistance, significant progress was made in reducing poverty in old age (through the Continuous Benefit Program, BPC) and in providing a minimum level of income support for the working poor (through Bolsa Família/Auxílio Brasil). However, social assistance expansion occurred without adjusting entitlements under existing contributory social protection programs, leading to duplication between similar programs. Brazil struggled for a long time to achieve political consensus on eliminating regressive subsidies in pensions and, to a lesser extent, labor programs. Except during the unusual circumstances of the emergency response to Covid-19, pension spending continued to drive the rise in social protection spending, even after the 2017 reform (figure 5.3). Pensions are also the main reason for Brazil's benefit system to be very skewed toward the elderly and only mildly progressive. A portion of pension benefits is subsidized (World Bank 2018), even if most pensions accrue to the middle and top income groups (figure 5.4), leaving few resources for children and youth, who are disproportionately poor.

Figure 5.3 Social protection spending by age group of the primary target, 2014–2020



Source: Authors based on expenditure data from Brazil Portal da Transparência.
Note: SP programs were classified by main target-age group. Bolsa Família is classified for children and Auxílio Emergencial 2020 as not age specific.

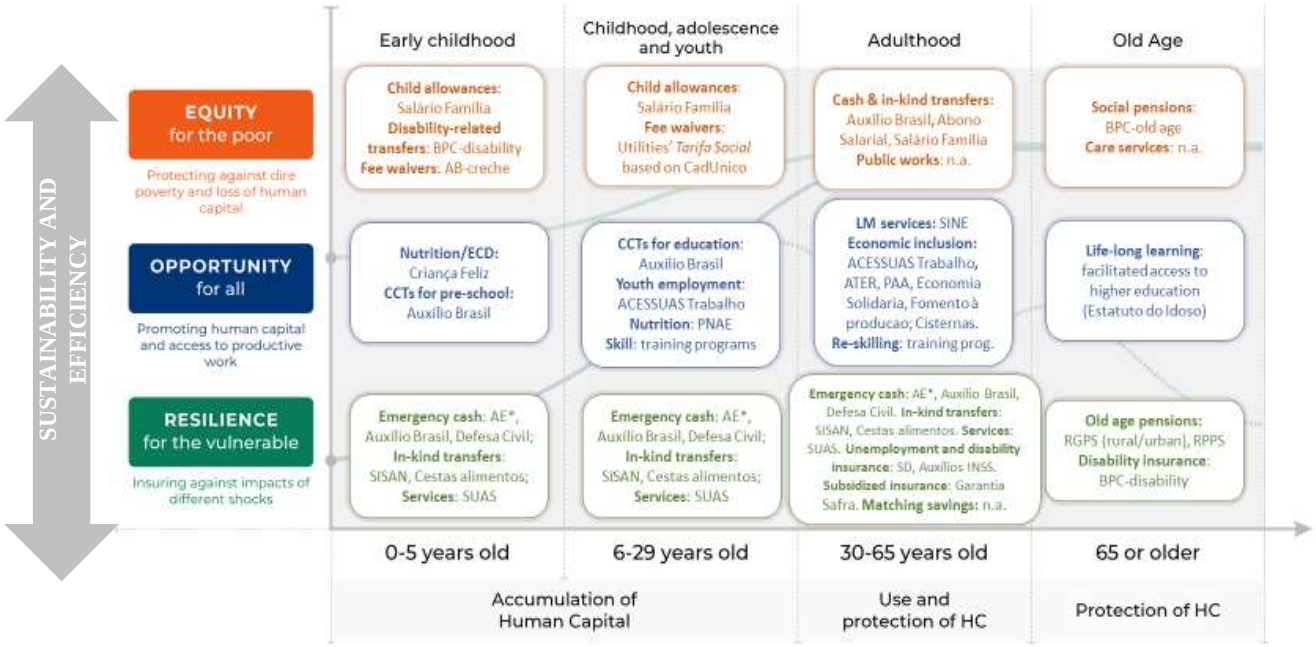
Figure 5.4 Social protection benefits, as a percentage of household income, by quintile in 2019



Source: BraSim microsimulation tool developed by the World Bank Poverty team, based on PNAD Continua 2019. The figure shows the share of specific social protection expenditures in the total household income of each quintile.

With an eye to the future, Brazil should reconcile its social protection and labor market systems through design features that promote resilience, economic opportunity, and equity. Brazil can rebalance its social protection expenditures today to better prepare its population for tomorrow's challenges. While Brazil already spends at an adequate level for a country with its revenue capacity, the allocation of resources to social protection and labor programs can be optimized to more equitably serve different age groups. The framework in figure 5.5 shows the main functions of an optimal system: equity, by ensuring sufficient income protection for the poor and vulnerable; opportunity, by promoting labor productivity and human capital accumulation and ensuring balance between contributions and benefits; resilience, by insuring individuals against shocks and risks along the entire life cycle and, to the extent possible, in ways that are neutral to elements of the labor market (formal or informal, dependent or self-employed); and sustainability and efficiency, by leveraging the delivery system to target effectively, avoid program overlaps, and ensure adequate revenue collection to finance the system.

Figure 5.5 Social protection and labor market interventions for human capital accumulation throughout the lifecycle



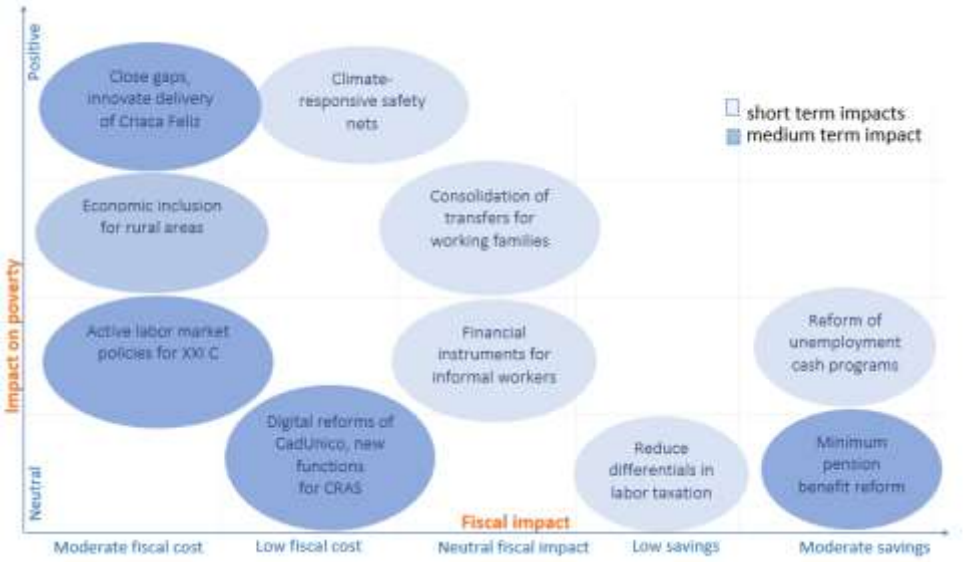
Source: Adapted from World Bank (2012).

Several reforms could bring the social protection system closer to this vision, without increasing fiscal costs.[216] The framework shows that Brazil already has many of the programs needed to achieve this vision, but, as this chapter illustrated, rebalancing and reform are needed. Figure 5.6 summarizes a set of proposed reforms that could help Brazil improve in all dimensions of the framework:

- Resilience: enhance the efficiency of the unemployment program, expand instruments for managing income volatility, and adapt safety nets to respond to climate shocks.
- Opportunity: reform delivery of early childhood development, revamp active labor market programs to support workers during job transitions, as well as rural productive inclusion.
- Equity: consolidate targeted transfers to working families, enhance the Social Assistance Reference Center (CRAS) network to deliver more complex services.

Enhancing the use of technology in Cadastro Unico will be key to improving the efficiency of the system, while two reforms, discussed in chapter 6, focus on strengthening sustainability of revenues and expenditures: revisiting the minimum pension benefit, and reforming social contributions and taxes for dependent and independent work. The diagnostics and reform ideas in this chapter are illustrated in more detail in the companion report, *Social Protection for the Future Brazil.*

Figure 5.6 Prospective social protection and labor market policy reforms



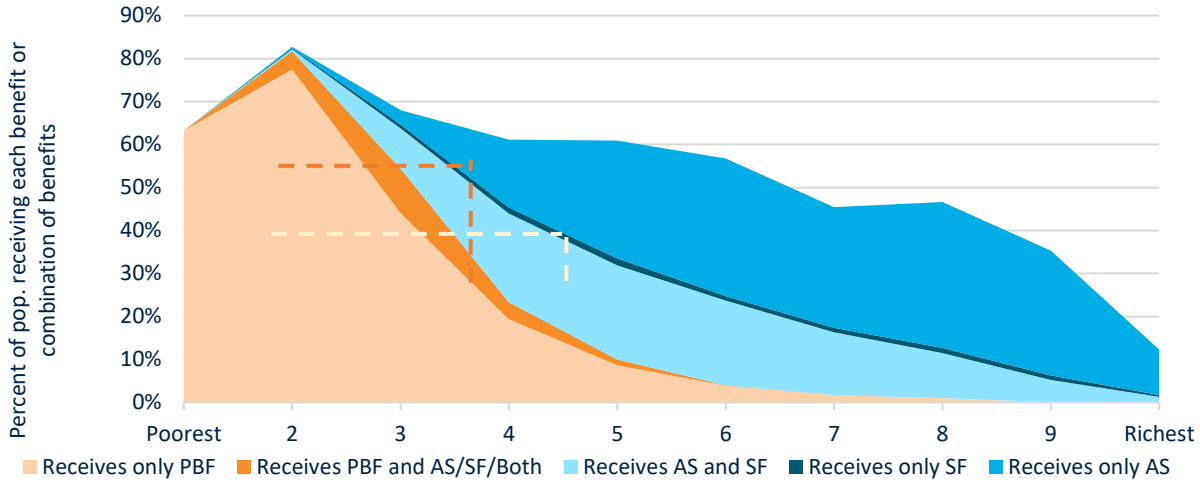
Source: Authors.

Social assistance for working families: building on strengths and the recent Auxilio Brasil reform

The 2021 Auxílio Brasil reforms maintained the key strengths of Bolsa Família but opened the door to new synergies with other social policies. Auxilio Brasil further enhanced conditionalities for human capital, especially in terms of education incentives from preschool to upper secondary. It also strengthens linkages with services to support economic inclusion, in particular with a new benefit for childcare, the introduction of block grants to municipalities for contracting economic inclusion programs, and new benefits for labor market integration. So, in years to come, Auxilio Brasil could become the platform to further strengthen the "Opportunity" pillar of the social protection system.

The Auxilio Brasil reform did not address the fragmentation of transfers. Ultimately, household welfare depends on the combined effects of tax and fiscal policies. Figure 5.7 shows, for every level of formal labor income, the total net take-home income from transfers: Auxílio Brasil, Abono Salarial, and Salário Família in 2019. The coexistence of benefits with different targeting approaches creates duplications in some households and gaps in others. The inconsistencies across families likely became even greater with the recent creation of the generous but ill-designed *Beneficio Extraordinario*, which tops-up every household receiving Auxilio Brasil with additional benefits up to 400 BRL, regardless of family size, leading to horizontal inequities between families.

Figure 5.7 Distribution of benefits for working families, by family income decile, 2019



Source: The World Bank using BraSim microsimulation tool.
Note: AS=Abono Salarial; SF=Salario Familia; PBF=Bolsa Familia program

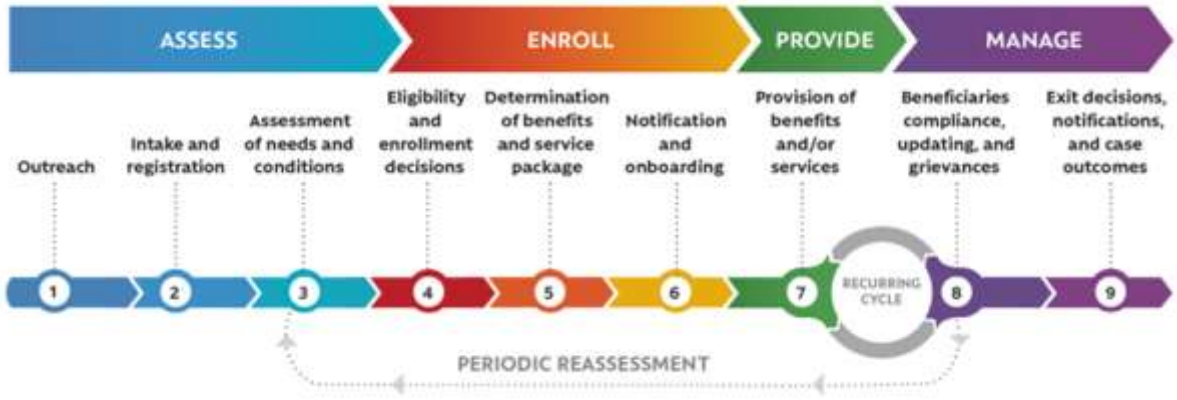
Brazil could consolidate transfers for working families into a universal child allowance, coupled with a single tapered social transfer. This could more generously support the chronically poor and those affected by transitory shocks. Over the years, several think pieces have proposed this type of benefit consolidation.[217] One such option could be to create a universal transfer to children, combined with a broadly targeted means tested benefit to poor households. The universal flat benefit would consolidate child and youth benefits of Auxílio Brasil, Salário Família, Abono Salarial, and child-related income-tax deductions. Conditionalities would be preserved. The means tested component of the new benefit would consolidate the unconditional component of Auxílio Brasil (Beneficio de Cidadania) with Abono Salarial. This allowance would be tapering off above the eligibility poverty line, in order to preserve incentives to participate in the formal labor market. The targeted benefit could eventually include any additional resources for social assistance, such as benefício extraordinario.

Simulations for 2019 show that the reform would have impacts on poverty similar to the scenario of perfect implementation of the available benefits. This new consolidated benefit would remain reasonably well targeted, and the universal child component would also be progressive (due to the over-representation of children in poor households). And it would bridge coverage gaps and reach a larger number of families than the current fragmented transfers combined, while avoiding overlaps. Simulations (discussed in World Bank 2022a) show that the reform would yield similar impacts on poverty in a scenario of *perfect* implementation of the current fragmented system; and it is known that perfect implementation is less likely for a targeted transfer than for a universal transfer. More importantly, the universal component would create a stable income stream to support children among vulnerable households, regardless of the form of engagement in the labor market, and of the frequent fluctuations of income that currently generates significant rotativity across programs (Fietz et al, 2021). Broadening the beneficiary base, especially among the vulnerable middle class, could also support the political economy of reform.

New frontiers for the social protection delivery systems

Delivery systems are the operating environment for implementing social protection benefits and services. That operating environment is anchored in core implementation phases along the delivery chain (figure 5.8). Interactions are facilitated by communications, information systems, and technology, among other factors.[218]

Figure 5.8 Delivery chain of social protection system and areas with room for enhancement



Source: Lindert et al 2020.

In the coming decade, outreach, intake, and registration for social protection programs should incorporate advances in mobile and communication technology. Communications regarding new programs or new rules for existing programs and interactions between government and citizens for social policy should take advantage of the new possibilities offered by modern information technology systems and the increasing (but still incomplete) access to the internet by the poor. There is scope to develop customized communication based on individual profiles and enrollment status. This may also become a preferred gateway after natural disasters.

Auxílio Emergencial showed how to integrate public registries into programs to better identify beneficiaries. The historic divide between the contributory and noncontributory registries remains a persistent weakness.[219] Auxílio Emergencial showed the potential to leverage many more government databases to identify, for instance, assets as well as income.[220] Populating user profiles with data from other sources, such as formal employment, education degrees, and receipt of other benefits, would also reduce the burden on future users to populate Cadastro Unico. International experience also showed that in order to permanently embed such innovations, the governance of social assistance, pension, and labor records needs to be reviewed. Cadastro Único, Information to Social Security (GFIP), and General Register of Employed and Unemployed Persons (CAGED) should be integrated, and the National Database of Social Information (CNIS) seems to be the best environment for this.

Cadastro Unico can be upgraded to become a social protection registry, by making it interoperable with other program-information systems. Although more than 20 targeted programs use Cadastro Unico to verify income, each program maintains its own registry, and beneficiary information is not aggregated. Interoperability with program registries, similar to best practice experience of countries like Chile and Turkey, would enable identifying overlaps and managing access to packages of services, thus ensuring better coverage.[221] Integrated registries will also enable stronger monitoring, including attention to program exit criteria**,** and tracing of

the effects of multiple programs on beneficiaries**.** There is also an opportunity to reduce the number of ad-hoc questionnaires that today govern entry to specific programs, repeating questions in the Cadastro Unico.

Universalizing payments through digital accounts opens new options for financial inclusion. Digital accounts allow fast and secure payment of benefits. However, the state bank's monopoly on payment services should be analyzed, as allowing more banks to manage transfers could generate competition in the financial sector for tailored products to meet the credit and savings needs of low-income residents.

A partially digitalized delivery of administrative functions opens space for CRAS to focus on high value human interactions. Social assistance networks will continue to be fundamental in the delivery of social protection services even with increasing digitalization. In particular, Brazil SUAS for years foresaw the application of household-specific case management (Plano de *Acompanhamento Familiar*), but with high caseloads and limited administrative tools. OECD countries transitioned social offices toward high-value individualized service, and many middle-income countries are following suit. High initial investment needs make this a challenge, but it represents an important opportunity to focus on the nonmonetary causes of poverty. Among others, expanded functions comprise:

- Systematic and integrated needs assessment that can trigger intensified case management.
- Dedicated approaches to complex problems that remain widespread in Brazil, such as domestic violence, and to serving new vulnerable groups, such as refugees and migrants.
- Digital inclusion of beneficiaries, a necessary condition for social inclusion in the future.
- Monitoring and correction of errors of machine-operated processes, such as targeting.

An enhanced role for social assistance to increase resilience to climate change

Social safety nets and SUAS already have an enhanced role in helping communities cope with climate-induced natural disasters. As discussed in chapter 2, drought and excess rainfall, resulting in recurrent floods and landslides, are climate-induced events with the greatest impact on the poor and vulnerable in Brazil.[222] The broad coverage of social assistance and Cadastro Unico give Brazil an advantage in developing a strong response strategy to climate change–induced disasters. Several disaster risk management instruments are already in place: With early warning systems in place in high-risk areas, Civil Defense[223] steps in after a shock and triggers the SUAS to identify and rapidly enroll the affected families in Cadastro Unico. When a state of emergency is declared, current regulations allow for advance payments of Auxílio Brasil or BPC; resources for municipalities to respond and recover from the damage, however, need ad hoc legislative processes. CRAS also directs families to basic services such as shelters.

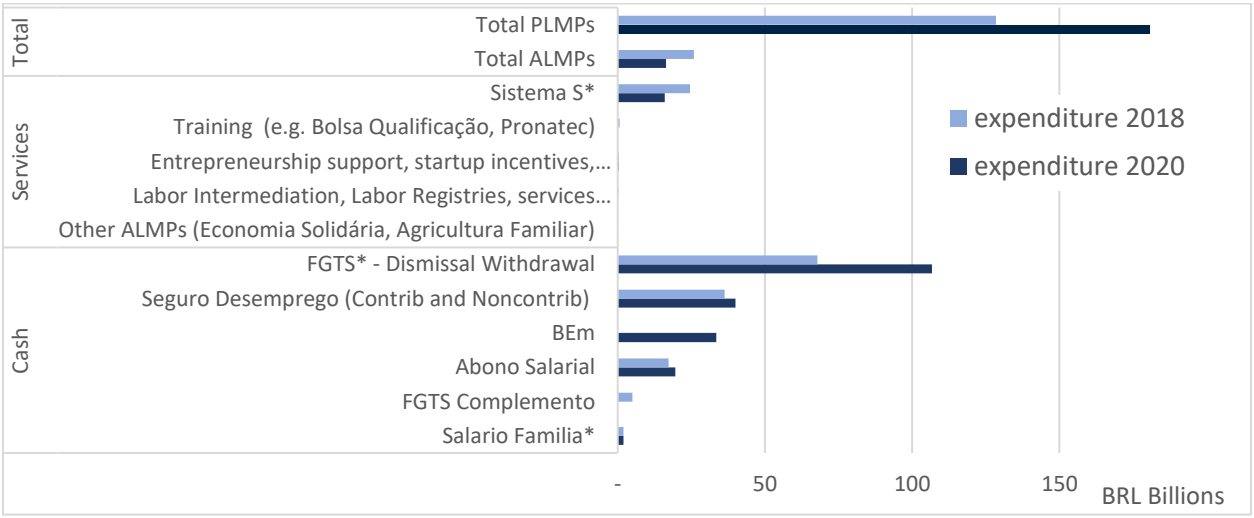
A recent review of social protection protocols pre- and post-emergency reveals room to strengthen adaptive social safety nets in Brazil. Brazil is now ripe for an integrated strategy for adaptive social protection to deal with the most frequent and disruptive shocks, through appropriate legislative reforms and fiscal commitment.[224] First, Brazil could create mechanisms to automatically mobilize resources for social protection responses to disasters, thus avoiding the need for legislative action after each shock; these resources could be mobilized according to specific criteria and the nature of the shock, with different financial instruments for different types of situations. Second, lessons from Auxílio Emergencial can be applied to emergency benefits, and enable rapid digital enrollment for distribution to those not yet in Cadastro Unico. In addition,

the Cadastro Unico could be updated with relevant household questions, and importing of community level data, to better identify ex-ante households and communities at risk.

Labor market policies for greater resilience and inclusion: beyond passive income support

Most federal labor market spending in Brazil is devoted to passive income support rather than to active labor market programs. Brazil spends more as a share of GDP on labor market policies than the OECD average. Including mandatory employer contributions, Brazil spends 2.2 percent of GDP on labor market policies (1.56 percent on passive programs and 0.64 percent on active programs), while the OECD average is 1.32 percent (0.79 percent on passive programs and 0.53 percent on active programs).[225] However, labor market programs in Brazil seldom promote economic inclusion. Unemployment insurance and outlays of the Government Severance Indemnity Fund (FGTS), an unemployment savings fund, typically absorb three-quarters of spending on labor market programs (figure 5.9). Little goes to labor intermediation, economic inclusion programs, and other active labor market programs to help vulnerable workers find better employment, including by supporting their accumulation of human capital. Public spending on labor policy is also regressive.[226] In fact, household survey data show that most of Brazil's unemployed come from informal work or are in transition from school to work. [227] Job losses from formal employment are the smallest share, and yet the programs financed by the Workers' Protection Fund (Fundo Amparo Trabalhador) is devoted almost entirely to this group. Only an estimated 1.8 percent of spending on labor market programs is for programs targeting workers outside the formal sector.

Figure 5.9 Active and passive labor market expenditure financed by the federal government and employers, 2018 and 2020



Source: Authors based on budget data from Portal Transparencia data for 2018 and 2020.
Note: *out of budget expenditures financed by mandatory employer contributions. Passive labor market programs nclude Salário Família, Abono Salarial, Seguro Desemprego, FGTS, and BEm (Benefício Emergencial de Preservação do Emprego).

Reforming Brazil's Workers Protection Fund (FAT) to increase financing of active labor market programs is a priority to help workers weather the labor market shocks of the future. Looking toward 2042, Brazil will face rising dependency ratios and a high risk of skills mismatches with labor demand. Analyses of workers' histories show that, following a job loss, workers with the lowest levels of human capital take years to restore employment and earnings.[228] With the

exception of training programs, which exist at some scale but are offered in isolation from other policies, Brazil lacks quality active labor market programs almost across the board. Brazil can afford to invest in new active labor market programs without increasing total labor market spending. For instance, current expenditures of R$14 billion in the FAT, which are used to supplement the wages of mainly middle-income workers who already have a formal job, could be redeployed to active labor market programs. Box 5.1 summarizes the evidence on promising active labor market programs to support workers displaced by structural economic shocks.

Box 5.1 Effective active labor market programs to support workers displaced by structural economic shocks

If well designed, active labor market programs can support workers affected by shocks and structural changes to get back on their feet. Several metanalyses that have compared types of support conclude that training programs have the most positive medium- to long-term impacts, though they may be less effective in the short-term.[1] For the short term, job-search assistance programs that focuses on "work first" have large positive impacts. Comprehensive programs that address several constraints at once are generally more effective but also more costly.[2] In contrast, temporary public sector jobs serve only as a safety net, with a negligible employment effect thereafter.

Of particular relevance in periods of accelerated and geographically concentrated structural change are programs designed to help workers move to new sectors. Trade adjustment assistance programs include a package of services, such as income support (for longer periods), intensive training in specific demand-driven sector, and temporary hiring incentives. Two Trade adjustment assistance programs that have been evaluated in depth:

- **The US Trade Adjustment Assistance Program.** The program provides job-search assistance, training, wage subsidies, and health insurance to workers laid off due to "increased imports or shifts in production out of the US."[229] A participant can receive training for up to three years. Evaluations show mixed results. Two studies find a negative to limited effect of the programs on future earnings and employment.[3] Another study of 20 years of worker earnings and re-employment responses to the program finds that trainees had $50,000 greater cumulative earnings after 10 years in the program, driven by both higher earnings and more labor force participation.[4]
- **Austrian Steel Foundation (ASF) program.** The AST program was created in response to the privatization and downsizing of the steel industry in Austria. The program was an independent training center where displaced workers could spend relatively long periods of time obtaining work orientation training, formal education, and placement services. The ASF was financed by the Austrian unemployment insurance fund, steel firms, and a collectively bargained special tax on the remaining steel workers. An evaluation of the program found significant wage gains among participants even five years after leaving the program, as well as improved employment prospects.[5]

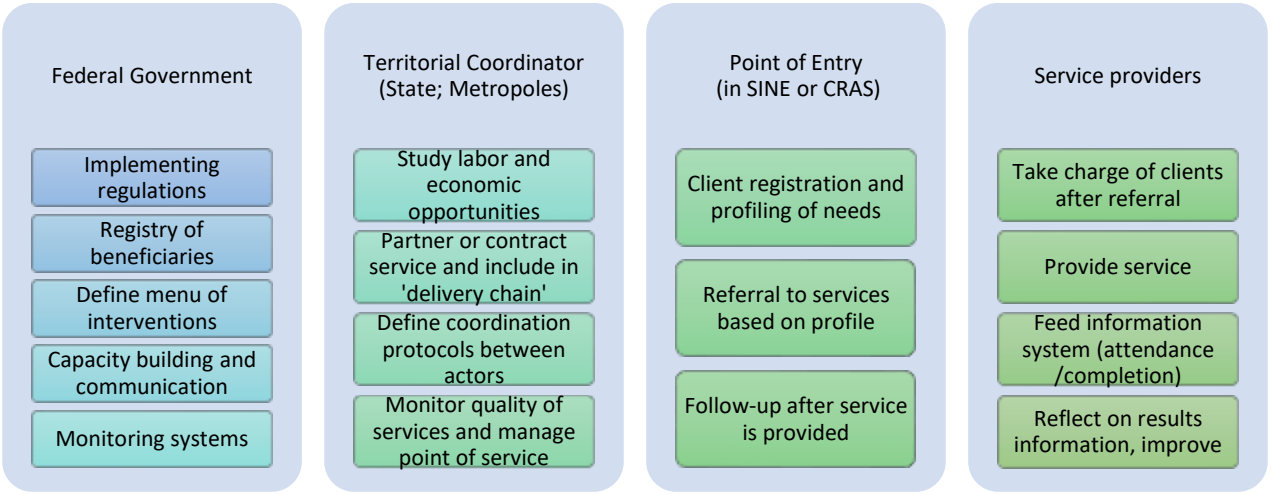
After evaluating different TAA interventions in developed and developing countries, Hollweg et al. (2014) offer some lessons learned for the design and implementation of those interventions. First, the intervention should be context specific and focus on a single sector or a few policy instruments. Secondly, different cost-sharing options should be explored for the financing of these programs and solutions such as the ASF could be used. Lastly, the retraining component of the TAA interventions needs to be carefully designed drawing from lessons from previous training programs.

Notes:
1. Card et al. 2018.
2. Datta et al 2018.
3. Schochet et al. 2012; Berk 2012.
4. Hyman 2018.
5. Winter-Ebmer 2001.

The delivery of active labor market programs should start with profiling (diagnosis) and then move on to some of the following elements: career counselling, job-search support, structured skill development, socioemotional skills development, and accumulation of work experience supported by a temporary wage subsidy.[230] Monitoring and evaluation systems should be in place to identify well performing programs and evaluate individual providers. Active labor market programs are particularly important where labor market discrimination based on gender or race is pervasive. Such programs can reduce information asymmetries and employer bias (through skills signaling and objective intermediation), incentivize initial employment opportunities for youth with a limited social network (through wage subsidies), improve interview skills and on the job learning (through soft skills training), and enhance purpose and pursuit of better-quality skills training programs (thorough orientation and counselling services). Several developing countries are also experimenting with performance-based contracts to deliver technical training, personalized intermediation, and subsidized placements. This is a promising area for Brazil public policy to experiment more aggressively.

To coordinate this agenda at the local level, Brazil should revamp its ailing employment services, and invest in coordinating mechanisms between SINE and social assistance and service providers. Public employment services (SINE) historically covered a narrow set of functions: job matching, labor documentation, and enrollment in unemployment insurance. Funding has been minimal and falling. SINE's role was further diminished after unemployment insurance moved to digital delivery. The Institute for Applied Economic Research (IPEA) estimates that even minor improvement in the effectiveness of intermediation would result in large fiscal savings on unemployment insurance, freeing resources for other active labor market programs.[231] While labor intermediation can already be provided through digital matching platforms, that does not eliminate the need for developing a territorially based "entry point" that can conduct essential functions such as profiling jobseekers, training clients in job search, providing referrals to local service providers for more complex treatments, and ensuring fair treatment (figure 5.10). As SINE offices have less capillarity than social assistance, CRAS could be a likely an additional entry point for low-skilled unemployed to being referred to appropriate labor programs.

Figure 5.10 Potential delivery chain of active labor market policies in a federal structure

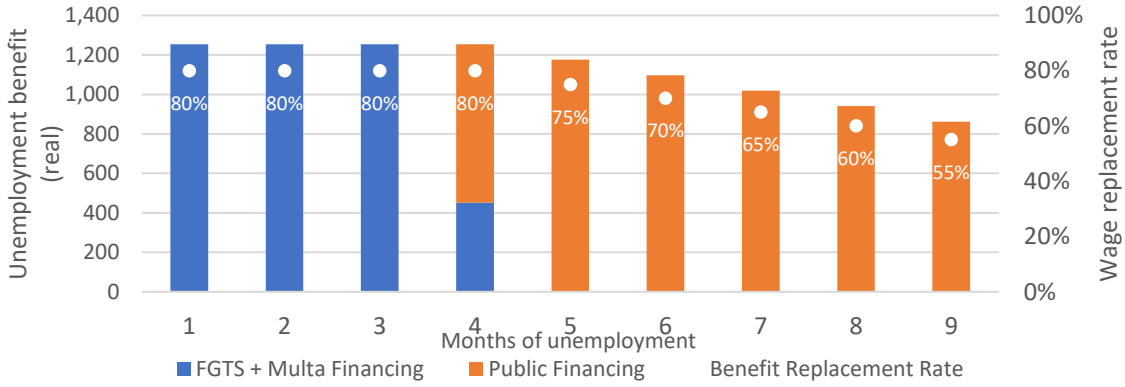


Source: Authors, based on World Bank 2022b,

Reforming Brazil's passive labor market programs is vital to the renewal of the entire system. Currently, Brazil's unemployment insurance program (Seguro Desemprego) is generous in its wage replacement rate, but its duration, coverage, and efficiency are limited. Simultaneous payments of Seguro Desemprego, FGTS, and severance payments, bring the value of unemployment payouts above the pre-unemployment wage, especially for low-wage workers.[232] The high payouts at dismissal contrast with the low duration of payments (five months maximum). The generous payment, combined with a lack of enforcement of job-search requirements by labor offices, creates perverse incentives for unemployment.[233] The resulting high labor turnover undermines productivity. However, most workers in Brazil are ineligible for unemployment insurance, because they are informal workers or self-employed or have too short a formal job history: in 2019, only 17.7 percent of people who reported being unemployed received unemployment payments.

Seguro Desemprego and FGTS should be coordinated with each other and with other labor market services. A large body of literature has been calling for reform of unemployment programs.[234] One suggested approach, based on international experience, is to use individual savings that accumulate in FGTS as the first line of financing for unemployment claims.[235] Only once FGTS is exhausted would workers receive funds from the risk pool (unemployment insurance). In this way, workers would receive less than they earned while working (thus removing perverse incentives), payout periods could be extended (figure 5.11), and individual savings would be accessed before using the public risk pool.

Figure 5.11 Example of unemployment payouts through coordinated financing of unemployment insurance (Seguro Desemprego) and individual savings accounts (FGTS)



Source: Morgandi et al. 2021.
Note: Figure shows the unemployment benefits for dismissed workers with pre unemployment wage of 1.5 times the minimum wage and job tenure of 24 months.

Brazil can also strengthen the resilience of self-employed and informal workers to income shocks through better financial inclusion. Cadastro Unico, especially after its recent enlargement to the Extra-Cadastro beneficiaries of Auxílio Emergencial, revealed a vast group of vulnerable people (but not the extreme poor) operating mainly in the informal sector or as self-employed. A new generation of saving schemes targeting informal workers and the self-employed are being developed in middle income countries, including Colombia, Kenya, Pakistan, and Rwanda (table 5.1). These programs take advantage of digital delivery, behavioral nudges, or matching contributions to create an incentive-compatible savings account to help self-employed workers manage income volatility. These workers are normally ineligible for unemployment insurance, but in some countries, including Colombia, the government subsidizes matching

contributions (mindful that Seguro Desemprego is also de facto subsidized). Such accounts are often bundled with incentivized long-term savings for retirement and can support financial inclusion through other products, such as microinsurance. Cadastro Unico and Auxilio Brazil could thus became an ideal platform to introduce users to such savings schemes (as further discussed in World Bank 2021). By making informal income streams visible to the financial sector, these accounts can also become ways to offer less costly credit to otherwise less visible borrowers.

Table 5.1 International experience with precautionary savings instruments for workers

	Type of program	Target group	Design features to increase savings	Number of beneficiaries/coverage
Colombia (*BEPS*)	**Pensions / long-term savings** (can also be used for other long-term savings purposes in Kenya and Rwanda)	Informal and low-income workers	Matching contributions, lotteries, text message reminders	666,990 beneficiaries (2020). Potential beneficiaries: 11.4 mn
KENYA (Mbao pension scheme)			Some withdrawal-side restrictions, digitally provided	100,000 beneficiaries (2018). Potential beneficiaries: 12 mn
RWANDA (Ejo Heza)			Matching contributions by socio-economic status, digitally provided, bundled with life insurance	1.3 mn enrolled (2021). Potential beneficiaries: 2.9 mn
CHILE (Reform 2008)		Formal self-employed	-	> 300,000 self-employed (2008): represents 33 percent of those eligible to contribute
COLOMBIA (Cesantias)	**Unemployment insurance savings accounts**		Favorable interest rates	8 mn beneficiaries (2018)
MEXICO (PROIIF) -Discontinued	**Financial inclusion program**	CCT beneficiaries	Automatic transfers, financial education, free life-insurance, potential access to micro-loans	2.3 million families (2015-2018). Potential target group: 6.2 million beneficiaries.
PAKISTAN (CRISP) -*Planned*	**Voluntary savings scheme with individual accounts**	Informal uncovered, CCT graduates	Matching contributions	Pilot will target 150,000 beneficiaries.
High income OECD countries	**Unemployment insurance to formal self-employed**	Formal self-employed	-	-.

Source: World Bank 2021b.

Bringing reforms together

Brazil faced formidable challenges in reforming social protection and labor market policy benefits that accrued to the better organized share of the middle class. To succeed with further reforms, it will need to engage in a broad social dialogue to present packages of reforms that translate savings in some regressive areas into progressive, better-quality services to meet long-term needs, close coverage gaps, and reduce uncertainty in essential programs.

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Chapter 6 Updating Brazil's growth model

Toward an equitable and sustainable growth model for Brazil

Brazil's growth model has run out of steam. Growth has been slow and since the end of the commodity supercycle, Brazil has become poorer on average (chapter 1). Second, Brazil's growth model is equitable only up to a point. During the commodity supercycle, poverty and wage inequality were reduced through improving labor market outcomes and substantial transfers and regulatory measures (such as the minimum wage). However, when capital income is also considered, income inequality seems to have stagnated (chapter 2). Poverty has worsened in recent years, unless supported by considerable fiscal outlays (as in the Covid-19 pandemic).

Recent World Bank research shows that Brazil is unsustainable in at least two ways (Hanusch 2023 and World Bank 2023): first, a focus on factor accumulation (including demographics, savings, and expansion of agricultural land) will not suffice to propel Brazil from middle-income to high-income status. Second, the expansion of agricultural land causes large-scale deforestation, especially in the nine states of Brazil's Legal Amazon region, making land use change one of the biggest sources of greenhouse gas (GHG) emissions in the country. World Bank 2023 argues that relying on the exploitation of the country's vast natural resources (forests and also oil and gas) will neither deliver sustained economic growth nor is it fit for a decarbonizing world.

A more globally integrated economy, more diversified exports, and higher value addition would be consistent with a more dynamic growth model. Brazil barely trades with the global economy. Agricultural and mineral commodities account for about two-thirds of its exports.[236] Goods with higher value added (automotive parts) tend to be exported within Mercosur, with the notable (but small) exception of airplanes. Service exports are also minor. Commodities are not a road to wealth. Integrating with global value chains could boost Brazil's economic growth by enabling it to move up the value chain and tap larger markets. To do this, Brazil needs to become more competitive, especially in the currently lagging urban-based sectors, industry and services, which requires investment and productivity gains.

Brazil has much to gain from a more productivity-focused growth model combined with institutions that foster inclusion and sustainability.[237] This chapter shows that achieving a more inclusive society can also improve Brazil's paltry savings and investment rates, helping the economy build its stock of capital. It could also raise labor force participation, a source of both higher and more inclusive growth, as women in particular would benefit. Yet more fundamentally or longer-term growth, Brazil needs to shift its focus to productivity to move up the value chain and lower the costs of domestic products and services while gaining global market share. This model is suitable for the transition from middle-income to high-income status and it can unlock opportunities from a decarbonizing world: it would reduce pressures on the agricultural frontier and limit emissions and the destruction of biodiversity associated with deforestation (Hanusch 2023). Rather, it would enable Brazil to leverage a major green asset, it's power sector which is comprised to 80 percent of renewables (chapter 3 and World Bank 2023). This growth model could make Brazil both greener and more inclusive.

This chapter examines what a shift to such a growth model would take. It first shows how Brazil's growth model could become more equitable and sustainable, drawing on other parts of the report, and describes how to shape the economy. It then considers policies to promote a productivity-led model. It focuses on domestic income, as Brazil's net remittances are negative,

which indicates that growth in Brazil has spillovers to other countries, especially within the Latin America and the Caribbean (LAC) region.

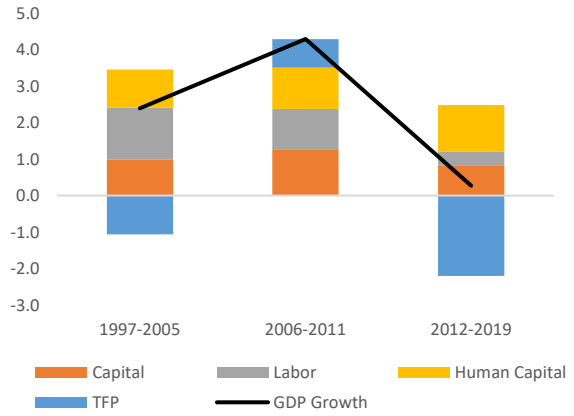
Sustainable and equitable growth

Limited remaining potential from factor accumulation

Factor accumulation is diminishing as a source to sustain economic growth. Labor accumulation and human capital accumulation (i.e. school enrolment) have been a major source of growth in Brazil (Figure 6.1). However, the demographic dividends are nearly exhausted, and Brazil is now one of the fastest aging societies (see chapter 3). The accumulation of capital has been hindered by low savings, in addition to high discount rates, which are common in middle income countries with substantial levels of poverty and exclusion (chapter 1). With some, but limited, potential from labor and capital accumulation, Brazil needs to strive for higher productivity, which can increase output from existing factors and multiply the gains from new accumulation. Although there is still some potential for growth through capital accumulation (box 6.1) and higher labor force participation, productivity will increasingly need to sustain growth—this is where Brazil has been particularly lagging (Figure 6.2).

Figure 6.1 Labor, adjusted for education, is the main driver of growth

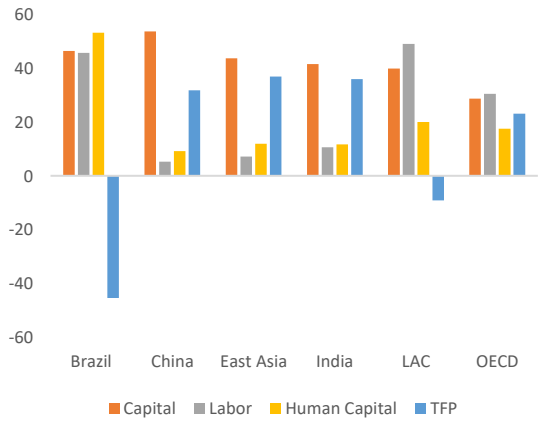
(factor growth contribution, selected periods)



Source: Hanusch 2023.

Figure 6.2 Brazil's productivity growth is low among its peers

(average annual contribution to growth, 1997-2019)



Source: Hanusch 2023.

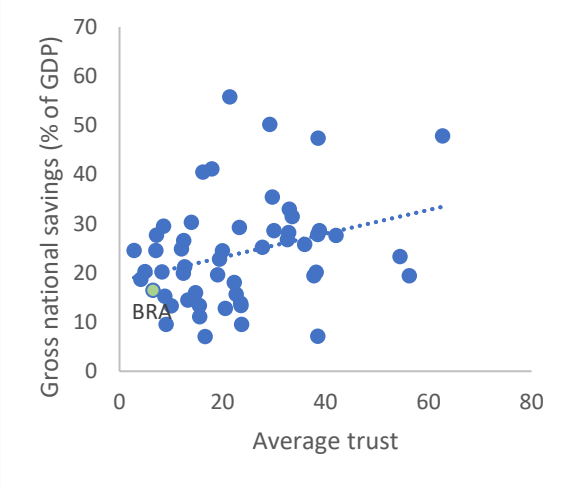
Box 6.1 Savings and the potential gains from capital accumulation

Brazil's gross national savings are low by global standards, despite government programs generating forced savings (such as the FTGS, a mandated employee savings scheme). Brazil has or appears to have a high discount rate, which can be linked to pervasive poverty (one implication of inequality) or overoptimism—or memories of high inflation (see chapter 1). It may also be linked to low levels of trust. Brazilians with lower trust levels tend to focus more on the present, for their own finances and for their preferred horizon for government policy.[1] Figure 1 shows that higher trust is associated with higher national savings (also see chapters 1 and 8). Savings may also be low because demand for investment is low: there is little need to invest in expanding production when the economy is stagnant, when markets are protected, or when the appropriability of economic returns is in doubt (linked to low trust), which all reduce the need to invest to remain competitive.

Inclusiveness would raise domestic savings, which is important for the poor. Building financial wealth could enable the poor to reduce the gaps in endowments that underlie Brazilian inequality (see chapter 2). Measures that increase the future orientation of poor people, strengthen trust (see chapter 8), or increase financial inclusion could boost savings (see chapters 1 and 2). Such measures include financial education, training and formalization of small business entrepreneurs, and microinsurance.[2]

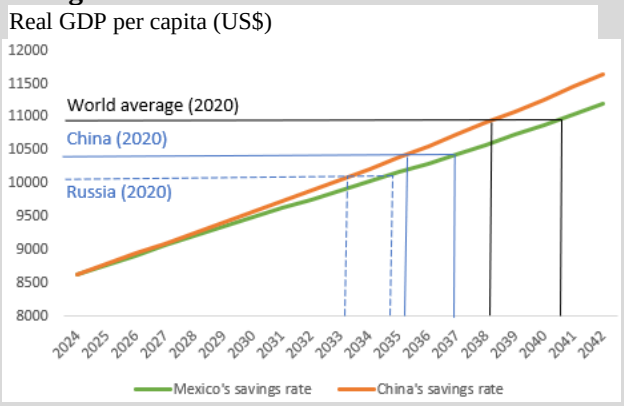
If higher domestic savings lead to higher investment, economic growth would rise but not enough for Brazil to quickly catch up with more developed countries. If Brazil were to raise its domestic gross savings rate from 13 percent of GDP to rates in countries like Mexico (24 percent) and China (44 percent), Brazil could reach the 2020 development levels of China, Russia, and the world average within the next 20 years (figure 2 and table). Assuming that other countries also grow, however, Brazil would continue to lag unless it also raises productivity.

Box figure 1 Higher trust is associated with higher national savings



Source: World Bank staff CGE modeled results based on data from World Economic Outlook and Our World in Data databases.

Box figure 2 Brazil's income would rise if its savings rate rose to the levels in China or Mexico



Source: World Bank staff CGE modeled results based on data from World Economic Outlook and Our World in Data databases.

Box table 1 Simulated cumulative impacts from higher domestic savings by 2038, relative to baseline

Raise domestic savings from 13% of GDP to levels of:		Real wages				
	GDP	Most skilled	Least skilled	Government revenue	Investment	Greenhouse gas emissions
China (44%)	7.52	3.11	3.58	33.17	70.20	8.22
Mexico (24%0	4.91	2.07	2.37	20.40	37.38	4.33

Source: World Bank staff CGE modeled results based on data from World Economic Outlook and Our World in Data databases.
Note: Simulations up to 2042 not feasible for technical reasons.

Notes:
1. Vostroknutov 2022. These results are robust to various controls, including income, education, and race.
2. Morgandi et al. 2021.

The slowdown in labor force growth could be partly offset by increasing the participation of disadvantaged groups (see chapters 1 and 2). Despite considerable improvement since the mid-1990s, labor force participation by some disadvantaged groups is still low, although it has increased especially for women between 1995 and 2015 (Sinha 2022). Participation is only around 50 percent among prime age (ages 24–54) women (50 percent for women of color and 54 percent

for white women), while it is around 80 percent for prime age men (81 percent for men of color and 84 percent for white men). Women and people of color still face considerable barriers in education and the labor market. Removing those barriers could significantly increase the participation rates of these groups, boost productivity growth, and increase output per capita (box 6.2).[238] Thus, introducing more economic support for parents such as early childhood education and childcare services (see chapter 4) as well as addressing gender norms that perpetuate disparities in employment could boost employment and growth.

Box 6.2 Boosting the labor market participation of disadvantaged groups in Brazil

Reducing barriers in the labor market and in education faced by disadvantaged groups can accelerate growth. In the occupational choice model used to study this issue, barriers in the labor market appear as a wedge between sector-specific wages and marginal products.[1] The stylized specifications capture both taste-based and statistical discrimination.[2] The model also estimates the additional "costs" faced by women and people of color in attaining the education level that would allow them to realize their full potential. These costs are a synthetic measure of many potential factors (see chapters 2 and 4), such as access to adequate nutrition and early education, availability and proximity to well performing schools, parental preferences and credit constraints to investing in children's education, and distribution of household care duties, all of which differ across race and gender. In addition to labor market and education barriers, preferences and social norms can influence occupational choices.[3]

Estimated labor market barriers faced by women and by men of color between 1995 and 2015 were substantial, indicating considerable potential to increase labor market participation and growth.[4] Across race-gender groups, women of color faced the largest wage discrimination, receiving 25–64 percent less than White men. There are also patterns of discrimination in certain occupations. For example, White women experience lower discrimination in high-income occupations, while the opposite applies for men of color. Discrimination is also higher in formal occupations than informal ones. Wage discrimination has declined over time, especially for men of color, who experienced a 10 percentage point median decline. Declines have been weaker but still significant for women of color. There were also some increases in wage discrimination. For White women, discrimination rose in 5 of the 12 occupations analyzed. Consistent with the expansion in education observed in recent years (see chapter 4), education barriers relative to White men have declined considerably, in particular for women (across races). Nevertheless, barriers are still high in comparison with White men.

Halving labor markets and education barriers faced by women of all races and men of color could boost output by 4.8 percent and earnings by 3.6 percent. Additionally, labor force participation could increases 1.6–13.8 percent for disadvantage groups (see table).

Changes in output, labor earnings, and labor force participation and output with a halving of labor market and education barriers facing disadvantage groups

			Change in labor force participation (percentage point)			
			Women		Men	
Barrier	Change in market output (percent)	Change in real labor earnings (percent)	Of color	White	Of color	White
Labor markets	2.1	1.4	9.3	7.5	0	–1.1
Education/human capital	2.5	2	4.8	–1.3	1.6	–0.8
Both	4.8	3.6	13.8	6.6	1.6	–2

Source: Sinha 2022.

Notes:
1. Sinha (2022), using the occupational choice model of Hsieh et al. (2019).
2. Altonji and Blank 1999.
3. Costa 2000; Blau et al. 2013.
4. The period 1995 to 2015 was the longest harmonized panel possible.

Productivity-based sustained and sustainable growth

Higher productivity is critical to propel growth going forward. Progress was made on the productivity agenda in recent years. Important reforms in 2019 included a new law establishing a credit bureau, updating laws for regulatory agencies, an Economic Freedom Law improving the business environment, and a new telecoms law. In 2020, new landmark legislation promoted private investment in water and sanitation. Other important reforms that year included a new bankruptcy law, a new law on the ITC sector and on the Internet of Things, in addition to a broad suite of measures to preserve businesses during the Covid-19 crisis. In 2021, the central bank became formally independent and various new laws were passed for startups and credit to small businesses, on the investment climate, on railways, water transport (cabotage), and special economic zones. Some key reforms are further discussed below. It is too soon to evaluate the impact of these reforms but their focus on productivity is aligned with what is proposed in this report. The government also attempted to make progress on reforming Brazil's complex tax system and opening Brazil to trade—these remaining major pending areas for future reform.

Commodities sectors have been experiencing productivity gains. A key challenge is to broaden these gains to other parts of the economy. Between 1996 and 2020 labor productivity (a partial measure of total factor productivity) grew by 5.8 percent in agriculture and 3.5 percent in mining. In manufacturing labor productivity in fact contracted, by 0.9 percent. Services stagnated with some exceptions like the financial sector whose productivity grew by 1.9 percent over the period. Raising manufacturing and services productivity is particularly important because these sector account for the lion share of the economy (87 percent of Brazilian GDP). In addition, since manufacturing and services tend to be urban activities they are particularly important for Brazil as a highly urbanized country: 87 percent of Brazilians live in towns and cities.

Table 6.1 Average annual percentage change in labor productivity growth in Brazil, by sector, 1996–2020

Sector	1996–2002	2003–2010	2011–2020	1996–2020
Agriculture	5.3	5.7	6.2	5.8
Industry	–2.6	0.5	0.5	–0.4
Mining	6.3	2.2	2.5	3.5
Manufacturing	–3.7	0.3	0.1	–0.9
Construction	–2.8	0.6	–1.4	–1.2
Utilities	3.7	2.4	3.2	3.1
Services	–0.5	1.1	–0.4	0.1
Retail	–2.5	2.1	–0.2	–0.1
Transportation	–1.2	0.5	–2.4	–1.1
Information	–3.1	–1.7	1.7	–0.7
Financial	0.6	5.0	0.3	1.9
Real estate	2.3	–0.5	0.8	0.8
Other services	–1.2	0.4	–1.0	–0.6

Source: Veloso and Zaourak 2023.
Note: Labor productivity is measured as value added per worker.

A productivity-led growth model is also more environmentally sustainable. World Bank 2022a, b argues shows that productivity also matters for natural resource use. Brazil has major and commercially attractive offshore oil and gas deposits (the pre-salt reserves), attracting massive investment in spite of global decarbonization. These could make Brazil a major oil and gas exporter over the next 20 years, comparable in export volumes to Saudi Arabia. In addition to depleting oil and gas reserves, Brazil is also depleting its forest stocks as agriculture expands into forests in the Legal Amazon, especially the Cerrado and Amazon biomes. Table 6.2 shows that a productivity-led growth model, especially one focused beyond commodities, would reduce deforestation, greenhouse gas emissions, and oil and gas exports. There are two major reasons. First, higher productivity of non-commodity sectors would raise their competitiveness relative to commodity sectors, and this would lower pressure on forests and fossil fuel reserves. Second, productivity implies the more efficient use of resources, which includes land and mineral deposits. Given Brazil's green power matrix particularly benefits manufacturing which explains why raising productivity in manufacturing raises GDP while reducing greenhouse gas emissions: somewhat higher emissions from higher industrial productions are offset by large reductions associated with lower deforestation pressures in the agricultural frontier. This model is complementary with additional sectoral interventions focused on protecting Brazil's forests (Box 6.3).

Table 6.2 Impact of different growth models on Brazil's economy, natural forests, mining exports, and greenhouse gas emissions by 2035 (cumulative percentage change relative to the baseline over 12 years)

A 0.5 percentage points increase in:	**GDP**	**Forested land** (millions of hectares)	**Greenhouse gas emissions** (metric tons of CO2 equivalent)	**Mining exports (including oil)**
Productivity across Brazil	17.89	3.62	–141.0	–58.52
… In agriculture	0.80	0.8	18.2	–6.22
… In mining	0.30	0.2	–0.7	29.47
… In services	10.10	–0.1	3.1	–23.75
… In manufacturing	5.00	1.9	–67.8	–26.89

Source: World Bank 2023.
Note: Green shading: positive economic and enviornmental impacts (and lower oil dependence). Vice versa for red shading.

Box 6.3: Preserving Brazil's forests through sustainable growth and good governance

A productivity-led growth model and effective forest governance are complements. Between 2012 and 2021 deforestation in Brazil's states of the Legal Amazon, the country's deforestation hot spot, accelerated, from 4,471km2 in 2012 to 13,235km2 in 2021. To a considerable extent this was due to laxer enforcement of Brazil's laws designed to protect the country's natural forests (like the Forest Code, last updated in 2012). Yet economic forces also played a role, as Brazil's export sectors—notably agriculture—disproportionately benefited from the country's sliding real exchange rate following the end of the commodity supercycle. Hanusch 2023 shows, consistent with Table 6.2, that strengthening productivity across Brazil, especially beyond the commodity sectors, would strengthen the balance across Brazil's commodity and non-commodity sectors,

reducing deforestation. This would support the effectiveness of forest protection frameworks and policies.

Strengthening forest governance could also promote productivity. Extensive agriculture is a form of factor accumulation, converting natural forests into agricultural land. Intensive agriculture produces more output given the available land. Higher productivity in agriculture would intensify it. Forest governance restricts the availability of forested land for conversion, thus promoting agricultural intensification and productivity. In addition, raising the cost of unproductive forms of agriculture could also release capital for more productive sectors, including non-commodity sectors.

More can be done to protect Brazil's forests. Brazil has a sophisticated system to protect forests, including vast protected and Indigenous areas, a solid Forest Code, and real-time satellite monitoring to detect illegal deforestation. The problem has been enforcement of existing laws. In addition to taking pressure off natural lands by promoting a productivity-based growth model, the following interventions could help protect Brazil's forests: 1) adequate funding for forest protection agencies (such as IBAMA and ICMBio), 2) focusing resources on high-deforestation municipalities ("black-listing"), 3) regularizing land to limit the potential for land grabbing, 4) reforming the rural credit and tax systems, removing implicit incentives for extensive agriculture, 5) promoting deforestation free value chains (e.g. through effective tracing systems and through private sectors commitments not to source from deforested areas, such as the 2006 Amazon Soy Memorandum or the 2009 Zero-Deforestation Cattle Agreement).

The bioeconomy is also complementary to a productivity-driven growth model and can render development in Brazil's forested areas more sustainable. Structural transformation is one of the elements of productivity-led growth, as factors of production shift to sectors with higher productivity. Generally this implies a shift migration of rural workers to urban areas as employment shifts increasingly from agriculture to manufacturing and services. Yet these shifts are gradual, farmers cannot easily transition to urban jobs. To enable sustainable livelihoods in rural areas as structural transformation advances sustainable economic activities consistent with standing forests (such as the bioeconomy) is critical in areas at risk of deforestation (Hanusch 2023), while preparing the future workforce for increasingly urban jobs.

Curbing deforestation, and eventually moving to reforestation is critical for Brazil to meets its climate commitments. More sustainable land use can become a major revenue source for Brazil as carbon markets develop. World Bank 2023 shows that reducing emissions from land use change—deforestation—lies at the core of Brazil's ability to meet its Nationally Determined Contribution under the Paris Agreement. More ambitiously, Brazil could reach net zero emissions (or even negative emissions) by 2050 if it were to stop illegal deforestation, maintain its green power matrix and further leverage renewables to decarbonize the broader energy sector. Forest offsets could become an important component of domestic carbon pricing instruments (like an Emissions Trading System or a carbon tax). Eventually, Brazil's contributions to mitigating global climate change could generate significant revenue from voluntary carbon markets or through Internationally Transferred Mitigation Outcomes in global carbon markets under Article 6 of the Paris Agreement.

Sources: Hanusch 2023 and World Bank 2023.

Focusing logistics investments on connecting Brazil's coastal cities can also yield large economic and environmental gains. Consistent with an economic model focused on urban

productivity growth, improving connections among Brazil's large urban spaces rather than building new rural roads to expand agriculture would improve welfare in Brazil.[239] Brazilian cities are poorly integrated, often linked to commodities (like oil), and thus tend to trade more with the rest of Brazil than with each other. Focusing transport investments on coastal cities (Brazil's largest cities, for the most part) would reduce emissions by raising urban productivity and by reducing the expansion of the rural road network (most deforestation happens around roads). This does not necessarily reduce the welfare of states on the agricultural frontier, especially when they are better integrated with Brazil's urban economies.[240]

Equitable growth

Brazil's growth model has not overcome the legacy of exclusion. The notable gains in reducing poverty and wage inequality in recent decades now seem to be exhausted. Favelas stand as testimony to the inability of Brazilian cities to generate better jobs for those who migrated there during the economy's structural transformation or in response to droughts and other impacts of climate change. Settlers who moved to the Legal Amazon as part of Brazilian resettlement programs (such as Land without People for People without Land) remain poor and often lack even a title to their property, and indigenous people remain among the poorest in Brazil (see chapter 2). Without faster economic growth, demand for jobs will remain lackluster, with limited opportunities for further social progress. A more dynamic growth model will help Brazil resume job creation and raise wages.

The most vulnerable people are often those who are suffering from the effects of environmental damages. For example, many Brazilians work in low-skill jobs in construction and agriculture which are exposed to climate shocks like heatwaves, droughts, and floods. A growth model based on urban productivity would likely reduce employment in these sectors due to lower costs of capital (machines become cheaper if manufacturing experiences productivity gains or if an appreciating exchange rate means that they can be imported more cheaply).[241] A more urban-based growth model could also reduce rural conflict by lowering demand for rural production factors, most notably land—lowering demand for land could reduce conflict over it.[242] However, the structural change associated with a shift in labor from rural to urban sectors can cause grave disruptions, raising unemployment among those who cannot adapt quickly. This may particularly affect workers along Brazil's agricultural frontier, which is still undergoing significant structural transformation.

A growth model focused on productivity would reduce poverty, but policy measures will be needed to address widening income gaps. For example, the current focus that includes export-led agriculture reduces poverty as a result of the current high labor intensity of agriculture, especially of unskilled labor. Poor people are generally endowed with lower skills, and they tend to use them less (they experience more unemployment spells). Urban sectors require higher skills, so a model based on increasing urban productivity benefits the skilled. For example, raising total factor productivity (TFP) by turning out more university graduates, improving regulatory quality, and spending more on research and development (R&D), by closing gaps with the United States, would boost wages and income growth more for skilled than for unskilled workers, increasing inequality (table 6.3). Thus, different returns on different types of labor (skilled and unskilled wages) would be a source of higher inequality.

Table 6.3 Simulated economic and wage impacts in Brazil by 2042 from closing total factor productivity gaps with the United States

Source of productivity gains	Impact on GDP	Impact on real wages	
		Most skilled	Least skilled
More university graduates	0.90	1.28	1.11
Better regulatory quality	0.14	0.19	0.17
More research & development spending	0.25	0.36	0.31
More paved roads (kilometers per 100 persons)	0.25	0.36	0.31

Source: World Bank staff using CGE; TFP gaps estimated using long-term growth model.

The distribution of capital endowments also matters for poverty and inequality. For example, most capital (direct or indirect equity participation, bonds, bank savings) is concentrated among just a small number of Brazilians (see chapter 2). Skewed capital income has been identified as one reason why overall inequality has not decreased significantly in Brazil.[243] Raising incomes among the poor and encouraging savings could boost national savings as well as capital income among the poor, thus raising investment and economic growth (see box 6.2). Growth can still generally benefit the skilled more than the unskilled, but capital income will rise slowly for the poor. However, this may not have a large impact on overall inequality because of the vast gap in capital endowment between the poor and the rich who accumulated capital over generations.

Because of the skewed distribution of land, a model focused on urban productivity could reduce income inequality. A growth model such as Brazil's that remains partly focused on agricultural exports raises the return to land, unless the supply of land increases.[244] Since most land in Brazil is in the hands of wealthy individuals (or the public sector) (chapter 2), rising incomes from land benefit the rich disproportionately, increasing inequality. An urban-productivity model will reduce land values due to the impacts on agricultural competitiveness, reducing land conversion (land is a tiny part of urban production but the key part of agricultural production).

Reducing inequality and raising economic sustainability in Brazil requires government support measures. Building human capital (education and health) and helping the population weather shocks, including structural change (social protection and reskilling) are the most important policy priorities to strengthen inclusive growth (see chapters 1 and 4). Because Brazil cannot afford to lose the Amazon forest, forest governance must be combined with macro-sectoral policies.[245] Carbon pricing can help Brazil meet its Nationally Determined Contribution.[246] Notably, there are feedback loops between economic dynamism, sustainability, and inclusion. For example, global trade will increasingly reward Brazil for its green assets (associated with green energy, largely in the urban sectors), generating new export opportunities and reducing the impact of climate-informed trade measures such as the European Union's Carbon Border Adjustment Mechanism. At the same time, the global trading system is already increasingly holding agriculture accountable, demanding deforestation-free value chains. Focusing on urban productivity now will help Brazil get ahead of the curve by 2042 and beyond.

Raising productivity

While changes in the sectoral allocation of labor yield some productivity gains, significantly reducing Brazil's productivity gap with developed countries requires boosting productivity in most sectors. Agriculture accounts for only about 7 percent of Brazil's GDP (around 20 percent if agribusiness is included). Although some lagging regions, such as the Legal Amazon, are still undergoing structural change,[247] the economic structure in more developed regions already

resembles that in more developed countries. A steady shift in employment from agriculture to services underpins the productivity gains from structural change. Despite strong productivity growth in the last decades, agriculture is still a low-productivity sector. Accordingly, for most of Brazil, little growth will come from factor reallocation across sectors and more will need to come from productivity gains within sectors. A counterfactual exercise shows that if Brazil had the same sectoral labor allocation as the United States, aggregate productivity would be 68 percent higher, but if Brazil had the same productivity as the United States in all sectors, aggregate productivity would be 430 percent higher.[248]

Overall low productivity is explained by a larger concentration of low-productivity firms in Brazil than in other emerging market economies. The general pattern of a large concentration of low-productivity firms is confirmed at the sectoral level for textiles, garments, food, machines and equipment, chemicals and pharmaceuticals, automobiles, retail, hotel and restaurants, construction, transportation, and other services.[249] This large concentration of low-productivity firms across different sectors prevents higher overall productivity and growth in Brazil and reflects the substantial misallocation of factors arising from uncompetitive practices and barriers to competition. Contributing factors include such government policies as subsidized credit, tax exemptions, financial incentives, and privileged access to government contracts.[250]

With low productivity and low potential gains from structural transformation and factor accumulation, growth prospects are unpromising unless Brazil shifts to a higher productivity path. In light of the limited dividends expected from further factor accumulation, the potential negative long-term effects of the Covid-19 crisis,[251] and the challenging and uncertain current global environment, the growth outlook is bleak without decisive reforms to boost productivity growth. Reforms should focus on preparing Brazil to meet upcoming challenges and take advantage of the new global trends. Brazil has already undertaken some important steps to foster productivity (box 6.4).

Box 6.4 Recent pro-productivity reforms

Brazil has recently enacted several reforms to accelerate productivity growth and boost long-term economic growth potential. Key reforms include the following:

- **Air transport competition.** New legislation has opened the air transport sector to foreign capital, allowing foreign airlines to operate flights in the domestic market or to increase their existing stakes in major Brazilian carriers. The legislation facilitates the authorization process for entering and overflying Brazilian territory and therefore should streamline processes, eliminate unnecessary formalities, and reduce waiting time for issuing permits and adopting new technological solutions for the provision of services. The law creates additional flexibility in reorganizing the market structure and fostering competition among air transport service providers. Programa Voo Simples was launched in October 2020 to modernize and simplify rules, reduce bureaucracy, and attract investment to general aviation in Brazil. The program provides differentiated measures according to the size of each company, enabling new small operators to enter the market and provide services at a lower cost. In addition, the program aims to simplify processes for manufacturing, importing, and registering aircraft.
- **Telecom sector and broadband connectivity.** A new general telecommunications law (Law 13879/2019), enacted in October 2019 and amending a 1997 law, seeks to improve broadband development and bridge Brazil's digital divide by increasing broadband penetration. Currently, 47 million Brazilians do not have internet access. In rural areas, 56 percent of households and 43 percent of schools lack internet connectivity.[1] Also in 2019, a telecommunications decree was approved on right of way and deployment facilitation.

- **Gas market reform.** In June 2019, Brazil launched Novo Mercado de Gas (New Gas Market), a package of reforms aimed at improving the flexibility and competitiveness of the natural gas market. Gas is a critical part of Brazil's clean energy transition because of its flexibility and security of supply, which will be important as Brazil's energy generation mix moves toward increasing shares of hydropower, wind, and solar. In addition, gas has the potential to replace more polluting liquid fuels in the industrial and transport sectors. Novo Mercado de Gas supports these objectives by bolstering the competitiveness of gas markets and integrating the regulatory and planning regimes for electricity and gas. Key reforms include enhancing third-party access to transportation infrastructure and divesting Petrobras of its monopoly gas transport and storage businesses.

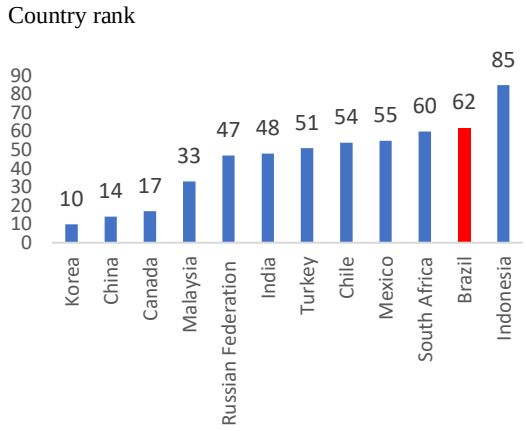
Note:
1. GSMA 2019.

Moving to a higher productivity path requires the accumulation and diffusion of knowledge. The new Shumpeterian growth paradigm is anchored on three principles. First, innovation and the diffusion of ideas from other industries and countries are at the core of the growth process. Second, innovation depends on incentives and the appropriability of returns. Third, productivity growth depends on the process of creative destruction, as new ideas and technologies replace old ones. This creates a tension between incumbent firms and potential competitors, with incumbents historically trying to delay or block the entry of new products or competitors.

Middle income countries can grow through frontier innovation (developing frontier technologies) and through imitation or adaptive innovation. In developed countries, innovation usually focuses on pushing the technology frontier. Less developed countries, too, can invest in productivity-enhancing innovation, but they can also adopt and adapt existing non-frontier and frontier technologies from other countries.[252] They can import new processes and new management methods and leverage new ideas. The returns on adaptive innovation are typically much higher the further a country is from the technological frontier because of the ease of transferring new knowledge from abroad, especially within global value chain networks. Middle income countries like Brazil can take advantage of both types of innovation. Brazil is at the frontier of technology in agriculture, but most of its manufacturing firms rely on technology adaptation and imitation.

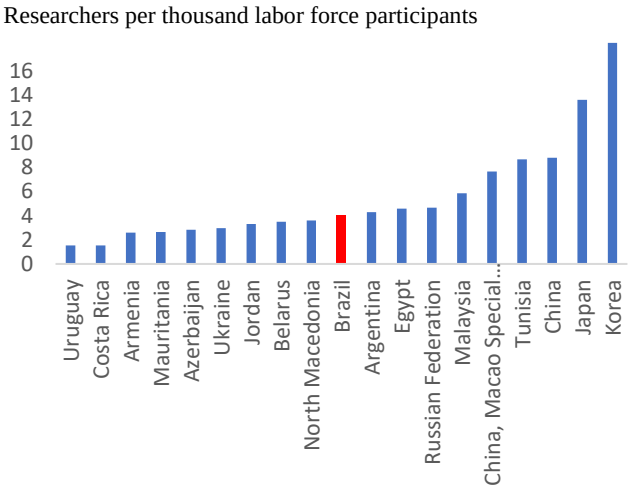
Despite the opportunities, Brazil and most other developing countries have low levels of innovation—a paradox given the potential high returns to investments in innovative technologies.[253] Brazil ranks below most peers on the Global Innovation Index 2020, which includes a set of input indicators and a set of variables capturing innovation outputs (figure 6.3). Brazil also exhibits substantial lags against other comparator countries on such innovation inputs as the number of researchers and engineers as a proportion of the labor force (figure 6.4). In a country like Brazil, investing in R&D and engineering capacities to accumulate innovation capabilities is essential not only to promote frontier innovation and adaptive innovation but also to support absorptive capabilities that are key for catching up.[254]

Figure 6.3 Brazil ranks below most peers on the Global Innovation Index, 2020…



Source: World Bank staff based on data from WIPO, Cornell University, and INSEAD (2020).

Figure 6.4 ...and in number of researchers, 2018



Source: World Banks staff based on data from UNESCO Institute of Statistics.

Innovation requires complementary factors. Firms are unlikely to invest in innovation if they cannot import the necessary machines, hire trained workers and engineers, transport inputs and outputs in time and at reasonable cost, and have access to the needed finance. Thus, innovation requires complementary factors, such as a competitive environment, efficient factor markets, a well-organized financial system, and high-level management skills and practices. Greater competition induces frontier firms to innovate in order to survive. The more a country relies on innovation, the more stock markets, private equity, and venture capital stimulate growth. Thus productivity growth also depends on the financial system. Moreover, frontier innovation comes from the knowledge economy, in particular, from basic research and postgraduate education. In a similar fashion, imitation innovation is driven by technological transfer, efficient factor markets that allow a fluent reallocation of resources, and improvements in management skills and practices, since the best managers are those who can lead firms to grow by identifying new activities and new technologies that they can import and adapt to local needs.

Political reforms are also needed to ease the way for innovation. Countries that have successfully advanced economic growth, including the Asian countries, show that implementing productivity-enhancing reforms is possible but requires political will to remove constraints and distortions affecting markets. Furthermore, innovation capabilities, such as the number of engineers and researchers, tend to pay benefits in the long run,[255] but politicians do not have incentives to invest today because they cannot benefit politically from those returns in the future. However, there have been some exceptions (box 6.5). Brazil and other developing countries need to rethink policies to incentivize innovation and reduce misallocation. For example, programs that attempt to increase formalization by reducing the regulatory costs of formalization might fail because informal firms are not productive enough to succeed.[256] Instead, formalization policies may need to focus on increasing the productivity of all firms instead of just reducing administrative and tax costs for informal firms.

Box 6.5 Subsidies to national innovation

Brazil has implemented several innovation policies, most of them involving fiscal incentives. Lei de Informática (Informatics Law) of 1991 (renewed in 2001, 2004, and 2014) promotes increased local content of information and communication technology (ICT) hardware and related electronics assembly, as well as investments in local R&D operations. Lei do Bem (Fiscal Incentives Law) of 2007 expanded incentives for investments in R&D, authorizing companies that invest in R&D and meet certain requirements to claim tax incentives automatically.

Several studies show that the incentives for innovation and R&D provided by the Informatics Law have not been effective.[1] In particular, the law has not stimulated productivity-enhancing R&D. Although the incentives have induced some global ICT hardware firms to produce locally, the beneficiaries have not been able to produce internationally competitive ICT products.

The evidence suggests that the Fiscal Incentives Law had a positive but modest impact on innovation. Average realized R&D intensity has been low.[2] The law favors larger and older firms and does not reach most small or new companies. The law excludes firms that file income tax returns based on their presumed profit, which includes most young firms. To the extent that Lei do Bem favors incumbent firms, it may have slowed the reallocation of resources from low-growth incumbents to high-growth young firms.[3]

A 2001 Brazilian innovation program that taxed the leasing of international technology to subsidize national innovation ended up reducing employment.[4] The Technology Substitution Program levied a 10 percent marginal tax on international intellectual property payments. The revenue raised by the tax was used to subsidize innovation projects by firms in targeted sectors. However, the program induced firms to replace technology licensed from developed countries with in-house innovations, which led to a decline in employment and an increase in the share of low-skilled workers.

Notes
1. World Bank 2017; Kannebley Júnior and Porto 2012.
2. Devereux and Guceri 2015.
3. See Klenow and Li (2020) for evidence on the importance of young firms for innovation.
4. De Souza 2021.

Global trends in information and communication technology (ICT) and expansion of services make innovation even more crucial. More tasks are being digitalized with the diffusion of new ICT. In addition, automation, expansion of the services sector through scale economies, and advances in 3-D printing are expected to lead to a decline in manual and routine occupations while expanding jobs that require analytical and interpersonal skills. These trends present a growth opportunity for countries whose business environment enables rapid innovation, adaptation, and adoption of new technologies and ideas and whose education and training systems are nimble enough to transform the skills of their labor force to meet the demands of the new technologies. On the flip side, these trends present a risk for countries that are unable to take these steps. Intensive digitalization and automation will exclude workers without the appropriate skills, fueling labor market and income inequality. To minimize the risks and maximize the potential gains from these megatrends, countries need to innovate.

Brazil is at risk of missing out on the opportunities generated by the new wave of technology and falling further behind developed countries. A recent study of 48 firms in the Sorocaba Metropolitan Region presents suggestive evidence that the technological level in firms that are investing in new technologies is stuck at the transition point between the Second and the Third Industrial Revolutions, far behind full implementation of the Fourth Industrial Revolution (see chapter 3).[257] To be ready to increase productivity across all sectors of the economy, Brazil needs

to improve its levels of innovation, in order to introduce new ideas and methods to help the private and public sectors adapt to current trends and create value.

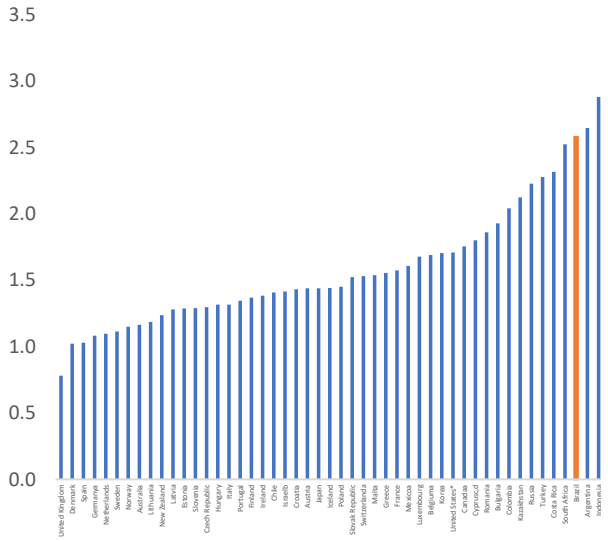
The following sections address the main challenges and opportunities for innovation and identify where the potential for productivity growth lies. To that end, the levers of innovation are divided into the categories mentioned above: competition, efficiency of factor markets, organization of the financial system, and human capital. In each case, the analysis considers where Brazil stands and where it needs to be to achieve growth.

Competitive production and trade environment

The flow of new ideas and the process of creative destruction in Brazil are impeded by the absence of a competitive environment, a result of high entry barriers, fiscal distortions, lagging trade liberalization, and lagging domestic integration. Brazil's low and stagnant productivity reflects a business environment that discourages competition and induces the misallocation of resources. Brazil has high regulatory barriers to competition. For example, Brazil ranks among the bottom three of all countries with data available in 2018 on the Product Market Regulation Index (figure 6.5), a measure of how well policies promote competition.[258] The pattern is repeated for most subindices in the index. Brazil ranks in the bottom three in distortions induced by government intervention, in barriers to domestic and foreign entry, in simplification of regulations, in administrative burden on start-ups, and in barriers to trade and investment. Similarly, Brazil lags comparator countries such as Chile, Republic of Korea, Malaysia, and South Africa in the intensity of local competition and the effectiveness of anti-monopoly policy (figure 6.6).

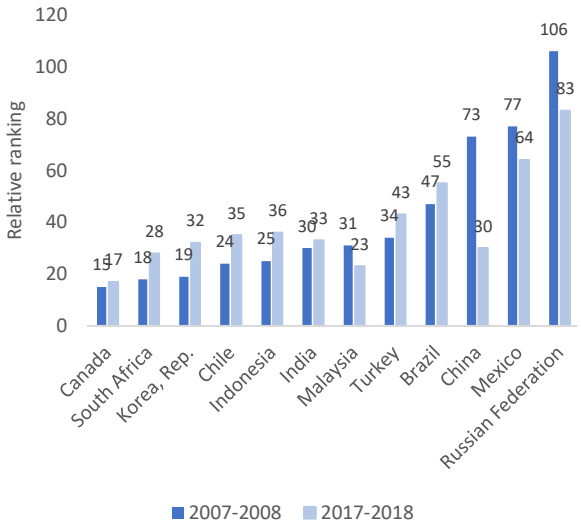
Figure 6.5 Competition in Brazil lags that of peers, 2018

Product Market Regulation Index value



Source: Product Market Regulation, OECD database 2018.
Note: Scale:

Figure 6.6 The effectiveness of Brazil's antimonopoly policy also ranks below peers'



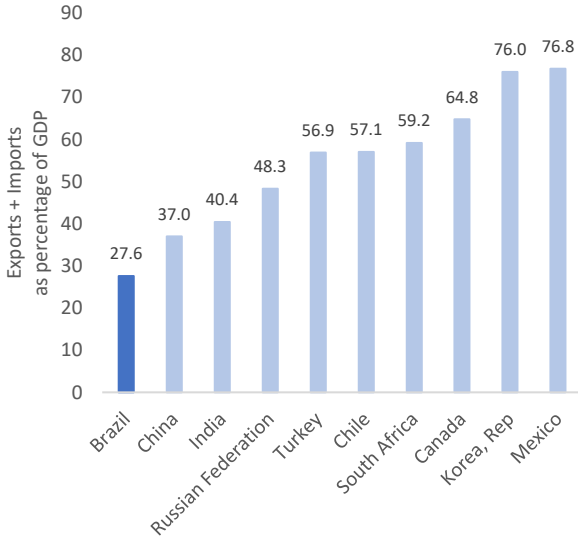
Source: World Economic Forum.
Note: Rank scale: 1 = best, 137 = worst.

International and domestic integration are two direct mechanisms for improving competition. International integration through trade stimulates competition across countries, while domestic integration strengthens competition within the country.

International trade liberalization in Brazil is associated with improvements in productivity. From the late 1980s to the mid-1990s, Brazil liberalized its trade largely through unilateral reductions in tariffs, with substantial positive impacts on productivity growth and output per worker.[259] In the manufacturing sector, firms were thus able to acquire more advanced equipment and components from other countries.[260] Trade liberalization also expanded markets for national firms, while exposing them to more competition (in both the export market and the domestic market), stimulating innovation and efficiency and spurring productivity growth.

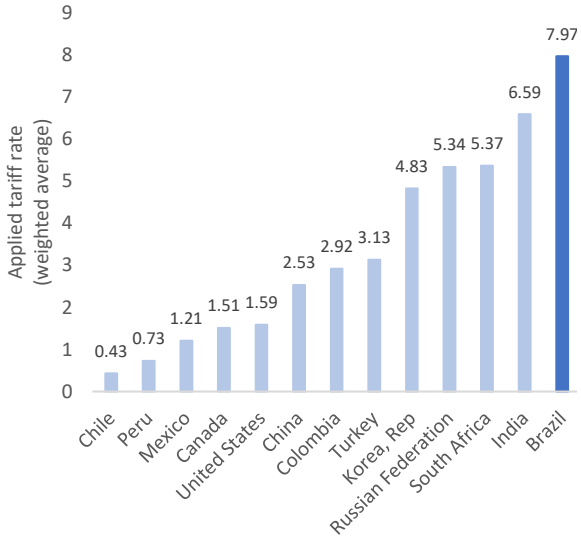
However, tariffs are still high, and Brazil is less open than peer economies. Brazil has one of the lowest trade openness indicators (exports plus imports as a share of GDP) among peers (figure 6.7), with higher effective tariffs than comparable countries (figure 6.8). Brazil determined its tariff schedule during the Uruguay Round of multilateral trade negotiations of 1986–1993 at rates of 0–55 percent for agricultural products and 0–35 percent for other products. Brazil applies a common external tariff regime as part of its membership in Mercosur. Unilaterally, in November 2021, Brazil reduced its common external tariff by 10 percent as a temporary measure to curb inflation; it is set to expire at the end of 2022.

Figure 6.7 Trade shares for Brazil and comparator countries, 2015-2020 average



Source: World Bank, World Development Indicators.

Figure 6.8 Applied tariff rate in Brazil and comparator countries, weighted average, 2019



Source: World Bank staff using WITS from COMTRADE and TRAINS data.
Note: 2018 tariffs for United States, Republic of Korea, and Mexico.

Brazil recently reduced import tariffs for 1,495 products by 10 percent and reduced all import tariffs below 2 percent to zero. The measure will make imports of capital goods and ICT goods and services cheaper for consumers and producers, increasing domestic competition and

overall competitiveness. It covers 1,495 Mercosur Common Nomenclature (NCM) codes that do not depend on negotiation with other members (each Mercosur partner is permitted to unilaterally change tariff rates on capital and ICT goods). Another benefit from the reduced tariffs is lower logistics and civil construction costs through reductions in the costs of cranes, excavators, forklifts, locomotives, and containers, among other items.

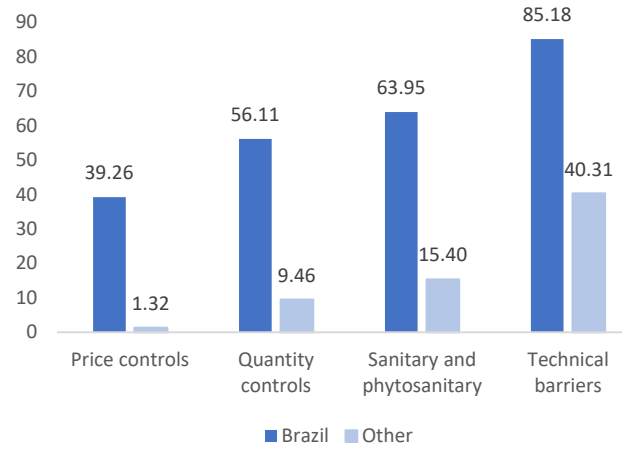
Brazil is also working to open its economy in other ways. With a view to fostering Brazil's integration into the global economy, the government has signed the Mercosur–European Union Agreement and the Mercosur–European Free Trade Association Agreement and is negotiating new trade agreements with Canada, Republic of Korea, and Singapore. These new agreements are deeper than previous ones. Furthermore, Brazil has adopted resolutions to reduce the abuse of antidumping measures by streamlining its antidumping framework, reinforcing public interest procedures (a mechanism to determine whether antidumping duties cause more harm than benefits to the production chain), and allowing the suspension of antidumping measures when they have anticompetitive impacts.

In addition to having relatively high tariffs, Brazil's nontariff measures (NTMs) are higher than those in other countries. Brazil's NTMs apply to 86 percent of imports (compared with 72 percent for other countries), with a frequency of 76 percent (43 percent for other countries). The main type of NTMS are certification requirements, labeling requirements, and authorization requirements for technical barriers to trade. The percentage of imports subject to at least one NTM is higher in Brazil than in other countries: 74 percent for technical barriers, 55 percent for sanitary and phytosanitary measures, and 23 percent for quantity controls, well above world averages (figure 6.9). The main sectors affected are vegetables, machinery and equipment, and food products. Brazil's support to agriculture is relatively low compared with other countries, but it maintains several domestic support measures, including preferential credit lines and price supports.

Inadequate trade facilitation measures also discourage competition and productivity gains through innovation. Brazil's participation in global value chains is low. In particular, Brazil uses fewer imported inputs than its peers. In part, this is the result of complex and time-consuming border crossing processes. Global value chains offer low and middle income countries a path to diversify production and new ways to export tasks, services, and other activities. Low wages alone will become less of an advantage in low-skill-intensive industries, as machines replace humans in certain tasks and as logistics and infrastructure aimed at increasing connectivity become more important. Despite positive developments in trade facilitation, mainly recent reforms in the Single Foreign Trade Portal Program,[261] which is reducing the time for compliance with trade related documents, Brazil is still behind comparable countries (figure 6.10).

Figure 6.9 Coverage ratio of nontariff barriers in Brazil and rest of the world, 2016

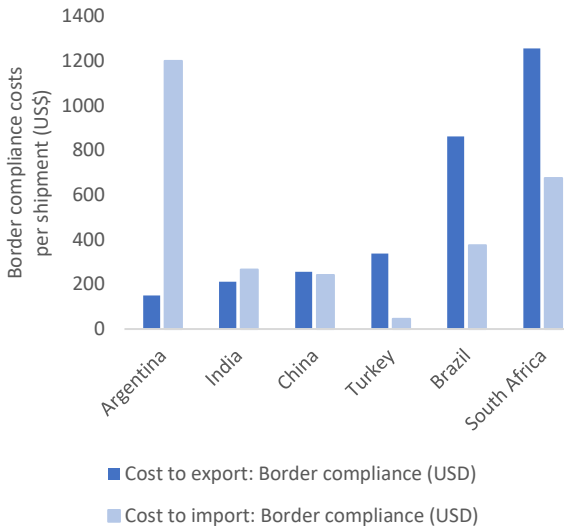
Percent



Source: World Bank staff using WITS data[.

Note: The coverage ratio is calculated as the value of imports of each commodity subject to NTMs, aggregated by applicable Harmonized System (HS) commodity group, and expressed as the value of imports covered as a percentage of total imports in the HS commodity group..

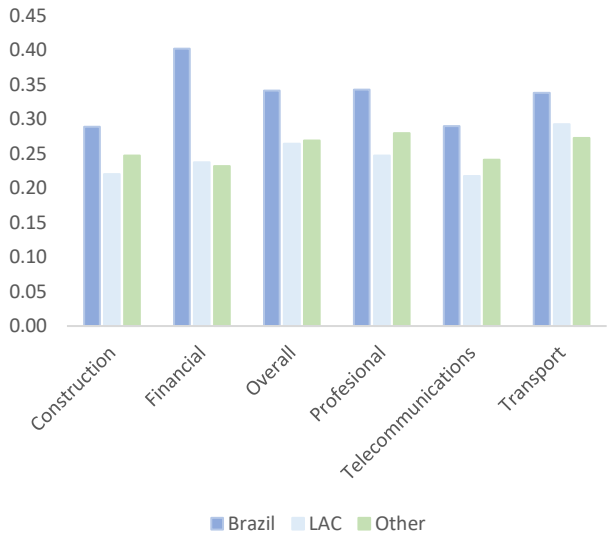
Figure 6.10 Border compliance cost for Brazil and comparator countries, 2019



Source: World Bank 2020.

Brazil also has high barriers to trade in services. Brazil exported services worth US$34 billion and imported services worth US$70 billion in 2019. Business, professional, and technical services are the largest categories of services exports and imports. Services account for only 13 percent of Brazil's gross exports, but half of its exports in value added terms, indicating that Brazil's exports of goods rely intensively on services inputs. Brazil had a higher score on the OECD Services Trade Restrictiveness Index (STRI) than the average in 18 of 22 sectors in 2020, reflecting both general regulations affecting all sectors and sector-specific rules (figure 6.11). Air transport, rail freight transport, legal services, and architecture services have the lowest score relative to the average across sectors (indicating lower restrictions on trade). In recent years, STRI scores improved for commercial banking and insurance, reflecting the ease of licensing conditions for foreign banks and insurance providers. As with trade in goods, Brazil can gain from relaxing restrictions to trade in services and barriers to foreign direct investment.

Figure 6.11 Services Trade Restrictiveness Index subindices for Brazil, Latin America & Caribbean, and OECD, 2020



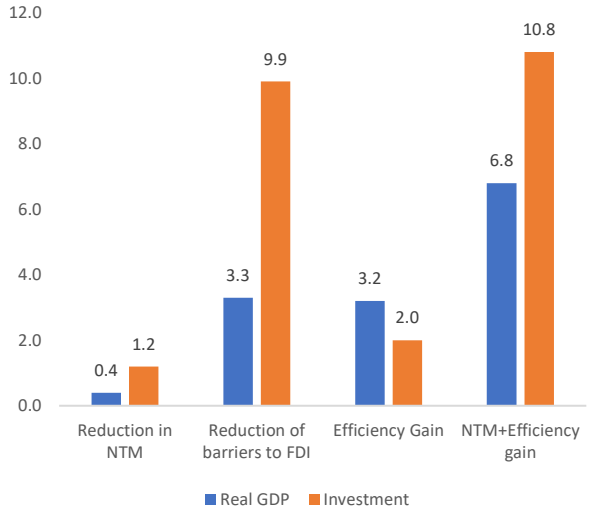
Source: World Bank staff using OECD data https://stats.oecd.org/Index.aspx?DataSetCode=STRI.
Note: Latin America & Caribbean includes Chile, Colombia, Costa Rica, and Peru..

The impact of trade policy on sustainable growth depends on what kind of liberalization in goods is implemented. Shifting from agriculture to manufacturing through trade can boost economic growth and support the climate agenda.[262] Rebalancing Brazil's economy by shifting from a resource-based growth model toward less land-intensive sectors, like manufacturing, can attenuate one of the main drivers of Brazil's GHG emissions, deforestation.[263] Thus, even though energy use and thus GHG emissions increase with GDP, this can be offset by reduced emissions from land use change. If urban sectors transition to cleaner energy, this could also support decarbonization of the economy.

Policy simulations also confirm the potential gains in output and investment from liberalization of trade in services. Simulations using a computable general equilibrium model find potential sizable gains in output and investment from reducing restrictions to trade in services and to foreign direct investment, in four scenarios: a reduction in NTMs on services, a reduction in restrictions on foreign direct investment (FDI) and an increase in capital productivity in the service sector, an increase in efficiency in the service sectors, and a combination of reductions in NTMs on services and gains in efficiency.[264] Reducing NTMs on services boosts GDP and investment, as does improving efficiency, while combining the two reforms results in significantly greater gains (figure 6.12). Trade liberalization and productivity gains reinforce each other, resulting in a multiplicative effect on output and investment. Furthermore, combining reductions in restrictions on FDI with gains in productivity also has sizable effects on GDP and investment.

Figure 6.12 Brazil's total gains from trade in services liberalization by 2035

Percentage change from baseline



Source: World Bank 2022b.
NTM is nontariff measures; FDI is foreign direct investment.

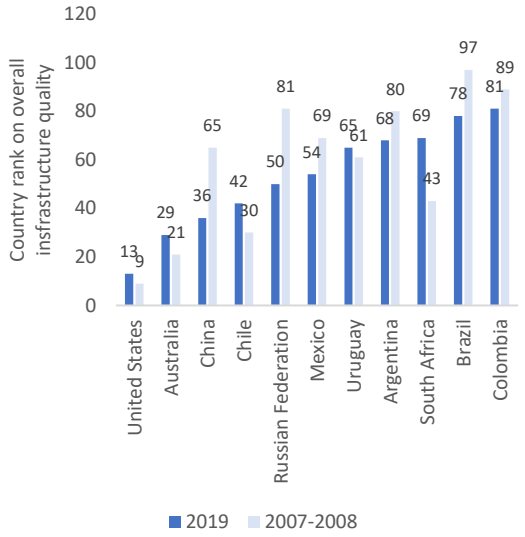
The gains from liberalization of service sectors are distributed across all sectors of the economy: agriculture, manufacturing, services, and natural resources. Reducing NTBs in the service sectors drives down domestic prices, reducing costs domestically and stimulating output. Manufacturing, which depends most on services as inputs, experiences greater gains. However, as imported services substitute for domestic production of services, output in services falls slightly. Reducing restrictions to FDI and increasing efficiency tend to benefit production in all sectors, increasing output in services directly and in other sectors indirectly, through changes in relative prices. These results illustrate the potential costs to Brazil of having a more closed economy. The lack of openness directly delays productivity growth by limiting exposure to international competition and slowing the acquisition of knowledge and modern technologies. Furthermore, the benefits from international integration can be even higher if accompanied by domestic policies aimed at improving domestic integration and a more efficient allocation of resources.

To reap the full benefits from domestic and international competition, Brazil needs to improve its domestic integration. Brazil is not only less integrated externally than its peers, but it also faces bottlenecks that impede domestic integration. Such bottlenecks include high regulatory barriers, low competition in the financial sector, distortionary business supports, and inadequate infrastructure.[265] Having poorly connected domestic markets lessens the pass-through of tariff reductions to consumer prices and the adoption of new technologies, making it more difficult to start a business and to move goods and services across the country. Therefore, the limited domestic integration not only hinders competition within the country but also dampens productivity gains from international integration.

Thus, a first step to greater domestic integration is to improve infrastructure, which is inadequate to support high levels of domestic and external integration. Brazil ranks below comparator countries in quality across all types of physical infrastructure (figure 6.13). The quality of the infrastructure is particularly poor in transport, including roads (country rank of 93), railroads (90), and ports (104).[266] Brazil also has higher transport and logistics costs than most comparator

countries.[267] A recent study finds that inefficiencies in Brazil's main road network cost the country 2.5 percent of welfare each year,[268] the highest costs among all LAC countries.[269] This means that Brazil has the most to gain from infrastructure expansion. A 50 percent expansion in the road network that improves connections in the east and along the coast (connecting the south with the northeast and Sao Paulo with surrounding areas) would boost welfare by 2.5 percent. A similar expansion across Mercosur countries focusing mainly on Brazil and improving connections along the coastal highways would increase Brazil's welfare by 2.4 percent. Improving infrastructure requires additional public and private investment and an investment framework that allows for a more efficient allocation of capital. Long-term planning and a robust pipeline of projects based on clear priorities can increase the predictability and attractiveness of investments.

Figure 6.13 Quality of Infrastructure Index, 2007 and 2019



Source: World Bank staff based on World Economic Forum.
Note: Rank 2019: 1=Best, 141=Worst. Rank 2007-2008: 1=Best, 137=Worst.

Factor market efficiency

After competition, a second lever of innovation and growth is the efficient allocation of resources, an area in which Brazil faces multiple obstacles. Frictions in the labor market in Brazil lead to a misallocation of labor. Brazil faces high labor adjustment costs, a high degree of informality, and misallocations due to patronage and corruption (rent-seeking). The public sector not only needs to implement measures to improve the business environment and facilitate innovation in the private sector, but it also needs to avoid sources of misallocation from within, such as patronage, corruption, rent-seeking, and high wage premiums.

Boosting the efficiency of factor markets to increase the potential gains from international and domestic integration requires reducing labor adjustment costs. The slow reallocation of labor (and capital) toward export-oriented industries has reduced the potential gains from trade to an estimated 11–26 percent lower than they would be without adjustment frictions.[270] In general, trade liberalization displaces workers in regions and sectors facing larger negative shocks.[271] This job displacement not only affects the tradable sectors subject to more intense competition but also has negative spillovers to non-tradable sectors. Trade-displaced workers spend some time unemployed or out of the labor force but many eventually find reemployment.[272] Thus to take full

advantage of trade liberalization, policies to facilitate labor market adjustment are important not only to avoid losses in production due to unemployment but also to promote inclusion.

Moreover, Brazil has a large concentration of low-productivity informal firms whose main obstacle to becoming formal is their low productivity rather than high formalization costs. A study of informal firms in Brazil to determine the reasons for persistent informality places them in three groups.[273] The smallest group (9.3 percent) consists of informal firms that are kept outside the formal sector by high regulatory costs. A second, larger group (41.9 percent) of "parasite firms" are productive enough to survive as formal firms but choose to remain informal to lower their costs by not complying with taxes and regulations. The third and largest group (48.8 percent) remains informal as a survival strategy because the firms are not productive enough to become formal.[274] This distribution of informal firms explains in part why policies to reduce the regulatory costs of being formal have not had better results. The main obstacle for most informal firms is their low productivity rather than high formalization costs. In part, the existence of a large and less productive informal sector is explained by policies that create an economic environment that discourages the efficient allocation of resources, ultimately reducing productivity and growth.

Differentiated policies for firms by sector and size have had the unintended effect of intensifying misallocation by protecting less productive firms. Brazil's regulatory environment—including high entry barriers, high tax rates, a complex tax system (see chapter 7), and cumbersome processes for starting and operating a business—impedes competition.[275] To encourage new firms to enter despite this unfriendly environment, the government has invested substantial resources in selective business support policies, such as subsidies, direct credits, tax exemptions, local content requirement, and government procurement preferences. Not only have these measures not had the intended effects on productivity, but they have generated undesirable consequences, such as protecting firms with low productivity.

Brazil's consumption taxes are highly distortionary. The majority of Brazil's equivalent to a sales tax, the Circulação de Mercadorias e Serviços (ICMS), is based on turnover which means that the further downstream firms are in value chains the higher their effective tax rates are. This provides implicit incentives to integrate vertically. Secondly, ICMS is charged based on where production happens rather than where products are purchased. This provides room for 'fiscal wars' across states and undermines allocative efficiency. Finally, the ICMS, including various exemptions, is highly complex which also equates to a tax on productivity. Complexity is even worse due to other national and subnational sales taxes, including the Programa de Integração Social (PIS), Contribuição para o Financiamento da Seguridade Social (COFINS), Imposto sobre Produtos Industrializados (IPI), and Imposto Sobre Serviços (ISS). Legislative proposal PEC 45/2019 would merge these taxes under one value-added tax (the Imposto sobre Bens e Serviços (IBS)) which, one study estimates, would raise potential GDP growth by 20 percent over 15 years, largely due to efficiency gains.[276] Tax reform is further discussed in chapter 7.

Special tax regimes have stimulated misallocation by allowing less productive firms to operate while having little impact on formalization. The Simples Nacional tax regime is intended to encourage formalization by reducing taxes and simplifying the tax system for micro and small enterprises. Evidence suggests, however, that the effects on formalization have been small.[277] Similarly, the Individual Micro-Entrepreneur Program (MEI) aimed to increase formalization of small businesses by eliminating entry costs and lowering their tax burden. Recent assessments concluded that the program had increased formalization among existing informal firms but did little to stimulate the creation of new ones. The program was not cost-effective but

led to net losses in tax revenues and social contributions.[278] Furthermore, the fiscal benefits provided to firms through Simples Nacional and MEI are reducing costs for small firms and independent workers to such an extent that they have no incentive to grow. And by supporting less productive activities that otherwise would not be profitable, these programs encourage the misallocation of talent by enabling less productive workers in subsidized firms to earn as much as more productive workers in larger firms.

By relying on a single tax on gross revenues, Simples Nacional also discourages capital investments and distorts labor costs. Simples Nacional unifies different taxes into a single tax on revenue. Despite some advantages, this dependance on a revenue tax creates additional distortions. Unlike a value added tax, a revenue tax offers no incentive to buy from formal firms and places a greater burden on products that have longer production chains.[279] Simples also treats labor, investments, and regular inputs equally, punishing firms that opt to invest more to grow and more productive firms. The bundling of payroll contributions in the single tax also creates undesirable differentials in employers' contributions to the pension fund (INSS): contribution rates increase with the size of the firm rather than with the wage of the worker. Effective payroll tax rates are much lower for most Simples firms, except those in the retail sector.

The minimum wage also has discouraging effects on formality. The minimum wage is an important tool to strengthen the bargaining power of workers in wage setting negotiations with employers, and as coverage of the minimum wage has broadened, wage inequality has diminished. However, a minimum wage that is too high creates an entry barrier for workers whose productivity does not match their gross labor costs. This undesirable effect is exacerbated by nonwage labor costs, which in Brazil are among the region's highest. Studies find that Brazil's minimum wage has exceeded prohibitive thresholds, especially during economic downturns.[280] The price is paid by low-productivity workers, typically first time jobseekers and those with less than a secondary education, who are forced into informal employment or unemployment.[281]

Noncontributory pensions and unemployment insurance also contain implicit incentives against formalization. The means tested noncontributory retirement program Benefício de Prestação Continuada (BPC) also provides benefits to low-wage earners who qualify for the minimum contributory pension. This creates an implicit incentive to operate informally, especially for workers who do not value the benefits associated with formal work.[282] In practice, however, many of BPC's beneficiaries are vulnerable individuals who move back and forth between formal and informal work throughout their work life and who, without BCP, would lose the value of their formal pension contributions (see chapter 7 for how to remedy this policy inconsistency without lowering protection). The literature also documents how Brazil's unemployment insurance incentivizes some workers to combine periods of formal and informal work in order to maximize benefits, at times in collusion with their employers (see chapter 4 for how to fix this policy distortion).[283] In both cases, attempts to reform these distortive programs have failed, even though Brazil's policy parameters are outliers in global benchmarks.[284] In contrast, Auxilio Brasil's (formerly Bolsa Familia) in-work benefit features (through its Regra de Emancipacao) are similar to those of OECD countries and are largely compatible with formal low-wage work.[285]

The choice of pegging all contributory social transfers to the minimum wage reflects the intention that gains in national income trickle down to society at large. As the minimum wage in Brazil is used as parameter for a host of other social protection policies, each increase generates a cascading effect on other large fiscal expenditures. This includes minimum pensions, social

pensions, and unemployment insurance. Moreover, in the past the minimum wage valorization formula has been pegged to prior GDP growth rates, rather than being derived from a close observation of wages in the labor market. One advantage of rigid formulas is their transparency: this is valued in societies where the level of collective trust in policymakers or collective bargaining is low. However, minimum wage values set in this way are unrelated to the typical parameters needed to identify either the optimal wage (usually based on the wage distribution, particularly at the bottom) or optimal social transfers (usually based on the consumer price index or fiscal constraints).

Limited trust among stakeholders makes it more difficult to reform labor policies. A history of failed reforms of labor benefits shows how low trust prevents changes that would improve the well-being of workers and employers alike, such as setting appropriate minimum wage levels, negotiating optimal levels of social protection benefits separately, and allowing exceptions in the minimum wage law (such as targeted wage subsidies) for those who clearly stand to lose from the current minimum wage floor. Lack of trust also precludes scenarios in which losers from the suboptimal status quo may reasonably hope to be compensated, because they do not feel that they are sufficiently represented in collective bargaining negotiations. The weakening of workers' collective bargaining power in recent years makes opening the Pandora's box of labor reform even more risky. This is why strengthening the voice of less represented workers, especially informal workers (a stated priority of the poor) could be important for reaching consensus on better labor regulations.

Factor misallocation is not only the unintended result of policies but is also the intended result of government behaviors such as rent seeking, patronage, and corruption. Political connections have a large influence on public employment in Brazil, contributing to the selection of less competent individuals.[286] Corruption also results in misallocation since it allows well connected but inefficient firms to operate. One estimate puts the effect of corruption as equivalent to a 5–23 percent tax on firms.[287]

The public sector can also cause misallocation by paying a premium on factors' remuneration. An earnings premium in the public sector can result in misallocation if the existence of the premium is the reason why a high-productivity entrepreneur choses public employment. Overpayment of workers in the public sector in Brazil has sizable negative effects on productivity. Reducing the public sector wage premium from 19 percent to 15 percent would increase long-run aggregate output by an estimated 7 percent without any substantial decrease in public infrastructure.[288] Moreover, a fifth of this effect is explained by reallocation of factors of production (while the rest is explained by factor accumulation).[289] Another study hypothesized that the job security and generous compensation schemes in the public sector in many countries deprive the private sector of productive potential employees and, by reducing firms' incentives to create jobs, increase unemployment and lower GDP.[290] Quantitative simulations suggest that removing the public sector wage premium in Brazil would lower unemployment by almost 4 percent and increase output by 1 percent.

Deep and competitive financial system

The third lever of innovation and growth is a deep, competitive financial system. A competitive financial system that facilitates the acquisition and efficient reallocation of capital can improve aggregate productivity by reducing the misallocation of resources, particularly capital.

Studies find that the misallocation of capital is significantly greater than the misallocation of labor in manufacturing in Brazil.[291] This pattern could be the result of policy distortions in financial markets, leading to a highly concentrated banking system, with high spreads and subject to large government interventions.

Brazil's banking system is highly concentrated. The lack of competition results in elevated levels of concentration and large lending spreads. Between the mid-1990s and 2016, the share of assets held by the five largest banks in Brazil rose from 50 percent to 85 percent; in the United States, the share rose from 30 percent to 45 percent.[292] The two largest banks, state-owned Banco do Brasil and Caixa Economica Federal, account for about 40 percent of financial system assets, while the three largest private banks account for 69 percent of private bank assets.[293] Moreover, Brazil is an outlier in its large interest rate spreads for relative low levels of credit to the private sector. The spread is Brazil is 27 percentage points, compared with 5.0 points in Mexico, 2.0 in Malaysia Korea, and 1.6 in the Republic of Korea.[294] These large spreads have real effects. A recent study estimates that a fall in Brazil's spread to world levels would increase output by approximately 5 percent.[295] One reason for the lack of competition in the banking system is government intervention.[296]

The Brazilian government has intervened for several decades in the financial market, without the expected improvements in productivity. The government owns the largest banks in the country and also subsidizes credit. Almost half of the banking system is state-owned.[297] The government-owned Brazilian Development Bank (BNDES) is the main source of long-term financing to firms in the country. BNDES is also the largest intermediary of (subsidized) earmarked credit, principally rural credit and affordable housing. However, most studies have not found positive effects of BNDES credit on productivity for large firms, and those that have found evidence of positive impacts have found a lack of effectiveness once subsidies are considered.[298]

A few financial reforms have shown positive effects. The Fiduciary Law of 2004 (which affects the auto loan, mortgage, and capital markets) has resulted in larger loans with lower spreads and longer maturities.[299] The payroll lending reform of December 2003, allowing banks to offer loans with repayment through automatic payroll deductions, resulted in lower interest rates and a surge in personal loans, thus improving access to finance.[300] The 2005 bankruptcy law, intended to enhance the protection of creditors, is estimated to have resulted in large increases in total and long-term debt in Brazil and large reductions in the cost of debt.[301] More generally, financial deepening in Brazil has had positive effects on the formalization of firms, which can lead to better resource allocation and to higher productivity.[302] The introduction of banking correspondents has recently enhanced financial inclusion by allowing more services to be delivered through agents and expanding the list of institutions that may use agents. Brazil's retail payments foundation is solid, and the Central Bank of Brazil has significantly strengthened the legal and regulatory framework that governs instant retail payments, particularly in relation to nonbanks. Of particular importance, the central bank aims to boost inclusion by making the market for financial services more contestable through its open banking project launched in 2019. The fourth and last phase is planned for September 2022. Early results have been encouraging, as shown by the recent jump in new payment accounts at nonbank providers of payment services.

Financing Brazil's decarbonization is the main challenge facing Brazil's financial system over the next 20 years. Financing the carbon transition will require equity-type financing, as well as long-term/subordinated debt financing. Most of the financing will need to be in local currency

to shield borrowers, especially smaller businesses, from currency risk. The quantity of credit needed for climate investments, both mitigation and adaptation, exceeds the capacity of Brazil's public lending model.

Brazil's public banks are well-integrated into the economic fabric, giving the banks granular knowledge of the sources of and needs for financing and a long history of relationships. This is the key asset for mobilizing private capital to accelerate investing in decarbonization. To monetize this intangible asset, Brazil's public banks would need to assume some of the risks that the private sector is not yet ready to take on. For debt financing, de-risked structures include the provision of guarantees on loans and credit enhancements on fixed income securities. For equity financing, de-risked structures involve co-investing with private investors on ventures that have strong public good dimensions. A public–private finance partnership could reduce persistent distortions in credit allocations as financing decisions would reflect the objectives of private partners and could achieve leverage well beyond the traditional lending model.

Brazil's forests and wetlands are among the largest carbon sinks in the world and among the most threatened; to the extent that banks are exposed to both physical and transition risks through their lending, a collapse of ecosystem services would undermine the financial system.[303] Forty-six percent of Brazilian banks' nonfinancial corporate loan portfolio is concentrated in sectors highly or very highly dependent on one or more ecosystem services. Output losses associated with an unanticipated ecosystem collapse could translate into a long-term increase in corporate nonperforming loans of 9 percentage points. The Central Bank of Brazil is planning to issue regulations to curtail bank financing of activities that further deplete ecosystem services, especially unsustainable agribusiness in key vulnerable land and forest areas of Brazil. Brazil could issue sustainability-linked debt instrument (SLB) that raise debt the way that regular sovereign bonds do for general purpose liquidity and therefore avoid difficulties around budget tagging.[304] SLBs include clauses that lower interest payments conditional on achieving nature-related key performance indicators, such as Brazil's commitments under the 2021 United Nations Climate Change Conference (COP26) declaration on forest and land use.[305]

A high-skilled labor force

The fourth driver of innovation and growth is the knowledge economy, propelled by human capital. Brazil has made substantial progress in education coverage, but quality and other challenges remaining, including the need for improvements in management skills and practices.

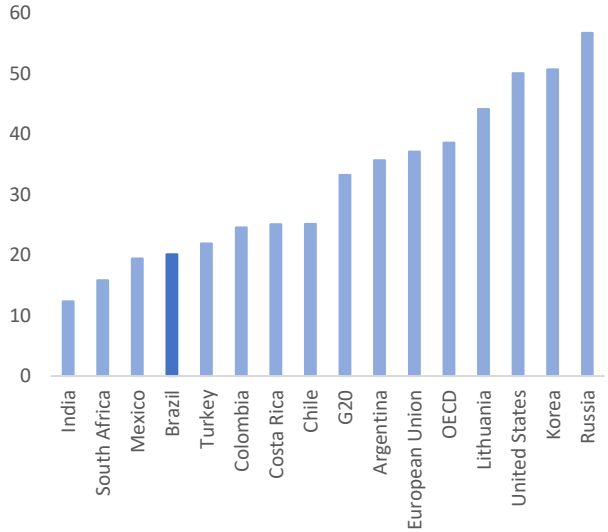
Countries need a highly skilled workforce in order to adopt the new generation of technologies at scale. Having a high share of skilled workers is essential for raising productivity by fostering frontier innovation and expanding the adoption of existing technology and innovation at scale. Improvements in skills are also important to reduce wage and income inequality in the face of technological change (see chapter 3).[306]

To develop a knowledge-based economy, Brazil needs many more college graduates and skilled workers in key fields. Brazil has made impressive progress in expanding education coverage since the 1990s. But the weak quality of education remains a major constraint to developing a broader, knowledge-based economy. Although children's expected years of education rose to 11.9 years, that corresponds to only 7.9 years of actual learning.[307] Brazil is also lagging in college graduates compared with many other large middle income countries in the region and with higher income countries (figure 6.14). Over time, Brazil will also need to steer

more of its students toward degrees in math, natural sciences, and ICT, whose shares remain below OECD country averages.

Figure 6.14 Brazil's share of population with a university education is low compared with other countries, 2020

Percent of population ages 25–64



Source: OECD.
Note: Data for 2017 for Chile; 2018 for Argentina, Brazil, and Russian Federation; and 2019 for Turkey and India.

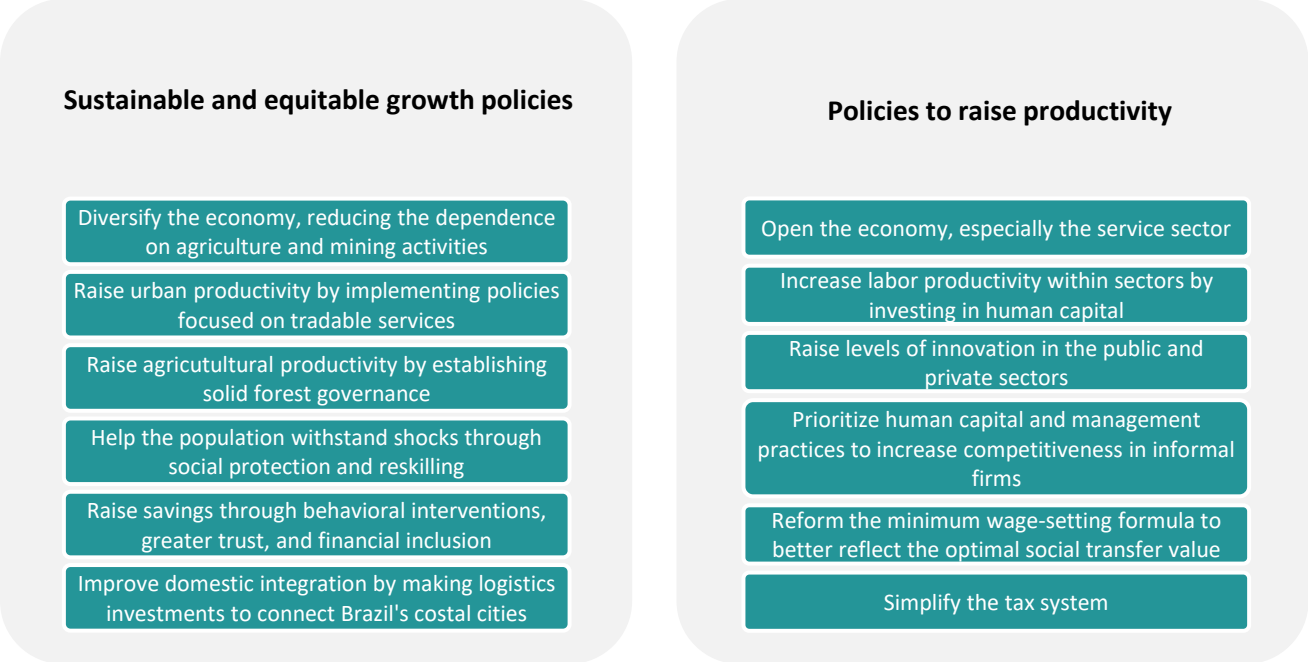
A failure to increase the education level of today's youth will lead to a decline in the overall share of skilled workers and raise the college premium, worsening income inequality.[308] Projections show that it is fiscally possible to increase university enrollment rates at current investment levels by reallocating funds within the education sector. But reforms are needed to improve universities' productivity and to orient them toward the most promising degree programs (see chapter 7). Boosting the number of college graduates by 50 percent would raise the share of the highly educated population to about one-third and decrease the college premium to about 2.4.[309] However, because this will take many years, other policies are also needed, including broadening short-cycle college degrees and technical and vocational secondary and postsecondary education and easing immigration requirements for skilled workers.

In addition to higher and better quality education, achieving a high-skilled labor force requires improvements in management skills and practices. The centrality of firms' managerial practices has emerged as one of the main findings in empirical studies assessing the drivers of productivity and growth in recent years.[310] Management practices account for about 30 percent of cross-country productivity differences.[311] Additionally, a positive correlation exists between management practices and performance in energy efficiency,[312] suggesting an important role of good management in fighting climate change.[313] On average, Brazil lags peer economies in management quality.[314] Almost one-fifth of Brazilian firms are classified as poorly managed—about nine times more than in the United States (seven times more in the manufacturing sector). Furthermore, even the best performers lag relative to the global leaders. Product market competition could encourage firms across the management quality spectrum to improve their practices, while forcing the closure of firms that fail to change their business model.

Looking to the future

The policies that Brazil needs in the next 20 years to respond to the megatrends are the same policies that enable an economy to innovate. Brazil needs policies to support equitable and sustainable growth and to boost productivity through innovation (figure 6.15). These policies can be placed into categories that complement the levers of innovation: institutions that stimulate competition between firms and lower barriers to technological transfer, efficient allocation of resources to markets, removal of distortions in the financial market, and high skilled workforce and well managed firms. With these levers in order, Brazilian firms will be able to successfully adopt and adapt more advanced technologies and management methods from other countries and produce frontier technology. However, all of these policies are essential, as they reinforce one another. For example, it is unlikely that firms will be well managed if the workforce is not skilled, or that the financial market will be well regulated without institutions that stimulate competition.

Figure 6.15 Policy recommendations to achieve consistently higher growth



Source: World Bank.

Some innovation levers depend on the approval of reforms that still need to be fully developed. Studies have revealed the need for comprehensive tax reform that simplifies and unifies tax rules across jurisdictions and reduces the scope of ineffective special tax regimes.[315] For example, the effect of Simples Nacional on formalization has been demonstrated to be modest, and its rules for tax exemptions perversely motivate firms to remain small and less productive.[316] Such policies inhibit the efficient allocation of resources to markets. Similarly, reforms that lower tariffs for capital and intermediate goods and reduce the costs of trade are necessary to foster technological transfers. New regulations were recently implemented in this direction. Law 14195/2021 simplified foreign trade administration, and an electronic one stop shop solution allows importers, exporters, and other foreign trade agents to fill out all their forms in one place. But other reforms are still needed to stimulate competition between firms and ease the adoption of technology, such as removing local content requirements. The new bankruptcy law for small and

medium-size firms that still awaits implementation could improve the reallocation of capital and thus boost productivity.

Other reforms are not about removing barriers to innovation levers but about realizing their potential to raise productivity. For example, a promising reform in the financial market would be to extend the TLP to housing and rural credit lines.[317] Another important initiative is Brazil's application for OECD membership. If successful, it could trigger a process of regulatory convergence to developed countries' best regulatory practices and the development of institutions that stimulate competition between firms. Another interesting possibility would be to create a Productivity Commission, which would be responsible for coordinating the productivity agenda. Australia successfully introduced this model, which was later adopted by other countries, including New Zealand, Mexico, and Chile. Also, institutionalizing public–private sector dialogue (such as the Mesas Ejecutivas in Peru) would facilitate overcoming coordination failures.

Because the innovation levers are influenced by government capabilities, reforms to raise public sector productivity should also be a priority. The agenda of public sector reform should focus on transparency and accountability, as well as revisions to business support policies and the establishment of regular evaluation procedures. Decree 9834/2019 created the Council for Monitoring and Evaluation of Public Policies (CMAP), with the authority to evaluate federal public policies and monitor implementation of recommended changes. Decree 10411/2020 requires federal government agencies to conduct regulatory impact analyses before implementing regulations that would impose substantial costs on the state and affect firms. The government can also facilitate business innovation. By the end of 2021, it had reduced the backlog of pending patents by 77 percent. While this is a notable accomplishment, additional measures are needed to raise innovation levels in private organizations, such as fostering university research (instead, for the past eight years university funding for discretionary expenditure has been severely reduced). Policies are needed to attract and retain FDI in sectors other than natural resources (agriculture and minerals), in particular in key service sectors that are enablers for the rest of the economy. Reducing restrictions on FDI in modern services can enhance inflows of technology and capital into modern services like ICT, finance, and business services. These services are not only exportable, but they are also intermediate inputs into manufacturing and agriculture.

In sum, Brazil faces opportunities and challenges on its way to higher productivity growth through innovation. First, higher levels of competition are desirable. They can be attained by increasing international and domestic integration. This will require, among others, a reduction of labor and capital adjustment costs, a reduction of entry barriers and other government interventions that reduce competition, a more competitive financial system, and an investment framework that reallocates capital more efficiently within the private sector and also permits the public investment needed to close the gap with peer countries. Second, despite substantial investments in education and increases in average years of education, Brazil still needs to improve the quality of its education and expand it at all levels. But even this might not be enough to increase the number of workers with a university education to enable the country to take advantage of latest trends in automation, spur innovation, and reduce inequality. Thus, additional policies may be needed to increase the share of workers with advanced degrees. Third, adopting technologies from more advanced economies, through foreign investment and trade, can boost productivity by enabling adaptive innovation. Brazil has a large informal sector with many firms that are too unproductive to survive as formal firms and a set of managerial skills that are lagging relative to peers. Both

challenges limit the capacity of the country to grow through adaptive innovation. Finally, a sizable misallocation of resources seems to be the result of rent-seeking activities, patronage, and corruption.

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Part III. Room for maneuver:

A budget and social contract for the future

Chapter 7 Strengthening fiscal policy

Policy space to shape the future

Fiscal policy is one key lever for Brazil to shape its future. But fiscal space is limited. It is constrained by high budget rigidities concentrated on pension payments, wage bills and mandatory minimum constitutional spending on public health and education. And since its public debt is higher than for other emerging markets, Brazil is spending an increasing share of its budget on interest payments. So, only a small fraction of the budget is discretionary, limiting the provision of tangible public services to the poorest Brazilians. Although federal rules constrain subnational borrowing, and state debt tends to be broadly low, states and municipalities face structural deficits in their public pension systems and have the main responsibilities to provide public services on health, education and security.

Monetary policy space is greater, but monetary policy is ill-suited as the main driver of Brazil's future—it is a complement, not a substitute for fiscal and structural policy. Brazil has a credible and, since 2021, fully independent central bank. This is a major asset for Brazil as it keeps inflation in check—no minor feat given Brazil's long history of inflation and even hyperinflation (chapter 2). Brazil follows an inflation-targeting regime that has kept inflation expectations well anchored. This allows the Brazilian central bank to pursue countercyclical policy and smooth out business cycle fluctuations without causing runaway inflation. It also reduces volatility, as shocks do not dislodge inflation expectations. Markets anticipate that the central bank will control inflation, and this helps reduce the passthrough from external shows to domestic prices. Brazil's central bank will thus help provide an enabling environment for development, keeping inflation in check and smoothing shocks. Yet the heavy lifting of driving development by investing in physical or human capital or changing incentives through improved regulations will still fall on fiscal and structural policies (the latter were discussed in previous chapters).

This chapter focuses on fiscal policy as an important tool for the Brazilian government to shape the future, promoting inclusion and productivity in a fiscally sustainable way. It first provides an overview of Brazil's limited fiscal space through the lens of a debt sustainability analysis, motivating the need to rethink how Brazil taxes and spends if it wants to have resources left to put the economy on a different path. It then discusses taxes, followed by expenditure drivers (wages, pensions, and health) and potential fiscal space (education) that emerges from megatrends. The key challenge for Brazil is to make taxes more efficient and progressive (which the tax reform currently underway is aiming at) and control inefficient or inequitable expenditures, while responding to pressures from megatrends, especially demographics in areas such as pensions, health and education. Finally, generating fiscal space in the budget would generate room for greater infrastructure investment.

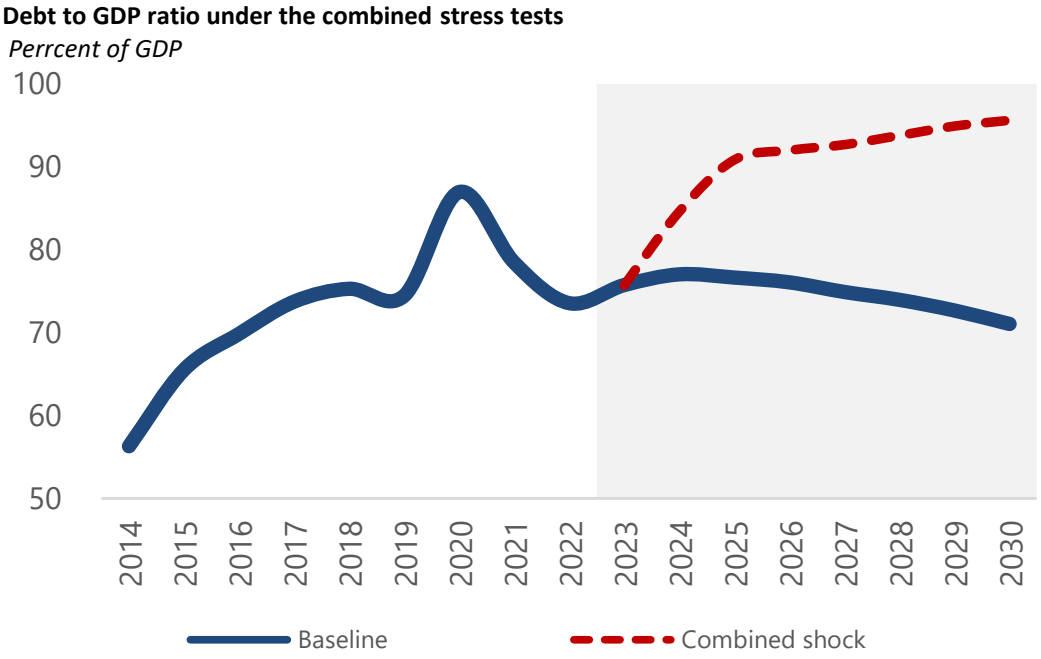
Debt sustainability

The newly approved fiscal framework shifts debt trajectory gears from expenditures (in the former fiscal rule) to government revenues. The new fiscal framework for the federal government combines a spending rule with a primary balance rule. The spending rule will limit federal real primary spending growth to 70 percent of the real primary recurrent revenue growth (i.e., excluding one-off revenues). Expenditures real growth should be within 0.6 to 2.5 percent. The primary balance targets will be defined for four years in the annual budget guidelines law, with a 0.25 tolerance interval. The annual budget guidelines law will also include a medium-term fiscal framework, with emphasis on the expected effect of the fiscal targets on the public debt

trajectory. The proposed framework implies a sharper fiscal adjustment and faster debt stabilization between 2023 and 2026 than under the previous rule ("teto de gastos"), provided that larger additional revenue collection efforts are met.

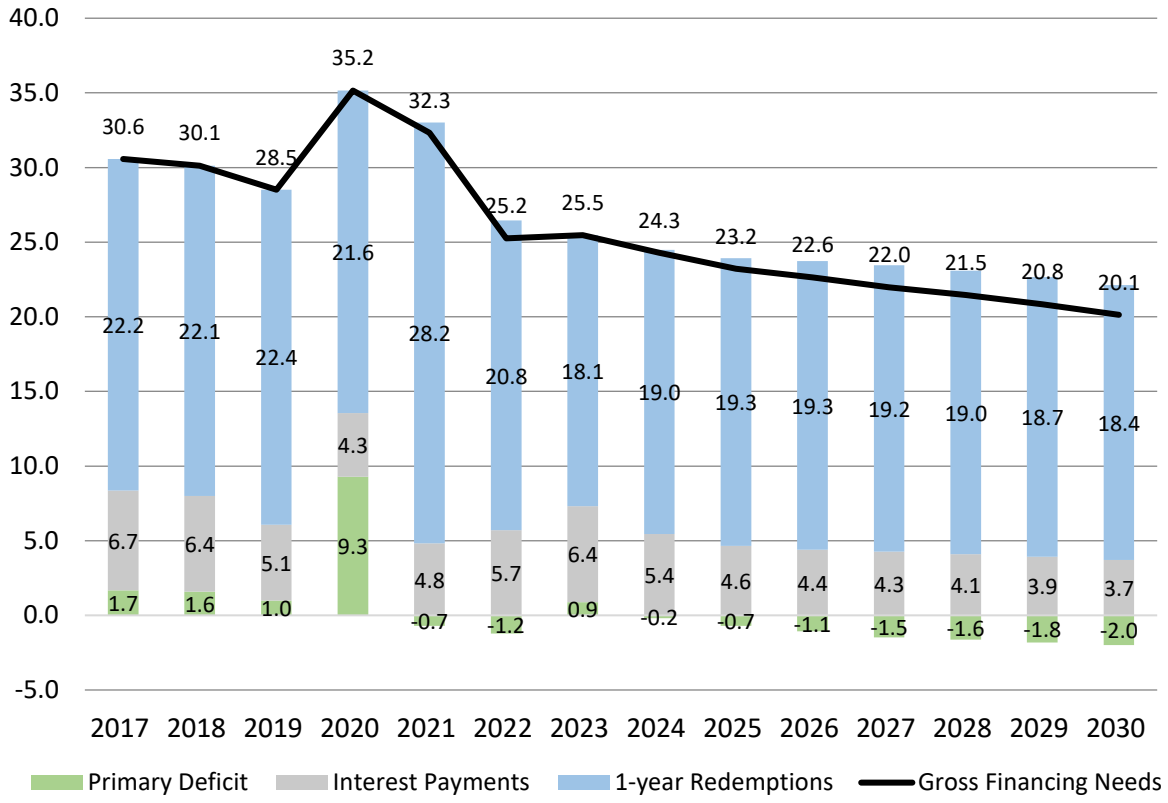
Brazil's future is already heavily taxed, as high levels of debt constrain future spending. Its public debt is expected to peak at around 77 percent of GDP by 2024 under the recently approved new fiscal framework, before declining steadily to 71 percent by 2030 (Figure 7.1). After a large increase in 2020 (of more than 10 percentage points), public debt fell to 78.3 percent of GDP in 2021 on the back of the economic recovery and improvements in the public sector primary balance. Debt is expected to slightly increase between 2023 and 2024 despite of a primary balance turning to a mild surplus in that year, stabilizing debt. Public gross financing needs increased to 35.2 percent of GDP in 2020 (6.7 percentage points of GDP above 2019), a result of the higher fiscal deficit, but fiscal consolidation (anchored by the previous spending cap rule and the rollback of the COVID-19 response package) drove gross financing needs down to 25.5 percent of GDP and is expected to keep it between 22 and 25 percent of GDP between 2023 and 2026 (figure 7.2).

Figure 7.1 General government gross debt (percent of GDP)



Source: World Bank calculations based on data from the Central Bank of Brazil and Federal Treasury.

Figure 7.2 Gross financing needs of general government gross debt (percent of GDP)



Source: World Bank calculations based on data from the Central Bank of Brazil and Federal Treasury.

Debt sustainability is vulnerable to the pace of fiscal adjustment, as well as growth and real interest rate shocks. The main macroeconomic shocks that pose risks to debt sustainability include delays in primary balance consolidation due to need for additional revenue collection efforts (under the new fiscal framework) that may not completely materialize, lower GDP growth in the short term, higher real interest rates, and a real exchange rate depreciation. If all these shocks hit the economy simultaneously, debt indicators would deteriorate significantly, with public debt potentially reaching about 95.6 percent of GDP by 2030.

Brazil's new fiscal framework requires special attention to four areas: pensions, and spending on health and education, all influenced by demographics, and **wage bill**.

Taxes

Tax system design is a central aspect of modern economies. The set of rules that govern tax collection have a direct influence on the behavior of individuals and firms, ultimately affecting a country's growth performance in a variety of ways. At the same time, the tax system has key distributional consequences, as it establishes how much each group of agents will have to contribute for the financing of the State.

It is natural that such a decisive institution be subject to political disputes, and Brazil is not an exception to this rule. Over the last twenty years, the necessity of a tax reform has been a constant subject of debate among Brazilian citizens, with several proposals being discussed in Congress. However, although there were some minor changes in taxation, until now, no extensive

reforms have taken place. Recently, Congress approved the project of the tax reform bill that replaces a multi taxes consumption-based tax system by a simplified VAT system. In this scenario, it is essential to have a good diagnosis of the current problems of Brazil's tax system, in order to enlighten future impacts of the reform.

The first thing that comes to mind when talking about taxation is the size of the tax burden. In 2020, the tax burden in Brazil was around 31.1 percent of GDP, one of the highest among developing economies, but a little below the average of OECD countries (33.6 percent). Although the size of the burden may be justifiable by the recent expansion of social services, this apparent normality hides a regressive and inefficient tax system.

In terms of composition, Brazil's tax burden departs from international standards. The country's tax revenue is heavily concentrated on taxes on goods and services which accounted for 42.3 percent of the tax burden in 2020. Alternatively, total income taxation (personal and corporate) is only 22.3 percent of total tax revenue, which is relatively low when compared to OECD average (33 percent in 2020). Moreover, income tax burden relies more on corporate income than on personal income in Brazil (8.5 and 13.8 percent of tax revenues in 2020, respectively) compared to OECD countries (8.2 and 24.8 percent, respectively). This regressive structure harms the poorest population, who spends a higher share of their income on consumption. Furthermore, focusing on the composition of income taxes, Brazil collects relatively more taxes from corporate income, underperforming when it comes to personal income.

The rules and institutions that govern tax collection in Brazil are the source of several inefficiencies, hampering the country's growth prospects. Brazil has one of the most complex tax systems in the world, with over 80 different taxes managed by different levels of government and a multitude of tax benefits and special regimes.[1] In this context, the amount of taxes a firm has to pay will considerably vary depending on its size, location and level of fragmentation[318], which encourages inefficient production arrangements designed to escape taxes.[2]

In light of this complex tax structure, four key challenges should be met by future tax reforms in Brazil, some of them already being tackled by the tax reform underway. This analysis, inspired by World Bank (2018), focus on the three most relevant groups of taxes in the country's tax burden: taxation on goods and services, payroll taxes and income taxes.

Production Distortions through Cumulative Taxes

The taxation of goods and some services is extremely inefficient in Brazil[319]. The majority of indirect taxes is levied on turnover, following a cumulative regime that imposes higher effective rates on firms that are in the final stages of the production chain. Moreover, even taxes that are legally non-cumulative may become cumulative in practice because of weak institutional designs. One of the most important sources of revenue for Brazilian states is the VAT on consumption called ICMS (*Imposto Sobre a Circulação de Mercadorias e sobre Prestações de Serviços*). The ICMS rules – state that only inputs that are physically incorporated into the final products give right to tax credits. Hence, taxes on inputs like telecommunication services or publicity do not

[1] World Bank, 2018.
[2] Appy, 2017.

generate credit and become cumulative in the VAT structure. In addition, many companies face bureaucratic difficulties when claiming for tax credits, which can take years to be reimbursed. In some cases, firms simply give up their credits.[3]

This cumulative structure creates an artificial incentive for vertical integration and market segmentation. In many cases, it may be worth it for firms to produce the inputs for their final product internally, in order to avoid the taxes that would otherwise be paid in each stage of the production chain. This environment also hampers horizontal equity, as different sectors are taxed at different effective rates. This is especially hurtful for firms that produce complex products, using several industrial inputs that embed a high amount of taxes in their cost. In turn, it might benefit firms in the primary sector, which need fewer inputs for their final products.

Current government's tax reform proposal is an important step towards a simplified taxation on goods and services. In order to tackle many of the flaws in the current tax system, the recently approved Constitutional Amendment bill by Congress (still undergoing some steps in the legal process to come into effect) replaced five taxes – three federal (PIS, Cofins and IPI), one state (ICMS) and one municipal (ISS) – by two VATs – one federal (CBS) and one subnational (IBS) – and an excise tax (IS) on goods and services with health and environmental harm. These taxes will have unified rates defined separately by the federal government (CBS) and states and municipalities (IBS). Furthermore, it will be charged in each production stage generating tax credits on previously paid taxes, thus eliminating the cumulative structure currently in place. However, the tax reform created several tax exemptions for a variety of goods and services, and maintained the tax exemption regime for Manaus free economic zone.

Box 7.2 Industrial policy of the future

Brazil has an opportunity to benefit from its recent macroeconomic performance by improving the economic efficiency of its industrial policy. Brazil still largely relies on a relatively traditional approach to industrial policy, heavily focused on tax exemptions and subsidies to companies. In fact, tax incentives to attract firms to states lies at the core of Brazil's "fiscal war" in the state-level tax ICMS which is a major inefficiency that distorts the economy and undermines Brazil's productivity (chapter 7). Selective trade protection is another major cause of distortions undermining productivity (chapter 6).

As an example, one of the costliest industrial policy interventions in Brazil are the various tax and duty incentives granted to the *Zona Franca de Manaus* which cost the federal government about 0.4% of GDP annually in forgone revenue —in addition to incentives at the state level[320]. Yet Amazonas is not the only state trying to attract businesses with tax incentives, it is a relatively common practice across Brazil. There is little evidence that these high investments have helped generate benefits that justify the costs to the government**.**

The industrial policy of the future is less distortive and leverages the private sector to solve economic challenges. It is an intelligent policy approach aimed at reducing distortions in the economy and creating positive externalities like agglomeration economies or networks of knowledge and innovation. It focuses much more on creating an enabling environment, such as common services and infrastructure, creative capacities, through technical advice and mentoring systems and networking structures, skills (for example, through vocational training), and much more targeted, customized business incentives. Governments have leveraged their industrial policy to address the global climate crisis by focusing on new technologies and

[3] Appy, 2017.

sustainable products. It is a much more balanced approach focused on unlocking productivity and tackling core market failures rather than subsidizing companies that would otherwise not be competitive.

Allocative Inefficiencies and Tax Competition among states and Tax Base Erosion

The ICMS tax rules are at the core of the "fiscal war" among the states, harming states' public revenues and fiscal balances and increasing the misallocation of production factors. Contrary to international standards, the ICMS tax follows the origin principle, such that tax revenues go to the state where the product was produced. Since states have freedom to set ICMS rates, this creates an incentive for them to offer tax discounts in order to attract mobile economic activities into their borders. This "fiscal war" is an extremely distortive instrument of regional development, as firms will choose their location based on tax benefits instead of going to the state where production will be more efficient.[4]

In this direction, the proposed CBS and IBS taxes will be charged on goods and services at destination. In this case, their tax revenues go to the state where the product is consumed, such that reducing its rate would not draw any new business. Therefore, eliminating incentives for the so-called fiscal war where state tax incentives distorts production location decisions. Yet, the transition from taxation at the origin to at destination is set to last fifty years from 2029. Nevertheless, there will be a long transition period between 2029 and 2033 where both system will coexist keeping the ICMS distortive incentives in play. Moreover, states will continue to provide preferential fiscal benefits already in place through a compensation fund until 2032.

The digital economy will impose challenges and the need for changes on taxation worldwide. Challenges to national tax systems derive from the absence of physical presence, the strong dependence on intangible assets, the complex nature of the transactions carried out in the digital economy, the difficulty of determining the jurisdiction in which value creation takes place due to the mobility of assets and "establishments" and the difficulty of qualifying assets, activities and types of income. Countries claim that the digitalization of the traditional economy require the adoption of new tax rules, given the growing gap between the economic reality and tax systems, which did not follow the development of new business models.

There are three major obstacles to be overcome in Brazil about taxes on digital services: constitutional rigidity, existence of conflicts of competence between different subnational governments and the need to preserve federal autonomy. The Federal Constitution is heavily detailed in tax matters, defining limits to the power to tax and fundamental rights of taxpayers, dealing with tax powers and on the sharing of the proceeds from tax collection, reaching especially detailed treatment in the case of ICMS. Moreover, for the ICMS, the concepts of "merchandise" and "services" are less clear. The division of taxing rights has created a conflict between states (ICMS) and municipalities (ISS) in relation to the taxation of intangible assets.

Limited Progressivity

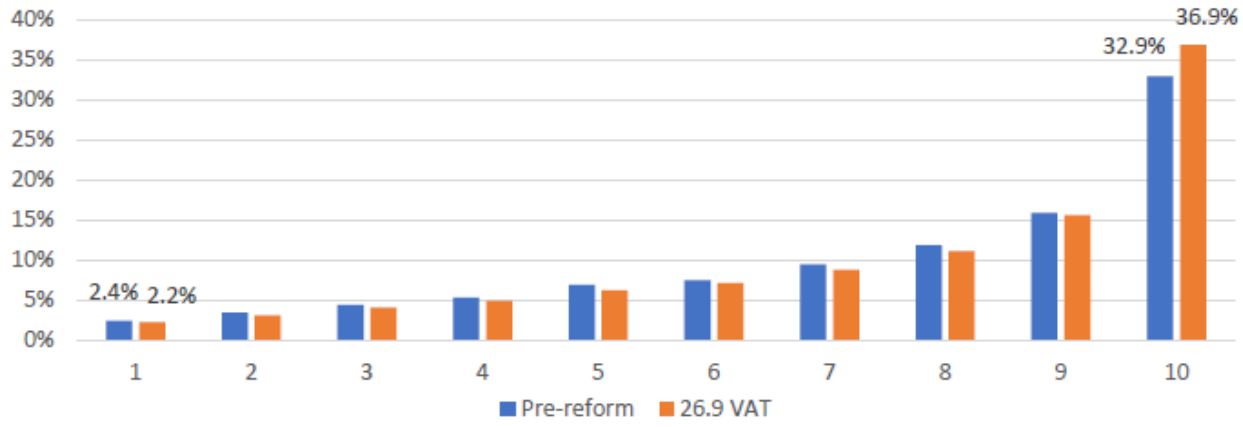
Brazil's tax system is regressive and contributes significantly to reduce the less well-off's welfare. This is partly due to the heavy reliance on indirect taxes on the production of goods and

[4] Appy, 2015.

some services, which constitute almost half of the entire tax revenue.[5] Those taxes are particularly harmful to poorer individuals, who spend a greater share of their income on consumption goods. It is estimated that indirect taxes have a negative Kakwani Index (-0.08), indicating that consumption taxes are disproportionally concentrated on the bottom of the income distribution in comparison with income itself. After accounting for indirect taxes, extreme poverty increases by 1.9 percentage point (p.p.) and moderate poverty by 6.1 p.p. in Brazil.[6] At the same time, taxes on personal income, which are progressive (Kakwani Index is estimated to be 0.3) and could be used to compensate this effect, represent a small share in total tax revenue.

The proposed indirect taxes reform may have a positive, yet limited, contribution to reduce inequality. The VAT rates – to be defined later under a complementary law – will be set in order to keep the tax revenue at the current level for the federal and subnational governments. However, the reform will change the tax burden on different economic sectors and consumption categories with respect to the system in place, having important distributional impacts. While taxes paid on food and personal services may increase, it is estimated they will decrease on clothing, transports, hygiene and personal care items. Overall, it is estimated that the tax burden on the poorest will decrease while it will increase on the richest. For instance, the share of the lowest decile of the income distribution in total paid taxes is expected to decrease from 2.4 to 2.2 percent, while it may increase from 32.9 to 36.9 percent at the top decile if a 26.9 percent VAT rate was established evenly.[7] In addition, reduced tax rates granted for specific goods and services (such as food products in "*Cesta Básica*" list) will likely alleviate the tax burden on the poor. Moreover, a foreseen cashback scheme has the potential to be an effective tool on reducing inequality.[8] In the end, it is estimated that the indirect taxes system is likely to continue regressive, but less so.

Figure 7.3 Share of total indirect taxes paid by each income decile – current tax system vs. VAT simulation



Source: Lara Ibarra et al., 2021.

[5] World Bank (2018.
[6] Lara Ibarra et al. (2023).
[7] Lara Ibarra et al., (2021).
[8] Campante Vale et al., forthcoming.

Moreover, high earners often manage to avoid taxes by shifting income from the personal to the corporate tax base. This phenomenon, called "*pejotização*" (from "PJ", or *Pessoa Jurídica*), not only harms the ability of the system to fight inequality, but also reduces the size of the tax base. In Brazil, the distribution of dividends at the individual level is exempt from taxation, and profits are only taxed once, inside the firm. Hence, the income that comes from profits is only subject to corporate tax rates, which diminish the government's ability to highly tax wealthy individuals without harming firms. This effect is aggravated by the existence of a special tax regime for small firms called SIMPLES. Firms with yearly revenue under R$ 3.6 million can enter this regime and pay only one tax, levied on turnover. The distortion arises because high-paid workers can choose to offer their labor as a company, instead of as a formal worker. What the worker would receive as wages now become profits, which are only taxed inside the firm at the SIMPLES rate (which is normally lower than the income tax rate for the corresponding level of income). Since profits are exempt from taxation after distribution, those workers can avoid higher tax rates that would fall on personal income. The higher companies' administration staff can also be particularly benefitted by the dividend tax exemption, as companies are induced to remunerate them through legally set dividend-linked mechanisms.

Another aspect of the tax system that inhibits formal work relations is the high level of taxes on payroll. Part of those taxes is used to finance social security, but an important share goes to policies that do not generate direct benefits for the employee. This is evidence that payroll taxes in Brazil are not only a source of funding for labor public programs, but are also used to attain fiscal sustainability of the government. Payroll taxes hurt the functioning of the labor market as higher taxes increase the Unit Labor Costs, reducing labor demand by firms and pushing less productive workers for informality. Some workers can also opt for informality to avoid those taxes. This situation is worsened by the fact that low paid informal workers may receive a minimum federal retirement benefit linked to the federal minimum wage, which would be the same as if they opted for formality and contributed for social security. Hence, being a formal worker in this case has a negative value on permanent income. Payroll taxes poses a heavier burden for the service sector, which is more labor-intensive.

On that front, the tax reform represents even less progress. If not changed during negotiations in the Senate, the bill project maintains the special regime for micro and small companies (*SIMPLES*) and its tax avoidance incentives. However, it opened room for reductions in the consumption tax rates whenever sectoral payroll exemptions generates revenue increases through employment creation.

Compliance Costs

The complexity of Brazil's tax system hinders a high compliance cost. The vast amount of taxes, with rates that vary according to region and sector, the proliferation of special regimes and the constant changes in legislation lead firms to spend a lot of time and money on tax planning. As

an illustration, Brazilian taxpayers spend four times as much time to comply with tax obligations as the average of Latin American countries and eight times as much as OECD average.[9]

Moreover, the system imposes a high amount of uncertainty on taxpayers and extensive resources are spent in judicial disputes. Taxation rules are often not clear and open room for legal discussions. According to Appy (2017), current resources under tax litigation may reach one third of Brazil's GDP.

The dual VAT system proposed in the tax reform constitutes an important step towards the tax simplification. A unified tax rate for each tax on goods and services (federal and subnational) provides not only simplification for the tax system but also imposes certain degree of restrictions on the ability of different states and municipalities to give beneficial tax treatment for specific sector or groups. Even the preferential treatments for some goods and services defined in the reform equalizes its reduction to a 60 percent of the full VAT rate. Thus, there is less room for marginal tax gains leading to lobbying and judicial disputes at a product level. Having said that, the reform still establishes and/or maintain favored tax regimes (e.g., *Zona Franca* and *SIMPLES*), zero rate treatment (e.g., *Cesta Básica*, *Prouni*), specific tax regimes (e.g., fuels, financial services, hotels, public procurement), excise taxes and allows new federation unit's tax on primary goods, which limits its potential to streamline the system and might turn it into a throwback to the current one.

Policy Options and Reform Proposals

The widespread consensus about the need to reform consumption taxation in Brazil, replacing several indirect taxes for a standard value added tax, recently materialized in an indirect tax reform. As already mentioned the ongoing indirect tax reform replaced five indirect taxes by a dual VAT (a federal *CBS* and a subnational *IBS*) and an excise tax. The new tax is non-cumulative with a broader tax base. Moreover, the number of tax rates is somewhat limited with one standard rate for each indirect tax and reduced rates for specific goods and services set at 60 percent reduction of the standard rate to be defined later. This helps avoid an unlimited number of exemptions and special regimes that impose extensive compliance costs for firms. Nonetheless, some goods and services may enjoy preferential treatment (either zero rate like *Cesta Básica* or specific rates like Fuels and lubricants). Moreover, the indirect tax reform implements the destination principle. Thus, it has the potential to end the "fiscal war" among the states and municipalities, with benefits for the collection of public revenues and for the states' fiscal sustainability, though the transition from origin to destination is set to take place over the course of fifty years.[10] Finally, the excise tax will be applied to goods and services harmful to health or the environment, for instance, tobacco products, alcohol and foods and drinks with high sugar content.

There is also a need to reform income taxation, increasing the overall progressivity of the tax system. However, simply raising personal income tax rates for the richest people would have little effect on fighting inequality in Brazil, since the main sources of income for the wealthy, such as

[9] World Bank, (2018)

[10]

dividends and earnings from financial applications, are currently tax exempt.[11] Hence, the country should harmonize income taxation across different tax bases – personal, capital and corporate income – to avoid incoming shifting. Profits should not only be subject to corporate income taxes, but should also be taxed at the personal level, after discounting the taxes payed inside the firm to avoid cumulativeness. This measure should strongly mitigate "*pejotização*". Moreover, tax differences between labor and capital earnings should be mitigated.[321] More recently, there has been discussions about a second phase of the tax reform (also motivated by the reform itself) targeted at revamping income taxation. However, the former reform will still requires additional regulation and legislative discussions about the income tax reform are less mature.

Another important measure to reduce "*pejotização*" and incentivize formal labor is a reform of payroll taxes. Taxes that are not directly related to contributory benefits for the employee should be removed from the payroll and transferred to other tax bases in a revenue neutral way.[12] Social security contributions could be reduced and compensated by an increase of contributions of favored categories such as autonomous workers and MEIs, on a revenue-neutral basis. These measures can establish a clear connection between the value of the contributions levied on payroll and the benefits received by formal workers. Without this connection, payroll contributions are only seen as one more tax used to finance government expenses, which disincentives work formalization, as workers will see no benefit in being a formal employee.[13]

Expenditures

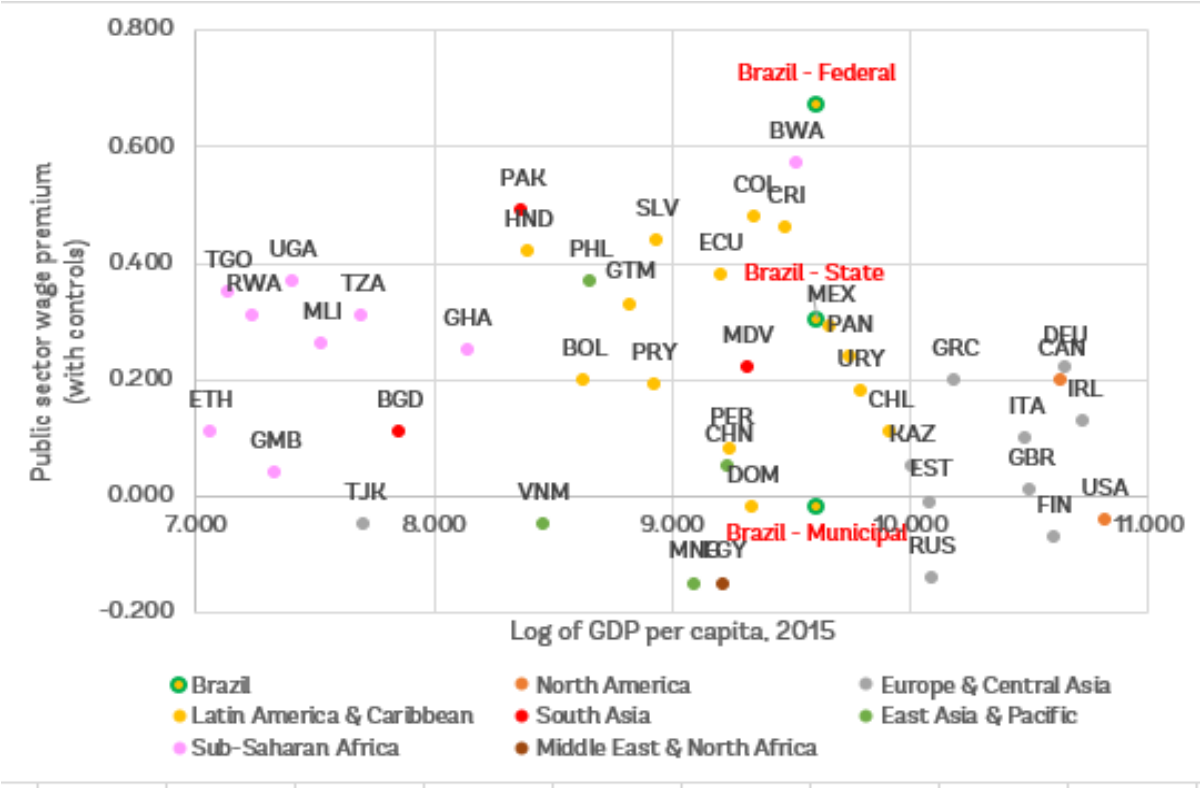
Wages of public servants

The wage bill spending in Brazil is high when compared with international standards, although the number of public servants is proportionally small in Brazil compared with Latin America countries. Brazil spent around 11.6 percent of GDP with wages and salaries of active public servants in 2021, above the average spending in Latin America (8.7 percent of GDP in 2021) and the average in OCDE countries (4.3 percent of GDP in 2021).[322] The share of public servants in the population in Brazil is 5.6 percent, higher than the Latin America average (2.2 percent), but smaller than the OCDE countries average (9.5 percent).

The comparison between the high personnel spending with the number of public servants in Brazil suggests that public wages are higher in the country. Indeed, public wages are higher than the salaries paid by the private sector. According to World Bank (2019), the average wage premium[323] in Brazil was estimated at 19 percent, a little below the average (21 percent) of a sample of 53 countries (figure 7.4). While the federal wage premium was estimated at 96 percent, the average wage premium of the states was estimated at 36 percent[324] and the municipal salaries did not present wage premiums on average.[325]

[11] Gobetti and Orair (2016)
[12] Ibid.
[13] Appy, (2015).

Figure 7.4 Public sector wage premium per country



Source: Worldwide Bureaucracy Indicators, World Bank Bureaucracy Lab.

The federal wage bill is significant although the federal government employs proportionally fewer public servants than the subnational governments. In 2017, the federal government employed 12 percent of Brazil's public servants, but the federal wage bill accounted for around 25 percent of total wage bill spending of the public sector.[326] On the other hand, subnational governments, which are responsible for important labor-intensive public services (such as health, education and security) employed 88 percent of public servants but its wage bill accounted for the remaining 75 percent share of the total wage bill. These differences reflect the higher wage premium at the federal level.

Mild government controls of salaries and hiring policies and the structure of the public careers resulted in wage bills growing above the real GDP and were at the core of the fiscal distress in Brazil, specially at the state level. According to World Bank (2019), the federal wage bill grew in real terms 2.5 percent per year between 2008 and 2018. This growth was 1.2 percentage points above the average GDP growth in the period (1.3 percent per year) and reflected either real wage increases (1.5 percent on average) and public servants hirings (1.1 percent). At the state level, the real wage bill increases surpassed 4 percent per year between 2003 and 2017, while the average growth of the GDP in the period was 2.5 percent. On top of this, 20 out 27 states have experienced wage bill payments delay of public servants over the last years.[327] This situation reflects the fact that most of the states have been above the Fiscal Responsibility Law (FRL) personnel spending limit (60 percent of the Net Current Revenues - NCR) in the last years. Since wage bill and pension payments are mandatory and rigid lines of the budget, there is little fiscal space for investments

and other current expenditures. Also, in some states, the current high burden of wage bill and pension spending avoids new hirings at important areas that are small staffed.

The organization of the public servants' careers should be reframed to increase the efficiency of the public sector. The federal government structure has many careers with many specificities, which favors fragmentation and an unequal treatment among careers. It characterizes a rigid and very regimented structure that is not resulted oriented. The federal wage bill is characterized also for having lots of rubrics which difficult management and transparency. When there is compensation for performance, almost everyone gets it.[328] Finally, many careers have a higher number of public servants in the last level (average is higher than 50 percent): progressions are fast, unrestricted and do not necessarily relies on good performance. This federal reality broadly reflects what can be observed at state's and municipal's levels. All of these characteristics put together with the past wage increase policies will lead to a continuous increasing wage bill spending that will not necessarily return into better and more efficient public services for the population[172].

There is a window of opportunity to implement structural reforms that will have both fiscal and efficiency impact at the wage bill spending at the public service due to the large number of estimated retirement up to 2022. According to World Bank (2019), by the end of 2022 around 26 percent of the federal public servants will have retired. It allows for an administrative reform that could tackle the main sources of inefficiency at the public sector and generates productivity gains. By doing structural reforms for the new entrants will allow the public sector to obtain fiscal gains in the short and medium term and will allow for future wage increases to be not linked to pension's spending as it is today. The World Bank estimated that around one quarter of the wage bill of the federal government in 2030 will be to pay public servants that were not yet hired. Note that this window of opportunity is likely to happen again only between 2037 and 2044. By then, decisions will already have been taken that will impact the Brazil in 2042.

Looking ahead, the menu of policy options for an administrative reform should aim for personnel expenditure savings through better human resources management combined with productivity gains. Policy options include wage revisions to reduce the wage premiums, career reforms such that the interval for progressions increases while the wage adjustment between progressions decreases, decrease of the replacement rates depending on the sector, and a general strategic planning and career restructuring. The increase of the interval for progressions combined with decreases in wage adjustments due by the progressions is an important public policy, mainly for states where salaries intervals between levels of the careers are too tight and readjustments are big.[329] This is important to mitigate a source of inequality between public sector's careers, and to generate more equity between the careers. High initial wages in many careers are also a source of inequality, inefficiency, and contributes for the high wage premium of the public sector.[174] Replacement rates should be assessed to reduce overstaffed sectors and to end careers that are no more necessary due to technology innovation. Planning will be key to incorporate the correct demand for public services into the replacement policy, which will improve the efficiency and the quality of the public sector. For example, demographic trends will affect the demand for education and health services in different ways. Better management of human resources in the public sector can lead to both fiscal and productivity gains. Careers could be more transversal, and with more general attributes, which would provide the public administration with more flexibility.[330] Finally, it is important to implement a pyramidal structure in which only a proportion of public servant's

progress to higher levels based on job performance. Such a policy is also associated with fiscal savings and presents incentives that can lead to better service delivery to the population.

Pensions

Brazil's pension system and its evolution

Brazil has a comprehensive social protection system, but spending is highly skewed to benefit the elderly through generous pension programs. Brazil prides itself for a wide array of labor market policies, an extensive social assistance net, and fairly high pension coverage. But social protection spending is heavily skewed toward older people (76 percent of the total in 2021), mostly through generous pay-as-you-go (PAYG) pension programs. Private sector workers are covered by the *Regime Geral de Previdência Social (RGPS)* and public civil servants belong to the *Regime Próprio de Previdência Social (RPPS)*. RGPS also offers unusually high noncontributory pensions, equal to the minimum wage, to rural residents and low-income urban residents. As a result, Brazil in the last decade has been allocating social protection spending like an aging OECD country.[331]

Unlike other areas of the social protection system, pension programs remain extremely fragmented and are the primary source of fiscal vulnerability for subnational governments. Unusually, in Brazil, apart from the federal RPPS regime, each subnational entity—states, the Federal District, and municipalities—was allowed, until 2019, to create its own individual RPPS. This resulted in 2,154 RPPSs insuring 8.9 million people (active civil servants, retirees, and survivors) at the three levels of government—federal, states including the Federal District, and municipalities. While the total membership of RPPS stands at only about 10 percent of RGPS coverage, its spending amounts to almost half of RGPS pension outlays, and a large share of these programs are financed by subnational governments (see table 7.1).

Table 7.1 Size of the population covered by civil servant pension regimes in 2019

Government level	Active	Retirees and Survivors	Total	Spending, % of GDP, 2018
Federal government	688,778	740,997	1,429,775	
States and Federal District	2,014,773	2,064,150	4,078,923	
Municipalities	2,521,955	925,559	3,447,514	
Total RPPS	**5,225,506**	**3,730,706**	**8,956,212**	**4.1%**
RGPS	**58,156,477**	**29,089,160[a]**	**87,245,637**	**8.6%**

a. Number of pension and survivor benefits paid in December 2019, including accident insurance.
Source: SRPPS/SPREV/ME - CADPREV, accessed on July 2019; Boletim Estatistico da Previdencia Social.

The roots of generous pension spending can be traced back to the creation of the first pension schemes, expanded with the 1988 constitution, which makes past promises harder to roll back. At a time when the number of elderly workers and pensioners was small in comparison to the large and rapidly growing workforce, financing generous pension benefits was possible with a very low social security contribution rate. Most workers were retiring in their early 50s, with a pension equaling the preretirement salary, to be continued after death in a survivor benefit in its original amount. Actuarially, the resulting benefits were much more valuable than paid

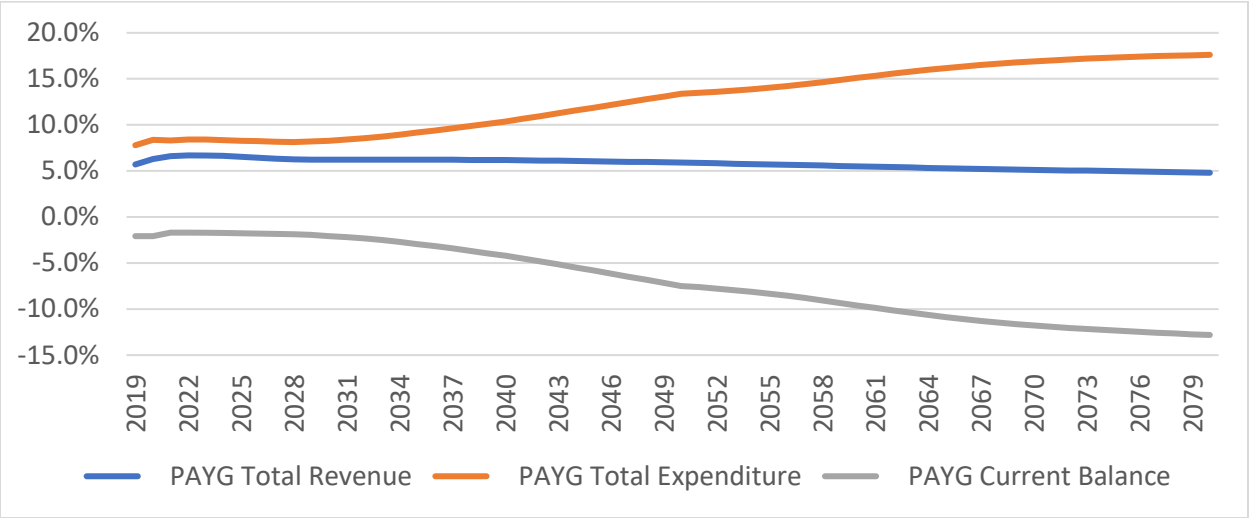
contributions and involved regressive subsidies that, with demographic ageing, became fiscally unsustainable. But these overgenerous benefits became part of collective expectations that were politically difficult to scale back. Subsequent governments also expanded the eligibility to the minimum pension, set equal to minimum wage, and initially available with just 10 years of contribution in urban areas. Even that requirement waived for rural residents. With the institution of noncontributory BPC (*Benefício de Prestação Continuada*), a minimum pension of equal amount was also extended to the urban poor.

Starting in 1998, several constitutional amendments advanced the reform agenda to put the pension system on a more fiscally sustainable footing. The 1998 amendment introduced a minimum age of retirement in the RPPS (60 and 55 for men and women, respectively). In 1999, the RGPS was also reformed with *Fator Previdenciário*, leading to a gradual decline of benefit generosity. Constitutional Amendment No. 41 of 2003 reduced RPPS benefits by changing the calculation of the wage base used to assess pension benefits but kept a nominal 100 percent replacement rate. But even such changes did not address the collective attachment to the idea that pensions should equal wages earned before retirement. Moreover, both RPPS and RGPS reforms involved decades-long transition periods and exempted important beneficiary groups, including teachers, uniformed personnel,[332] and civil servants hired before 2003.

The pension reform of 2019 made one more key step toward a more sustainable pension system. It affected both the RGPS and the federal RPPS regimes, devolving power to subnational governments to reform their own RPPS regimes within federally prescribed guidelines. Gradual increases in effective retirement ages were a cornerstone of this reform, and it mostly affected the higher income population which used to retire especially early due to their higher contribution frequency. The more lenient eligibility conditions for women were also scaled back, resulting in more equal pension access at ages 65 for men and 62 for women. Teachers, uniformed personnel, rural workers, and some other categories still retain options to retire earlier. Among other fiscally important parametric changes, survivor pension eligibility and benefits were reduced, and pension contributions were levied on RPPS pension amounts above the minimum wage.

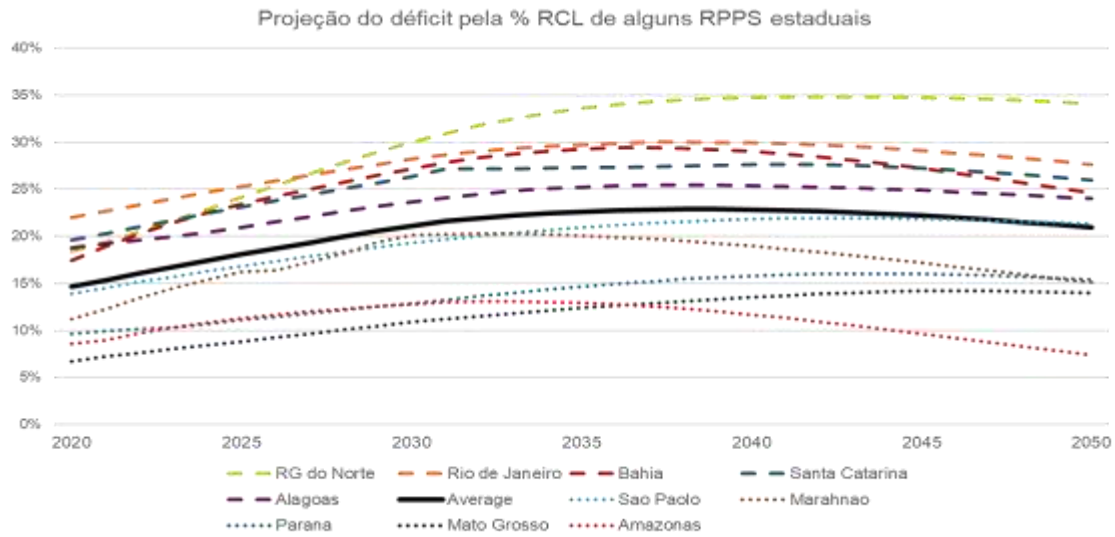
While transition periods still apply to most of the parametric changes of the 2019 reform, they have been shorter than in previous reform attempts. This stabilized the expected growth of RGPS deficits until the end of 2030s (figure 7.5). But uniformed personnel, and civil servants hired before 2003 were exempt from the reform, and teachers still retained preferential treatment in retirement eligibility conditions. This is especially relevant for the subnational RPPS fiscal situation, which is expected to deteriorate significantly for the next two decades, due to the big hiring waves in the 1980s and 90s, translating into large retiring cohorts in 2010s and 20s under generous unreformed retirement rules. Projected deficits for ten state RPPSs all point to a general trend of significant deficit increase, averaging 23 percent of state revenue by 2035 (figure 7.6).

Figure 7.5 Projected revenues, expenditures, and deficits of RGPS systems (% of state revenue)



Source: World Bank PROST projections using INSS data.

Figure 7.6 Deficit projection of RPPS systems by percentage of current net revenues, selected states



Source: World Bank projections using data provided by the state governments.

Subnational RPPS schemes need urgent reform

In the short term, the fiscal sustainability of subnational systems remains the main concern of the overall pension system. While federal 2019 pension reform mandated states to incorporate some pension policy measures, like introducing complementary pension funds and applying federal rules to subnational employed uniformed personnel, the most fiscally important reforms remained optional for subnational entities. These include retirement age increases to ages 62 and 65 for females and males respectively, revisions of survivor benefit formula and eligibility, increases in retiree contribution base, and allowances for extraordinary pension contributions. Subnational governments are, in principle, allowed to strengthen the changes in pension rule parameters beyond what was approved for the federal civil servant scheme. But so far, most of the

first-mover states have opted to copy or weaken federal civil servant reform, prioritizing political expediency. Overall, the take-up of these reforms by states has been underwhelming, possibly due to the short-term improvement to state finances in 2020 and the overwhelming urgency of the COVID-19 response. It is likely that municipal governments, with lower implementation capacity, are even further behind in the reform process.

So far, very few states have consolidated the management of pensions from all their government branches into a single RPPS management unit, as mandated by 2019 federal reform. Some implementation delays have been due to complications in integrating different IT solutions now used by separate government branches to assign and monitor benefit payments. But even the states making steps toward integration of pension sub-schemes tend to take a narrow view of the task, and rarely attempt a more ambitious integration of some human resource and pension assignment system functions, including proactive benefit audits. Recent experiences from Alagoas and Santa Catarina suggest that a pension record audit, greatly simplified by improved IT solutions, could yield substantial savings of pension spending.

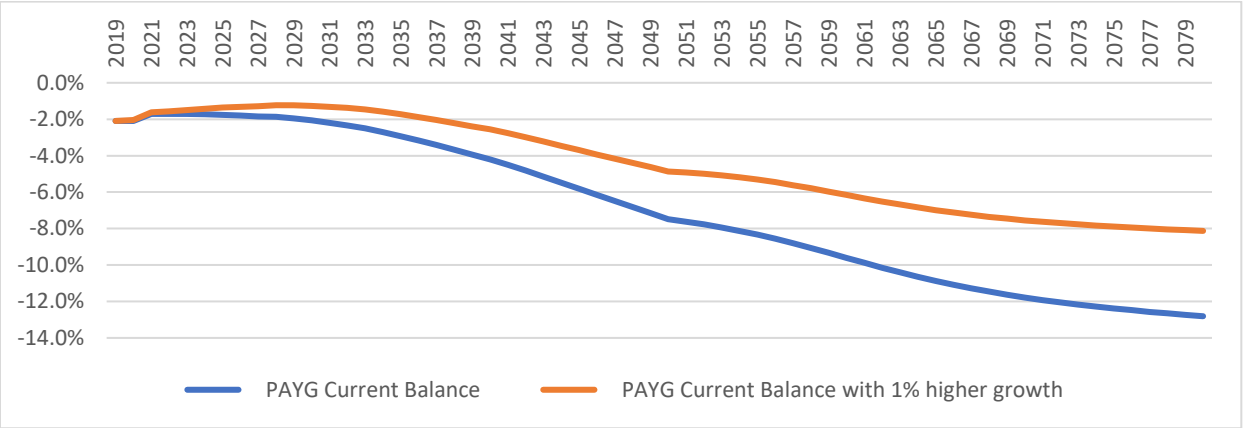
Going forward, lasting solutions would be easier to find if fiscal, human resource, governance, asset management, and pension policies were viewed as integral parts of an interdependent system. To address expected growth in pension spending in the next two decades, pension policy would benefit from reexamining the inequities left by exemptions from the 2003 reform. Some ways to devise partial claw-backs of unjustified subsidies to pre-2003 cohorts are highly progressive contribution rates, extraordinary additional contributions, and some lump sum inducements to voluntarily accept post-2003 benefit rules.

In addition, there is an urgent need for more transparency, better governance, and policymaker-friendly IT solutions throughout the system. It is neither reasonable nor efficient for all 2,154 RPPS schemes to acquire or develop their own IT systems and set up their own asset management departments. Therefore, IT and asset management services should be made available, sponsored at the federal or at least state level, that smaller RRPS schemes could use. But subnational governments cannot passively wait for that to happen. Temporary solutions are also urgently needed, including cloud-based service rentals from private IT companies, or own-developed software packages shared between cooperating RPPSs schemes. Sharing asset management services is already happening and should be further encouraged with appropriate safeguards. For example, the Sao Paulo asset management service is now used by multiple states.

Meeting challenges for RGPS schemes in the medium and long terms

The RGPS outlook is also worrying, even though much less certain. While population ageing is one of the easiest things to predict about the future, many unknowns can influence economic growth and labor market developments, making overall predictions about the fiscal trajectory of the pension system much harder (figure 7.7). For the RGPS, pension payments directly depend on an individual's wages earned while young, indexed to inflation. Meanwhile, contribution revenues of the scheme grow together with nominal wages. So, the higher the real wage growth, the higher the difference between the rates of growth of expenditures and revenues. Just a 1 percent sustained difference in real wage growth can reduce the deficit of the scheme to the order of 1.5 percent of GDP by 2042 and would continue to accumulate in the following decades (see figure 7.7). To achieve a higher growth rate of real wages and, by extension, a more sustainable pension scheme, Brazil needs to accelerate its pace of productivity growth (chapter 6).

Figure 7.7 Deficit projection of the RGPS with 1 percent versus 2 percent long term wage and GDP growth



Similarly, deficits in the scheme could be substantially influenced by changes in the contribution density of the working age population. Social security coverage in Brazil is rather high, so RGPS membership is unlikely to go up very significantly. But formalizing the economy could mean that each affiliated person contributes to the RGPS more regularly. If the number of active contributors were to go up by 10 percent, the RGPS deficit would be reduced on the order of 0.5 percent of GDP. In contrast, formal job losses from automation are one of the possible risk scenarios that could potentially reduce contribution density and RGPS revenues in the opposite direction (see chapters 3 and 4).

One more important unknown facing the RGPS outlook is related to the disability program's beneficiary growth. In the recent past, the program has experienced some worrying fluctuations in disability benefit assignments. Benefit applications denied by RGPS on medical grounds are also increasingly being successfully challenged in legal cases against the institution. In September 2021, 68 percent of new disability benefit assignments were based on court decisions rather than administrative procedures. These administrative challenges are likely to become even more significant in the coming decades, due to the gradual phase-in of substantially higher retirement ages mandated by the 2019 RGPS reform, which would almost certainly result in much higher numbers of disability benefit applications.

Even allowing for substantial uncertainty in the medium to long term, the downside risks to the RGPS fiscal outlook look greater than chances of a positive surprise. Uncertainty around economic and wage growth, possible jobs losses from automation, growth of disability program spending, the rising share of self-employed contributing through special regimes at lower rates, and the evolution of the labor force participation make forecasting the system very uncertain. So, it is likely that additional pension spending control measures will need to be phased in by 2042. Starting to plan for these measures now would allow for more gradual implementation and greater political acceptance by the population.

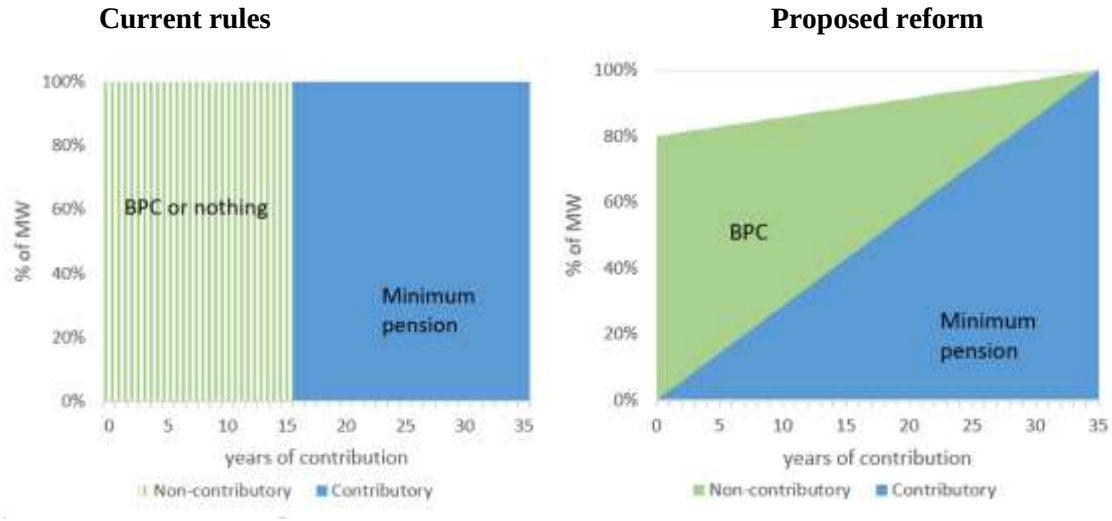
While the 2019 pension reform justifiably targeted early retirement provisions mostly benefiting higher income RGPS members, the minimum pension guarantee continues to be above international benchmarks and greatly subsidizes middle-income beneficiaries. A minimum pension that equals the minimum wage is high by international standards, since it is usually considered appropriate that those actively working for their wage should be remunerated more than those who collect the benefit and can enjoy their leisure. In 2019, 65 percent of new old

age and disability recipients were benefiting from the minimum pension guarantee, which puts them into the third and fourth quintiles of the income distribution and pays up to a 12 percent return on their contributions when the contribution period is short. The number of minimum pension guarantee recipients is expected to grow even further due to the reduced generosity of the new benefit calculation formula being gradually phased in with 2019 reform.

The social pension Benefício de Prestação Continuada, available to low-income individuals without sufficient contribution histories with the RGPS, also undermines the incentives to contribute. In this case, indexing the benefit to a minimum wage is even less justified, as BPC beneficiaries do not have any links to the formal labor market. It is not appropriate for this noncontributory benefit to equal a contributory benefit for the similar category of people. Rural pensioners, exempt from contributing to the RGPS, are in essence in the same relationship to RGPS as BPC recipients and should be treated equally.

Revising the minimum pension, BPC, and rural benefits in a unified system would generate savings for the RGPS, increase fairness of the scheme, and strengthen the incentive to contribute. One mechanism to achieve that goal, by prorating minimum contributory pension guarantee in accordance with the years of contribution, in conjunction with the elimination of the minimum contributory period (figure 7.8). And rural benefits could be absorbed into the BPC program, with the benefit amount gradually reduced in relation to the minimum pension amount. Due to political difficulties associated with approving such a reform, BPC could a second-best option also be made universal, eliminating the means test. This would reduce administrative inefficiencies, and fully eliminate remaining old age coverage gaps, while still saving an estimated 0.9 percent of GDP. Further savings could be achieved by fully eliminating retirement age differences between genders and rural versus urban populations.[333]

Figure 7.8 Reform and coordination of the minimum pension guarantee and social pensions

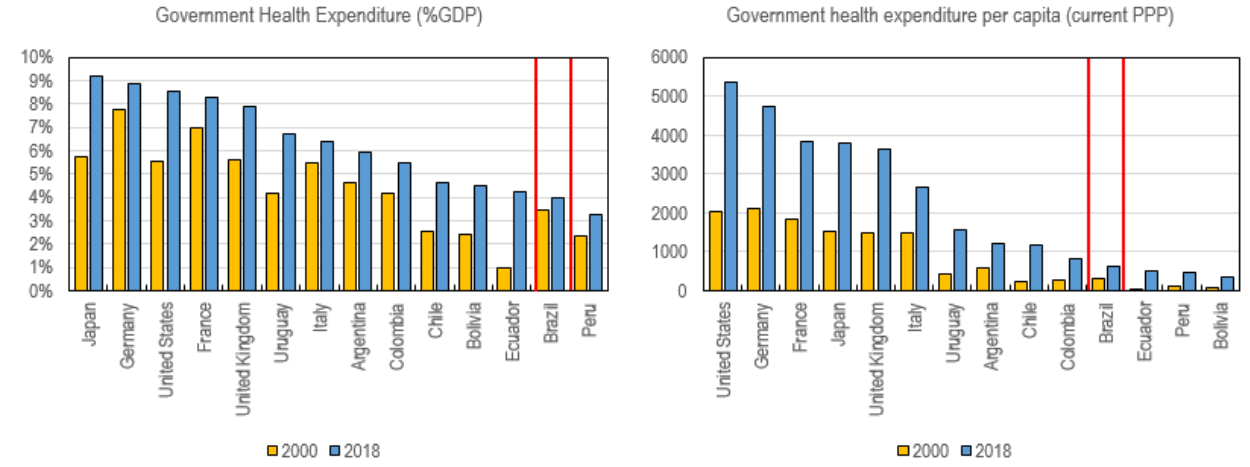


Note: The figure displays expected pension values at retirement (expressed as a percentage of the minimum wage), for a worker earning one minimum wage, according to the number of full years of contribution during their working life.
Source: Authors' elaboration.

Health

Healthcare systems face financial pressures around the world, with public and private, soaring to unprecedented shares GDP in nearly all countries. Health spending per capita has been increasing faster than GDP per capita, in both low-middle- and high-income countries. This trend raises a red flag for governments and policymakers, as it may affect the future sustainability of public healthcare systems.

Figure 7.9 Domestic general government spending (percent of GDP) and domestic general government health spending per capita, PPP (current international $)



Note: Countries are ranked in descending order of 2018 values in each panel.
Source: World Bank data.

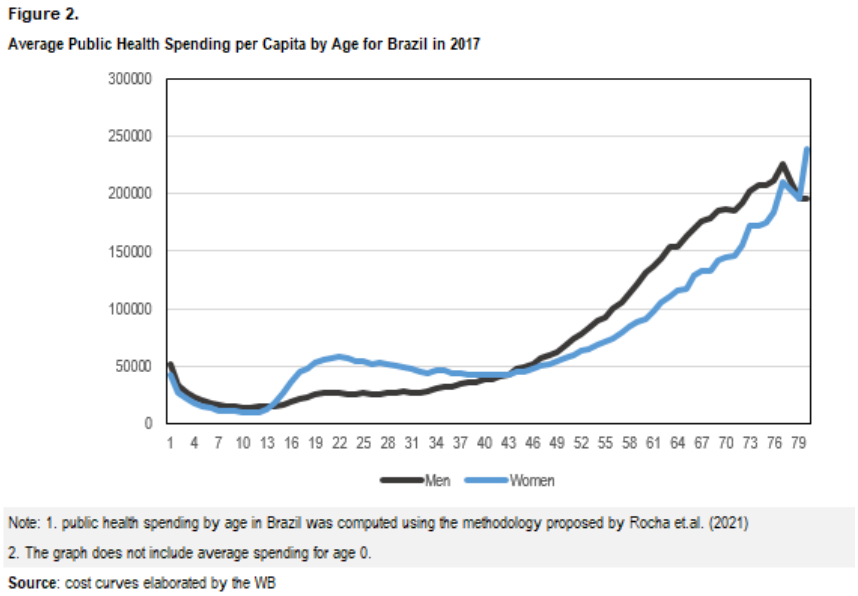
Brazil is no stranger to this process. Over the last 20 years, its public health spending was on the rise, going from 3.5 percent of GDP to 4 percent. There was also a change in real terms, with public healthcare spending increasing by 48 percent between 2007 and 2018, after discounting by IPCA inflation, while real spending per capita rose by 35 percent in the period.

A natural candidate to explain the rise in healthcare spending is population ageing. As individuals get older, they access more the health system, both by increasing the probability of contact with the system and by increasing the number of contacts.[334] Moreover, older people tend to demand more expensive health services, as the weight of curative relative to preventive services increases and the need for long-term care rises (figure 7.10). The curves in the figure are positively sloped in almost every stage, indicating a direct link between age and health expenses.

However, the impact of higher longevity on health spending greatly depends on the health status of the extra years of life. If mortality falls at the expense of a rise in morbidity, it is likely that health spending will increase with age. But if people live longer and spend those extra years in good health, there will be an increase in the number of healthy years, and spending will not necessarily go up.

In fact, a large body of research indicates that age has a minor role in explaining health spending, once proximity to death is taken into account.[335] Most of the outlay in health services is in the last year of an individual's life, as people tend to spend large amounts in emergency treatments trying to avoid death (figure 7.11). As expected, the survivors' curve has a positive slope, indicating that health expenses increase with age, but for all stages of life, health costs are much higher for individuals who are about to die.

Figure 7.10 Average public health spending per capita by age for Brazil in 2017

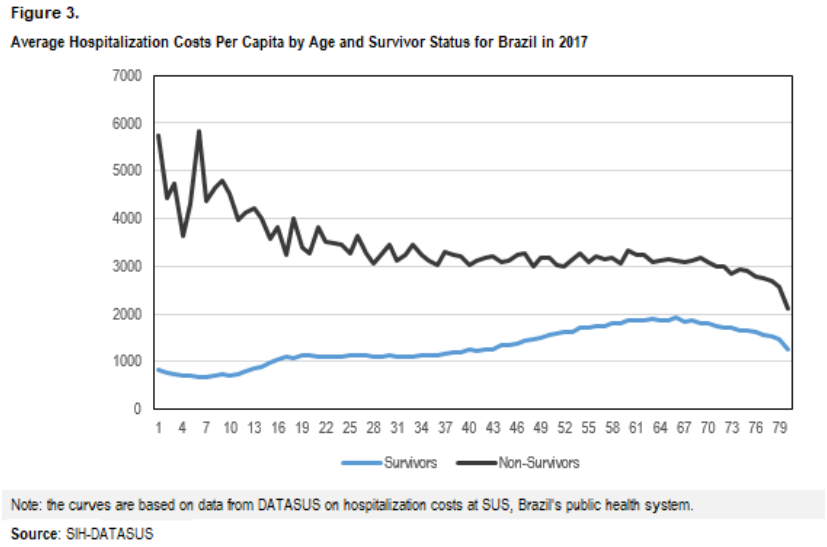


Note: 1. public health spending by age in Brazil was computed using the methodology proposed by Rocha et.al. (2021)

2. The graph does not include average spending for age 0.

Source: cost curves elaborated by the WB

Figure 7.11 Average hospitalization costs per capita by age and survivor status for Brazil in 2017



Beyond demographics are other important determinants of the evolution of health spending. For example, GDP growth tends to have a positive effect on aggregate healthcare expenses, as it boosts individual income and tax revenues.[336] And because of its labor-intensive nature, wages in the healthcare sector tend to grow faster than productivity, an effect known as Baumol's cost disease.[337] Recent evidence also points to technology as an important factor behind rising healthcare costs.[338] When medical innovations allow for treatment of previously untreatable conditions, they create demand for new healthcare services and lead to an increase in spending. Of course, if new discoveries promote a reduction in the costs of current available treatments, expenses might fall. But even cost-reducing innovations can have a positive impact on medical bills when they allow for more individuals to be treated, or lead to a more frequent search for care.

The relative importance of each of those factors on the long-term path of healthcare spending varies greatly across countries, depending on its demographic structure and institutional background. So, even though most nations today face a rising trend in public healthcare outlays, important peculiarities differentiate them.

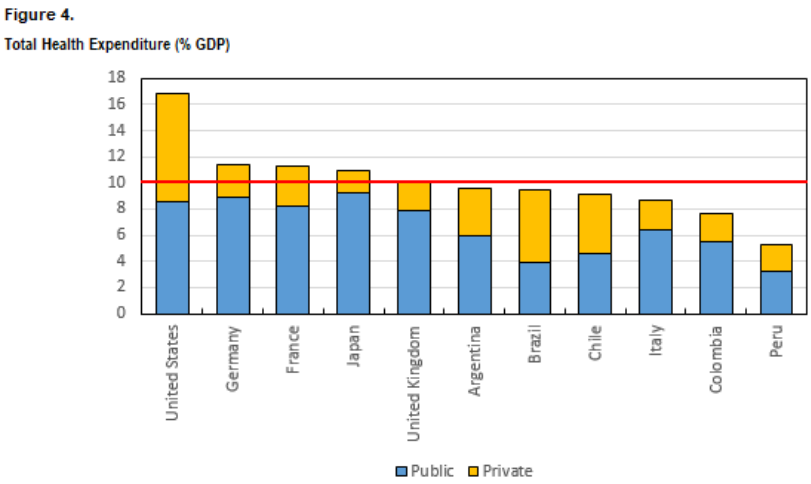
As mentioned above, public health spending in Brazil went from 3.5 to 4 percent of GDP between 2000 and 2018. Although it is not negligible, this 0.5 percentage point increase is small if compared to other countries. Over the same period, public healthcare spending as a share of GDP rose by 1.2 percentage points in France, 3 percentage points in the United States, and 3.5 percentage points in Japan. Brazil underperforms even among its Latin American peers, as the average increase in health spending per GDP was around 1.2 percentage points in Argentina, Chile, Colombia, and Peru.

Moreover, the bulk of the rise in Brazil occurred between 2014 and 2017, when public investment in healthcare went from around 3.7 to 4 percent of GDP. This timeframe coincides with a period of low, or even negative, growth rates, indicating that part of the increase in spending per GDP was actually an accounting effect caused by the reduction in output. In fact, when adjusting for IPCA inflation, real healthcare public spending shrank by almost 3 percent in the period.

Long-term analysis shows that public healthcare spending as a share of GDP is more stable in Brazil than in other nations. A possible explanation is the existence of revenue earmarks set by the constitution. Since 2000, the Brazilian constitution specifies minimum amounts of healthcare spending for all levels of government. All states and municipalities must spend at least 12 and 15 percent of its respective tax revenues on healthcare (net of transfers from other levels of government). For the federal government, several spending rules have been applied over the years, including earmarking a share of tax revenues, as for states and municipalities. But since the adoption of the "New Fiscal Regime," enacted through Constitutional Amendment 95 in December 2016, the federal government's minimum healthcare spending is equal to the amount spent in 2017, adjusted by inflation. Recently, the new Fiscal Framework approved by Congress in 2023 undid the changes implied by the previous fiscal regime meaning that mandatory health spending should be 15 percent of tax revenue. These constitutional rules create a clear connection between spending and tax revenues, which, in turn, are linked to GDP.

Although total health spending in Brazil is comparable to the OECD average, it is well below the average for those countries. While advanced economies like Germany, Italy, and the United Kingdom spent on average 7.1 percent of GDP on public healthcare in 2018, Brazil's spending was around 4 percent of GDP. Again, the situation is similar when restricting the analysis to Latin American countries, such as Argentina, Chile, Ecuador and Uruguay. Spending per capita in Brazil is around $640 annually, also lagging behind most countries in the sample, especially advanced economies, for which per capita public spending runs around an average of $4,000 annually. But a great part of the difference between Brazil and other countries seems to be compensated by the private sector. In fact, when considering the sum of private and public healthcare, Brazil is roughly on average in terms of spending per GDP (figure 7.12).

Figure 7.12 Total health spending (percent of GDP)



The red line represents the average value of Total Health Expenditure as a share of GDP in the sample

Source: World Bank Data

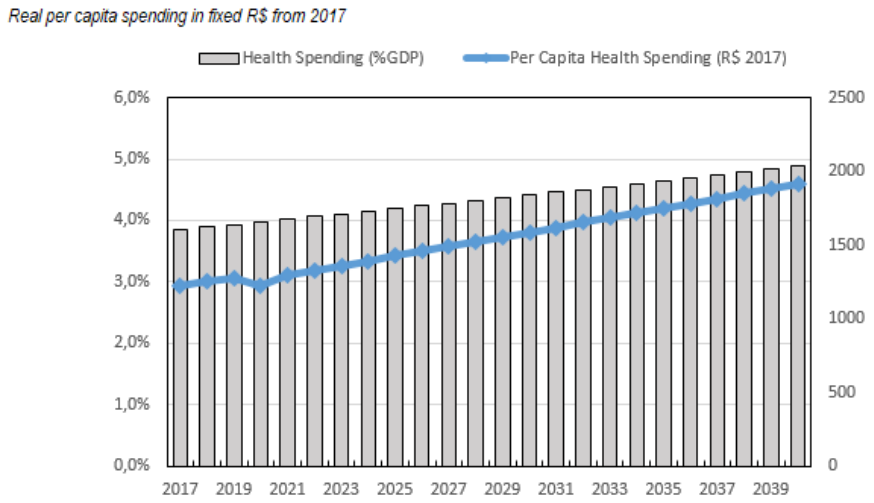
The relatively low increase in public health spending in Brazil over the last 20 years does not imply that the system will remain financially sound in the near future. True, Brazilian institutions might favor a closer link between spending and revenues, such that spending-to-GDP ratios vary little over time. But population ageing in Brazil is accelerating only in recent years, indicating that past trends might not prevail. For example, while it took 50 years for the number

of people above 65 years old to go from 3 to 5 percent of Brazil's population, this share increased from 5 to almost 10 percent over the last 20 years. And Brazil lags behind in public health spending per capita, suggesting that it will have to make greater fiscal efforts if it wants to catch up with other nations.

To understand the fiscal consequences of current long-term trends in Brazil's healthcare costs, public spending in healthcare is projected for the next 20 years. Our model separates the future path of spending among three components: demography, GDP and excess cost. The demographic component catches the effect of population ageing on total spending. The GDP component captures the influence of constitutional minimums and the income effect. And the excess cost is a residual component representing all other variables that may affect public health spending.

Fiscal projections indicate a 1 percentage point increase in public health spending as a share of GDP until 2042. Government spending on health services is expected to go from 3.9 to 4.9 percent of GDP (figure 7.13). In real terms, this represents an expansion of 75 percent in the resources directed to public health, together with a 56 percent increase in spending per capita. Converting by purchasing power parity, projection results show that health spending per capita in Brazil will reach almost $1,000 by 2042, around a quarter of the current average for Germany, Italy and the United Kingdom. Even Argentina and Chile now have higher investment per capita than Brazil will have 20 years from now.

Figure 7.13 Projections for public health spending in Brazil

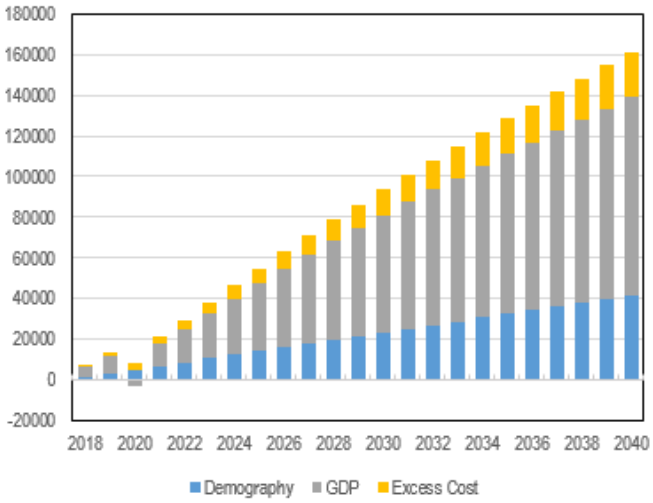


Note: Public health spending as a share of GDP depicted in the right axis. Public health spending per capita depicted in the secondary axis.
Source: Projections elaborated by the World Bank.

The projected growth in spending is mostly due to GDP growth and demographics. The increase in GDP is responsible for more than half of the variation in public health expenditure, while changes in population structure explain about one quarter (figure 7.14). A strong influence of GDP growth in expenditure growth was expected, given Brazilian fiscal rules. Since the federal constitution stipulates a minimum share of tax revenues to be spent on healthcare in subnational governments, it is natural that GDP growth leads to growth in health spending, since the minimum spending will also increase. And the important role of demography was also predictable. By 2042,

the share of individuals above the age of 65 in the Brazilian population is expected to increase from 10 to 17 percent, boosting the financing needs of the health sector.

Figure 7.14 Decomposition of projected variation in health spending (2017 R$ millions)

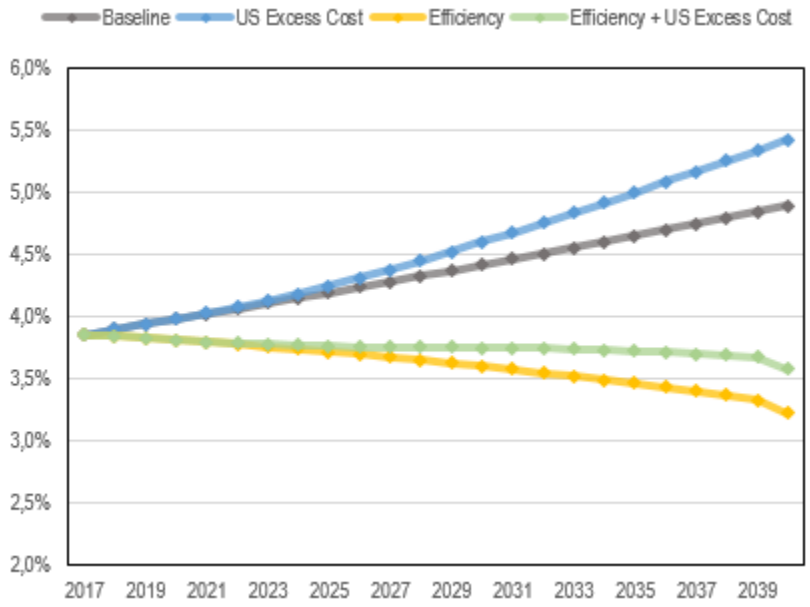


Source: Projections elaborated by the World Bank.

Excess cost growth seems to play a minor role. This residual component is responsible for only 16 percent of the overall variation in public health resources. This reflects historical patterns. The average annual growth rate of excess cost between 2007 and 2017 was 0.37 percent, indicating that GDP and demography explained almost the entire variation in public health spending in the period. So, other aspects such as technology and the Baumol effect, which are key to understand the behavior of healthcare costs in most advanced economies, do not have a substantial participation in the Brazilian case.

If excess cost in Brazil grew at the same rate as in the United States, public healthcare spending would reach 5.4 percent of GDP by 2042. Developed economies tend to have higher rates of excess cost growth. For example, when projecting health expenses in the United States, the Congressional Budget Office (2017) assumed excess cost growth would converge to a 1 percent annual rate. It is not hard to expect excess cost growth to increase in Brazil as the country develops. So, the analysis assumes an alternative scenario where excess cost growth reaches an annual rate of 1 percent in 2028 and stays at this pace until the end of the simulation. The result is a stronger increase in public health spending (figure 7.15). But even with this extra boost on health costs, Brazil would still be below the current public spending as a share of GDP for most advanced economies.

Figure 7.15 Projections for public health spending in Brazil under different scenarios



Source: Projections elaborated by the World Bank.

If Brazil were more efficient, it could save resources and still provide the same quality of public healthcare services. Using a cross-country Data Envelopment Analysis, the World Bank (2017) estimated that Brazil could improve health outcomes by 9 percentage points using the same amount of funding. Alternatively, it could offer the same level of services using 34 percent less resources. Based on these results, our model checks what would happen to the baseline scenario if Brazil gradually increased efficiency, reaching 100 percent in 2042 (box 7.2). As the yellow line in figure 7.14 shows, public health spending as a share of GDP would fall approximately 0.6 percentage points, despite population ageing, reaching 3.2 percent at the end of the period. The efficiency gains are so significant that, even assuming a convergence to 1 percent annual excess cost growth, public health spending as a share of GDP would still fall.

Box 7.2 Sources of inefficiency and possible reforms for the health sector in Brazil

In a 2017 report, the Word Bank identified several sources of inefficiency in the provision of public healthcare in Brazil.[1] One of the main sources of inefficiency is the large number of small hospitals in the public health system. These hospitals operate at a small scale, with low volume of services and often with large idle capacity. Future reforms should focus on reducing the number of small hospitals to better balance the access and volume of services.

There is also a need to increase integration and coordination in the healthcare system, avoiding duplication and competition for resources between the public and private sectors. The Brazilian system does not stimulate integration of care across providers and levels (primary and hospital care, for example). And the scarcity of health professionals in remote and poorer areas results in the need to incentivize task-shifting among health care workers. For example, nurses could do many basic procedures, which are currently performed by doctors, who are more costly.

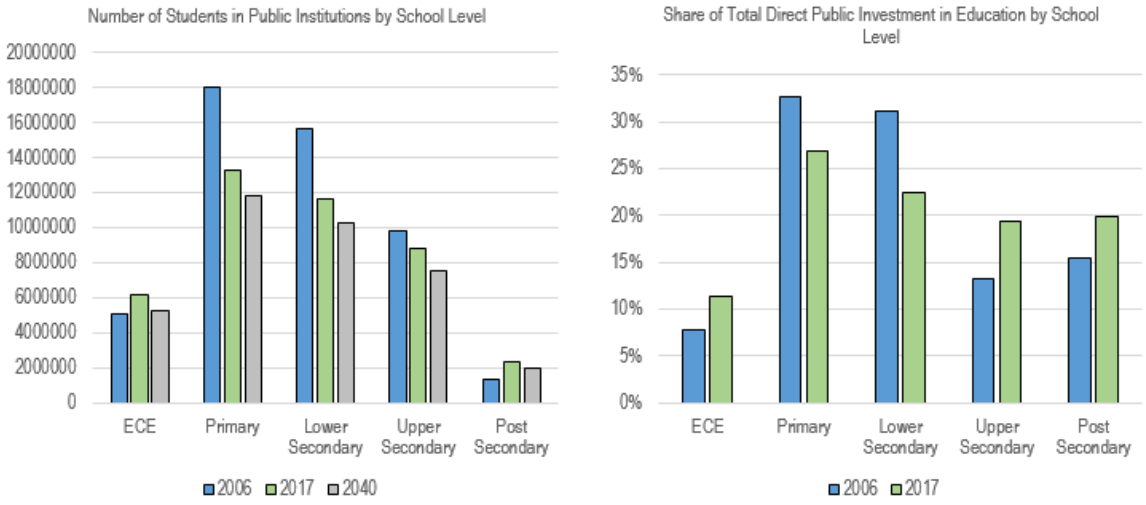
Skilled health workers are also scarce, have relatively high wages, and show low productivity. Significant productivity gains can be achieved by increasing the number of consultations per doctor by adopting better working practices and introducing incentives in health service delivery. There is also scope to reform the way health providers are paid, introducing incentives to improve service quality and increase productivity.

1. World Bank 2017.

Education

As Brazil's demographics reach the "adults bulge" in 2042, the number of children is set to fall, with important consequences for public education spending. While 52 percent of the Brazilian population was between 0 and 19 years old in 1950, this share fell to 28 percent in 2020 and is expected to reach 22 percent in 2042. In absolute terms, this will represent a 13 percent decline in the young population over the next 20 years. In a sufficiently flexible environment, these demographic shifts should have an impact on education spending and enrollments. For instance, recent estimates predict education spending as a share of GDP to fall for most advanced economies in the upcoming decades.[339] In Brazil, the number of students has been falling in the last 15 years, except for early child and higher education, which saw significant increases in coverage. In response, the composition of education spending is also changing, with growing importance of early child, upper secondary and postsecondary education in the government's budget (figure 7.16).

Figure 7.16 Number of students in public institutions and share of total direct public investment in education, by school level



Projections for the number of students by school level in 2040 assume fixed coverage rates at 2017 values

Note: Figure shows changes only due to demographic effect, does not include likely changes in coverage.
Source: Authors' computations based on IBGE and INEP data.

However, the constitutionally mandated minimum spending on education is more relevant than demographics to explain Brazil's baseline expenditure trajectory in the next two decades. The constitution stipulates that states and municipalities have to spend at least 25 percent of their revenues from taxes and transfers on education, while the federal government was required to spend at least 18 percent. After the approval of the "Teto Rule" in 2016, the federal minimum changed, and is now equal to the amount spent in 2017 adjusted for inflation – which was reverted back to the former constitutional mandates by the new Fiscal Framework approved in 2023. Although these fiscal rules have helped to increase investment in education over the last decades, they are also a source of inefficiency. The constitutional earmarks are highly procyclical, forcing governments to increase education spending in times of economic expansion, without previous planning or a focus on results.[340] They also imply a strong rigidity to the government's budget,

hampering any possible downward adjustment in spending below constitutional minimums, even with demographic changes.[341]

Brazil's spending per student lags behind wealthier economies in absolute values, but not when considered as a share of its lower GDP per capita. Converting values using PPPs, Brazil spent US$4,661 per student on public institutions in 2017, less than half the OECD average of about PPP$10,000 (figure 7.17). But when computing spending per student relative to GDP per capita, Brazil performed better than any other country in the OECD sample (figure 7.18). Given the budget constraint, Brazil devotes significant resources to education. It is also important to recall that, across schools within Brazil, there is only a tenuous relationship between per-student expenditure and student learning:[342] increasing expenditure without addressing the major organizational and institutional challenges described in chapter 4 is unlikely to yield quality improvements.[343]

Figure 7.17 Public expenditure on public educational institutions per full-time equivalent student, divided by GDP per capita

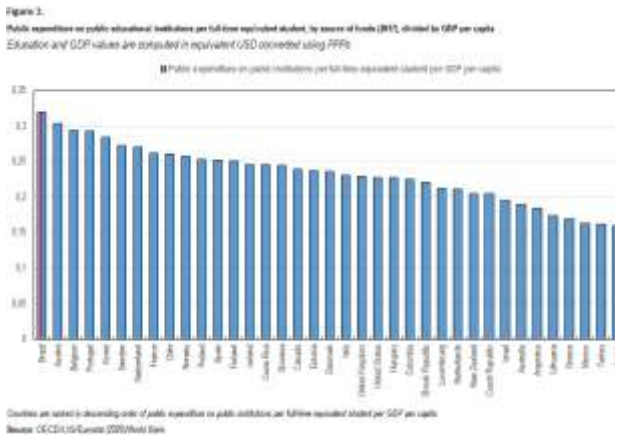
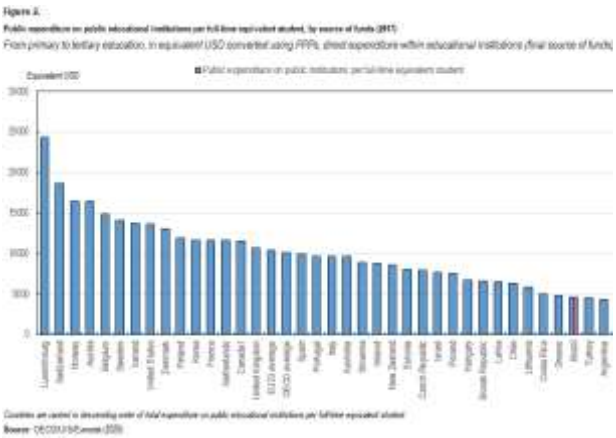


Figure 7.18 Public expenditure on public educational institutions per full-time equivalent student



Public spending on education increased as a share of GDP in recent years, despite a reduction in the number of students in the system. Since 2006, the total number of students enrolled in Brazilian public institutions fell by 15 percent due to demographic changes and migration to private schools.[344] But direct public investment in education, as measured by INEP, went from 3.9 to 5.2 percent of GDP, making real investment per student almost triple in the period**.** The bulk of the variation was between 2006 and 2011.[345] After that, this index increased only 0.15 percentage points through 2017, the last year in our sample.

Population ageing opens a window of opportunity for Brazil to improve educational outcomes without putting too much pressure on the government budget. But with several alternatives in the hands of Brazilian policymakers, it is important to understand how each of them will affect the budget in order to optimize future education policies.

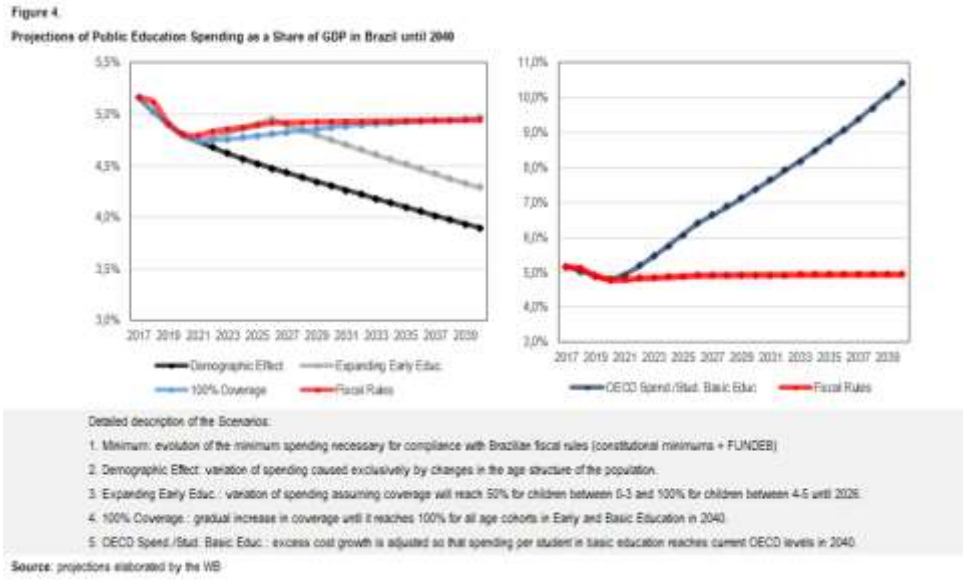
The next 20 years

This chapter presents a baseline projection of spending in education as a share of GDP for the next 20 years, and compares different scenarios under different policy choices.[346] The baseline scenario projects the evolution of public education spending dictated only by the country's formal fiscal rules and without changing enrollment rates. Alternative scenarios allow identifying

tradeoffs deriving from the combination of demographic change, existing expenditure rigidities, and the policies to alter enrollment rates or per student spending. Of course, these do not represent the full array of public choices for Brazil's diverse education system.

In the baseline scenario, public education spending stabilizes at around 4.9 percent of GDP. As spending converges to the minimum mandated by the constitution, its participation on GDP tends to become steady, the red line in figure 7.19. The positive variation until 2026 is a short-term consequence of the increase in federal spending brought by the new FUNDEB. In this scenario, keeping current enrollment rates constant, the demographic transition is projected to double per student spending in Brazil by 2042 (figure 7.19). This is because the number of students would fall, while fiscal rules would hamper a downward adjustment in aggregate spending.

Figure 7.19 Projections of Public Education Spending as a Share of GDP in Brazil until 2042



If demography were the only driver of education spending, the expected reduction in the young population would lead to a 24 percent fall in aggregate spending as a share of GDP. Education spending per GDP would fall by almost 1.3 percentage points, reaching 3.9 percent (the dark line in the first graph of figure 7.19), below the constitutional minimum. This result shows that, if the fiscal rules remain in place, Brazil will have to choose between increasing spending per student and increasing the number of students by raising coverage rates. These two options are the focus of the remaining scenarios.

Increasing coverage

Brazil could greatly increase coverage in early education and still be below minimum levels of spending. The grey line in figure 7.19 shows the evolution of public education spending resulting from a policy that, over the next five years, elevates enrollment rates from 63 to 100 percent for children between 4-5 years old, while increasing coverage from 21 to 50 percent among children from 0 to 3. Projections show that spending per GDP would grow sharply while enrollment rates are increasing, but would return to its falling trend as soon as those rates stabilize. In fact, spending per GDP would cross the red line and go below minimum levels already in 2028, two years after coverage stops increasing. In a sense, this scenario is simply a consolidation of ongoing trends. Going back to figure 7.16, the share of the education budget destined to early

childhood education has been growing over the years, together with the number of students, despite a reduction in the number of children between 0 and 5 years old. So, there seems to be fiscal space for Brazil to be even more aggressive in its policies focused on that level of education.

If Brazil increases coverage to 100 percent, from pre-school to upper secondary education until 2042, education spending as a share of GDP would grow almost at the same rate as the minimum level of spending. Closely following the path of the minimum line, this result demonstrates the extent of the opportunity brought by demographic change (the light blue line in figure 7.20). With virtually the same level of spending per GDP, Brazil can put all its citizens from 0 to 18 years old in public schools, keeping investment per student fixed in proportion to GDP. This scenario assumes that increasing coverage would not have increasing marginal costs, which may be a strong assumption if reaching the hard-to-enroll children proves increasingly costly.

Figure 7.20 Number of students by level of education for different scenarios

(millions)

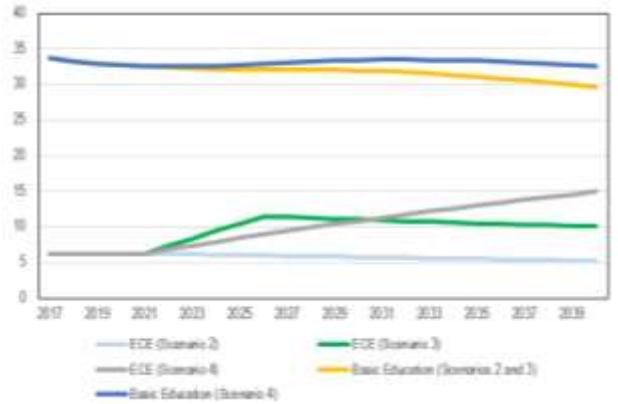
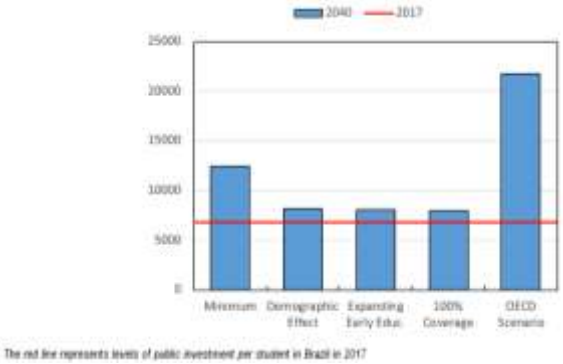


Figure 7.21 Scenarios of public spending per student in 2042



Increasing spending

The projections also suggest that it is not realistic to expect Brazil to match average spending in high-income economies by 2042. The dark blue line in figure 7.19 shows projections for public education spending per GDP in Brazil in a scenario where the country achieves 2017 OECD levels of public investment per student in basic education by 2042. This would require spending per student to roughly triple in 20 years, reaching 10.4 percent of GDP, which is extremely high in relation to other economies.

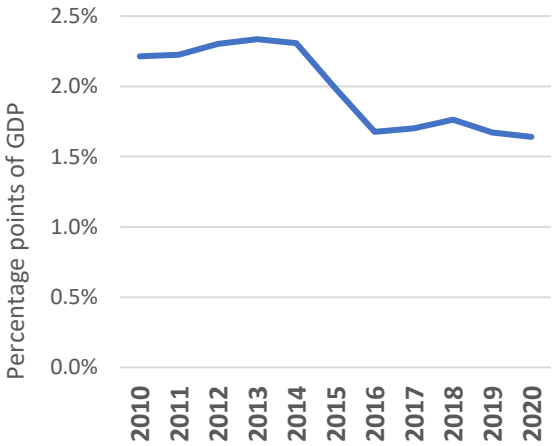
Instead, as discussed in chapter 4, the efficiency of public education spending would have extensive margin for improvement to help Brazil converge with the OECD. Using a DEA analysis to compare IDEB performance across Brazilian municipalities, the World Bank (2017) estimated that, if the country achieved maximum efficiency, it could spend 38 percent less in education and still obtain the same quality of service. Conversely, it could increase its IDEB performance by 40 percent using the same amount of resources than it does today. Among the sources of inefficiency are the bad allocation of spending across Brazil's macro regions, an excessive number of teachers, and pervasive incentives generated by the constitutional earmarks.[347]

Infrastructure

Brazil invests too little in infrastructure. Infrastructure spending has fallen dramatically over the years, from about 4.8 percent of GDP in the 1980s, to just over 2 percent in the 2010s, and to only 1.6 percent in 2020 (Figure 7.22). Brazilian public investment is no longer sufficient to replace depreciating capital, let alone expand the infrastructure stock. World Bank (2022a) pegs the gap just to meet the Sustainable Development Goals (SDGs) at 3.7 percent per year, up to 2030. World bank (2022) estimates another 0.8 percent up to 2030 (or 1.2 percent up to 2050) for adequate spending on climate mitigation and adaptation (chapter 3). The largest needs for investments are in the transport sector (Figure 7.23). Infrastructure investment is important for inclusion (chapter 2), competitiveness (chapter 6), and infrastructure can also support economic growth through significant fiscal multipliers.[14]

Figure 7.22 Brazil's total infrastructure spending

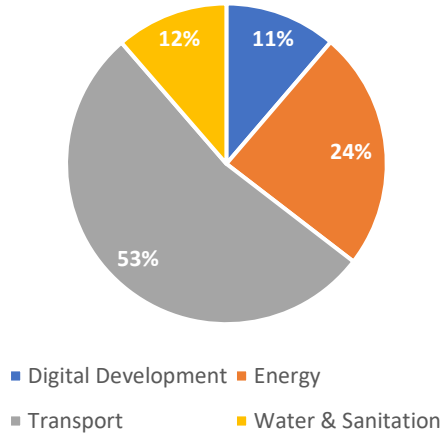
(percent of GDP)



Source: World Bank (2022a).

Figure 7.23 Brazil's infrastructure gap

(by sector, percent of total)



Source: World Bank (2022a).

Over the next 20 years Brazil could benefit from reprioritizing its budget to better support infrastructure. World Bank (2022a) identifies the urgent need to meet the minimum requirements implied by the SDGs and Brazil's climate commitments for mitigation and adaptation under the Paris Agreement. More will be needed for Brazil to meet its aspirations to become a high-income country. Strengthening the maintenance of existing roads is critical and, since maintenance tends to be cheaper than new investments, could result in significant fiscal savings in the longer term. In addition, there is room for significant expansion of rail and waterways.

A comprehensive infrastructure governance strategy could underlie a stronger emphasis on infrastructure spending.[15] Brazil has one of the strongest public-private investment frameworks among Latin American countries that could prove a major boon as Brazil steps up its infrastructure priorities. Progress was recently made on updating Brazil's public infrastructure management system[348] but there are still significant gaps especially at the subnational level, with high variance

[14] World Bank (2022a
[15] World Bank (2022a)

in quality across Brazil's states and municipalities. This will require significant investments in capacity building to support infrastructure planning and implementation at the subnational level.

Annex 7.1 Methodology for projecting public healthcare spending

In our long-term projections for public healthcare spending, we took the approach presented in U.S. Congressional Budget Office (2007) and adapted it to Brazilian institutions using the methods from Rocha et al. (2020). The model disaggregates the growth of healthcare spending among three major components: demography, GDP and excess cost growth. While the demographic component captures the influence of changes in population size and composition on total spending, the GDP component controls for inflation and income effects. Then, excess cost growth is simply the amount of spending growth that is attributable to factors other than demographics and GDP. The model is summarized in the following equation

$$\frac{HS_t^{pc}}{HS_{t-1}^{pc}} = \frac{AI_t}{AI_{t-1}} \times \frac{GDP_t^{pc}}{GDP_{t-1}^{pc}} \times (1 + X_t)$$

where $HS_t^{ps}$is per capita public health spending and GDP_t^{pc} is GDP per capita in year t. The first term in the right-hand side is an age-index that catches the effect of population change. Finally, the residual X_t represents excess cost growth, which can be interpreted as the increase in health care spending for an average individual relative to the growth of per capita GDP.[349] The age index is equal to

$$AI_t = \frac{\sum_i P_{i,j,t} s_{i,j,b}}{P_t}$$

where P_t is total population in year t; $P_{i,t}$ is total population of age cohort i, surviving status j and time t; and $s_{i,j,b}$ is average spending per individual in age-cohort i and surviving status j in a base year b.

An important remark about these equations is that population groups are divided not only by age cohorts, i, but also by surviving status, j. An individual's surviving status at a given year can be either "survivor" or "deceased", depending on weather he survived to the next year or not. This distinction is key, because data shows that an important part of health care spending through the life cycle occurs in the last year of a person's life. Hence, not accounting for the "costs of death" may weak our analysis.

Past values of excess cost growth are not observable in the data. Hence, we compute it as a residual using

$$X_t = \frac{HS_t}{HS_{t-1}} \times \frac{GDP_{t-1}}{GDP_t} \times \frac{AI_{t-1}}{AI_t} - 1$$

Based on this past values, we can create scenarios for future excess cost growth and project total health spending using the other equations above.

Annex 7.2 Methodology for projecting public education spending

Table A7.2.1 Summary of projection scenarios for public spending on education

Scenario	Description	Policy Variables		
		Financing Rules	Coverage	Spending/Stud.
1 - Baseline	Assumes that all levels of government spend exactly what is needed to comply with constitutional minimums.	Constitutional earmarks are maintained. Spending is exactly the constitutional minimum.	.Fixed at 2017 levels	Varies according to what happens with aggregate spending (exactly the minimum) and demography (exogenous projections).
2 - Demographic Effect	Counterfactual analysis to study what would happen with aggregate spending if it were allowed to adjust to demographic changes.	Constitutional earmarks are removed.	Fixed at 2017 levels.	Grows at the same rate as GDP
3 - Increase coverage in ECE	Same as scenario 2, but with na increase in coverage of pre primary to credible targets.	Constitutional earmarks are removed.	Increases in ECE over the first five years: from 33 to 50 percent in childcare, and from 63 to 95 percent in pre-school. Fixed at 2017 values for remaining school levels.	Grows at the same rate as GDP
4 - 100 percent Coverage	Same as scenario 2, but with coverage increasing to 100 percent for all levels of early and basic education until 2042.	Constitutional earmarks are removed.	Increases smoothly to 100 percent for all levels of basic education until 2042.	Grows at the same rate as GDP
5 - OECD Spending per Student	Same as scenario 2, but increasing spending per student to OECD values in all levels of ECE + Basic Education.	Constitutional earmarks are removed.	Fixed at 2017 levels.	Increases smoothly until it reaches the average of OECD in 2042

When projecting public investment on education, we built a baseline where the evolution of spending is dictated only by Brazil's formal fiscal rules. We compare this baseline with alternative scenarios accounting for different policy options. This way, we can check whether a specific policy will generate enough aggregate spending to comply with the minimums required by current institutional arrangements. Table 1 summarizes our scenarios.

The minimum spending scenario accounts for constitutional minimums and the new FUNDEB. We assume that the general government spends exactly the minimum necessary to comply with

fiscal rules. If this were true, spending at state-level and municipal-level would grow each year at the same rate as GDP, since there would be a GDP-Revenue-Spending parity. For the federal government, we need to recognize the consequences of the recent reform in FUNDEB, a fund designed to redistribute tax revenues among different levels of government. Before the reform, the Union had to make an extra contribution to the fund every year, increasing its value by 10 percent. After 2020, this amount will increase gradually until it reaches 23 percent of the fund's initial value. Moreover, the so-called "New FUNDEB" is outside the scope of the Teto Rule, designed to limit the growth of federal spending. So, when projecting the minimum level of education expenditures, we assume that federal spending will be equal to the constitutional minimum plus the annual increase in FUNDEB contributions.

To build the remaining projections, we used an adaptation of the CBO (2007) model, originally applied to project health spending for the US economy. The model separates the future path of spending between three components: demography, GDP and excess cost. The demographic component captures the effect of population ageing on total spending; the GDP component captures the influence of constitutional minimums and the income elasticity of demand for education; there is also a residual component representing all other variables that may affect public education spending. This residual is used to increase investment per student in the simulations. Formally, we have

$$\frac{ES_t^{ps}}{ES_{t-1}^{ps}} = \frac{AI_t}{AI_{t-1}} \times \frac{GDP_t^{pc}}{GDP_{t-1}^{pc}} \times (1 + X_t)$$

where ES_t^{ps} is the total public spending in education in time t divided by the number of students enrolled in public education in time t; AI_t is an age-index that catches the effect of population change; GDP_t^{pc} is GDP per capita; and X_t is excess cost growth. The age index is equal to

$$AI_t = \frac{\sum_i N_{i,t} s_{i,b}}{N_t}$$

N_t is the total number of students enrolled in public education and time t; $N_{i,t}$ is the total number of students in age-cohort i and time t; and $s_{i,t}$ is spending per student in age-cohort i in a base year b. For establishing future values of $N_{i,t}$ and N_t we use

$$N_{i,t} = P_{i,t}\theta_{i,t}$$

$$N_t = \sum_i N_{i,t}$$

where $P_{i,t}$ is total population of age cohort i in time t and $\theta_{i,t}$ is the share of individuals from age cohort i enrolled in public education.

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Chapter 8 Building an inclusive social contract

Social drivers of change

Previous chapters in this report have discussed policies to make Brazil more inclusive and productive. Implementation, however, depends on political economy factors. Experts in government, academia, and civil society have been examining how the Brazilian state could better respond to citizen demands and contribute to a fairer society for a long time. Many policies have been suggested, including numerous suggestions to overhaul the country's education system (chapter 5), detailed tax reform proposals circulating in the country for decades (chapters 6 and 7), and persistent calls for fairer and more effective distributive policies (chapter 7). Over 60 percent of Brazilians also want to protect Brazil's natural lands from deforestation,[350] and many solutions to deforestation have been tried and tested (chapter 6). Brazil's chronic underspending on infrastructure, and the poor quality of this spending, is well understood (World Bank, 2022). Many reforms have long been advocated by experts on various sides of the political spectrum—and were picked up in earlier chapters. From a political economy perspective, the question becomes: Why are social groups seemingly unable to work together to push through such reforms? Or, as Marcos Mendes asked (Mendes, 2019): Why is it so difficult to pursue economic reforms in Brazil?

Reforms do happen. Yet despite the success of some well-known government programs over the past decades, much public spending goes into systems that deliver poor returns to society. For example, there is no correlation between levels of healthcare spending in the country and the quality of services.[351] And the automatic increases in education spending have not improved learning outcomes, even though governance and technical reforms in the state of Ceará could accelerate learning without higher spending (chapter 4).[352] In the social protection field, new programs targeted to the very poor (such as Bolsa Família) became a global reference for the quality of their technical design and implementation, but little of this technical knowhow could be applied to innovate legacy labor benefits (accruing to the middle class), which rely on antiquated targeting methods (chapter 5).

To explain Brazil's policy outcomes, the chapter analyzes the quality and dynamics of the social contract.[353] Political leaders do face pressure to respond to citizens' demands, but the results are often short-term focused. Political economy analysis often focuses on identifying the important stakeholders (elites, political actors, pressure groups), formal and informal institutions, and how their interests, incentives and interactions lead to a certain equilibrium (which can also be understood as a given political settlement). A social contract lens, applied in this chapter, centers the discussion more on citizens' relation with the state, and the resulting accountability of the political class. The social contract framework applied in this chapter highlights how citizens form expectations regarding development outcomes, and the mechanisms through which they can mobilize and collaborate to influence the state's policies. By focusing on how social trust affects patterns of government responsiveness, this chapter explores some of the reasons why successive Brazilian governments have had so much difficulty in undertaking reforms that would—in theory—benefit the vast majority of their constituents in the long run.

The focus on the social contract goes beyond the analysis of formal institutions and contributes to the debate on how patterns of state-society relations shape long-term development trajectories.[354] Much of this debate has centered around issues relating to fiscal policy and income redistribution. Samuel Pessôa has prominently argued that the 1988 Constitution reflects a preference of the Brazilian median voter for a large role for the state in

setting up employment insurance schemes and income redistribution programs.[355] However, others have pointed out that, despite consistent support for income redistribution by voters, a large share of government spending is still not directed at policies that benefit the poorest.[356] This suggests that Brazil's social contract has not produced an effective consensus toward reducing inequality, despite the aspirations of the constitution. To account for such apparent contradictions, this chapter broadens the focus of the debate on the social contract to go beyond formal constitutional norms and to encompass state-society relations and how they shape government responsiveness.

Among several aspects of state-society interaction in Brazil, three appear central to improving the way successive governments respond to citizen demands. First, political promises in recent times have often focused on levels of government spending, with somewhat less focus on reforming institutional design and implementation mechanisms, including the incentives to increase the quality of policies by implementing stakeholders. Second, politicians often focus on short-term benefits for individuals and better organized groups, rather than on long-term investments in public goods and complex reforms that take years to mature (chapter 1).[357] Third, politicians have been too reluctant to challenge the power of well-positioned interest groups that can easily capture large chunks of public spending (see, e.g. World Bank 2022), and often belong to the institutions that require renewal to yield better results. The result is that politicians have only a narrow set of policy choices to respond to pressures from citizens, and they do so in ways that exacerbate social, economic, and political inequalities in Brazilian society.

Brazil's fragmented social contract—and trust

Low levels of social trust act as a key impediment to the well-functioning of the country's social contract. Brazilians who exhibit lower levels of interpersonal trust are more likely to demand redistribution in the form of private goods and less willing to demand public goods. The data further suggest that Brazilians' preferences about government policy are correlated with their willingness to trust individuals outside their immediate social group—such as their families, friends, and neighbors—with those individuals that only trust members of their in-group being more likely to demand government redistribution in the form of private goods and less likely to prefer that public money be invested in the provision of public goods.

Individuals who exhibit more trust in those outside their immediate social group tend to prefer the government to focus on the provision of public goods. These results are consistent with political economy models showing that promises to deliver public goods are less credible in environments in which voters face high collective action costs.[358] This is one of the key reasons Brazilian governments so often respond to citizen demands through inefficient forms of spending that are unproductive in the long run: promises to make investments that would benefit the country as a whole are not as credible as promises to benefit specific individuals or well-positioned social groups.

Social trust also affects Brazilians' perceptions of the future in ways crucial for long-term policy planning. Trust not only affects the credibility of promises to deliver public goods, but also shapes citizens' expectations and the ways in which they decide to plan for the future. Both when discussing their personal finances and when thinking about whether the government should focus on the present or in the future, Brazilians who have lower levels of social trust in general and who do not trust those outside their immediate social groups are more likely to focus on the present. The poor especially have limited social capital and thus interpersonal trust. This previously unknown mechanism connecting social trust to voters' preferences helps to understand the political

reasoning behind government policy choices that can generate short-term benefits but that, in the long-term, represent a high cost to society. Many of the needed structural reforms for the future will benefit from higher participation and voice of the poor and the vulnerable, in order to sustain trust in the reforms.

The rest of this chapter is in three parts. The next section presents a broad description of Brazil's social contract, based on analysis of relevant statistical databases, including the Gallup World Poll, the World Bank's Institutional Assessment for Brazil,[359] and the Armed Conflict Location & Event Data (ACLED) Project. It zeroes in on the problem of government responsiveness to citizens' demands and uses public opinion data to show how the citizen-state bargain is at the root of many inefficient policy choices that have hampered effective governance in Brazil over the last decades. The following section deals with the political economy of reforms and provides an in-depth discussion of the conditions under which transformative reforms are possible in Brazil's fragmented social contract. It makes use of a novel netnography dataset derived from millions of data points representing online interactions during public debates about two key reforms in Brazil over the last years: pension reform and the creation of the new Basic Education Development Fund (FUNDEB). The final section focuses on how government and civil society actors can contribute to the process of building a fairer social contract for Brazil over the next two decades.

Contested legitimacy and growing discontent with Brazil's social contract

An important characteristic of social contracts is whether they meet citizen expectations. This chapter uses the social contract assessment framework to investigate whether Brazilians are satisfied with their current social contract and, if not, what are the apparent sources of misalignment between their expectations and their perceptions of the current social outcomes (box 8.1). Measures of a social contract's legitimacy included citizens expressed opinions through perception surveys as well as such observed behaviors as civil disobedience and protests. These data sources can also indicate the specific source of discontentment. As citizen expectations and preferences change over time, it is normal for misalignments to appear and be resolved through renegotiations of the social contract. However, when social outcomes such as service delivery, fairness, and inclusiveness are not meeting citizen aspirations, this can lead to a gradual rejection of the state and potentially to social unrest.

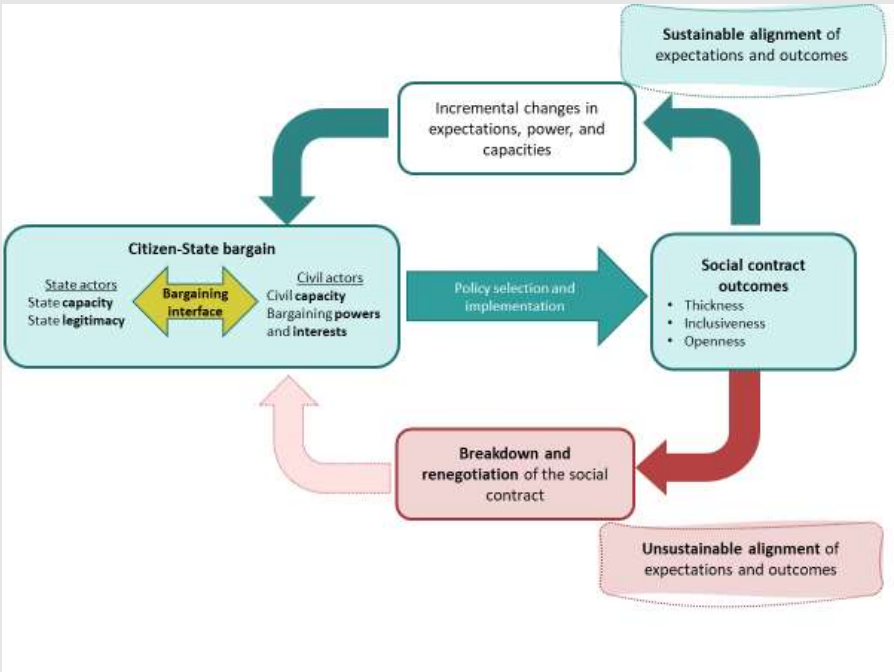
Box 8.1 The social contract assessment framework

The social contract assessment in this chapter is based on a framework developed in World Bank (2021), which defines social contracts as "dynamic agreements between state and society on their mutual roles and responsibilities." The framework focuses on three dimensions:

- The Citizen-State Bargain dimension includes State Capacity and the Civil Capacity to bargain and shape social contracts.
- The Social Contract Outcomes dimension captures the quantity (thickness), fairness of the public services and social safety nets (inclusiveness), and freedoms the state provides to citizens (openness).
- The Sustainability dimension captures how well citizens' expectations are aligned with their perceptions of the outcomes of the contract and the openness of the dialogue between them and the state to renegotiate the contract.

The social contract is dynamic and is constantly being renegotiated. Dissatisfaction can be addressed through a renegotiation which can be peaceful, where the state is open to dialogue (measured by freedom of expression and of the press)—or violent, which can lead to a breakdown of the social contract.

Box figure 1 Shaping the social contract



The aspects examined in each dimension are as follows:

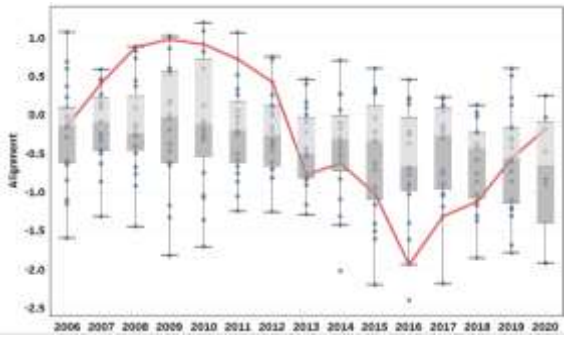
- Civil capacity captures the bargaining power of citizens and how effectively they can mobilize, cooperate, and organize to resolve the collective action problem and hold the state accountable.
- State capacity captures the state's capacity to collect and deploy resources over its territory effectively.
- Thickness captures the quantity of public goods and services that are provided by the state.
- Inclusiveness captures whether the social contract is geared toward benefiting the few or everyone, including considerations of equality of opportunity, abuse of power, and corruption.
- Openness captures the openness of the state to different opinions, the respect of human rights, and freedoms of press and expression.
- Alignment captures whether perceptions of the outcomes of the social contract are aligned with the expectations by looking at indicators of civil compliance or disobedience and popular support.

These aspects are measured through indicators from many sources including Gallup World Poll, Varieties of Democracy, ACLED data, and Economist Intelligence Unit. The subindicators and data sources for each dimension are in annex 1.

Source: World Bank (2021).

Since 2010, measures of citizen satisfaction with the social contract in Brazil have decreased according to several indicators. These variables include both measures of popular support for the state and observed measures of contestation such as the frequency of protests and riots. After peaking in 2009, the alignment index—consolidating variables linked to Brazilians' satisfaction with their social contract—plummeted to negative values and reached a bottom in 2016 before recovering some of its loss by 2020, the year of the COVID crisis. Subcomponent analysis indicates that the primary cause for the decline in the index comes from public opinion surveys in which people expressed a lot less satisfaction and trust for their government. Data from ACLED also indicate that Brazil has the second highest rate of demonstrations (combining both peaceful protests and violent riot events) in the region (see figure 3.10 in appendix A).

Figure 8.1 Declining satisfaction with the social contract in Brazil

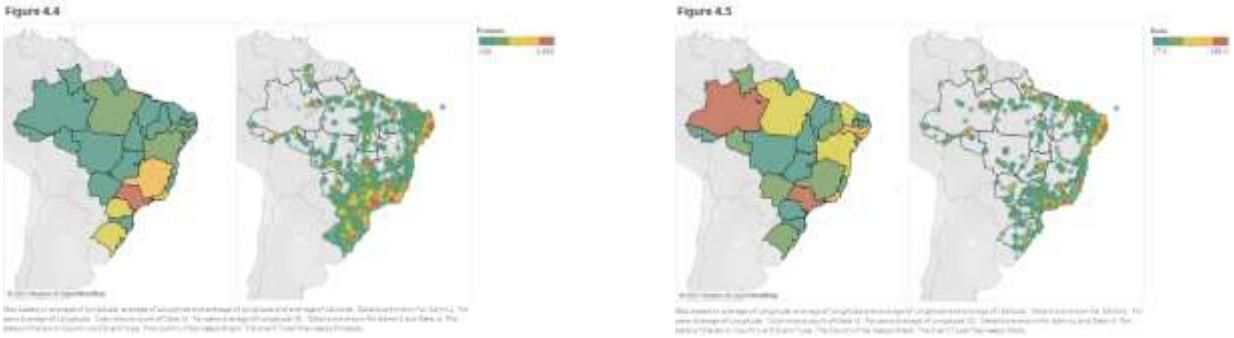


Note: Alignment is measured by combining measures of popular support and public opinion on the government and measures of observed contestation such as protests and riots. Brazil in red is compared with its regional neighbors in LAC. See Appendix A for more details.

Public trust in government and approval of leadership are generally low. Only 25 percent of individuals approve of the country's leadership,[360] and only 29 percent say they trust the government. According to Gallup's World Poll, women tend to have lower trust and support less the state. Trust is lower in the southeast and northeast.

Some of the more dissatisfied groups, including women and minorities, are also those who more often mobilize in public display of disapproval. For demonstration events in the past five years, among the groups participating in these events some tend to appear the most: women, students, labor groups, and teachers. Interestingly, the high occurrence of vigilante groups and minority groups (such as LGBT and indigenous groups) can also indicate fracture points within the social contract. Regions with lower trust and higher levels of protests and riots are concentrated in the urban regions of the southeast and northeast, but there are also important levels of riots in the north (figure 8.2).

Figure 8.2 Protests and riots across Brazil



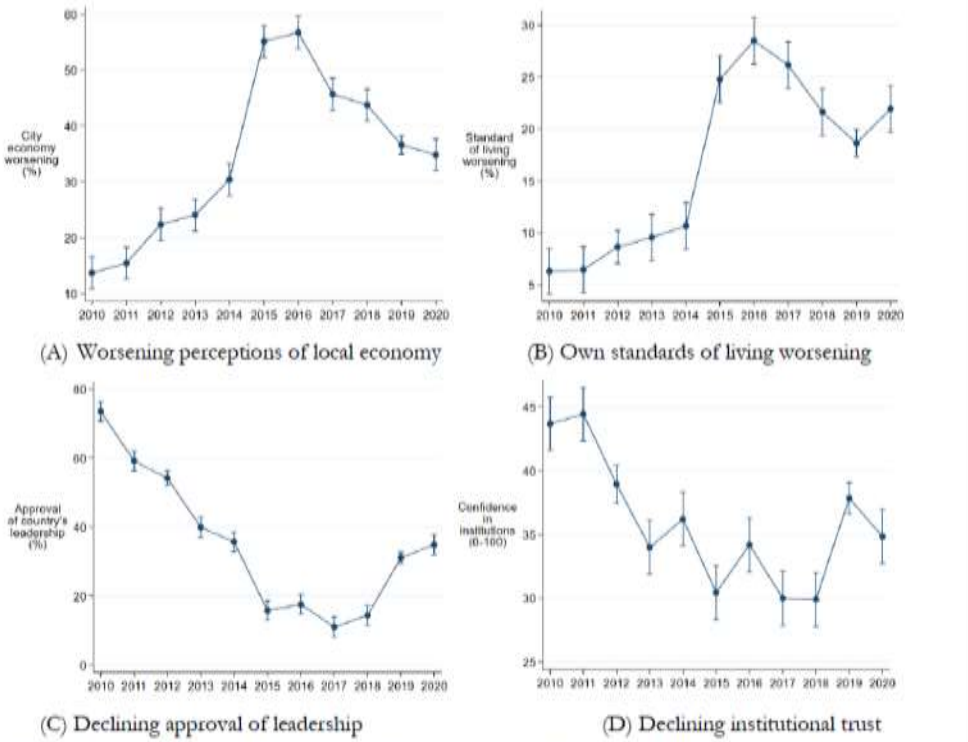
Note: The left panel of each figure looks at number of events per capita in each regions while the right panel looks at the concentration of these events. Protests are peaceful demonstrations, riots are violent demonstrations.
Source: ACLED data.

Falling alignment with the social contract goes hand in hand with the general decline in individual happiness of Brazilians from high levels. The country made steady improvements in its experienced welfare during the past half a century.[361] Brazilians used to be exceptionally happy people. In 1960 the average Brazilian evaluated their life with a 4.6 out of 10, by 2011 this value increased to 7.1. A similar increase is also observed during the 2000s commodities supercycle using answers to the life-satisfaction question in Latinobarómetro for the period 1997–2013.[362]

Improvements in subjective well-being coincided with rising per capita incomes and growing political inclusion. Especially between 2003 and 2014, poverty and inequality substantially declined and millions of Brazilians joined the ranks of the middle class. Democratic reforms following the end of the military dictatorship in 1985 increased political inclusion, civic engagement, and human rights.[363] However, in 2014 the virtuous cycle between economic development and improvements in perceived welfare drew to a halt when economic growth collapsed from 7.5 percent in 2010 to -3.5 percent in 2015 before partially recovering to a bit more than 1 percent after 2018. As per capita income declined from close to US$16,000 in 2013 to about US$14,600 in 2018, so did Brazil's average SWB, dropping by 12.7 percent from 2013 to 6.2 in 2018 (figure 1.6 in chapter 1). Correspondingly, the percentage of thriving Brazilians (scoring 7 or higher in SWB) decreased from 65 percent in 2013 to 49 percent in 2018, according to the Gallup World Poll. A similar decrease is found when examining alternative SWB measures including the Affect Balance Scale in the Gallup World Poll and data from Latinobarómetro. Subjective well-being slightly improved in 2019 but given the severity of the Covid-19 crisis in Brazil those levels have declined again in 2020 to levels at or below 2018.[364]

Most of the decline in subjective well-being since 2014 is explained by the dissatisfaction with one's financial position, economic optimism, and several social outcomes (also see chapter 1)**.** Satisfaction with income and living standards, financial security, economic optimism, social capital, digital access, and satisfaction with health services are the main factors associated with subjective well-being in Brazil. As discussed in chapter two, the 2014 recession was particularly detrimental to the poor and ultra-poor,[365] whose life had improved in the 2000s and never really recovered. In addition to the income shocks, the crisis had psychological consequences. The percentage of people with worsening expectations about the local economy and their own standards of living, which was steadily increasing in the first half of the 2010s, escalated in 2014 (figure 8.4a and b). In parallel, during the same period there was substantial erosion in government approval (figure 8.4c) and trust in political institutions (figure 8.4d). The declines in leadership approval and trust were spurred not only by the economic crisis, but also by the many corruption scandals that marred Brazilian politics. The distribution of unhappiness is also unequal between various sociodemographic groups with younger, urban and more educated individuals most affected.

Figure 8.4 Decline in expectations and loss of political trust in Brazil



Source: Gallup World Poll, 2010-2020. *Notes:* 95% confidence intervals shown. Sampling weights used. Panels (A) and (B) show the percentage of respondents with worsening expectations about the economy and own standards of living, respectively. Panel (C) displays the percentage of respondents who approve the political leadership in Brazil. Panel (D) shows an index of confidence in institutions, with higher values representing greater confidence.

Expert's assessments are consistent with citizen's perceptions and in particular point to issues linked to inequality and corruption. While perception surveys capture the citizens' lived experience of the social contract and are also affected by their expectations,[366] expert assessments, such as the Transparency's International rankings or the World Bank's Worldwide Governance Indicators, reflect the opinions and observation of experts on the basis of international standards and comparisons. Neither perspective is better than the other, and they both provide slightly different but usually correlated information.

Inadequate government responsiveness is at the heart of the growing popular dissatisfaction, yet governments struggle to pass reforms that can respond to this clear demand. Polling data show that citizens are deeply concerned with the quality of public services. According to the Americas Barometer LAPOP survey, more than 80 percent of Brazilians listed the quality of public services as one of their top three most important concerns. This coincides with recent findings from the IPSOS survey commissioned for this study about Brazil's future (chapter 1), where citizens consider the improvement in education and health as priorities to eliminate poverty in Brazil (alongside giving the poor more voice). Many changes are not fiscally costly, but they do involve institutional reforms and high coordination efforts. The question is why policymakers mostly focus on addressing citizens' short-term needs, rather than engaging in structural reforms that are unavoidable to make the qualitative improvement that Brazilian citizens clearly expect. The next section tries to answer this question, and explores the dynamics of citizen-state relations in Brazil and how the social contract is negotiated.

Box 8.2 Improving safety to increase trust

Although it has decreased in recent years, Brazil is still one of the most violent countries in the world, with a homicide rate of 30.4 per 100,000 inhabitants (IHME 2021). Violence and criminality can have serious consequences on the safety of any community, leading to an environment of fear and mistrust. It also generates economic burden. According to a report from the President's Executive Office (Brasil 2018) the cost of criminal activity in Brazil have escalated from around R$ 113 billion in 1996 to R$ 285 billion in 2015, with part of it being explained by a projected loss of 550 thousand reais per young individual killed by homicide between the ages of 13 and 25.

Violence in Brazil is spatially concentrated in the North and Northeast region (56% of all homicides), affects more nonwhites (77% of all victims of homicides are black), and young men (94% of victims are men between the ages of 15 and 29). Homicides are mainly committed by firearm, roughly 70% between 2017 and 2019 (Cerqueira et al. 2021).

To keep communities safe and restore trust in the capacity of government to deliver its promises is important that public policies are developed to reduce violence and crime. This can be achieved by deterring and controlling violence through higher arrest and conviction rates and more severe punishment, as well as by reducing environmental and individual risk factors for violence, through community interventions that build social capital and cohesion, and by allowing conflict resolution through negotiation and nonviolent alternatives (World Bank 2006).

For example, despite gun availability being an important risk factor for violence (World Bank 2006), between 2019 and 2022, the Federal Government approved a series of regulations that facilitated the access to firearms and increased the amount of guns and ammunition individuals can possess (Cerqueira et al. 2021). In 2017 there were 573 thousand firearms registered with civilians and private security companies. In 2021 this number almost doubled, jumping to 961 thousand. Between the same period, the total number of active firearms in Brazil went from 638 thousand to 1.49 million, an increase of 113.6% (Fórum Brasileiro de Segurança Pública 2019; 2022). These changes could lead to a series of problems, such as an increment in interpersonal violence, triggered by rage or emotional instability, even if the citizen doesn't have a criminal record (Fleury-Steiner, Miller, Carcirieri, 2017). Hence, is important to implement gun control programs and keep a close track on their circulation.

Economic factors can also affect violence. There is a vast literature analyzing how labor market conditions and criminal activity are connected (Raphael and Winter-Ebmer 2001; Gould, Weinberg, and Mustard 2002; Fougère, Kramarz, and Pouget 2009). Recent evidence on the Brazilian case has revealed that the probability of committing crimes increases on average by 23% for workers when they are displaced by mass layoffs with lasting effects of up to 4 years. The research indicates that unemployment benefits can offsets potential crime increases from 3 to 5 months after the job loss, but this effect vanishes after benefit expiration (Britto, Pinotti and Sampaio 2022). Therefore, is important to develop approaches to protect those more vulnerable to job loss and subject to high liquidity constraints.

Sustainable economic and social progress requires governments to make decisions that go beyond responding to the short-term needs of voters. Over the past decades, successive governments have increased spending on government services, but have failed to tackle growing concerns about their quality. Addressing dilemmas about the quality of public services is at the heart of Brazil's challenges for the next two decades. Given that it is unlikely that any Brazilian government over the next two decades will be able to preside over a period of rising government spending of the same magnitude as in previous decades, increasing the quality of spending is likely the only way that political leaders will be able to respond to citizens' demands in the medium and long terms.

How citizens negotiate the social contract: Civil capacity and trust

The quality of the social contract, and resulting policy outcomes, are produced by the interactions between the citizens and the state and its inclusiveness. Between the late 1990s and the mid-2010s, the real value of the minimum wage has inched up constantly due in part to fierce political competition for the votes of formal low wage workers (prevalent among the urban vulnerable middle class) and the overwhelming number of elderly that receive the minimum and social pensions.[367] Such policies reduced wage inequality and poverty.[368] But an excessively high minimum wage hurts the prospects for formal employment of low jobseekers and informal workers, especially youth.[369] All reform attempts, since the last crisis, that tried to reduce employers' costs to facilitate hiring of vulnerable groups did not find congressional support, hurting labor market outsiders. This exemplifies the challenge of achieving balanced policy outcomes in a context of unequal levels of voice, even between the poor and the middle class.

Elections are the most visible bargaining and accountability channel between citizens and the state, but citizens' ability to coalesce and enforce accountability on candidates matters. Elections are a bargaining moment—a key event during which decision-makers try to convince citizens to vote for them. Many studies on voting behavior mention a strong sense of discontent in parts of the population as a driver of voting the incumbent out of office.[370] However, there exist different electoral systems and their different characteristics matter for the bargaining power of different groups of citizens. For example "swing regions" benefit from extra attention from politicians. One of the critical mechanisms for lower levels of trust to shape the quality of government responsiveness to citizens' demands is by affecting voters' willingness to work together in order to monitor and credibly threaten politicians who fail to deliver good public services. In theory, this problem can be mitigated by a well-organized party system capable of sanctioning free rider candidates who would tarnish the party brand.[371] But some argue that Brazil's peculiar open-list proportional representation electoral system, combined with some of the world's largest electoral districts, weakens the role of parties to fulfil this role. When parties are poorly disciplined and accountable to the base, small well-organized elites have stronger influence. This is why trust—together with norms and social networks—are critical elements of social capital, and this is associated with the quality of democratic governance[372] and economic growth.[373]

Trust in government in Brazil is lower than in other countries, and particularly so among the better educated, youth, women and urban dwellers. According to Gallup World Poll, fewer than 30 percent of Brazilians trust government, with trust in the police and the military slightly more elevated. Trust in politicians is lower in Brazil than in both comparator and aspirational benchmarks.[374]Younger, more urban, more educated and female citizens generally have lower trust across the board. And as noted earlier, confidence in national institutions—the government, judicial system, military, and honesty of elections—is associated with higher subjective wellbeing levels. This was found to matter more to men and to urban residents, while women care more about social support, personal freedom, and social mobility.

Interpersonal trust is also exceptionally low in Brazil. This reduces the interest in coalescing to pressing government for the provision of public goods with broad based benefits. In addition to limited trust in the state, Brazilians also exhibit low levels of interpersonal trust, even when compared with other Latin American democracies.[375] Specifically, survey data show that most citizens in Brazil are unwilling to trust those outside their immediate social group.[376] A lack of trust in those outside the inner circle reduces the degree to which members of a specific social

group are willing to work with outsiders to contribute to the provision of public goods, those which benefit the broad society.[377] In the public opinion survey commissioned for this report, citizens were asked how they thought the government should design public policy, whether by focusing resources of delivering public goods, private goods, or club goods. The data show a correlation between out-group trust and a preference for public goods. Participants with higher levels of out-group trust are also more likely to believe that other people that they know would also favor a focus on the provision of public goods.

Despite trusting the state the least, richer and tertiary educated citizens exhibit a much higher level of interpersonal trust than the country's average. Under a situation of general fragmentation of the citizen-state institutions**,** those with higher level of social capital, in addition to education and wealth, clearly enjoy stronger advantage in negotiating with the state. This capacity for collective action of the rich can also prevent reforms that undermine the source of their privilege. Interestingly, social capital is inversely correlated with trust in the state. The poor exhibit the least degree of social capital, which underscores their isolation and weakness in participating in the social contract, but also makes them more dependent on the decisions of the state.

Low interpersonal trust is associated with greater demand for government to focus on short-term policies. The public opinion survey commissioned for this report shows that individuals with lower interpersonal trust are also more likely to believe that the government should be making policies for the here and now, not thinking about their consequences for years and decades in advance. This holds true even when controlling for other sociodemographic characteristics of respondents. As discussed in chapter 1, the survey also shows that individual beliefs about how the state should plan are correlated with how citizens plan their personal finances. Being present-focused is a common situation for poorer citizens, who can ill afford to defer consumption, but also for those who trust less the future.

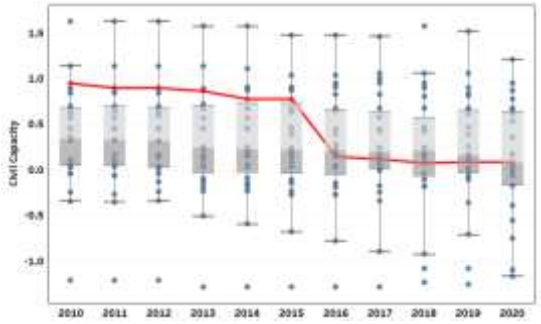
Low trust also reduces the space for complex reforms that pay off in the future and require sequential bargaining. In a perfect bargaining environment, groups that stand to lose in the short term could be compensated. However, lower levels of interpersonal trust reduce citizens' willingness to support policy reforms that would provide greater (but more uncertain) payoffs in the future, compared with the present.[378] In fact, many reforms yield broad-based benefits but require mechanisms to compensate short-term losers. This is the case of many of the reforms that Brazilians as a whole would benefit from: liberalizing trade, restructuring unemployment benefits, simplifying indirect taxes would all be best complemented by reforms cushion the negative effects: productivity policies, trade adjustment programs for displaced workers, and transparent compensating mechanisms for territories looing tax revenues. Facing uncertainty of whether "others" will reciprocate concessions made to enable a reform, citizens who hold veto power are more likely to opt for the status quo, even if the equilibrium is evidently welfare-decreasing.[379]

Civil capacity dropped in recent years, especially in the active engagement, ability of groups to work in broad coalitions. According to the empirical measurements part of our social contract assessment, overall Civil Capacity index fell in 2015 and never recovered (figure 8.5a and b). When disaggregating the components of this index, it emerges that *formal* membership in organizations and their amounts remained stable ("Citizen Organization"). But the Mobilization and the Cooperation indicators both declined.

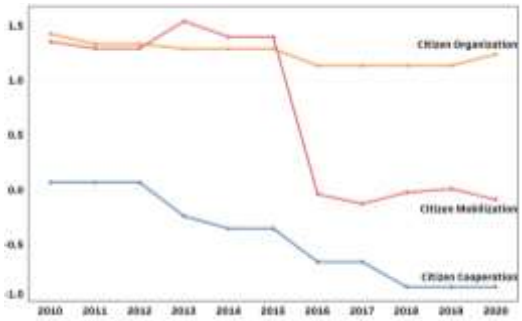
One interpretation of these trends is that part of citizens are disengaging with the state, potentially due to having their expectations repeatedly unmet, but in a context of diminished space for engagement. The fall in the Civic Capacity index is roughly coinciding with the corruption scandal and events around 2015 and 2016. At the same time, the Openness index (Figure 8.5c and d), which tracks the effective level of protection of some human rights (like violent repression) and freedoms (expression, press and association), also saw deteriorations in Brazil. The decline in the capacity of citizens to coalesce into broad and diverse coalitions, for all these reasons discussed, is indicative of increased social fragmentation. The resulting picture is that formal civic engagement institutions continued to exist and exercise influence, but more on behalf of those citizens who remained engaged, and less in ways that may be more conducive to tackle complex reforms and vested interests.

Figure 8.5 Civil capacity and its components

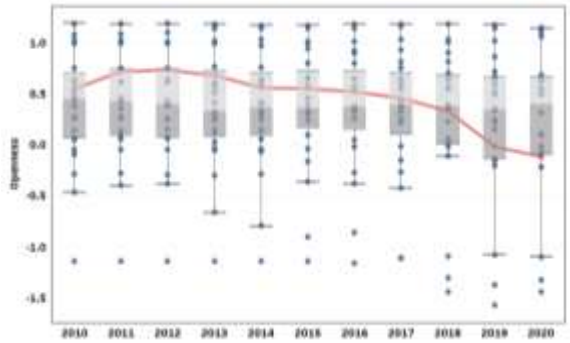
Civil Capacity Index, Brazil compared with LAC countries



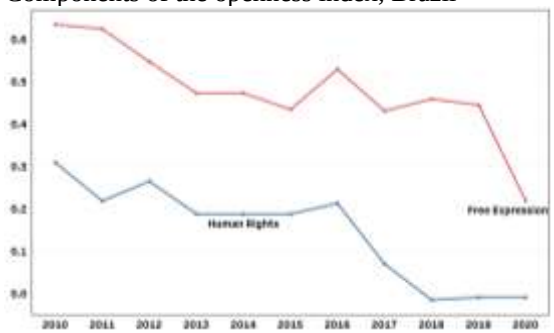
Components of civic capacity index, Brazil



Openness Index (Brazil compared with LAC)



Components of the openness index, Brazil

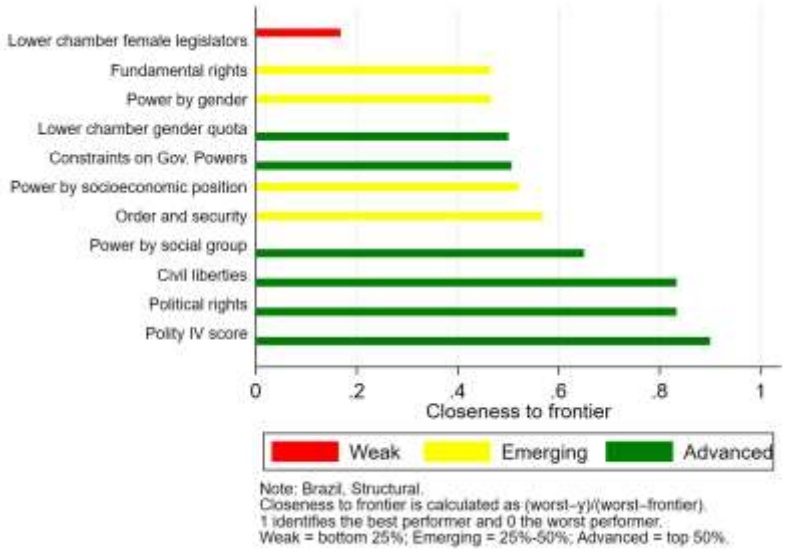


Note: Calculations by authors, based on the framework and methodology described in World Bank (2021) Social Contracts for Development: Bargaining, Contention, and Social Inclusion in Sub-Saharan Africa.

The importance of the less formal aspects of the social contract in shaping outcomes is revealed also in the benchmarking of Brazil's political institutions with other countries. Figure 8.6 shows a recent WB-led benchmarking of Brazil's political institutions and outcomes with other countries of similar income level or upper income level. The exercise shows a mixed performance. De jure, Brazil does not have large gaps in the design of its core political institutions, relative to aspirational countries. These include the protection of civil liberties, political rights, democracy (Polity IV), and checks and balances. At the same time, the index finds Brazil lags in terms of equal enforcement of such protections, unequal distribution of effective power in political institutions, and in the amount of undue influence of economic elites. Most lagging indicators are correlated with Brazil's legacy of inequality and exclusion that predate the democratic institutions.

This underscores the importance of reforms that strengthen the position of the poor and vulnerable, and create preferential access channels, form to fulfil their civic capacity in formal institutions.

Figure 8.6 Political institutions, Brazil vs comparator countries



Source: World Bank Country Level Institutional Assessment and Review.

When transformative reforms happen: The need for urgency and alignment

Netnographic analysis offers a practical way to illustrate how some reforms have been transformative in Brazil, in the context of its fragmented social contract. The netnography tool combines the analysis and classification of large quantities of data, mainly from open and public digital sources,[380] with sociological analysis to reveal networks of influencers or interest groups on specific issues. The methodology uses multistakeholder mapping that includes three important arenas of debate for society: social, political, and media engagement. It identifies individuals and organizations interacting and influencing each other and their communities on specific issues. It describes the spread of related narratives, the positions of the main stakeholders, and the political and social drivers that influence final outcomes. This innovative work yields a descriptive model of the social contract context in which a reform is designed and adopted, and of the characteristics that define a favorable context leading to a reform's success or an unfavorable context leading to its failure. The insights gathered with the two case studies here can help establish a predictive filter for reforms and open the possibility for development partners to engage with these processes more effectively.

The netnography framework integrates quantitative and qualitative methods. Data mining gathers open, dispersed, and unstructured digital data. Social network analysis and dynamic network analysis map and quantitively analyze the emergent network structured between actors and its evolution over time. Netnography qualitatively analyzes the narratives and social dynamics observed in the digital space. The framework derives from multistakeholder mapping to identify a set of stakeholders called "small worlds"[381] of relevant actors and influencers on specific issues, but always considering the macro context. Social network analysis and dynamic network analysis help understand how stakeholders are connected in both online and offline relationships and how they change over time. The analysis uses Twitter—an open digital data source frequently used in

studies of this nature, either for technological reasons or for its wide use among strategic stakeholders in public debates—and other (open) digital footprints such as speeches, interviews, mentions in communication vehicles and news platforms, in addition to monitoring the legislative chambers and public hearings. An element that is added beyond the interactions in the small world are the online trends on the topics, understanding the peaks of discussion in the Big World of the Brazilian World Wide Web, and what was the relationship with the progress of the agenda in the political decision making process. (Appendix 2 illustrates how the different element of the methodology relate to each other.)

The two reforms selected for the case studies are the constitutional amendment to make the FUNDEB permanent (voted in 2020) and the process of pension reform. They were chosen because they affected and mobilized large swaths of the population. They were also at the center of an important and sustained public debate. And they had a relatively recent resolution (which is important given the digital nature of the data collected which requires a good penetration of both internet and social media). Both reforms experienced some form of contention and bargaining but ended successful (boxes 8.1 and 8.2). This allows us to identify certain characteristics associated with successful reforms.

Box 8.2 Making the FUNDEB permanent

The previous agreement on the FUNDEB was planned to expire at the end of 2020 and needed to be replaced. The FUNDEB is a redistributive policy aimed at financing public basic education. It was approved in 2006, replacing the former FUNDEF. Given FUNDEB success, a reform was planned with the objective of making the fund a permanent instrument for financing basic education. While there was strong consensus that the mechanism needed to be renewed, there was no obvious general agreement that the pool of funds should be increased or that funding allocation formulas should change. How government and interest groups positioned themselves in the public arena eventually determined the final outcome of the reform.

The design and debate period for the reform lasted from 2015 to its official vote in August 2020. A Proposal for Amendment to the Constitution (PEC No. 15/2015) was presented by the then Federal Deputy Raquel Muniz (PSC-MG), in 2015.

The reform saw sustained bargaining in the political and social arenas, in both the new and old media. In the political arena, due to the need for replacing the expiring FUNDEB, the proposed reform experienced sustained support from politicians during the period it was in debate, but saw some contention during the vote on its regulations. The debates about FUNDEB in the legislative arena involved three distinct groups:

- Strong supporters of an increase in the union top up, mostly defended by the teachers' unions, whose main leader was Deputy Professora Dorinha (DEM).
- Those in favor of renewing the policy but against increasing the top up from the federal government, with greater emphasis on parliamentarians affiliated to the NOVO party.
- Those opposed to renewing FUNDEB, from right-wing parties that voted against renewal, most of them supporters of the "Escola Sem Partido" movement.

Perhaps surprisingly, the federal government was virtually absent from the public debate. The lack of strong policy position weakened the executive branch's position in Congress and strengthened that of advocacy groups that wanted to increase FUNDEB's top up. While an increase in FUNDEB top up was detrimental for the government fiscal position, the increase didn't affect the spending ceiling and therefore it didn't affect short-run policies. In addition, the then current federal government wasn't able to build a strong political base in Congress, and therefore support for the government's agenda was always politically

costly. In evaluating the costs and benefits, the government virtually stepped out of the debate, which opened up space for other actors to influence public opinion.

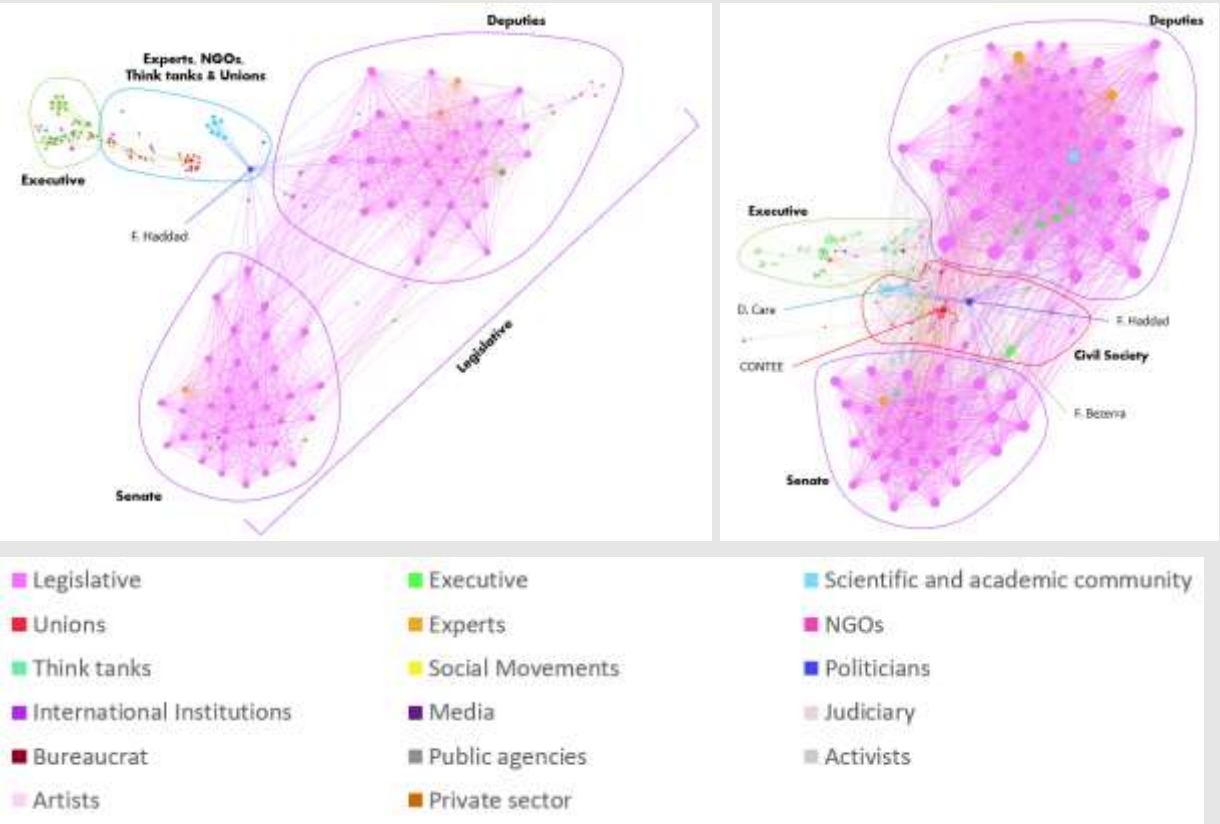
Civil society organizations and unions strengthened their position for broadening FUNDEB reform over many years. As early as 2018, the Education Seminar of the Brazilian Union of Secondary Students (UBES) was put in place to discuss FUNDEB reform, in which the central concern was its dissolution. In 2019, there were student protests on May 15 and 30, popularly known as the "Tsunami da Educação". In 2020, due to the Covid-19 pandemic, these debates began to take place in a more intense way virtually through stream channels for discussion and information about the policy, its consequences, the importance of renewal and the legislative process.

Network analysis of the main stakeholders shows the increasingly central role of civil society organizations leading up to the reform. In 2018, the network had 198 stakeholders, clearly differentiated in clusters, including legislative and executive branches as well as sectors of civil society, such as experts, NGOs, think tanks, and unions. In 2020, the network had 228 stakeholders.

As the government stepped out from the debate, network analysis reveals significant cohesion and little communication gaps between stakeholders. The two networks are mapped below, where the size of the nodes indicates the degree and the colors indicate the category to which they belong at the current time. Compared to 2018, executive branch nodes in 2020 are diffuse and scattered. In 2020, civil society grew in connectivity and articulated with the other clusters of the network. It also positioned itself in a brokerage role, connecting the different clusters of the legislative branch.

Box figure 1 Stakeholder networks in 2018–19 and 2020 on Fundeb reform

2018–19 **2020**



Source: Elaborated by Tree Intelligence.

The FUNDEB reform demonstrates the importance of urgency and social mobilization in creating political momentum for reform. The first determining element for the approval of the policy is the institutional context. The context involves the urgency of renewal of FUNDEB, because it would expire, thus, the risk of the end of the policy makes its discussion in 2020 necessary and urgent. Debate on the policy was important to establish social cohesion, since what was under discussion was not only what each group was willing to spend financially, but also what was understood as the social justice and the level of solidarity to be established. Netnography provides a detailed mapping of the ebb and flow of these different narratives (see annex 2).

The data show how the evolution of the narratives was mainly influenced by a coalition of expert civil society and members of the legislature. Think Thanks such as Todos pela Educação proved to be strategic stakeholders for their ability to connect technical arguments and reports, with language that combines more technical and informative aspects, in order to be understood in a more practical way by civil society, articulating with experts and decisionmakers.

Box 8.3 Changing the pension rules

The pension reform had a long journey spanning two administrations. Its design and debate period for the reform lasted from 2016 (during the first proposals) to its official vote in November 2019. Social security is an integral policy of the social welfare state, defined as a social right and is provided for under the Federal Constitution of 1988. Since the formulation of the 1988 Constitution, Brazil has faced three pension reforms. The concern with the public pension deficit is not a recent discussion and governments with different political projects have made or tried to make changes to its rules. President Jair Bolsonaro was the fifth president to send a proposal to modify the public pension rules. The reform was a priority for the economic team, led by the current economy minister Paulo Guedes.

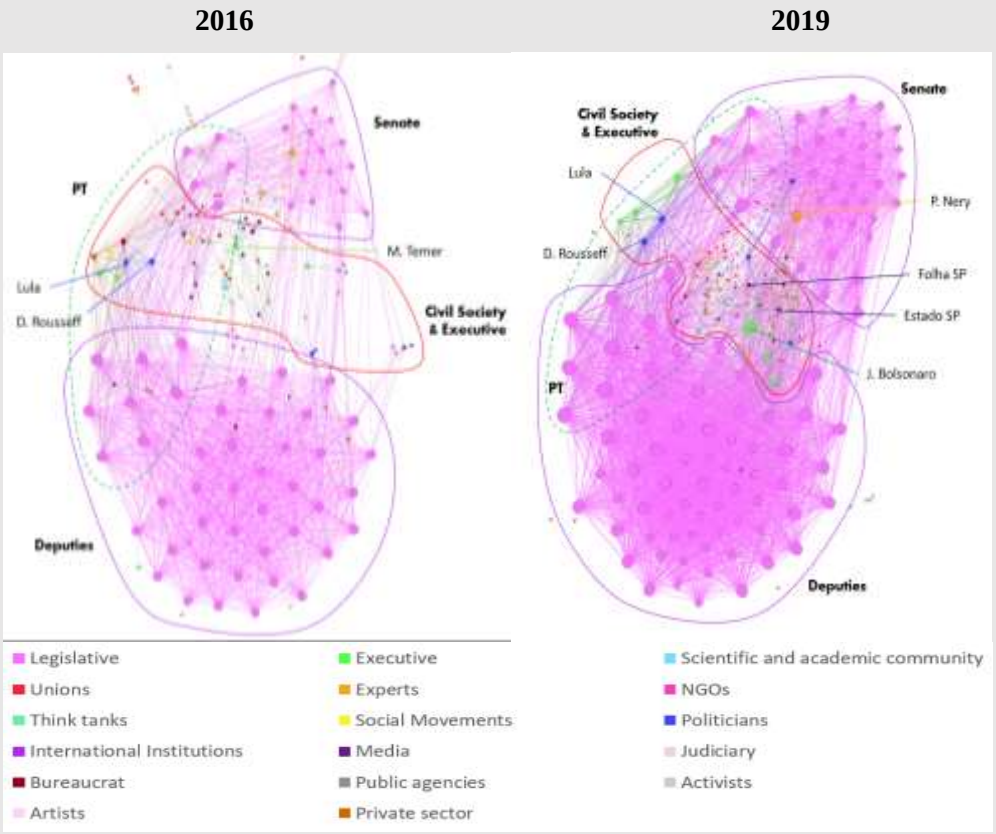
The reform suffered initially from an unfavorable political environment, which changed only when a new government was elected. At the end of 2016, on December 5, President Temer sent a proposed amendment to the Constitution (PEC) to Congress, PEC 287/2016. The project was approved by a special committee of the Chamber, but its process was interrupted. The context was political instability, with accusations of corruption against President Temer. Surveys by Datafolha pointed to the Temer government being considered bad or very bad by 62 percent of those interviewed. Bolsonaro’s government came to power with a strong mandate from the electorate to pursue pension reform. Bolsonaro's presidential election campaign received strong support from the financial market and business circles.

Different parts of civil society mobilized either in support of or against the reform. In the social arena, there were several protests and calls for general strikes against the proposed reforms during Temer’s government, with an emphasis on labor and social security. The protests were organized by union entities and civil society, criticizing the legitimacy of Temer’s government. The mobilization around the proposal of President Bolsonaro was more balanced in part due to his public support at the time. In the movements and protests around PEC 06/2019. An absence of public debates about the reform with society is one of the criticisms regarding the process of conception and approval of the Pension Reform, especially with regard to the participation of workers' representatives. The Brazilian economic elite, with some businessmen and organizations, also acted in different ways to support the reform. The Brasil 200 movement led the initiatives of the group of businessmen, supporting Jair Bolsonaro and the measures proposed by Paulo Guedes.

The social networks show that the pension reform was characterized by the confrontation between two strong polarized positions which eased in 2019. Box figure 2015 shows the high polarization of the stakeholder network in 2016, with the executive relatively on the fringes. In 2019, the network had become thicker (indicating much more engagement), denser (suggesting somewhat lower polarization), with civil

society, experts, and the executive taking a much more active and central role—jointly making the reform succeed.

Box figure 1 Stakeholder network evolution during the pension reform



Source: Elaborated by Tree Intelligence.

The key elements emerging from the analysis for the approval of the policy were the political context and the citizen's trust. In 2016, which corresponds to the Temer government, there was a post-impeachment scenario and corruption scandals involving the president. The legitimacy of the government in office, called by some a "coup presidency," the general political distrust, and the government's low popularity are variables that contribute to the rejection of the pension reform proposed by Temer. In 2019, when Bolsonaro took the seat as President, the political context was more favorable (box 8.3), the president had an electoral mandate for the reform and benefited from greater citizen trust. There was also a renewal of the National Congress. The transition for a new government, the entry of new parliamentary representatives (some coming from social movements that emerged after June 2013), evangelical leaders, movements that represent political renewal and parliamentarians in their first term in Congress were all elements that make the scenario more viable for changes in the social contract established around the pension policy.

Also important were the movements and street protests by both supporters and opponents of the proposal. Pro-reform protests bring a new element to the analyzed scenario since it is an unpopular topic supported by the streets' agenda. Stakeholders linked to the Brazilian economic elite also appear with a more visible role in the social and digital arenas in defense of the pension reform. Political articulations and lobbying from different sectors of society tend to occur in the process of formulating or reformulating certain policies. But the visibility of these private sector

stakeholders in the pension reform, using the social media to spread campaigns, adds a new element to the scenario. At the level of the citizen-state bargaining, the extreme polarization identified in the network and the narrative disputes around pension reform skewed the initial proposal delivered by the government, which was significantly modified. The changes, exclusions and additions, during the legislative process, reduced the initial forecast of savings with the reform, which went from around R$ 1 trillion in 10 years to around R$ 800 billion.

The use of social media, mainly by political actors, and the growth of digital activism and digital mobilizations were important in the pension reform debate. The Bolsonaro government's strategy of spreading information about the "New Pension Plan" in different media, such as open TV and radio, using strategic influencers, expanded the subject beyond social media. Beyond political marketing in electoral campaigns, social media were used more frequently as an important communication channel for political actors and authorities, such as President Bolsonaro and some of his ministers. Especially Twitter, which is increasingly used by parliamentarians to strengthen direct communication with their voters, reach new audiences, and create a notion of transparency and accountability based on their legislative work on certain issues.

The two case studies present two different political scenarios leading to a successful reform. The approval of FUNDEB is characterized by cooperation between different political sectors, civil society and elites, with low polarization between positions and the majority of the stakeholders supporting it, which allowed a more fluid process of approval. Tensions occurred only at specific points of the reform, which caused a prompt reaction from a large part of civil society and representative entities. The small cluster with a position contrary to the proposal had neither the social support nor the political strength to form a defense coalition to overthrow or significantly alter the project presented.

By contrast, the pension reform is characterized by a conflict between actors, an extreme polarization of postures, a greater balance of strengths between the different sides, and active participation of the executive branch in the process. This more active participation of the executive branch has to do with the fact that the bill comes from the executive, which also affects the social and political coalition formed to support or criticize the project. Another factor identified by the social network analysis of the multistakeholder networks over time in the pension reform was the low centrality of civil society stakeholders in the Twitter network, identifying little interaction in conversational terms with other stakeholders on social media about politics, despite its high social mobilization reflected in offline spaces and in digital activism.

The way forward—To a more inclusive social contract

The analysis in this chapter, using a social contract angle and netnographic analysis, suggests that a favorable environment for reforms combines alignment and urgency. Alignment represents the support of the reform by a significant coalition of citizens who are ready to mobilize and hold the state accountable. For Fundeb, the reform had a broad support from civil society and citizens. For pension reform, the business sector was supportive, and President Bolsonaro also benefited from a high level of political capital following his election. Urgency represents the source of the political timeliness or momentum behind the reform. In the case of Fundeb, urgency came from the soon to be expired previous financing fund the FUNDEF which needed to be replaced. For the pension reform, there was growing salience within Brazilian society of an impending economic and social crisis if the country continued on its current path.

Strengthening alignment: Building trust and civil capacity

Building trust and civil capacity would increase alignment for reforms associated with a more inclusive social contract. Low trust makes collective action more difficult, but also frays the bonds of citizenship (solidarity) that can move people to accept changes and costs (taxes) that improve the life of others and serve them well in an uncertain future. Organizations and institutions that facilitate solving collective action dilemmas, that reduce mistrust and enhance civic behavior are all important to progressively strengthening social capacity to address the future challenges.

One of the keys to building trust is creating incentives for trustworthy behavior. Addressing asymmetries of power and information facilitates holding the "trusted" accountable to the "trusting". First, judicial and public sector reforms can reduce the power asymmetries that reduce trust in the public and private sectors. These reforms should give firms and citizens predictable and rapid judicial and administrative resolutions of their disputes with each other and with government. Second, information asymmetries can be addressed by requiring public sector agencies to carefully communicate the decisions they make and take responsibility for those decisions and their consequences. Third, governments should integrate concerns about trust, citizenship, and inclusion into their programs by advancing reforms that build trust, such as digital transformation in the administration of fiscal policy, uniform administration of tax and regulatory policies, and multistakeholder or citizen engagement platforms.

Political engagement, through citizen engagement and transparency was the key to addressing government failures and low-quality service delivery. Political engagement is a means for citizens to improve the quality of public goods they receive by selecting and sanctioning political leaders.[382] These leaders in turn exert great influence—for good or for ill—through the many public service institutions that are responsible for providing public goods. At the same time, greater political engagement is supported by greater transparency, defined as citizen access to publicly available information about the actions of those in government and the consequences of these actions. Public disclosure policies by governments, but also by nongovernment agents such as investigative journalists and civil society groups, bring greater information. New media technologies and social media (such as those used in the netnographic exercise) broadcast information about government performance at all levels.

Transparency of information can support citizens' political engagement to overcome government failures. Transparency—in the form of greater information, verifiability, and better means of communicating it—can improve what citizens demand from leaders, influence what issues they consider when assessing candidates for leadership, and help them determine whether to enter political markets as contenders for leadership.[383] The design of transparency is important—the nature and credibility of sources of information, and media through which it is communicated, and access to data by academia and experts to generate or interpret information—all matter. The literature on institutional transition in the history of nations suggests that transparency in combination with political engagement provides tipping points for change in how government institutions function.[384] Working together, these forces not only can hold elected leaders more accountable, but can also improve the incentives, political beliefs, and behavioral norms of appointed officials and of citizens. Multiple levels for political engagement created through local electoral institutions can enable transitions to healthy political behavior by increasing the supply of leaders who have built reputations for responsible management of public

resources.[385] Both the spread of local electoral competition and instruments for transparency, such as new communication technologies, can lower barriers to entry for new political contenders.[386]

Providing states and municipalities with governance and accountability mechanisms is particularly important to support a virtuous cycle of improvements in public services demanded by citizens. As Brazil relies on local governments to deliver key public services—such as primary and secondary education, healthcare, and social work—the quality of local bureaucracies matters for many of the services that constituents care the most about. However, what holds for the federal level is often lost in translation at the local level, as municipal institutions are more vulnerable to capture by political interests and other distortionary interventions.[387] Compared with peers such as Argentina and Colombia, Brazil is usually regarded as having successfully created a professional cadre of federal bureaucrats capable of implementing complex economic and social policies. Yet, at state and municipal level, bureaucracies tend to be more politicized and heterogeneous. For instance, political appointment of principals in local schools leads to lower performance than in schools that use meritocratic technical standards. Corruption at municipal level in Brazil can also be curbed by tools that make information more accessible and scrutiny by communities less costly. A wide range of studies documents the connection between corruption, voter information and independence of the press.[388]

Improving data access in some areas of government can unlock public debate and advance pressure for quality service delivery. Brazil counts both on legislation guaranteeing access to information and transparency, as well as on an encompassing data protection legislation**.** Each area of government has to strike a delicate balance between ensuring data access to generate information useful for public policy and accountability, while preserving privacy of individuals. Such a balance is very heterogenous across areas of government**.** For instance, data on wages paid to formal public and private workers has been long accessible to academics in Brazil in anonymized form, which generated a large body of literature to understand the labor market. And the list of the poor who received noncontributory benefits from the state was made completely public from the outset of Bolsa Familia, to improve accountability and discourage misreporting of incomes by the poor. At the opposite side of the spectrum, data on how much citizens declare and pay in taxes has remained highly secretive (even to other areas of government) beyond aggregate statistics. International experience shows there are ways to make such data available in forms that protect the privacy of the more identifiable (usually high-income) contributors. Similarly, as discussed in Chapter 4, access to student learning outcomes in ways that could support student choice and evaluation of effectiveness teachers and institutions remains highly protected in Brazil, preventing to generate useful information for parents and students to make informed career decisions. International experience shows that such information can be put to use of policy and research safely, and such information is critical for change.

In addition to access, ensuring a vibrant set of channels that makes information useful to mobilize citizens matters. According to the Black Box of Social Accountability,[389] access to information and transparency are insufficient for social accountability. In the case of "visible" weaknesses (such as poor school infrastructure and teacher absenteeism), the main bottleneck is the low or absent civic mobilization of citizens to act on what they see and know.[390] World Bank (2016) recommends that transparency is most effective when it supports processes that generate *specific, reliable, and impartial evidence* on the performance of leaders tasked with the delivery of public policies, which citizens can understand. Policies to strengthen the functioning of media markets can be a crucial part of governance strategies to foster healthy political accountability.

And tools to aggregate preferences and opinions of users need to be perceived as impartial. For example, if beneficiary feedback is solicited through local elites who are the ones capturing public resources, citizens are unlikely to respond by providing reliable feedback to reduce local capture.[391] In contrast, when beneficiaries are informed with the purpose of strengthening their bargaining power vis- à-vis local elites, then they are more likely to demand their entitlements and complain about poor performance.[392]

Special attention should be placed to ensure effective spaces for building civic participation and representation by historically excluded groups, to support for reforms that need broad based coalitions. This process starts with strengthening bodies and spaces that allows the vulnerable middle class and the poor, those displaying the lowest levels of interpersonal trust in our assessment, to improve their social capital and ability to contribute. Philanthropy and transparent public financing of institutions that provide services to the vulnerable, including grass roots institutions that give them voice, are thus important to rebuild social capital foundations lacerated by historic inequalities. Political engagement of institutions that citizens at the margin of the social contract trust is important to build a shared narrative and understanding of the benefits of particular reforms. This is particularly needed for alignment towards polices that will benefit future generations, who are over-represented among the poor and vulnerable classes.

Finally, it will be key to strengthen society's understanding of the challenges brough by future megatrends, and their cross-cutting impacts, to enhance the sense of urgency for comprehensive reforms. The sudden Covid-19 crisis resulted in large parts of Congress acting in unity to finance broad-based support to nearly half of the population, through the temporary safety net Auxilio Emergencial. The program included many atypical non-poor beneficiaries, such as middle class self-employed, who never registered in Cadastro Unico before. Arguably, the experience had lasting impacts on a highly contested issue: the size of the permanent safety net for the poor. The Auxilio Brasil reform, in 2022, reflects this change, with the program being 40 percent larger in coverage than Bolsa Familia was prior to the Covid crisis. Similarly, many reforms advocated in this report require a broad understanding of facts and risks associated with the future, and of their cross-cutting nature in society, including, for instance, climate change and the benefits of investing in disaster preparedness. For instance, high volatility of income and perspective reduction in traditional form of work increase the benefits, even for the children of middle-class voters, to reduce historic segmentations in the labor market.

A strong social contract will form a critical foundation for Brazil to be able to undertake the reforms that allow it to become the country in 2042 that Brazilians wants.

Annex A8.1 Social contract concepts and definitions

The Social Contract assessment dashboard below is based on the conceptual framework developed for the Sub-Saharan Africa Social Contract[393] report. Social contracts are defined as "dynamic agreement between state and society on their mutual roles and responsibilities" and the framework focuses on three dimensions of the social contract. The *capacity dimension* examines the ability of the state and citizens to influence the bargaining space that shapes social contracts. Citizens' political weight (defined as civil capacity) and the state's capacity determine which policies are adopted and implemented. The *outcome dimension* captures the quantity (thickness) and fairness (inclusiveness) of the public services, social safety nets, and freedoms the state provides to citizens. Finally, the *sustainability dimension* captures how well citizen's expectations are aligned with their perceptions of the outcomes of the contract and the openness of the dialogue between them and the state to renegotiate the contract. The social contract is dynamic and is constantly being renegotiated. Dissatisfaction can be addressed through a renegotiation of the bargain which can be done peacefully where the state is open to dialogue (measured by freedom of expression and of the press) or could be through violent means which can lead to a breakdown of the social contract.

The measurement of these aspects is done through the combination of indicators from many sources including Gallup World Poll, Varieties of Democracy, ACLED data, Economist Intelligence Unit. The sub-indicators and data sources for each dimension can be found in annex 1. The empirical methodology is further detailed in the background paper.[394]

This conceptual framework can be measured at the cross-country level for the following dimensions:

- **Civil capacity:** captures the bargaining power of citizens and how effectively they can mobilize, cooperate, and organize to resolve the collective action problem and hold the state accountable.
- **State capacity:** captures the state's capacity to collect and deploy resources over its territory effectively.
- **Thickness:** captures the quantity of public goods and services that are provided by the state
- **Inclusiveness:** captures whether the social contract is geared towards benefitting the few or everyone, includes considerations of equality of opportunity, abuse of power, and corruption
- **Openness:** captures the level of openness of the state to different opinions, the respect of human rights and of freedoms of press and of expression.
- **Alignment:** captures whether perceptions on the outcomes of the social contract are aligned with the expectations by looking at indicators of civil compliance or disobedience and popular support.

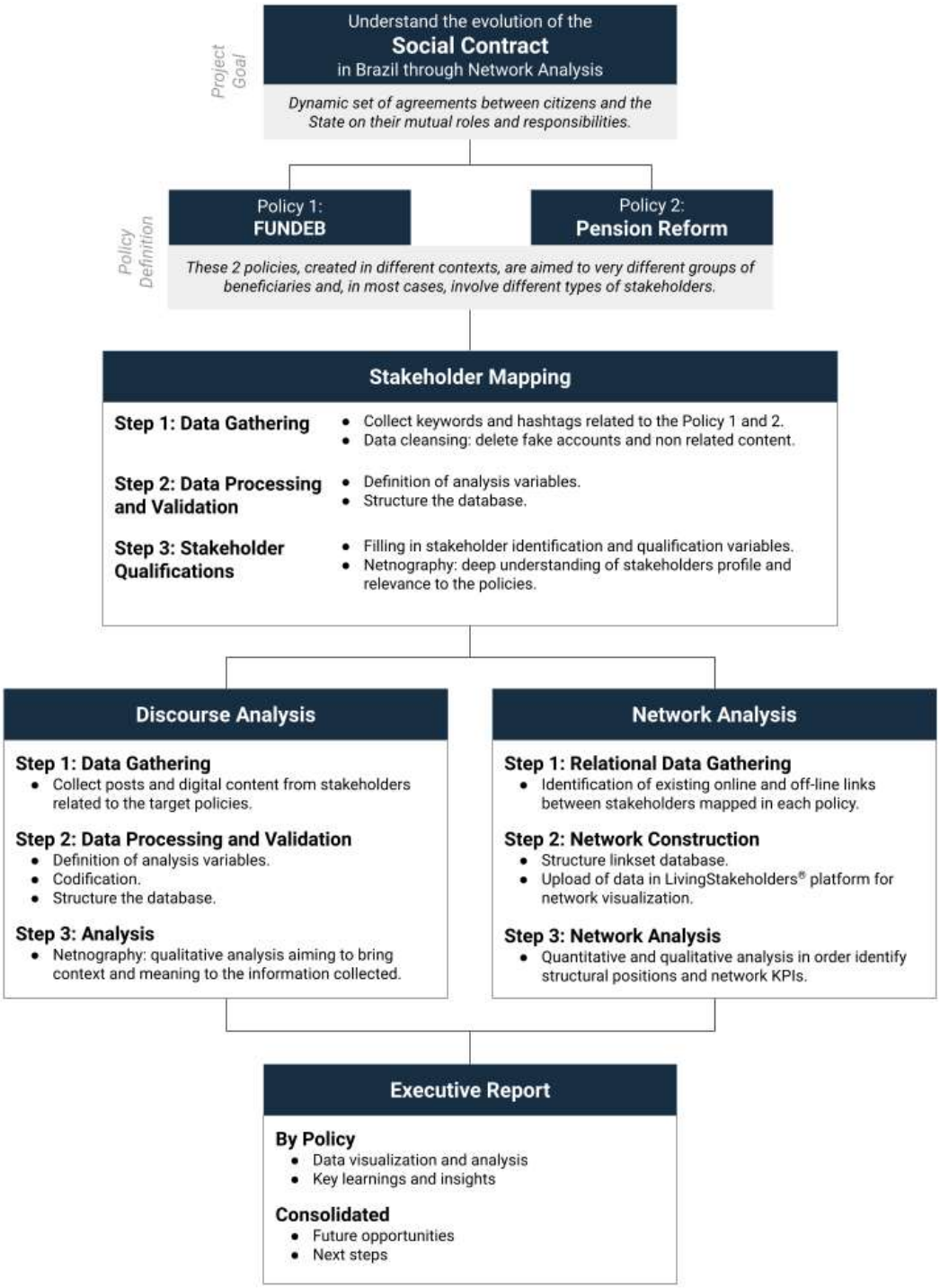
Table A8.1.1 Variable definitions and sources

Indicator	Sub-Indicators	Data Source
Civil Capacity	Citizen mobilization	V-DEM Engaged citizen
	Citizen organization	V-DEM CSO Participatory Environment, Civil society participation, Engagement in independent trade unions, Engagement in independent political associations

	Citizen cooperation	PRS Religious Tension, Ethnic Tensions V-DEM Political polarization
State capacity	Deployment of state authority	V-DEM Control over territory EIU Violent Crime, Organized Crime
	Mobilization of state resources	EIU Budget revenues per capita V-DEM State Fiscal Capacity
	State effectiveness	PRS Bureaucratic Quality V-DEM Bureaucratic remuneration
Thickness (perceived)	Public goods and services	Gallup: perceptions on Health and Education
	Welfare and safety net	Gallup: perceptions on Welfare policies and Access to Food and Shelter
Thickness (expert)	Public goods and services	V-DEM Education Equality, Health Equality
	Welfare and safety net	V-DEM Means-tested v. universalistic policy, Access to public services distributed by socio-economic position
Inclusiveness (perceived)	Equal opportunity (Equality)	Gallup: standard deviation in Standard of Living and Subjective Wellbeing scores
	Absence of corruption and abuse of power (Fairness)	Gallup: perceptions on Corruption and Impartiality of the courts
Inclusiveness (expert)	Equal opportunity	V-DEM Equal access index WID Bottom 40 percent Income Share
	Absence of corruption and abuse of power	Transparency international Corruption Perceptions Index V-DEM Rigorous and impartial public administration
Openness	Absence of repression and respect of human rights	V-DEM Physical violence index EIU Respect of Human Rights
	Freedom of expression and of the press	V-DEM Freedom of Expression and Alternative Sources Information Index
Alignment	Absence of civil disobedience	V-DEM Mass mobilization EIU Violent Demonstrations
	Popular support and public opinion	Gallup: Perceptions on Leadership, Trust in Government PRS Popular support

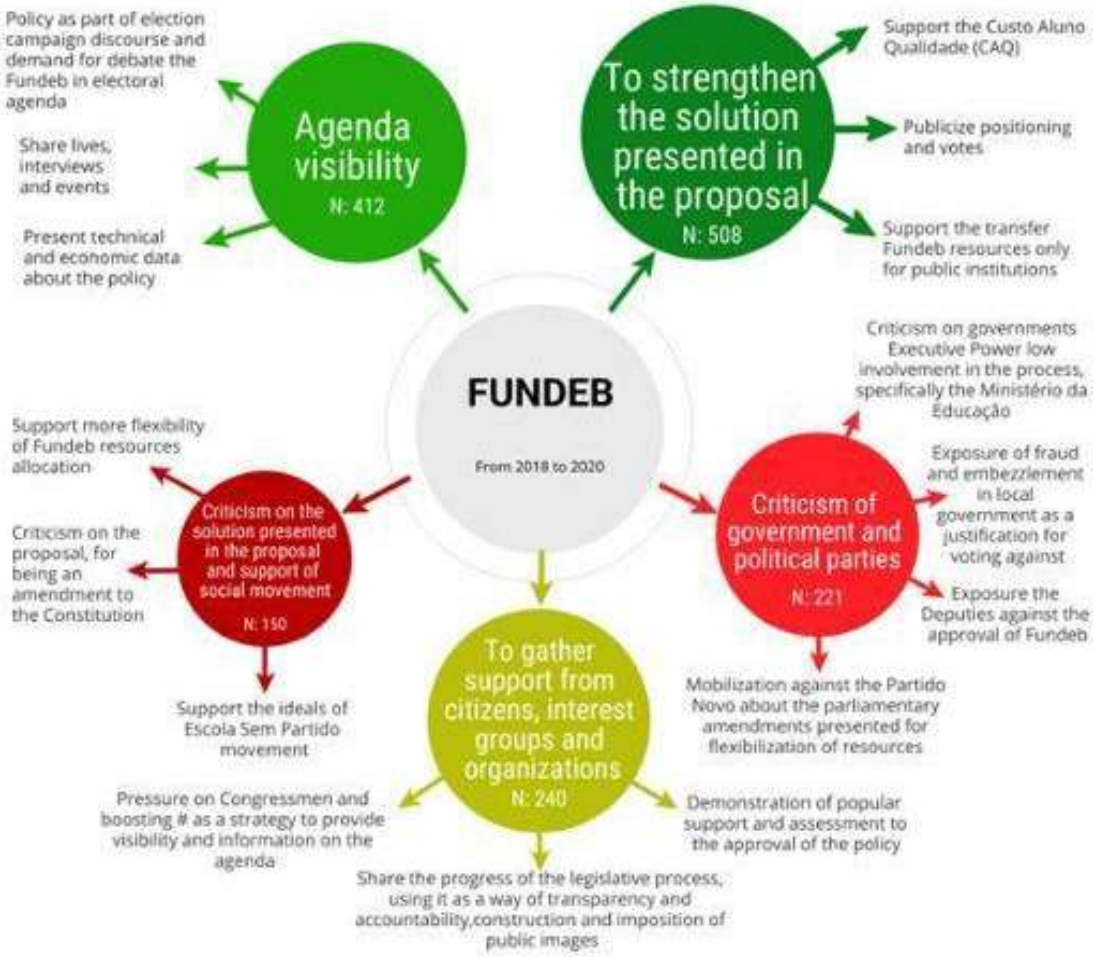
Annex A8.2 Methodological framework for understanding Brazil's social contract through network analysis

Figure A8.2.1 Methodological framework for understanding Brazil's social contract through network analysis



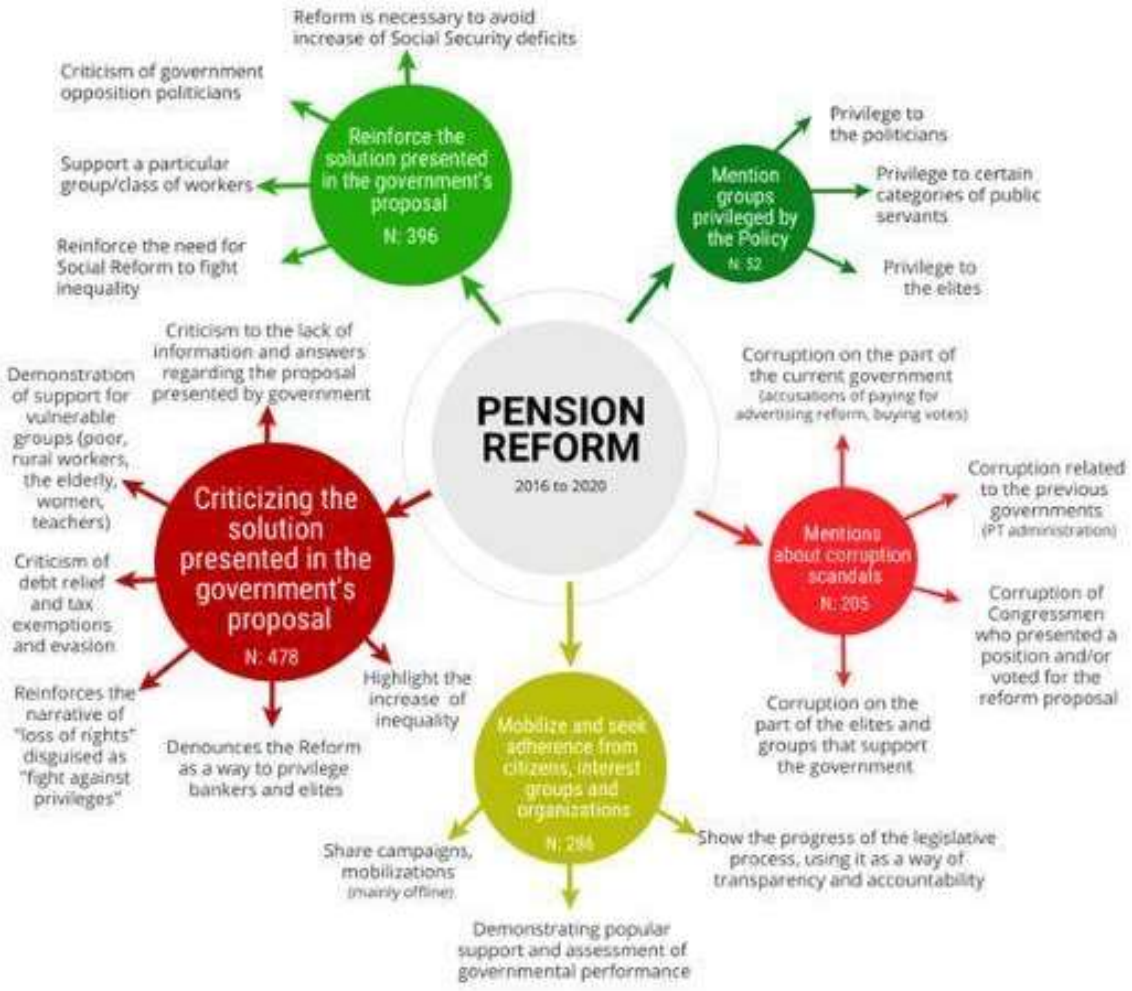
Source: elaborated by Tree Intelligence.

Figure A8.2.2 Narrative strategies used by the stakeholders in tweets—FUNDEB (2018–2020)



Source: Elaborated by Tree Intelligence.

Figure A8.2.3 Narrative strategies used by the stakeholders in tweets—pension reform (2016–2020)



Source: Elaborated by Tree Intelligence.

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Part IV. Brazil 2042:
Alternative futures

Chapter 9 Four scenarios for Brazil in 2042

Constructing scenarios for Brazil in 2042

This chapter constructs alternative futures for Brazil in 2042. This is not the only report to do so. In fact, over the past years there have been many visioning exercise for Brazil: Annex 9.1 provides an overview. Of course, predicting the future is impossible and there can, in principle, be an infinite number of possible futures for any society. In economics, "Knightian uncertainty" refers to cases where the likelihoods of occurrences cannot be quantified.[395] The evolution of complex societies is one example. The construction of scenarios can help navigate "Knightian uncertainty" by developing plausible causal chains of events that shape the future, anchored in particularly impactful triggers. In this sense, scenarios are not an exact science, they are narratives (Chapter 7).

To conduct scenarios for Brazil in 2042 an expert survey was conducted. Chapter 1 laid out a virtuous circle where historical legacy, megatrends and policies can reinforce each other to shape the future. Yet which of these areas are most critical? To answer this question, a survey was undertaken with 50 experts who contributed to this report, developing a Cross-Impact Balances Analysis (Weimer-Jehle, 2006).[396] Participants were asked to first select areas discussed in this report ("descriptors") that they were specialized in (e.g. trust), identifying the strength of relationship across the descriptors they selected, from "strongly restricting influence" to "strongly promoting influence". Within descriptors, experts were presented with variants, or alternative futures, (e.g. "high trust", "low trust") and then also asked about their estimated likelihood of a variant arising. The structure of the cross-impact matrix is displayed in annex table 9.1.

Inclusion and productivity emerged as strong clusters, moving them to the center of the scenarios. Clusters are marked by particularly strong linkages across descriptors. One cluster emerges around inclusion (including education, voice, tax, social protection and informality) and another around productivity (including infrastructure and the fourth industrial revolution). The strong interlinkages suggest that focusing action on these two areas would have multiplier effects on other areas, from trade to basic services to fiscal sustainability and environmental sustainability. The logic of those core areas spilling into other areas is reflected in the construction of the scenarios. Along the two axes of inclusion and productivity, four scenarios—or alternative futures—for Brazil in 2042 were constructed (figure 9.1): Distopia Brasileira, United Stagnation, the Great Divide, and the South American Powerhouse.

Imagining 2042. The presented scenarios tell plausible stories, informed by the discussions from this report, from the viewpoint of an observer in the year 2042, reviewing fictitious developments over the past 20 years.

Figure 9.1 Scenarios for Brazil in 2042

Source: World Bank.

Scenario 1: Low productivity, low inclusion, environmental degradation

Continuing adherence to the old style of governing and a rejection of fundamental reforms over the past 20 years produced a dismal outlook for Brazil. Following years of highly uneven service delivery and low job creation in the informal sector, the country is now approaching a new state of crisis. The rich kept getting richer, and with inequality reaching new peaks, there is strong unrest in the society, and the population seems to have lost faith in government and policymakers. The middle class and the poor are fed up with the lack of progress, the diminishing job opportunities, and the rise in inequality, jointly making them much more susceptible to populism and clientelistic policies.

Over the past 20 years, Brazil continued specializing in agricultural production. The agricultural frontier continued to expand into the Amazon, with ongoing deforestation destroying many natural habitats. After the first tipping point had been reached in the 2030s, droughts affecting agriculture and power supply became much more frequent. Given Brazil's heavy reliance on hydropower, the consequences have been severe for the entire population. The poor are disproportionately affected and experience frequent blackouts, which further worsens their precarious situation. Job creation is low and tends to be in the informal sector, adding to crime, insecurity, and extreme poverty.

Since the economy remained weak and unproductive for many years, shocks—from global commodity markets, natural disasters, and internal political tensions—have disproportionate effects on the poor. Mass protests became more frequent, leading to violence, destruction of wealth, and spreading fear. The government tries to appease the voters by borrowing on international credit markets, but unreformed pension obligations and rising interest rates nullify

these attempts. The debt has reached unsustainable levels, and a shock to any part of the budget could now trigger default.

The fourth industrial revolution, which advanced in many countries but Brazil, has left Brazil on the outskirts of the developed world. Given the proliferating informal sector and corrupt political elite, the country has become a haven for illegal, unsustainable, and otherwise questionable forms of business, which further depletes its natural resources and makes it unappealing for outside investments in innovation. These trends have weakened Brazil's position on international markets and left it mostly isolated from emerging economic opportunities.

Scenario 2: Progress on inclusion alone

Following the Brazilian government's far-reaching measures to strengthen inclusion, education, and service delivery, the initial buzz among the population has subsided. Continuous efforts to ensure more equal spending of taxes and to keep debt sustainable strengthened the social contract but were insufficient to stimulate productivity reforms. Brazil's focus on redistribution from the rich to the poor is not enough to operate in a highly technological and productive world without serious upgrades to the economy. The lack of progress in structural reforms and modernization kept the old status quo and old institutional relationships that continue to block far-reaching societal transformation. While Brazilians have benefited somewhat from the new inclusive policies, they are disillusioned about their country's future prospects. Combined with selective inequality due to the fact that productivity gains are concentrated mainly in urban regions, social stability is not guaranteed.

Over the two decades, education has improved for most people in the country, but the lack of growth still means that the demand for skilled labor is low. Overall, the labor market paints a mixed picture: skill premia have fallen, jobs have grown modestly, inequality has come down but overall wage growth remains constrained. Since productivity gains have been limited to a few sectors, many well-educated workers are forced into low-skilled jobs, enhancing the vulnerability of the middle class and increasing frustration.

Low rates of technological innovation and productivity growth did not make Brazil more competitive on international markets, leaving it in the backwaters of international supply chains. Brazil remains a low-tech commodity-exporting economy.

The strong continued focus on commodity exports meant that pressures on the agricultural frontier in the Amazon continued. Yet Brazil's more inclusive and trusting society feels a joint responsibility for protecting its public goods, including its exceptional biodiversity, while contributing positively to the global climate change agenda. This has translated into stronger institutions to protect the Amazon and made Brazilians more sustainable consumers, somewhat attenuating deforestation. Yet without the gain in productivity, Brazil does not manage to leverage its opportunities in green value chains, outside of commodities.

Although tipping points in the Amazon could be avoided, climate shocks remain serious and limited productivity growth constrains government revenue to invest in significant adaptation.

Despite positive moves in inclusivity, education, and taxation, low productivity growth did not produce a dramatic increase in the welfare of the struggling population or promote enough change in the political climate to stimulate structural reforms. Even though the old elite has given up certain privileges and income, which is now used more productively, they are still in control of

most initiatives for economic transformation. Given that the population did not gain much financial benefit from the reforms, Brazilians become less excited about the future and less trusting in formal institutions, perpetuating the environment of low reform and leaving Brazil in a state of stagnation.

Scenario 3: Progress on productivity alone

Over the past two decades, Brazil successfully implemented a wide variety of measures to increase productivity. In particular, catapulting into the new digital age raised hopes within the population and as the economy shifted from commodities to urban production Brazilians proudly saw Amazon deforestation gradually diminish. But this initial economic success came at the expense of slow progress on inclusion, which was neglected by several governments. The result: a deeply divided Brazil with the elites getting richer, the poor becoming ever more desperate, and the vulnerable middle class slipping into poverty—a disjointed construct held together by the remnants of its former national identity. While some Brazilians, especially among the upper middle class, enjoy higher wages due to increased productivity, the cultural and economic divide between the poor and everyone else separates the population into enclaves that live in parallel realities promoted by widespread digitalization.

The development of the digital economy gave rise to new technologies that are replacing unskilled labor and increasing the already extreme wage inequality. As a result, the digital space, now accessible to everyone, has fragmented into echo chambers of conspiracy theories. The disenchanted poor struggle to find work jobs in the new economy, which leads to even more poverty. The elites enjoy the material benefits of the new industries developing in the southeast while remaining numb to the suffering of the rest of the population in the northern and northeastern regions.

To suppress rising discontent and maintain the discriminatory status quo, the government became more authoritarian and has been suppressing political voices offline and online—through real and digital disinformation campaigns. Besides the developing southeast, agricultural regions like Mato Grosso are managing to move up the value chain, but poorer regions are declining, since they are not competitive, resulting in massive outmigration to the urban centers in the southeast which, having neglected inclusion, is not prepared for the inflow of migrants. The disruption to society and rising inequality create new social tensions.

While the Brazilian government initially earned the political and financial support of the international community, its negligence of the poor and its authoritarian measures to quiet discontent turned many international partners away. Even though Brazil has been credited for lowering the deforestation of the Amazon and has been seizing some opportunities from green manufacturing in a decarbonizing world, the government's authoritarian tendencies have raised concerns among global consumers and investors, curtailing the potential from global trade and FDI.

Scenario 4: Inclusive, sustainable, productivity-led growth

After a once highly unequal Brazil recognized the diversity of its people, heard the voices of the poor, and provided all with improved access to basic infrastructure and credit markets, the divisions between societal groups substantially diminished. As a result, the trust of the population

in government institutions and each other has gradually improved and the belief in a bright shared future strengthened. This provided a solid foundation for ambitious reforms.

Society's longing for a prosperous and stable country has been fulfilled in recent years. With a widely inclusive productivity growth and a stronger social contract, the benefits of technological change and improved education were felt by most of the population. Although Brazil has maintained its diversity—socially, economically, and politically—the many Brazils have moved closer together.

The goals of political players have become more aligned and focused on the prosperity of the nation (not just narrow interests) due to the new social norm of promoting inclusion. All this improved the business environment and raised public investment in economic and social infrastructure, making the economy more open. A newly acquired sense of stability, belonging, and community among Brazilians strengthened formal institutions through the wide support of the population and increased public support through governmental actions that increase prosperity. Brazilians today invest in themselves and into their society, with optimism about their own prospects and those of their country.

By passing critical reforms that increased investments in education, introduced a more progressive tax system, and improved equity and sustainability in social protection, the Brazilian government transformed the social contract into a stable and working relationship with the population. Critical structural reforms have led to harmonious productivity growth and technological change across the whole of society. Informality has majorly reduced as the quality of jobs improved and the tax system raised the benefits of formalization.

Political, societal, and macroeconomic improvements promoted the cycle of positive changes in many sectors of Brazilian economy. Strong job growth reduced poverty and brought much needed investments to the favelas. Fiscal accounts have improved due to a sustainable budget and stable economic growth, generating space for a range of public investments, from education to social protection to climate change adaptation. Overall, Brazilians are more educated and can apply their skills in a growing economy. They are more engaged politically, enjoy more stable economic conditions and social protection, are healthier and happier than ever.

On the international stage, Brazil is now more integrated into the world economy, and its export base has diversified beyond primary products. It has become an important exporter of green manufacturing goods, benefiting from the high demand for green production across the world. Brazil's new green-energy matrix together with low land-use emissions have made it highly productive and competitive on international markets. And as a result of increased international cooperation, Brazilians are now active players in international business and global supply chains, opening new frontiers and possibilities for growth across all sectors of the economy.

Brazil once again became a pioneer in fighting climate change. Strong institutions support effective carbon pricing systems and natural forests and promote economic growth based on productivity rather than resource extraction. This helped to successfully avert a tipping point in the Amazon. Brazil is an integral part of the world's economy and ecosystems.

Building the Brazilian narrative: keeping the focus

Agreeing on a set of key performance indicators could help Brazil keep track of its progress to 2042. Selecting such indicators would allow governments and citizens to monitor which scenario the country is likely moving into—and take course corrections as needed. Based on the

scenarios, potential indicators could include: 1) growth in total factor productivity; 2) the share of non-commodity sectors in total exports; 3) the share of trade (exports plus imports) in GDP; 4) the quality of education across income brackets (such as learning outcomes or drop-out rates); 5) the share of Brazilians feeling politically excluded; 6) quality of health across income brackets (such as stunting rates or the mortality rate); 7) labor force participation and real wages (by sex and rate); 8) the public debt-to-GDP ratio; 9) deforestation rates in the Legal Amazon; 10) Brazil's greenhouse gas emissions.

Concluding thoughts

The future is an opportunity. Over the past 200 years, Brazil has come a long way. Yet the future cannot be projected linearly and continuous innovation is critical to making progress. Too many Brazilians are still kept from contributing to their own fortunes and their country's economy, a major missed opportunity. At the same time, the old growth model will not deliver future prosperity, especially given the headwinds of megatrends like technological and climate change and demographics. There are risks to inaction—and major opportunities from action. This report provides many entry points for the latter. A new electoral term in 2023 could be a starting point.

Annex A9.1 Other studies on alternative futures for Brazil

Several prior studies identify future development scenarios for Brazil, with premises similar to the current study. Few try to include social, economic, and fiscal dimensions, or the environment. And none explore how a transition from a low to a high case scenario could occur.

Scott et al. (2017) analyzes alternative scenarios for Brazil's economy and simulates how different interventions would contribute to boost growth. Marcial (2015) explores six megatrends that will affect Brazil and the world and discusses its consequences on the economy, society, environment, technology and international politics. Spilimbergo et al. (2018) discusses fiscal and institutional challenges on the path of Brazil's economic growth. Giambiagi et al. (2020) presents key constraints limiting Brazil economic and social progress. BNDES (2018) looks at the sectoral agenda of the country for 2018–2035 and provides insight on how to lift development barriers in different markets. CEBDS (2021) envisions how a future inclusive and sustainable Brazil would look, and what companies and civil society organizations need to do to achieve it. Chamber of Deputies (2017) covers the consequences of Brazil ageing population, with a special look into the legal framework and implications for the labor market.

Annex table A9.1 Studies envisioning future challenges and opportunities for Brazil in key development areas

Study	Themes		
	Macro and fiscal agendas	People and human capital	Environment
McKenzie Institute (ongoing)	X	X	X
CEBDS (2021)			X
Giambiagi et al. (2020)	X	X	
Puga and Castro (2018)	X		
Spilimbergo et al. (2018)	X		
Scott et al. (2017)	X	X	
Marcial (2015)		X	X

Several studies conclude that Brazil's prosperity is highly dependent on structural reforms, and on how human capital development and new investments will affect productivity. Giambiagi et al. (2020) lays out three potential scenarios for economic growth in the 2021–2030 decade:

- Baseline growth (average of 2.1 percent per year): few key reforms pro-investment will be approved.
- High growth (average of 3.3 percent per year): reforms will occur at the beginning of the decade, and there are good prospects for human capital growth due to increases in schooling and learning.
- Low growth (average of 1.4 percent per year): stagnated productivity and investment will stay at low levels, reaching 17 percent of GDP by 2030.

Puga and Castro (2018) also presents projections for how the economy will develop in the next decade. It considers as baseline scenario that all necessary fiscal reforms won't be implemented, but some factors important to growth will probably occur, such as advancements in ICT that will generate new products and improve business processes. In this conservative scenario, prior to the pandemic, BNDES had estimated an average annual GDP growth of 3.2 percent until 2035.

One important message of Puga and Castro (2018) is that most reforms that are needed do not have a significant fiscal cost. Similarly, Giambiagi et al. (2020), Scott et al. (2017), and Spilimbergo et al. (2018) underscore how reforms made by the state to improve efficiency are key to promote growth. Therefore, the best growth scenario was more related to governance capabilities (both in the public and private sectors) than fiscal space to implement expansive reforms. Spilimbergo et al. (2018) also argues that Brazil growth hang on the ability of the country to solve structural fiscal idiosyncrasies and modernizing fiscal institutions (pensions and civil service wage bill).

Studies presenting economic growth projections for Brazil don't incorporate environmental scenarios. Annex table A9.1 reveals the lack of overlap between environment and the macro and fiscal agendas. Giambiagi et al. (2020), Puga and Castro (2018), Spilimbergo et al. (2018), and Scott et al. (2017) don't discuss, in detail, consequences of climate change or environment degradation. These topics are only briefly mentioned when they are considered as risks to developments in access to clean water and sanitation or potential source of future health issues.

The studies that cover environmental scenarios are speculative on what ought to occur to avoid further degradation. Marcial (2015) predicts that Brazil and other countries will face three megatrends in environment:

- Increased questioning of the current economic model without a shared vision of a sustainable development alternative.
- Increased pressure on water resources.
- Continued occurrence of extreme climate events and increased debate on issues related to climate change.

The authors argue that goals established in past international agreements were only partially met that environmental degradation will likely continue into 2030. As this situation develops, economic systems might

Become more vulnerable to the consequences of climate change, such as water shortages. In 2018, close to 17 percent of the Brazilian population didn't have access to treated water supply, and little more than 53 percent had access to a sewerage system (Giambiagi et al. 2020).

A different strand of literature includes "vision" studies of normative nature. CEBDS (2021) provides a collective vision for Brazil conceived with the participation of more than 4,000 representatives from Brazilian business and civil society organizations: it proposes what Brazil should seek to become a powerhouse in generating economic value and shared prosperity from biodiversity, to the business sector endorsing carbon neutrality on their operations. It also expects the energy supply to evolve and make energy production cleaner, renewable, and more resilient.

Annex A9.2 Cross-impact matrix for this report

Annex table A9.2: Structure of the cross-impact matrix

	A. Fourth Industrial Revolution	A1. Rapid Change	A2. Slow Adoption	B. Economic Infrastructure	B1. Developed	B2. Underdeveloped	C. Credit Markets	C1. Better access	C2. Worse or same access	D. Productivity	D1. Productivity Growth	D2. Stangation	E. International Trade	E1. Moderate Import Dependence	E2. High Import Dependence	F. Debt Sustainability	F1. Debt Sustainable	F2. Public Debt Unsustainable	G. Consumer Behavior	G1. Sustainable consumption	G2. Unsustainable consumption	H. Climate Change	H1. Profound	H2. Moderate	I. Pressure on Amazonia	I1. Amazonia is Preserved	I2. Amazonia Turns into Savanna	J. Geographical Divide (GD)	J1. GD Decreases	J2. GD Increases	K. Access to Basic Infrastructure	K1. High Inclusion	K2. Low Inclusion	L. Education	L1. Quality Improves	L2. Quality stagnates	M. Informality	M1. Low Informality	M2. High Informality	N. Social Protection	N1. Better Protection	N2. Same or Worse Protection	O. Taxation	O1. Progressive	O2. Regressive	P. State of Democracy	P1. Strong Democratic Institutions	P2. Authoritarism	Q. Voice of the Poor	Q1. Stronger	Q2. Same or less	R. Trust	R1. High	R2. Low
A. Fourth Industrial Revolution																																																					
A1. Rapid Change																																																					
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B. Economic Infrastructure																																																					
B1. Developed																																																					
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D. Productivity																																																					
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D2. Stagnation																																																					
E. International Trade																																																					
E1. Moderate Import Dependence																																																					
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F. Debt Sustainability																																																					
F1. Debt Sustainable																																																					
F2. Public Debt Unsustainable																																																					
G. Consumer Behavior																																																					
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R. Trust																																																					
R1. High																																																					
R2. Low																																																					
Color codes of factors:	**Economic**						**Environmental**						**Social**						**Political**																																						

Source: World Bank.

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[2] Lara Ibarra et al. 2021.
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[4] Beytía, Pablo. 2016.
[5] Burger et al. 2022.
[6] Burger et al. 2022.
[7] World Bank. 2022. Brazil Human Capital Review: Investing in People. World Bank.

[8] For a similar argument relating inequality and economic growth, see Mendes 2014.
[9] Fandiño et al. 2022.
[10] World Bank. 2022. *Brazil Human Capital Review: Investing in People*. World Bank.

[11]; Blair and Raver 2016; Noble et al. 2015; Kautz et al. 2014; Hanson et al. 2013.
[12] Cassio et al. 2021.
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[14] Strauss and Thomas 2007; Stowasse et al. 2014; Perkins et al. 2016.
[15] Hsieh et al. 2019;
[16] World Bank. 2013.

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[19] Morgandi et al. 2021.
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[23] Dutz 2018.
[24] Flabbi and Gatti 2018
[25] World Bank. 2022. Brazil Human Capital Review: Investing in People. World Bank.

[26] Dutz et al. 2018.
[27] This chapter defines a social contract's thickness by the level of involvement of the state in providing public goods and services such as education, healthcare, and social safety nets. In a thicker social contract, the state plays a larger role while in a thinner social contract, individuals have to obtain these services from the private sector if they exist.

[28] Burger et al. 2022.
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[30] Piketty, Thomas, and Arthur Goldhammer. 2014. *Capital in the Twenty-First Century*. Cambridge Massachusetts: The Belknap Press of Harvard University Press.

[31] Taylor 2020
[32] Arretche 2018.
[33] Brito, Foguel, and Kerstenetzky 2017; Kerstenetzky 2017; Saboia 2007.
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[35] Keefer 2018.
[36] Keefer et al. 2019.
[37] Mendes 2014.
[38] Acemoglu and Robinson 2012; Engerman and Sokoloff 2005.
[39] World Bank. 2016.
[40] Piketty and Saez 2014; Souza 2016; Scheidel 2018; Williamson 2015; Huber and Stephens 2013.

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[56] Souza 2018
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[58] Acemoglu and Robinson 2015.

[59] Barros, Henriques, and Mendonça 2007.

[60] Souza 2018; Morgan 2017.
[61] Gobetti and Orair 2016.
[62] World Bank 2022. By some accounts, those in the first decile pays on average 45 percent of their monetary income in indirect taxes, compared with only 13 percent of the top decile.

[63] Arretche 2018; Barros, Franco, and Mendonça 2007; Kerstenetzky 2017; Rocha 2013.
[64] Medeiros and Souza 2016; Medeiros, Castro Galvão, and Nazareno 2015, Medeiros, Souza, and Castro 2015a, 2015b; Morgan 2017.
[65] At the beginning of the century, four out of 10 Brazilians were considered poor and living below the $5.50 USD (2011 PPP) poverty line. By 2012, that rate was 20.7 percent. In the same period, the share of Brazilians living below $1.90 per day (2011 PPP) fell from 11.5 percent in 2001 to 3.8 percent in 2012 (Cord et al. 2015).
[66] Soares 2006.
[67] Brito, Foguel, and Kerstenetzky 2017.

[68] World Bank. 2022. *Brazil Poverty and Equity Assessment: Looking Ahead of Two Crises*. World Bank. https://doi.org/10.1596/37657.

[69] World Bank. 2022. *Brazil Poverty and Equity Assessment: Looking Ahead of Two Crises*. World Bank. https://doi.org/10.1596/37657.

[70] Ciaschi et al. 2020.
[71] Source

[72] For households in the bottom quintile of the country's income distribution, this was equivalent to a boost of more than 50 percent to their observed incomes in 2019.
[73] Holland 2018.
[74] Santos 1998.
[75] Draibe 1985.

[76] Arretche 2018.
[77] Curi and Menezes-Filho 2004.
[78] Menicucci 2007.
[79] Atun et al. 2015; Harris 2014.
[80] Barro and Lee 2015.

[81] Menezes-Filho and Kirschbaum 2015.

[93] Taylor 2020.
[94] Acemoglu and Robinson 2015.

[95] Gobetti and Orair 2016; Fandiño and Kerstenetzky 2019.
[96] Lazzari 2021.
[97] Gobetti and Orair 2016; Fandiño and Kerstenetzky 2019.
[98] They also appear in Brazilian future studies
[99] Schwab 2017.
[100] Pix dominates small-value transactions. With more than 70 percent of the total number of digital transactions, Pix substantially surpasses traditional bank transfers (Alfonso, Kamin, and Zampolli 2022).
[101] Albrieu et al. 2019.
[102] Cirera et al. 2021.
[103] Brynjolfsson, Hitt, and Kim (2011)

[104] World Bank. 2019. *World Development Report 2019: The Changing Nature of Work.* Washington, DC: World Bank.

[105] World Bank. 2019. *World Development Report 2019: The Changing Nature of Work.* Washington, DC: World Bank.

[106] Vieira et al. 2021.
[107] World Bank 2018, p. 88.
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[109] World Bank 2020.
[110] MGI 2019.
[111] World Bank 2021b.
[112] World Bank 2021.
[113] Riots linked to the introduction of steam-powered looms in England in 1826 are often invoked in this context (Hallward-Driemeier et al. 2020).
[114] Source.
[115] IPSOS 2021.
[116] Autor, Levy, and Murnane 2003; Martins-Neto et al. 2021.

[117] Routine tasks are a limited and well-defined set of cognitive and manual activities that can be accomplished by following explicit rules.

[118] For instance, recent evidence for Germany shows that workers in firms adopting such Industry 4.0 technologies saw average wages and job stability increase; however, improvements were concentrated in firms providing business services (as opposed to manufacturing) and especially benefited workers in ICT-related occupations performing complex tasks (Genz et al. 2021).

[119] Loyaza 2021.
[120] Acemoglu and Robinson 2012.
[121] WEF 2021.
[122] Based on PNAD Continua data, using a task-content index developed by World Bank teams with skill surveys in developing countries.
[123] See https://www.ilo.org/public/english/bureau/stat/isco/.

[124] The task indexes do not allow discerning whether such transformation is due to the rising share of services in the economy as part of structural transformation or to automation-induced processes. The adopted indexes were developed by Lo Bello, Sanchez Puerta, and Winkler, based on the World Bank STEPS skills surveys for developing countries. The advantage of using this measure instead of O-NET is that routine and manual contents for the same occupation differ significantly between developing and high income countries However, such indexes classify task content of occupations at the ISCO 1-digit level, and do not allow identifying specific tasks that can be substituted for by technology, which requires greater granularity in occupations classification. Thus, the rest of this section provides more insights on the role of technology in jobs through a review of the rich empirical literature for Brazil and the LAC region.
[125] Brambilla et al. 2021.
[126] Dutz, Almeida, Packard 2018. In Argentina, Colombia, and Mexico, both blue-collar and white-collar workers benefited from investments in ICT made by manufacturing firms. Particularly, the Brazil studies finds that "while increased Internet access has no net effect on aggregate employment, employment shifts from sectors with more limited expansion opportunities (wholesale and retail trade, public administration, and largely publicly owned utilities, which jointly made up almost half of the formal workforce in 2010) to sectors with more output expansion opportunities (such as manufacturing, transportation, and finance and insurance)."

[127] Gasparini et al. 2021.
[128] Beyles et al. 2021.
[129] Maloney and Molina 2016.
[130] Gasparini et al. 2021.
[131] Soto 2021; Martins-Neto et al. 2021.
[132] Martins-Neto et al. 2021.
[133] Soto 2020.
[134] Dutz et al. 2018.
[135] Almeida and Courseuil
[136] Shapiro et al. 2021.
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[141] OECD 2017.
[142] Gatti et al. 2018.
[143] World Bank.
[144] Source.

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[146] Plano Decenal de Expansão de Energia 2031 / Ministério de Minas e Energia. Empresa de Pesquisa Energética. Brasília: MME/EPE, 2022

[147] IEA (2021), World energy matrix 2019 (https://www.iea.org/data-and-statistics/data-browser?country=WORLD&fuel=Energy%20supply&indicator=TESbySource)

[148] World Bank (forthcoming) Brazil: Country Climate and Development Review

[149] World Bank 2017; OECD 2017.
[150] Source.

[151] Acemoglu and Restrepo 2021.

[152] Acemoglu and Restrepo 2021.
[153] Key sources of evidence on the association between economic outcomes and education quality is given by Hanushek and Woessman (2008); Hanushek and Kimko (2000). Other relevant studies in that regard include Barro (2001); Jamison, Jamison and Hanushek (2007); Woessmann (2003); Evans and Yuan (2022).
[154] A detailed description of the Human Capital Index is available on chapter 2.
[155] World Bank 2022b.
[156] World Bank 2022b.
[157] Azevedo et al. 2020.
[158] Learning poverty refers to the share of 10-year-old students who are unable to read and understand a short age-appropriate text. The detailed methodology of the HCI is available at World Bank (2019c).
[159] World Bank 2019a.
[160] MDS 2019.
[161] Defined as living in families with income below 0.5 minimum wages per capita per month, which is the eligibility line of Cadastro Unico, and close to the international poverty line of 5.5 US$ PPP per day.
[162] Ministério do Desenvolvimento Social. Programa Criança Feliz: A Intersetorialidade da Visita Domiciliar, Brasília, 2017a. Available at: < http://www.mds.gov.br/webarquivos/publicacao/crianca_feliz/A_intersetorialidade_na_visita_domiciliar_2.pdf>
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[164] World Bank 2022.
[165] Vaz, Braun and Ribeiro 2020.
[166] Pinto, Santos and Guimarães 2016.
[167] Campos et al. 2011.
[168] World Bank 2021.
[169] The Brazilian Constitution allocates responsibility for education to the federal, state, and municipal levels of government, which jointly provide public pre-tertiary education to 42 million students. Preuniversity education in Brazil consists of ECE for children from birth to age 5, primary and lower secondary education (grades 1 to 9) and upper secondary education (grades 10 to 12 on the general track or grades 10 to 13 for technical programs). The federal government is responsible for overall education planning and policymaking, such as setting the minimum wage of teachers and the rules governing funding formulas. Municipalities are responsible for providing ECE and primary and lower secondary education, while states are responsible for providing lower and upper secondary education. Municipalities and states overlap in their responsibilities for lower secondary education because not all municipalities can afford to provide it. Out of the 48 million students in preuniversity education, 16 million are enrolled in state school networks, 24 million in municipal school networks and 8 million are enrolled in private schools, which represent 33 percent, 50 percent and 17 percent of total national enrollment, respectively. The federal government manages a few mostly technical and military schools but focuses on providing tertiary education.
[170] Borges and Reis 2021. Background note.
[171] INEP 2021.
[172] PMPNE 2022.
[173] TPE 2020.
[174] Neri 2009; BRAVA 2017.
[175] World Bank 2018.
[176] Borges and Reis 2021. Background note.
[177] Barbosa and Costa 2019.
[178] Marioni, Freguglia and Menezes-Filho 2019.
[179] TPE 2020.
[180] Bruns, Evans and Luque 2012.
[181] Pereda et al. 2020.
[182] Bloom et al. 2015; Glewwe and Muralidharan 2017; Wang and Yeung 2019; Adelman and Lemos 2021.
[183] Loureiro et al. 2020; Carneiro 2018; Petterini and Irffi 2013.
[184] Andrews, Pritchett and Woolcock 2017.
[185] Reis 2021.

[186] Bruns and Luque 2015. Over the course of a single school year, students with a high performing teacher master 50 to 70 percent more of the curriculum for that grade (Rivkin, Hanushek and Kain 2005), and can get an average gain of one year to 1.5 grade levels or more (Bruns, Evans and Luque 2012).
[187] Acemoglu and Restrepo 2019.
[188] OECD 2018.
[189] OECD 2018; Amaral et al. 2018; IDB 2019; World Bank 2019b.
[190] Amaral et al. 2018.
[191] Markow and Sederberg 2020.
[192] WEF 2021.
[193] Hansen et al. 2021. 869
[194] Almeida et al. 2015.
[195] Almeida and Packard 2018.
[196] Silva et al. 2021.
[197] Source.
[198] To date there is no survey in Brazil, such as the Programme for the International Assessment of Adult Competencies (PIAAC) of the OECD, to measure adult skills.
[199] OECD 2019.
[200] Capes 2017.
[201] Based on PNAD C, 2019.
[202] World Bank 2017.
[203] GEMAA 2018. This increase was due to Law nº 12.711/2012, which required that 50 percent of federal university seats be reserved for students from public schools and 50 percent of these spots (or 25 percent of all affirmative action seats) be reserved for students from households with incomes at or below 1.5 times the minimum wage per capita.
[204] Firpo et al. 2021.
[205] Grundke et al. 2021.
[206] Barbosa Filho and Pessoa 2014.
[207] See https://www.timeshighereducation.com/world-university-rankings/2019/world-ranking#!/page/0/length/25/locations/BRA/sort_by/rank/sort_order/asc/cols/stats
[208] Sistema S institutions are a collection of nine corporate institutions that provide professional training, social assistance, consultancy and research, and similar activities to help workers and companies increase their productivity.
[209] Almeida et al. 2015.
[210] SAGI 2018.
[211] Bruns, Evans, and Luque 2012.
[212] Ferreyra et al. 2021.
[213] World Bank 2019c.
[214] Almeida and Packard 2018.
[215] World Bank 2021.
[216] See World Bank's BraJure simulation model, Balancing Stability and Opportunity.
[217] See, for example, IPEA 2019, World Bank 2018.
[218] World Bank 2020.
[219] World Bank 2018.
[220] World Bank 2021.
[221] Leite et al 2017.
[222] Informal urban settlements with poor infrastructure in higher risk areas (like steep slopes, creeks, and low-lying plateaus in urban centers) face increased exposure to natural hazards like floods and landslides in Brazil. Households with low monthly per capita incomes are overrepresented in these at-risk settlements, and 69 percent of households in these communities have household incomes below one minimum wage per person.
[223] The Civil Defense is responsible for emergency prevention, response, and recovery during a shock.
[224] World Bank (forthcoming) Brazil: Country Climate and Development Review.
[225] Brazil 2018 data from Portal da Transparência; OECD average 2010–2019, retrieved from OECD.stat and available at https://stats.oecd.org/Index.aspx?DataSetCode=LMPEXP.
[226] World Bank 2018.
[227] Morgandi et al. 2020.
[228] Silva et al. 2021.

[229] https://www.dol.gov/agencies/eta/tradeact.
[230] Lindert et al. 2020.
[231] IPEA 2017.
[232] Morgandi et al. 2021.
[233] Carvalho et al. 2018; Doornik et al. 2018; Gerard and Gonzaga 2016.
[234] Other potential incentive-compatible designs are proposed in the literature, for instance paying the benefit in part through the individual unemployment savings account and in part through the insurance pool.
[235] World Bank 2018.
[236] World Bank (2022): Brazil: Country Climate and Development Report. Washington, DC: World Bank.
[237] Ibid
[238] Sinha 2022.
[239] Gorton and Ianchovichina 2022.
[240] World Bank 2022a.
[241] Formetta and Feyen (2019) show that as countries get richer their populations also become less vulnerable to climate change.
[242] World Bank 2022a.
[243] Source.
[244] World Bank 2022a.
[245] World Bank 2022a.
[246] World Bank 2022b.
[247] World Bank 2022a.
[248] Veloso et al. 2017.
[249] Barbosa Filho, and Correa 2017.
[250] Qian, Araujo, and Nucifora 2018.
[251] World Bank 2022c.
[252] Aghion and Cette 2014.
[253] Goñi and Maloney 2017; Cirera and Maloney 2017.
[254] Cirera and Maloney 2017; Cirera and Muzi 2020.
[255] Maloney and Valencia Caicedo (2017) show that the *innovative capacity*, defined as the ability to absorb and adapt technologies, as measured by the number of engineers per capita in 1900, explains income level a century later. Countries including Argentina, Chile, Denmark, Sweden, and the southern United States in 1990 had similar levels of income, but large differences in engineering density, and these differences predict the differences in income observed today.
[256] Veloso and Zaourak (2022).
[257] Firmino et al. 2020.
[258] Product market regulation indicators are "a set of indicators that measure the degree to which policies promote or inhibit competition in areas of the product market where competition is viable." See https://www.oecd-ilibrary.org/economics/data/oecd-product-market-regulation-statistics_pmr-data-en for details.
[259] Ferreira and Rossi 2003; Schor 2004; Muendler 2004; Lisboa, Menezes Filho, and Schor 2010, Dutz 2018.
[260] Lisboa et al. 2010; Cirera et al. 2015.
[261] The Programa Portal Único do Comércio Exterior is an initiative of the federal government to reduce bureaucracy, time, and costs in Brazilian exports and imports, in order to meet the demands of foreign trade in a more efficient way. The main objectives are to make export and import processes more efficient and harmonized and to create a single window to centralize interactions between the government and private foreign trade operators.
[262] World Bank 2022b.
[263] Hanusch 2023.
[264] World Bank 2022a. The first scenario assumes a 20 percent fall in restrictions in FDI, together with a 10 percent increase in capital productivity in the service sectors indicated in the first scenario. The second scenario assumes a 10 percent gain in production efficiency in the service sectors mentioned in the first scenario. The third scenario assumes a 10 percent gain in production efficiency in the service sectors mentioned in the first scenario.
[265] Dutz 2018.
[266] World Bank forthcoming.
[267] Dutz 2018.
[268] Welfare gains and losses are reported as a percentage of annual consumption.

[269] Gorton and Ianchovichina 2021.
[270] Dix-Carneiro 2014.
[271] Dix-Carneiro and Kovak 2017.
[272] Dix-Carneiro and Kovak 2017, 2019; Dix-Carneiro et al. 2021.
[273] Ulyssea 2018.
[274] Veloso and Zaourak 2023; La Porta and Shleifer 2014.
[275] Dutz et al. 2018.
[276] Bráulio Borges (2020) Impactos macroeconômicos estimados da proposta de reforma tributária consubstanciada na PEC 45/2019. Available at https://ccif.com.br/wp-content/uploads/2020/06/Nota_Tecnica_Reforma_PEC45_2019_VF.pdf
[277] Piza 2018.
[278] Rocha et al. 2018; Veloso and Zaourak 2023..
[279] Firpo and Portella 2021.
[280] Firpo and Portella 2021 Almeida and Packard 2018.
[281] Morgandi et al. 2020; Almeida and Cardoso 2014.
[282] Firpo and Portella 2021.
[283] Sources
[284] Morgandi et al. 2021.
[285] Fietz et al. 2021.
[286] Colonnelli et al. 2020.
[287] Colonnelli and Prem 2022.
[288] Cavalcanti and Santos 2021.
[289] The pension reforms can also have a similar effect since they change the incentive of agents to invest in financial assets.
[290] Kospentaris and Zaourak 2022.
[291] Busso, Madrigal, and Pages 2013; Qian, Araujo, and Nucifora 2018.
[292] Veloso and Zaourak 2023. The average across countries is 78 percent.
[293] Dutz 2018.
[294] Domestic credit to the private sector in Brazil is about 70 percent of GDP, compared with more than 100 percent in the Republic of Korea and Malaysia
[295] Joaquim, Van Doornik, and Ornelas 2019. In addition, there is dispersion in spreads across firms, with young and small firms paying higher rates. The evidence suggests the dispersion in interest rates has important negative effects on productivity and output (Cavalcanti et al. 2021).
[296] Recent studies have attempted to quantify the relative impact of concentration on bank margins compared to operating costs and cost of risk. The evidence suggests that concentration plays a role, though not the dominant one. The 2018 International Monetary Fund Financial System Stability Assessment states that "Operating costs, loan loss provisioning, and bank concentration at the product level are strongly correlated with higher net interest margins in Brazil vis-à-vis peers. Other significant factors are bank size—typically the larger the bank the wider the spreads—and the volume of earmarked-credit." The central bank aims to increase contestability through its open banking project launched in 2019, with the fourth and last phase planned for September 2022. See Spilimbergo et al. (2018) and BCB (n.d.).
[297] Dutz 2018.
[298] Veloso and Zaourak 2023.
[299] Assunção, Benmelech, and Silva 2014
[300] Coelho et al. 2012.
[301] Araujo, Ferreira, and Funchal 2012
[302] Catao et al. 2009.
[303] Calice, Diaz Kalan, and Miguel 2021.
[304] Wang et al. forthcoming.
[305] https://ukcop26.org/glasgow-leaders-declaration-on-forests-and-land-use.
[306] There is a vast body of literature on this topic. See, for example, Artuc, Christiansen, and Winkler (2019) and Artuc, Bastos, and Rijkers (2018) for empirical evidence on the effects of robotization in open economies. Their results and those of Graetz and Michaels (2018) do not support the idea of overall reductions in employment, although Graetz and Michaels find that employment shares decline for those less skilled. For the United States, Acemoglu and Restrepo

(2017) find large, negative effects of automation on employment and wages across commuting zones. Autor and Salomons (2018) find a direct effect of automation for employment, i.e., automation displaces employment in the industries where it originates, but these losses are compensated by indirect gains in customer industries and induced increases in aggregate demand. (Acemoglu and Autor 2011; Berg, Buffie, and Zanna, 2018; Acemoglu and Restrepo 2017, 2018; Autor and Dorn, 2013; Autor, Levy, and Murnane 2003; among others)

[307] World Bank 2022.

[308] Ferreyra, Garriga, and Manuelli 2016; Ferreyra et al. 2017.

[309] Ferreyra et al. 2017.

[310] Bloom et al. 2013; Bloom, Sadun, and Van Reenen 2016; Cirera and Maloney 2017; Bloom et al. 2019; Scur et al. 2021; Syverson 2011; Bloom et al. 2016.

[311] Bloom, Sadun, and Van Reenen 2016.

[312] Bloom et al. 2012, 2019.

[313] Randomized controlled trials and quasi-experiments have also found positive effects of management on performance (Giorcielli 2019; Bloom et al. 2013; Bloom et al. 2019; Iacovone, Maloney, McKenzie 2021).

[314] Dutz 2018.

[315] Veloso and Zaourak 2023; World Bank 2017b.

[316] Firpo and Portella 2021; Piza 2018; Veloso and Zaourak 2023.

[317] Veloso and Zaourak 2023; World Bank 2017b.

[318] Fragmentation refers to a supply chain that is broken down into different stages. Together, those stages form the complete production of a certain good. The more vertically integrated a firm is, the more stages of the supply chain it performs internally, not depending on external suppliers.

[319] There are four taxes of such kind: two federal taxes (PIS/Cofins and IPI), one state tax (ICMS) and one municipal tax (ISS). Each of them is subject to different regimes and a variety of tax rates, depending on sector and location.

[320] World Bank (2023) Urban Competitiveness in Brazil's State of Amazonas: A Green Growth Agenda.

[321] For example, Orair and Gobetti (2019) suggest the adoption of a dual model, used in Scandinavia and Chile, where normal capital returns would be taxed at the business level using corporate income taxes, while super-normal returns would be taxed at the individual level using dividend taxes. As a reference to compute normal returns, one could use the SELIC rate together with methods currently used to compute interests on private capital (World Bank, 2018).

[322] Government Finance Statistics (GFS), from the International Monetary Fund. The LAC average includes Brazil, Chile, Costa Rica, El Salvador, Guatemala, Mexico, Paraguay, and Peru. And, the OCDE average includes 30 countries. In 2020 Brazil spent around 10 percent of GDP with wages and salaries of active public servants.

[323] Wage premium is the estimated excess salary when the salary of a public servant is compared to a equivalent private sector workers after controlling for variables that can explain differences in salaries (education, age, years of experience, gender, location and race).

[324] The variation across states is very large. While São Paulo almost does not have wage premium, only 5 percent, the Distrito Federal presents a wage premium similar to the federal government: 84 percent. Also important to highlight that the average wage premium at the state level increased more the 5pp between 2012 and 2017, going from 30 percent to 36 percent.

[325] Based on regression analysis comparing public sector wages to those in the formal and informal private sector while controlling for education, age and experience, location, race and gender.

[326] National Treasury data (2017), according to the Government Finance Statistics (GFS) methodology, from the International Monetary Fund.

[327] There is no evidence of wage payments delay at Pará, Ceará, Paraíba, Mato Grosso do Sul, Espírito Santo, Santa Catarina, and Paraná.

[328] Among the bonuses alone, there are a total of 179 items, of which 105 are included at the retirement. In 2017, in 87 percent of careers with pay for performance, at least 90 percent of public servants received. In some cases, performance payments do not differentiate public servants, they all receive the same amount.

[329] Some states have progression intervals of only 2 years with readjustments that could reach up to 30 percent. Thus, public servants reach the final stage of the career too fast, way before retirement.

[330] Using SIAPE data, it is possible to notice that in around 15 percent of the administration careers at the federal government the starting salary is less than R$ 5,000.00. On the other hand, in the case of legal careers, the starting salary reaches more than R$ 23,000.00.

[331] World Bank 2017.

[332] Militaries and policemen.

[333] SP 2040 reference.
[334] CAF 2020.
[335] Gray 2005.
[336] EPC/EC 2021. There is no consensus on the magnitude of the income elasticity of demand for healthcare. If it is higher than one, healthcare is a luxury good and demand will grow faster than GDP. Alternatively, if it is lower than unity, healthcare is a necessity, and health spending will increase at a smaller rate than GDP. Baltagi et al. (2017) shows that the income elasticity of demand for health is negatively correlated with GDP. While this parameter is smaller than one for developed nations, it gets close to unity for African and Latin American countries. In fact, when projecting the evolution of healthcare spending in Brazil, several studies assumed income elasticity of healthcare spending equal to one (Miller and Castanheira, 2013; Rocha et.al. 2020).
[337] Baumol 1967.
[338] EPC/EC 2021.
[339] Investment in education is expected to fall from 4.4 to 3.9 percent of GDP in France, 3.5 to 3.1 percent in Italy and 5.5 to 5.1 percent in Belgium (EPC/EC 2021). These computations assumed a fixed age-spending profile for the EU population and projected how aggregate spending will change with population ageing. So, they focused almost exclusively on the demographic effect.
[340] Loureiro et al. 2021.
[341] The Brazilian constitution also stipulates minimum levels of public spending on healthcare. There is an ongoing debate in Brazil about the possibility of unifying the earmarks for education and health, such that governments could transfer resources from one sector to another without failing to comply with constitutional minimums (for a discussion, see Vieira et al. 2020). The possibility of changes in current fiscal rules in Brazil is an important source of uncertainty for any attempt to project healthcare and education spending in the long-term.
[342] World Bank 2017.
[343] The link between school spending and education quality is still under debate. Reviewing the early literature, Hanushek (2003) concludes that variations in spending per student have a relatively small impact on student outcomes. He argues that governments should focus on within-school managerial policies. However, recent studies are showing otherwise. Jackson et al. (2016) questions the validity of previous findings, arguing that they fail to control for endogeneity between spending and learning. The authors find that increasing spending per pupil leads to more completed years of education, higher wages and a reduction in adult poverty. Moreover, Jackson et al. (2021) find that budget cuts in public education may lead to worse test scores and less college attendance.
[344] World Bank 2017.
[345] Much of this variation may be attributed to the Fund for Development of Basic Education (FUNDEB), established in 2006. Designed to mitigate regional inequalities in education resources, FUNDEB is financed by a series of state and municipal taxes, which are concentrated in the fund and then redistributed under a series of rules to ensure a minimum level of spending per student across municipalities. Until 2020, the federal government contributed to the fund with an extra amount equal to 10 percent of its value. With the establishment of New FUNDEB, this participation will increase gradually to 23 until 2026.
[346] Annex 7.1 illustrates the full assumptions for expenditure projections and for the different scenarios.
[347] World Bank 2017.
[348] A major overhaul of Brazil's infrastructure planning and governance was triggered by Decree 10526/2020 (World Bank 2022a), triggering the institutionalization of the Integrated Long-Term Infrastructure Plan, the updating of federal plans for transport, energy, water resources, urban mobility, and telecommunications. Progress was made on research and development in a more harmonized and transparency way. The new governance model instituted by the Interministerial Infrastructure Planning Committee (CIP-INFRA 2021) promotes the appraisal and prioritization of large-scale projects with upstream levels of planning based on socioeconomic cost-benefit analyses. Significant strides have also been also achieved in the dissemination of standardized methods aligned with international best practices for project preparation (Five Case Model Guidance), ex ante appraisals (CBA Guide), and ex post evaluations.
[349] CBO 2007.
[350] UNDP. 2021. Peoples' Climate Vote.
[351] World Bank. 2022. SUS 2040.
[352] Diaz 2012; Campos and Cruz 2009; and World Bank. 2022. Brazil Human Capital Review.
[353] Following Cloutier et al. (2021), we define social contracts as the "dynamic agreement between state and society on their mutual roles and responsibilities." The central idea of this approach is that policies and social outcomes are

produced by the combination of citizens' capability to make demands from the state and hold it accountable, and the state's capacity to provide services and enforce laws. The citizen state bargain is not the only factor influencing these factors and the role of historical contexts, including colonial legacies, the cultural preferences citizens, and economic conditions, cannot be ignored. More details on the conceptual and empirical framework underpinning the social contract approach can be found in annex A8.1.

[354] Acemoglu and Robinson; Besley 2021.

[355] Pessôa 2011. This is consistent with standard economic models explaining income redistribution in highly unequal democracies (Meltzer and Richard 1981).

[356] Higgins and Pereira 2013; World Bank 2017.

[357] Chapter 1 suggested that Brazil has a high social discount rate which makes it more difficult to invest for the longer term.

[358] Keefer et al. 2019.

[359] Conducted as part of the World Bank Group's 2022 Performance and Learning Review.

[360] Using Gallup World Poll data for 2016–2020 for a total of 7,004 interviewed individuals.

[361] Helliwell et al. 2015. The Subjective Wellbeing analysis use the Cantril Ladder scores in the Gallup World Poll to measure SWB. These cognitive measures of SWB, also known as life evaluation measures (Veenhoven 2000), are now generally regarded as valid measures of experienced welfare (Senik 2011) in a country (OECD 2013; Helliwell et al. 2021). The scores are the answers to the Cantril ladder question "Please imagine a ladder, with steps numbered from 0 at the bottom to 10 at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst. On which step of the ladder would you say you personally feel you stand at this time?"

[362] Veenhoven 2021.

[363] Neri 2009; Touchton et al. 2017; Wampler et al. 2019. See Inglehart et al. (2008), Orviska et al. (2014), and Ott (2021) for work on the relationship between freedom, democracy, and SWB.

[364] Several papers have already reported considerable mental health effects of the COVID-19 crisis in Brazil. See, for example, De Abreu et al. (2021); Passos et al. (2021), and Zhang et al. (2022).

[365] Wang and Sun 2020.

[366] Expectations explain why an individual in a developed country can perceive a certain level of education services to be unsatisfactory while an individual from a country that has historically had a much lower level of education services would find them to be satisfactory.

[367] Arretche 2018.

[368] Brito, A., M. Foguel, and C. Kerstenetzky. 2017. "The Contribution of Minimum Wage Valorization Policy to the Decline in Household Income Inequality in Brazil: A Decomposition Approach." *Journal of Post Keynesian Economics* 40 (4) ;

Kerstenetzky, C. 2017. "Foi um pássaro, foi um avião? Redistribuição no Brasil no século XXI." *Novos Estudos CEBRAP* 36 (2): 15–34. ;

Saboia, João. 2007. "Efeitos do salário mínimo sobre a distribuição de renda no Brasil no período 1995/2005 – resultados de simulações." *Revista Econômica* 9 (2). https://doi.org/10.22409/reuff.v9i2.34911.

[369] World Bank 2019.

[370] Ward et al. 2020.

[371] Hanusch and Keefer 2014.

[372] Putnam 1993.

[373] Knack and Keefer 1997.

[374] CLIAR Institutional Assessment.

[375] Moisés 2005; Moisés 2010.

[376] Standard survey questions on interpersonal trust such as the ones used in this chapter's analysis start by asking individuals about their willingness to trust those which are considered part of one's in-group, namely their families, their neighbors, and others that they know personally. A second set of questions is about how much respondents trust individuals outside their social group, often referred to as out-group trust. These questions are about trust in persons of other religions, persons of another nationality, and Brazilians in general.

[377] Kryzanek 2013.

[378] Cite Sasha's paper

[379] Cite Sasha's paper

[380] Such as Twitter, Instagram, blogs and websites with RSS, mass media, and YouTube.

[381]This chapter adapted the "Small World network" concept from network theory—understood as "a type of mathematical graph in which most nodes are not neighbors of one another, but the neighbors of any given node are likely to be neighbors of each other and most nodes can be reached from every other node by a small number of hops or steps." (Wikipedia.org). Use of this concept is associated with the importance of identifying and analyzing the dynamics of networks between relevant stakeholders and influencers on a certain topic, since they have the ability to influence the greater world.
[382] World Bank 2016.
[383] Campante, Durante, and Sobbrio 2013.
[384] Camp, Dixit, and Stokes 2014; Glaeser and Goldin 2006; Lizzeri and Persico 2004.
[385] Myerson 2005, 2012.
[386] Campante, Durante, and Sobbrio 2013.
[387] See Colonnelli, Prem, and Teso (2020) and Rougier, Combarnous, and Fauré (2021).
[388] Ferraz and Finan 2008, 2011; Brollo and Nannicini 2012; Brollo et al. 2013; Casselli and Michaels 2013; Boas et al. 2019.
[389] Grandvoinnet, Aslam, and Raha 2015.
[390] Khemani 2013.
[391] Olken 2007.
[392] Banerjee et al. 2015.
[393] Cloutier et al. 2021.
[394] Cloutier 2021.
[395] Knight, F. H. (1921). Knight, F: Risk Uncertainty and Profit (Illustrated ed.). Martino Fine Books.
[396] Weimer-Jehle W. (2006) Cross-Impact Balances: A System-Theoretical Approach to Cross-Impact Analysis. Technological Forecasting and Social Change, 73:4, 334-361. For a summary on how to apply the methodology see, e.g.: https://www.cross-impact.org/english/CIB_e_Alg_3.htm